ASSESSING FINANCIAL DISTRESS IN BANKING SYSTEM OF PAKISTAN

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CERTIFICATE

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DEDICATION

I dedicate this project to God Almighty my creator and my strong pillar his messenger Hazrat-e-Muhammad ﷺ my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared. I am dedicating this work to all my family members and especially beloved friend ***Mr.Safwan Haider*** *who help me in every possible way of my successful future. Without your help, patience and confidence in me, I was not be able to complete this whole journey. I love you all.*

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ABSTRACT

The banking sector plays a vital role in economic growth. The sound financial well-being of a bank is the assurance not only to its investors but is equally important for the owners, personnel, and the whole economy as well. As a result, efforts have been made from time to time, to gauge the money-related position of every bank and oversee it proficiently and viably. In this paper, an effort has been made to assess the financial distress in the banking sector of Pakistan using three known models that are Bankometer model, Altman Z-score, and the CAMEL model. The main aim of this study is to compare which one is the best model in the case of Pakistan and also analyzed the impact of CAMEL ratios on financial distress. For this purpose 11 years data is used from 2008 to 2018, collected from the annual reports of banks and State bank Evaluation report. The results show that the overall financial soundness of the banking industry in Pakistan is in the safe zone. But it is also evident that the Bankometer score is declining from the average score of 1.79 to 1.17 during the study period. Altman Z-score is rejected due to fact that it shows at least 70% of the banking sector in distress which is against the reality. Comparison of public banks with private banks showed that mean-variance of both types of banks are same and hence there is no difference between financial soundness of public and private banks and both types of banks are performing with financial soundness. Similar is the case with foreign and domestic banks. The regression results show that CAMEL ratios have a significant impact on financial distress. This study can help the public to aware of the investment situation of the banks so that they can determine easily with banks are good to invest in. it is recommended for future study to add the sixth dimension of the CAMELS model which is “Sensitivity”.it is also recommended to use macroeconomic variables like GDP, Real Interest rate, Inflation, etc as these could have improved the results.

Key words*:* Financial distress, Bankometer score, CAMEL, Altman Z-score,

JEL classification: G010, G210

CHATER 01

1.1 INTRODUCTION

Financial distress is the technical term that is used to assess the insolvency as well as the bankruptcy of the organizations.it refers to a state where the cash inflows of the corporations are not adequate to meet the day-to-day operational costs. According to Outecheva (2007), financial distress can be segmented into four subintervals: worsening of performance, insolvency, failure, and default. The profitability of the company is affected by failure and deterioration while liquidity can cause bankruptcy and evasion. In general, financial distress is considered a sharp deterioration in the performance and value of a firm. According to Dichev, (2002) Bankruptcy, default and financial distress are the substitute terms used in the literature. Due to its vital importance, prediction of financial distress remains an important area of focus for the firms, researchers, and stakeholders including lenders, investors, and applicants of capital markets in common. Additionally, the cost of financial distress is high, and it could result in business closure.

In today's fast-paced global competitive atmosphere, financial services particularly the banking sector plays an important role in serving the economy and society. The banking sector is among one of the national development's most vital instruments which occupies a distinctive position in the nation's economy. To produce its services banks desire clients that is the general public, and for the general public to deliver their cash to the bank, the bank should show them that they're a trustworthy bank to be entrusted with the funds.

Financial soundness in a banking business means the banks' ability to take care of the financial situation so that it can fulfill its long the term fixed expenses and pursue long run enlargement and growth plans. The financial soundness of the banking system is important as it

gives a very clear indication of how financial problems can be spread to the real economy. According to (Aspal& Malhotra, 2013) the good financial health of a bank is not only certain to its creditors but equally important to other stakeholders, employees and the entire economy. This issue of soundness becomes notably acute in economic crises and uncertainty but, also vital in an exceedingly stable economic condition as well. When the cause of economic recession are banks, for example, the recent past economic crisis in 2007-2009, it makes the economic recovery situation worse. The New York Bank (US) collapse in Dec 1931 comprising a loss of quite 200 million dollars in deposits was one of the largest failure within U. States history (Bordo& Lane 2012). In the time span of 02 years 2015-2017, 07 banks creased in Ghana, primarily attributable to monetary distress (larnyoh 2018). The Republic of Kenya has equally had a history of bank failures, with concerning 37 banks failing between 1986 to 1998 (Kithinji& Waweru, 2007; Waweru & Kalani 2009). In 2015, 3 Kenyan banks were placed under statutory management because of monetary distress, (Gathaiya, 2017). Financial turmoil is aggravated by the defaults within the banking sector which successively lead to the instability of the national economy. It is therefore of great importance that the banks 'efficiency and compliance with the regulatory requirements be closely monitored.

1.2 STATEMENT OF THE PROBLEM

The banking sector is one of the national development's most important instruments which occupies a unique position in the economy of a nation. Economic growth is reflected by a sound banking system. The soundness of the banking system is important because it gives some hints of how financial problems can be conveyed to the real economy.

The issue of economic soundness becomes notably acute in economic crises and economic instability but also vital in an exceedingly steady economic condition as well. In recession periods

and economic downturns, the economy and industry are supported by the banking sector. But, when banks are the cause of the financial crisis, such as the recent financial crisis of 2007-2009, it makes the economic recovery situation worse so it is a great problem of worry for economies.

Inorder to tackle this problem certain measures should be taken to predict bankruptcy and solvency issues in advance. There are certain bankruptcy prediction models which are already in use in different countries but still the problem is weather these bankruptcy models are applicable in case of banking system of Pakistan and which model can truly predict bankruptcy in case of Pakistan. Hence, the present study on "Assessing financial distress/soundness of banking system in Pakistan" shed light on predicting financial distress through Bankometer model, Altman Z score and CAMEL model and compares them on the basis of their distress prediction ability.

1.3 SIGNIFICANCE OF STUDY

The study derives its explanation from the fact that banks play a key role in national and international economies, Mobilization of funds from surplus entities to entities of deficits requires intermediaries between these two classes. In particular, financial institutions, banks serve as bridges between them and perform accordingly so that consumer expectations may not fall. Nowadays, the issue of how banks work with financial stability is buzzing.

So it is necessary to continually evaluate and measure their financial health by using trustworthy bankruptcy models to the benefit of all stakeholders (Orestis Manousaridis, 2017). The application of bankruptcy appraisal techniques to avoid crises in commercial banking allows the introduction of various crisis prevention strategies in advance. According to Mohan,(2005) a well-functioning financial sector enables effective intermediation of financial resources. The more proficient a financial system is in resource generation and in its distribution, the larger is its involvement in economic growth.

This study helped the banking sector by accessing its financial results and therefore gaining the confidence of the public particularly customers.it also helped the public to aware of the investment situation of the banks so that they can determine easily with banks are good to invest in. In case of Pakistan, this study is more significant than previous studies in a way that large sample size is used which has never been taken into consideration before for such studies, so the stakeholders can evaluate the banking sector more batter. This study is also significant in a way that it helps researchers to find out which bankruptcy model fits in the case of Pakistan's banking sector. Assessing the impact of camel ratios on financial distress can help researchers to incorporate appropriate ratios for future research.

1.4 RESEARCH QUESTIONS

This study is conducted to get answers of the following:

Question 01: Whether Banks in Pakistan are performing with strong financial soundness?

Question 02: Foreign banks are more financially sound or domestic banks?

Question 03: Public sector banks are more financially sound or private banks?

Question 04: Does camel ratios truly predict financial distress?

Question 05: Among Bankometer model and Altman Z-score model, which model is applicable in case of Pakistan?

1.5 OBJECTIVES

The general objective of the study is to examine the financial soundness of the Banking sector in Pakistan using Bankometer model (S-scores) and Altman Z-score, while the specific objectives includes the following:

1. To find out financial distress of banking sector in Pakistan over the 10-year period, 2008 to 2018.

2. Comparing Bankometer model with Altman Z-score.
3. Assessing the impact of Camel model on financial distress.
4. Comparison of financial soundness among foreign banks and domestic banks using Bankometer model.
5. Financial soundness comparison among public banks and private banks using Bankometer model.

1.6 RESEARCH GAP

Being a newly emerging model, a very little work has been done on Bankometer model. Hanif et al., (2012) used Bankometer model for comparison of financial soundness of Islamic and Domestic banks but comparison on the basis of public and private banks and foreign and domestic banks has never been done before in case of Pakistan. So in this research the researcher tried to fill this gap.

Ashraf & Tahir (2016) evaluate the Financial Soundness of listed Banks in Pakistan but overall banking sector (31 banks) has never been used for such studies in case of Pakistan, so the researcher used overall banking sector for assessing financial distress in banking system in order to depicts the true picture of banking system of Pakistan instead of just listed banks which are 20 in number.

Further, Bankometer s-score has never been used before in finding the CAMEL ratios impact on financial distress. Previously the researchers used Altman Z score for such purpose. So in this research the researcher used Bankometer model in place of Altman Z score to find the impact of CAMEL ratios on financial distress.

1.7 CHAPTER SCHEME

The study is organized under five chapters. Chapter 01 includes Introduction, Statement of the Problem, and significance of study, Research questions, Objectives, Research Gap, limitation of study .Chapter 02 comprise of a brief review of various related studies of Altman Z-score, CAMEL and Bankometer model. Chapter 03 includes Methodology, models and technical analysis and Statistical tools used for the analysis. Chapter 04 will related to analysis of data and interpretation of results. Chapter 05 will about summery of findings, conclusion from the results and recommendation for further studies.

CHAPTER 02

2.1 REVIEW OF LITERATURE

As obvious from the name, this chapter presents the review of literature related to the study undertaken. The purpose of this chapter is to describe the previous study that already done on the desired topic and this area with different variables in different time, and also result driven from this study and route map for further work to be needed.

2.1.1 THEORETICAL BACKGROUND

There is no common theory or ground behind the variables derived in the distress literature review because of variables selection procedure (Charitou et al., 2004; Grice and Dugan, 2003; Gentry et al., 1985). The models contributions are associated with practical issues facing by forecasting distress (Ohlson, 1980), and the process of distress is analyzed by various researchers regardless accepting the ratios information content. The stepwise statistical procedures are used as selection process to choose ratio from previous studies and group in distress forecasting. However, the previous studies comprised of relevant theories in order to comprehend and describe the financial distress phenomenon.

- **Profitability, Liquidity and Wealth**

The most famous hypothesis for a prediction of bankruptcy is indeed an idea. In contrast to an economic notion being converted into a measure, the theory is implicitly extracted from financial measures. This conceptual approach is based on the view of financial ratios as indications of the health of a company. It depends upon the excellence of the company's indicators to predict the risk of bankruptcy in a professional way. The high and positive assessment of three major categories including profitability, liquidity, and wealth decreases the risk of bankruptcy.

Academic research proposes two distinct theories to explain the origins of banking panics. One line of argument maintains that panics are undesirable events caused by random deposit withdrawals unrelated to changes in the real economy. In the influential work of Bryant 5 (1980) and Diamond and Dybvig (1983) bank runs are self-fulfilling prophecies. In these models, agents have uncertain needs for consumption in an environment in which long-term investments are costly to liquidate. If depositors believe that other depositors will withdraw then all agents find it rational to redeem their claims and a panic occurs.

The second set of theories of banking crises is that they are a natural outgrowth of the business cycle. An economic downturn will reduce the value of bank assets, raising the possibility that banks are unable to meet their commitments. If depositors receive information about an impending downturn in the cycle, they will anticipate financial difficulties in the banking sector and try to withdraw their funds, as in Jacklin and Bhattacharya (1988). This attempt will precipitate the crisis.

- **Theory of Financial Distress**

The term financial distress has been used for some time to describe different financial problems that affect companies. The initial studies carried out on financial distress (Beaver, 1966; Altman, 1968; Deakin, 1972) coincide on with the fact that financial difficulties include the inability to pay debts or preferential dividends and the resulting consequences, overdrawn bank accounts, liquidation for to pay interests of creditors and, even, legal bankruptcy proceedings. Carmichael (1972) defined it as a situation in which a company is unable to meet its obligations. This includes situations of insufficient liquidity, insufficient capital, failure to pay debts and insufficient liquid capital. Foster (1986) defined the term as a serious liquidity problem that cannot be resolved without a large-scale restructuring of operations or of the business entity. However,

over the years, the concept of financial distress has been grouping more features. Doumpos and Zopounidis (1999) go beyond these traditional perspectives and include the negative net present value of assets in their definition of financial distress.

Bose(2006) considered that a company is in financial distress when the listed value of its assets is less than 10 cents in the dollar. Hua et al. (2007) claimed that financial failure occurs when a company suffers chronic or serious problems or when it becomes insolvent with liabilities that are disproportionate to its assets. Lin (2009) considers that a company is in situation of financial distress in any of the following situations: bankruptcy, failure to pay debentures, overdrawn deposits, a significant event that does not allow debts to be paid upon maturity, entry into insolvency proceedings or when the listed price of shares falls below a specific minimum. Geng et al. (2015) defined financial distress as the situation in which the operating cash flow of a company cannot replace negative net assets.

Betz et al. (2014) claimed that credit institution financial distress included bankruptcy, liquidation and failure to meet obligations. They also considered that financial distress exists when an injection of capital is required by the government, asset bailout situations and forced mergers. This definition is also is followed by Constantin et al. (2018). According to these studies, financial distress can be defined as a situation in which a company has solvency problems at different levels that prevent it from performing its business without external aid and reduce its value until it reaches bankruptcy and therefore has to exit the market.

This is the concept of financial distress on which we base our study, which requires an analysis of credit institutions' present and future financial problems. A broader study than just the concept of bankruptcy is therefore required to measure their "state of health." Regarding the

methodologies used to predict the financial distress, there have been numerous classification techniques used to predict financial distress. The previous studies on corporate financial problems used the descriptive methods (Fitzpatrick, 1932; Smith and Winakor, 1935; Merwin,1942) and classified the companies analyzed into two groups (healthy and failing) using financial ratios. Half way through the 1960s, the predictive methods began to appear, with Beaver (1966) who performed a univariant data analysis to predict credit risk, suggesting threshold values as financial relationship variables in terms of profitability, liquidity and solvency to classify companies into healthy and failing.

Altman (1968) using a multivariate discriminant analysis in his famous Z-score model showed that the model had a significantly higher capacity of prediction in the year before bankruptcy than the univariate discriminant analysis models. Deakin (1972) also applied multivariate discriminant analysis using the ratios of Beaver (1966) and confirming this methodology is suitable for predicting business failure up to three years in advance.

Therefore, in this study, researcher try to predict the financial distress in the banking system of Pakistan with Bankometer S-score, Altman Z-score and CAMEL model because of their greater effectiveness in predicting stress situations. The details regarding these models are based in methodology chapter and empirical portion.

2.1.2 EMPIRICAL BACKGROUND

2.1.2.1 ALTMAN MODEL

Assessing bankruptcy on the basis of financial ratios is the primary methodology started by Altman (1968) by showing higher percentage of success. Edward I. Altman(1968) is a pioneer in scoring the prediction of failure and is one of the first to introduce it technically by implementing

the Altman Z-model (Z=1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + X5). The model is developed using multiple discriminant analysis (MDA) and is focused on the analysis of various financial metrics representing the performance of the business. One of the most significant advantages of Altman's method is high degree of precision in forecasting the failure of the company, 95 per cent-for a one-year time horizon and 83 per cent-for two years. Nevertheless, one should consider the weaknesses inherent in this model. In particular, the classic Altman Z-model can only be applied to large corporations whose stock are exchanged in exchange. Additionally, Edward I. Altman (1983) suggests a updated version of the multifactor model suitable for other corporations (Z = 0.717X1 + 0.847X2 + 3.107X3 + 0.42X4 + 0.995X5), as well as a revision of the model for non-production corporations particularly for emerging markets (Z= 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4).Financial health of many industries are examined by using the Altman Z-score model in different researchers. Wang & Campbell (2010) assessed the performance of various Z-score combinations, using an 11-year sample of 1,336 listed Chinese companies (1998-2008), the result driven by author is that some combination shown the better results instead of other combination of Altman Z-score models, financial distress is highly identified by original Altman Z-score.In forecasting failure and assessing the financial performance of major Islamic banks in the United Arab Emirates (UAE), Al Zaabi (2011) used Z-score model. He implemented Z-Score as a useful tool in determining the possible causes of deteriorating financial performance and recommends Altman Z-Score as an analytical tool that can be used in the banking sector.

Murari (2012) analyzed insolvency risk for 80 Indian banks, both public, private and foreign. For the period 2005-2009 he developed the index Z. The risk of Indian bankruptcy has decreased over the years, he found.

Das (2012) analyzed the possibility of commercial banks insolvency in India for the period 1998–2007. He identified Indian private banks to be the most risky, though international banks are considered to be the least risky for their cushion of fat money .The Public Sector Banks (PSBs) are in the intermediate category in terms of their risk levels.Some research, in particular those conducted in the banking sector, argues that Altman's ZScore Model is not appropriate for evaluating bank efficiency.

Vaziri et al.,(2012) compared multiple models on the basis of predictability of failure of financial institutions .Banks or financial institutions from Europe, the United States and Asia are considered as samples. . The authors applied Moody's financial ratios, Standard and Poor's financial ratio, Vaziri's financial ratio, Altman's Z score and then applying logit model and discriminant analysis and tested each of these model's predictive ability for future use. The paper analyzed the reasons like changes in market, policy, economy, and political influence which have led to bankruptcy. The researchers concluded that of all the models Z-score model gives the best prediction. Its prediction percentage of failed banks was 80% and showed 75% correct prediction before two years.

In order to determine the financial performance of P.T Bank Papua in the light of Cael, Z-score and Bankometer, Erari et al., (2013) conducts research covering the 2003–2011 period. The result shows that both CAEL and Bankometer reflect the same financial condition evaluation, but exception occurred in accordance with the Z-score model by placing the Papua banking industry in the gray zone. Research suggests that the Z-score model is not appropriate for the evaluation of the banking industry with certain limitations. However, the application of the Z-score model is recommended as early indication of bankruptcy in the assessment of financial performance.

Pradhan (2014) implemented Z score to estimate future-period Z score value. The study shows that Oriental Bank of Commerce's Z score holds the highest value. The condition of the banks has been improved as of 2011. He emphasizes the usage of back propagation neural network for prediction of bankruptcy for public sector banks in India.

Fu, Lin & Molyneux (2014) studied 14 Asia Pacific economies from 2003 to 2010 to examine the influence of national institutions, banking competitiveness, fragmentation of regulations, and fragility of individual banks. The fragility of the bank was calculated through probability of bankruptcy risk, and the Z-score of the bank. They found that by monitoring certain macroeconomic, bank-specific and regulatory parameters, the risk could be minimized for the commercial banks. They also found stronger entry restrictions are beneficial for banks 'safety, but strong deposit insurance policies are significantly linked to bank fragility. Chotalia (2014) evaluated Financial Health of Private Sector Banks with Altman Z-Score Model and concluded that the private sector banks which are under study falls in 'Grey Zone' as per Z-Score criteria and there is possibility of financial distress in some private sector banks.

Ilahi et al., (2015) uses Altman z-score to find the performance of selected commercial banks in pakistan and finds out that All the selected banks are in the range of bankruptcy as their z-score is less then 2.6 .but in reality all these banks are performing their function normally and effectively so they concluded that Altman z-score is not appropriate for finding financial performance of banking system in pakistan.

Rashid,Yousaf& Khaleequzzaman (2017) examine at empirical determinants of the financial strength of Pakistan's Islamic and traditional banks. They also study how the Bank's competitive conduct affects the stability of the banking system. They used quarterly data from 10

conventional banks, four full-fledged Islamic banks, and six stand-alone Islamic branches of Pakistan's conventional banks. Their research spanned the 2006–2012 timeframe. Higher rating of Z-score reflect that Islamic banks are relatively financially more stable. In carrying out regression analysis, they found that certain bank-specific parameters namely, loans to assets ratio, market concentration ratio, bank size, and income diversity, are important in assessing the stability of Pakistan's banks. Finally, they show that Islamic banks responded more significantly to the stability of the financial sector during the review period as compared to traditional banks.

Satibi,Utami &Nugroho (2018) compares Islamic banks and conventional banks in terms of efficiency, asset quality, and stability in Indonesia for the period 2008 to 2016, finding differences in efficiency, asset quality, and stability between Islamic and conventional banking where conventional banking is more efficient, better asset quality, and more stable than sharia banking. There are a few reasons of sharia banking deficiency such as information technologies, competency, human resource skills and experience, and the Muslim community's understanding of using sharia banking products for their primary financial transactions.

Agarwal (2018) applied Altman Z Score model to Public Sector Banks in India in order to verify the validity of the Z" Score model and to identify a trend in the Z" Score of the Top 5 Public Sector Banks in India according to their Marker Capitalization. For this, Altman Z score for a period of five years from 2012-17 has been calculated using ratio analysis. It has been found that the Z" Score model is a reliable predictor of current position of Top 5 Public Sectors Banks in India.

Sangamithra & RihanaBanu (2019) conducted a study to measure the financial health of Indian banks with the help of Z-Score. The study had a sample of five public sector banks and five private sector banks based on the top-lying total assets value in the industry. The empirical results

of the study revealed that the select five private sector banks were in safe zone and five public sector banks fall under grey zone.

Ghosn (2019) Predicted Financial Distress in Lebanese Non-Listed Banks and found out that all banks using the Z-score for non-manufacturing firms had a z score below the cutoff of 1.1, which means bankruptcy is predicted in the near future which contradicts the current situation of such banks. While Z value for emerging markets was above the cutoff of 2.6 which means that such banks are acting within the safe financial zone. The researcher concluded that the Multiple Discriminant Analysis notion for emerging markets is still powerful mechanism in forecasting financial distress and bankruptcy for the banking sector in Lebanon.

Jan & Tahir (2019)Examines the bankruptcy profile of Islamic banks in Pakistan for the and pre-crisis period 2007-2008 and uses Altman's Z-score bankruptcy evaluation model for evaluating bankruptcy rates of Islamic banks in Pakistan for the post-crisis period 2009-2015. And finds out that Islamic banks differ in the rate of bankruptcy from each other. Their results shows that the liquidity and productivity ratios have a significant positive impact on the bankruptcy profile of the Islamic banks. While profitability and insolvency, ratios indicated an insignificant impact on the bankruptcy profile of the Islamic banking industry in Pakistan.

Some researchers coated Altman model as inefficient model in finding financial distress in banks such as study of Das (2012), Erari et al., (2013) and Ilahi et al., (2015) who find out that Altman z-score is not appropriate for finding financial distress of banking system .so to find out whether this model is applicable in case of Pakistan we generate our hypothesis as.

H0: Altman Z score is not applicable to find financial distress in case of Pakistan.
H1: Altman Z score is applicable to find financial distress in case of Pakistan.

2.1.2.2 CAMEL MODEL

Committee of Basel in 1988 adopted CAMEL model as a standard model for bank's rating, The study of Cole & Gunther (1998); Thomson J.(1992) and in 2009 (Cole & White, 2012) proved that the CAMEL model's indicators and rating are effective determinants of banks failures during 1985-1992.These studies further provided evidence that the chances of failure of banks with adequate capital, higher earnings, sufficient liquidity and superior asset quality are low.

During 80's the failure of banks area assesed by Thomson (1991) who used CAMEL model .and concludes that CAMEL 'ratios can accurately predict the possibility of failure in a bank and can be used as an early warning system in banks.''Dar & presley (2000) have analyzed the third area of CAMEL model i.e. Management and control. For this purpose author assessed the internal governance of banks and financial companies of Muslim countries. They have found that there is lack of equilibrium between management and its control in Islamic countries, and further explained that profit and loss sharing in Islamic structure also caused the financial distress.

Rahman et al.,(2004) conducted a study to find financial distress of banks in Indonesia, South Korea and Thailand and compare these performance, for this purpose author used data from period of1995 to 1997. For this purpose author used logistic analysis and found that operating efficiency, capital adequacy and loan management are the most reliable predictors of financial distress in these countries.

Sarker (2005) investigated the CAMEL model for supervision of Islamic banks by the central bank of Bangladesh. The study enabled the supervisors to set a Sharia benchmark to supervise Islamic banks from Sharia perspective. Najjar (2008) analyzed the Al ahli Bank of Jordan and Palestine. The aim of this study was to examine the performance of Al ahli Bank, and

used CAMEL model to ensure equitable distribution to shareholders depends on fundamental analysis.

jaffar & Manarvi (2011) conducted the comparative study butween islamic and conventional banks of Pakistan to find out the performance of banks with CAMEL model, for this perpose author used the data from 2005 to 2009. And the result proves that the both types of banks are sound good in asset quality ratio, but in management quality and earning quality the conventional banks have high ranking as compare to Islamic banks, Islamic banks have high CAR and superior liquidity during this period.

Prasad et al.,(2011) have used CAMEL model to examine the performance of Indian public sector banks for the period 2006 – 2010 and to rate the banks according to their performance. After analysis they ranked Andhra bank as first and Central bank of India was ranked at the bottom most position.

Kouser & Saba (2012) assesed the financial performance of banking sector of Pakistan stock exchange and compares the Islamic, conventional and mixed banking systems. In this study author found that conventional banks and its Islamic branches didn't have adequate capital as compare to Islamic banks that is not good sign for these banks. Moreover, researchers found that Islamic banks in general have good management proficiency in comparison to conventional banks. The Islamic banks and conventional banks having lowest earning capacity as compare to Islamic branches of conventional banks. Finally, it can be concluded that Islamic banks have a developing setup.Prasad (2012) revealed that both the public and the private sector banks did not differ significantly during the study period and same was the case with management efficiency and liquidity.

Kerstein & Kozberg (2013) examined the banks performance in recent financial crises of US banking industry with CAMEL model ratios and suggested that the banks solvency is associated with the components of the CAMEL model. The financial ratios in model are individually and collectively hold the capability of predicting bank failure. Hanc (1998) evaluate the financial distress that caused by the CAMEL model factors and some other internal factors that influence on the financial health and financial performance of banking sectors.

Khouaja & Lotfi Boumediene (2014) use CAMEL parameters to determine the financial health of 150 commercial banks across six European countries during 2003 and 2008. The authors argue that for the purpose of banks stability greater profitability is needed that associated with incentives and risk management. The result of this study also shown that capital restriction improves the banks solvency. The authors suggest that by risk mitigating practice and effective risk management banks profitability increase and banks performs sound good.Maghyereh & Awartani (2014) conducted study to during 2000 to 2009 and used the data of 70 banks, concluded the result from analysis that soundness of the banking industries are betterly predicted through CAMEL model predictores.

For the above studies it is find out that CAMEL model is often use for finding overall financial performance of banks but not much work has been done on assessing financial distress through the CAMEL model so in this research the author try to find the impact of CAMEL ratios specifically on Financial distress instead of overall performance, the hypothesis generated for this purpose is;

Ho: CAMEL ratios do not truly predict financial distress.

H1: CAMEL ratios truly predicts financial distress.

2.1.2.3 BANKOMETER MODEL

In the year 2002, IMF developed a model called Bankometer S-score which is also based on financial ratios particularly CAMEL framework for banking sector. After the financial crisis of 2009, it is was observed that a number of industry turn into bankruptcy and this attracted the researchers from diverse area to conduct studies in Bankometer model.

Kattel (2014) assessed the financial solvency of selected commercial banks of Nepal, author used Bankometer S-Score and applied on the sample data of 6 joint venture banks and 22 private sector banks of Nepal over the period of 2007 to 2012.The results from this study compiled that private banks are in strong solvency position as well as joint venture and further found out that all the private and joint venture banks are financially sound. The study concluded that Bankometer model will help internal management in effectively minimizing the insolvency risk on operation level.

Yamin & Ali (2016) initiated a study using a Bankometer model for gauging the Financial Soundness of the Commercial Banks Jordan. The study covered the period 2002-2011 and found out that all of the Jordanian Commercial banks are financially sound and termed as super sound banks .the study also concluded that the Bankometer could help the commercial Jordanian banks' internal management to eschew insolvency issues with a proper control over their operations.

Landjang & Tumiwa (2017) conducted a study on financial soundness evaluation of selected commercial banks in Indonesia. The research model used in the study was Bankometer model which was applied on selected commercial banks of Indonesia for the time period 2015 to 2016. The output concluded from the study was that all the selected commercial banks are super sound for the last three year period. The study also recommended maintaining the soundness as the solvency scores of all the banks in the future.

Mousa (2017) attempted a study with Bankometer model for assessing the performance of the Commercial Banks in Jordan, for this purpose collected data from 2008-2015. The results driven through Bankometer model ratios suggested that banks are in safe position when Jordanian economy is instable and slow, the reason behind this position is that there is strong capital base, good assets quality, high liquidity, and good profitability generation in banks. The study concluded that Bankometer model is used as a best tool for finding out the financial performance and predicting the future out comes regarding the financial soundness.

Budiman, Herwany& Kristanti (2017) used Bankometer model to access the financial stress for Islamic Banks in Indonesia for the period 2011-2015 using 11 Islamic Banks. During the selected period for study all the listed and non-listed banks in Indonesia are in very healthy position throughout period and also found that according to structure non-performing loan is different in listed and non-listed banks. However, there are no significant differences between Variable Capital Asset, Loan to Asset, Cost to Income and Equity Asset.

JI Onyema et al. (2018) made an attempt to evaluate the financial soundness of selected commercial banks in Nigeria using Bankometer model. The researcher selected 10 Nigerian banks for the period 2000-2015. The study concluded that Bankometer model will definitely help the bank's internal management to avoid insolvency issues by controlling their operations properly and remove the shortcoming generated from inefficiency in dealing with banking activities.

From the above literature studies it is observed that Bankometer model can be used to find financial distress in banks .so to find out whether this model is applicable in case of Pakistan and weather banking sector of Pakistan is financially strong , the hypotheses generated are:

H0: Bankometer model is not applicable to find financial distress in case of Pakistan.

H1: Bankometer model is applicable to find financial distress in case of Pakistan.

H0: Banking sector of Pakistan is not performing with strong financial soundness.

H1: Banking sector of Pakistan is performing with strong financial soundness

In Literature some studies show comparison of the financial distress prediction ability of Bankometer model and Altman Z score model in different countries such as the study of Erari et al.,(2013) who analyze the financial performance of PT. Bank Papua using Cael, Zscore and Bankometer model for the period of 2003 to 2011 and find out that Cael and Bankometer S-score model gives the same good results for 2003-2011 while Z-score model reversely put theBank Papua in grey area and went bankrupt in 2007 to 2011.

Qamruzzaman (2014) carried out a study to predict the bankruptcy of private commercial banks in Bangladesh for period 2008 to 2012.the Bankometer "S-score" and Altman "Z-score" model is used in the study for predicting bankruptcy. The results described that during 2008, 2009 and 2010 both Bankometer S-score and Altman Z-score show similar financial position but exceptions prevailed in year 2011 and 2012. Bankometer S-score model showed healthy financial status of the whole banking industry whereas Altman Z-score model showed likely bankruptcy status.

Bolat (2017) tried to find the financial state of Kazakhstanis banking sector. He Applied Altman Z-Score Model and Bankometer S-Score in this research on data of five years (2011-2015) and did not find any bankrupt during selected time period and also concluded that Bankometer s score model have superior predictive ability as compared to Altman Z Score model in predicting the financial situation of banks in Kazakhstan.

So to find out which model among these is suitable in case of Pakistan the author generate a hypothesis as:

H0: Bankometer model has a superior predictive ability as compared to Altman Z score.

H1 Altman Z score has a superior predictive ability as compared to Bankometer model.

The literature shows some comparative studies of financial distress in different types of banks such as Islamic and conventional banks using Bankometer such as the study of laila & widihadnanto (2017) who used Bankometer model to find out the financial distress in Islamic and conventional banks of Indonesia. For this purpose author used 5 years data of 10 conventional and Islamic banks for the period of 2011 to 2014 and compared the Bankometer score. The author found from this study that financial distress prediction are same in both type of banks and there is similarity in financial distress predictions in Indonesian banks. The reason behind these results is that conventional banks and Islamic banks have same type of capital structure. Finally concluded that the Islamic banks less effected by the financial distress and facing insolvency as compare to conventional banks of Indonesia. The result of this study is also verifying the results of Pappaset al., (2012) who concluded that conventional banks have 55% more chances of failure as compare to Islamic banks. In term of sensitive behavior towards financial distress, finding of this research is matched with the finding of Hanif et al., (2012) who compare the performance of Conventional and Islamic Banking in Pakistan and Rahman & Masngut, (2014) who used "CAMELS" In Detecting Financial Distress of Islamic Banks in Malaysia.

Rahman (2017) researched on the evaluation of financial soundness of commercial banks in Bangladesh. To getting the result researcher used the data of 4 Islamic and 20 conventional banks listed on Bangladesh stock exchange for the period 2010 -2015. The result derived from this

study is explained that Islamic and conventional banks are financially in sound position whole financial industry is in favorable position, and further suggested that the Bankometer model is helpful in removing the insolvency issue and improvement of the banking operations that degrading the financial performance and improving the chances of financial distress.

Abirami (2018) conducted a study using Bankometer model to evaluate the soundness of select public sector and private sector banks in India for the period 2005-2015. According to the results all the public sector banks and private banks in the study are found to be super sound in their financial position. But private sector banks have been better than public sector banks during the period of study. The study concludes that Bankometer can help the internal management to evaluate and predict the solvency growth of banks and to give caution against bankruptcy.

Laely Aghe Africa (2018) studied Bankometer model to predict financial distress of banking sector in Indonesia and compare the application of Bankometer Model on foreign exchange and non-foreign exchange banks in Indonesia for the period 2014-2016. The samples of this research were 111 banks data which were listed in Indonesia Stock Exchange from 2014 to 2016. It consisted of 60 data for foreign exchange banks and 51 data for non-foreign exchange banks. It is concluded that Bankometer Model could be used to predict financial distress condition on foreign exchange and non-foreign exchange banks.

Parveen & Kumar (2019) collected the 10 years data of Indian commercial banks from 2009 to 2018 and analyzed for the purpose to measure the financial performance in the light of Bankometer framework. Authors finding from this study is that public banks are not performing well as compare to private banks. Also concluded that the private and foreign banks are the best achiever under the measurement of Bankometer frame work. Old private banks as a group are

among the moderate sound in the Indian banking system. The research concluded that Bankometer model is a replacement of the other related models in assessing the financial performance of the banks.

Ouma & Kirori (2019) used Bankometer model to evaluate the Financial Soundness of Small and Medium-Sized Commercial Banks in Kenya and also make comparison between medium-sized banks and small-sized banks on the base of the financial soundness. This research study concluded that both sizes of commercial banks were financially sound and there is no significant difference in the financial soundness of the two bank categories.

The above literature clarifies that Bankometer model has never been used for comparison purpose for foreign and domestic banks and for public and private banks ,especially in case of Pakistan, so the author generate hypotheses which are:

H0: There is no difference between the financial soundness of foreign and domestic banks.

H1: There is difference in financial soundness of foreign and domestic banks.

H0: There is no difference between the financial soundness of public and private banks.

H1: There is a difference in financial soundness of public and private banks.

CHAPTER 03

3.1 METHODOLOGY OF THE STUDY

In This section, the information about the methodology of the research that is used to carry out is given. The main headings under discussion are the population, sample size, sampling technique, research instruments and the techniques that will be used to measure and interpret the variables of the study in the succeeding chapters of the research.

3.1.1 POPULATION

Population is a collection or totality of all the entities, subjects or members that follows a set of specifications (Polit & Hungler, 1999).In this study, the whole banking sector of Pakistan is taken as population.

3.1.2 SAMPLE SIZE

As we are taking in our study all the listed and unlisted banks in Pakistan so The sample size of the research is same as our population.it must be noted that the listed banks on Pakistan stock exchange are 20 in number while total number of banks operating in Pakistan are 31in numbers including 11 unlisted banks. Among the 31 banks there are 05 public sector banks and 22 private banks and 04 are foreign banks and 05 Islamic banks, the details of which are given in the list of figures at the end of thesis.

3.1.3 DATA COLLECTION

Secondary data is used to assess the financial distress of the banking system. The data is collected from the financial statement Analysis FSA reports of state bank issued during the period 2008-2018. The selected financial ratios of the Pakistani banks are calculated from the collected data for the above mentioned period, for accessing the financial distress. Moreover, some of the

data will also assemble directly from the financial statements of banks and some from articles, the World Wide Web (Internet), and relevant previous studies.

3.2 DATA ANALYSIS

3.2.1 BANKOMETER MODEL

International Monetary Fund (IMF) has developed a model with norms to identify the financial soundness of the firms. Bankometer model is applied at international level which prescribes a procedure to scale the feebleness of an individual bank. The Model helps to find the solvency scores of the banks to avoid insolvency issues and to measure the financial position by taking into account the contribution of each ratio in the model according to the IMF (2000) norms.

The researcher used a model known as Bankometer developed by Shar, et, al. (2010) to measure solvency of banks. This model has a quality of using minimum parameters which the output of more accurate results in case of banks.

To analyze the Bankometer parameters individually, IMF has laid down the limits for a financially sound bank as follows:

3.2.1.1 BANKOMETER PARAMETERS AND IMF LIMITS

1. Capital Adequacy Ratio. = 40 %≤CAR≥08%
2. NPLs, to Loans (NPLs /total Loans). = ≤15 %
3. Equity, to total Assets (Equity / total Asset). = ≥ 02 %
4. Capital to Assets Ratio (Capital / total Asset). = ≥ 04 %
5. Cost to Income ratio. (Cost / total Income,). = ≤40 %
6. Loans to Assets (total Loan / total Asset) = ≤ 65%

The percentages describe a bank that:

6. Has value of CAR in between 8%, to 40%.
7. Has larger than 4% of capital to assets ratio.
8. Has a more than 2% of equity to assets ratio.
9. Has NPL ratio less than 15%.
10. cost to income ratio lower than 40%,and
11. Sustained loans to assets ratio under 65%.

The following parameters are used by Shar et al, (2010) in this model;

S = 1.5* CA+1.2*EA +3.5* CAR+0.6*NPL+0.3*CI+04*LA

Where '**S**' is for Score to assess bankruptcy,

1. **CAR** denotes capital adequacy ratio.
2. **CA** symbolize capital assets ratio.
3. **EA** represent equity to assets ratio.
4. **NPL** indicates non-performing loans to total loans.
5. **CI** is for cost to income ratio.
6. **LA** is for loans to assets ratio.

Based on the calculated Solvency score (S), the banks were classified as follows:

S' Value	Classification of Banks
greater than 70	Super sound banks
between 50 and 70	Grey Area
value below 50	Not solvent

Table shows Benchmark for Bankometer model used by Shar et al. (2010).

According to Shar et al, (2010) when the solvency 'S' value of banks are greater than 70% they are labeled as super sound banks. Banks whose 'S' value are below 50% are not solvent. Between 50% and 70percent is the gray area as defined by Altman, (1968) and Shar, et al., (2010).

a) Capital to assets ratio (CA)

It measures the extent of the assets being financed by total capital (ie. equity and retained earnings) of the bank. The higher capital to asset ratio means the bank are safer because it indicates that the funding involves long-term funding (Erari et al.,2013). To find out how much assets are funded by equity is also shown by Capital to asset ratio. According to Shar et al. (2010) the ideal number for this ratio is above 4%.

b) Equity to assets ratio (EA)

It Measures the extent to which the assets are funded by equity. Higher ratio means that financial position of banks are more secure in the long run because of less dependency on external funds as more assets are financed through banks equity. According to Erari et al. (2013) higher equity to asset ratio is worthy for banks because it indicates that the bank is prosperous from external funds .Shar et al. (2010) specify that the ideal number for this ratio is to be above 2 %.

c) Capital adequacy ratio (CAR)

It measures the capital position of the banks and also known as capital to risk-weighted assets ratio. High CAR indicates that the banks are safe and are probable to meet its financial obligations. The S-scores of the banks are mainly influenced by capital adequacy rates. According to Shar et al. (2010) the ideal number for capital adequacy ratio is between 8% and 40%.

d) Non-performing loans to total loans ratio (NPL)

It measures the proposition of NPL to total loans. NPL ratio indicates the productivity of loans given by banks (Erari et al.,2013). . Shar et al., (2010) specifies the ideal number for NPL is to be lower than 15 percent.

e) Cost to income ratio (CI)

Cost to income ratio is the operating expenses exclusive of non-cash expenses and the operating income. Lower the ratio, higher is the level of bank profits. According to Erari et al., (2013) when this ratio is low it would contribute to a higher profitability. Shar et al. (2010) in his article clearly point out that the ideal number for this ratio is below 40 percent.

f) Loans to assets ratio (LA)

This ratio measures the long term credit issued with respect to the amount of assets. Loans to asset ratio measure the extent to which assets are used for further credit lending. Larger values of Loan to asset ratio makes a bank's profitability batter but can affect the liquidity in negative sense, Erari et al., (2013) The best value of loans to asset ratio by Shar et al.,(2010).is lower than 65% .

3.2.1.2 TECHNIQUE OF ANALYSIS OF BANKOMETER MODEL

To predict financial distress in Pakistan banking sector using Bankometer model, several steps were taken:

1. First all the 6 Bankometer ratios of banks are Calculated for the period under study which are, capital adequacy ratio(CAR), the capital to assets ratio(CA), equity to total assets ratio (EA), loans to assets ratio (LA) , cost to income ratio (CI), and non-performing loan/total loans(NPL) ratio.
2. Bankometer scores "S" of all sampled banks are calculated for the study period.
3. Bankometer scores is categorized into four groups, namely Foreign, domestic, public and private banks.
4. The normality of the collected Bankometer S-scores is assessed.

5. The means of the Bankometer scores of all the four groups i.e. Foreign, domestic, public and private banks are calculated using t-test.

The independent sample t-test are conducted using the following steps:

1. Assessing data normality,
    i. **H0**: the Data is not normally distributed
    ii. **H1**: the Data is normally distributed
2. Test of homogeneity,
    a. **H0**: The Variance are not supposed to be alike
    b. **H1**: The variance are supposed to be the alike
3. Hypothesis is determined which is stated as follow: **H0**: X1 = X2=X3=X4 (there is no significant difference in means of foreign banks and domestic banks' Bankometer scores and between the mean of public banks and private banks' Bankometer scores. the alternative hypothesis generated was **H1**: X1 ≠ X2≠X3≠X4 (there is a significant difference in the means of foreign banks' domestic banks' public banks and private banks' Bankometer scores.
4. Conduct the testing rules, if –t table ≤ .t score. ≤ t table then H0 was accepted. If t score, > t table then H0 was rejected.
5. Compare the t score to that of t-table.

3.2.2 ALTMAN Z SCORE

Edward I. Altman in 1968 introduced and published the concept of Z score formula which predicts financial distress. The Z-score formula used different income statement and balance sheet values and ratios to measure the financial health of a company. The original Altman Z-score model was for publicly traded manufacturing companies.

(General formula) the original Z-score is: **Z=1.2*X1+1.4*X2+3.3*X3+0.6*X4+0.999*X5**

In 1977 Altman introduced another model for the predictions for non-manufacturing firms (not applicable for banks & finance companies) with slide changes in the original model. The calculation formula uses only four variables and becomes (Altman, 1977, p. 22; Chotalia, 2014)

Z -Score = 0.717X1 + 0.847X2 + 3.107X3 + 0.42X4 + 0.995X5

Altman, Hartwell, & Peck in 1995 formed the promising market scoring form to evaluate the economic health of banking sectors. Here Z score for an institution is mean of four part financial ratio; the ratios are represented in the subsequent procedure.

Z score model of bankruptcy**: Z = 6.56T1 + 3.26T2 + 6.72T3 + 1.05T4**

a) **Working capital to total Asset ratio (T1):**

This ratio is used to measure the ability of a company to gauge its ability to overcome its current financial obligations. This can be done by comparing total current assets to total assets. This ratio also shows some insights into the company's liquidity (Badea & Matei , 2016 ; Ilahi et al. 2015).

T1 = (Current Assets − Current Liabilities) / Total Assets

b) **Retained Earnings to Total Assets (T2):**

Among the balance sheet items, one is the Retained earnings comprised in the equity section. It is obtained by accumulating all profits of a company minus the distributed profit to the shareholders in the form of dividends. This ratio is related to profitability.if positive then assuming that entity making profits (Badea & Matei , 2016 ; Ilahi et al. 2015).

T2 = Retained Earnings / Total Assets

c) **Earnings before Interest and Taxes to Total Assets (T3):**

EBIT/total assets ratio is used to gauge a firm's assets' true productivity, independent of leverage and tax. Since the earning power of a business is the base of its ultimate existence. According to Altman, in assessing corporate failure risks including cash flow, this measure quietly outperforms other profitability measures.(Badea & Matei , 2016 ; Ilahi et al. 2015).

T3 = Earnings before Interest and Taxes / Total Assets

d) **Market Value of Equity to Total Liabilities (T4):**

Altman,(1968) enlightens that " the combined market value of all preferred and common stock establish total equity. While current and long-term debts combine to make total liabilities. This ratio "shows the extent to which assets of the firms can decline in value before the debt exceed the assets and the firm becomes insolvent (Badea & Matei , 2016 ; Ilahi et al. 2015).

T4 = Market Value of Equity / Total Liabilities

3.2.2.1 ZONES OF DISCRIMINATION

Z-Score Less than or equal 1.10: Institutions are belonging high risky area meaning that about to experience bankruptcy.

Score between 1.10 to 2.60: known as grey area indicating those institutions having possibility to become bankruptcy if necessary actions may not undertake.

Score more than or equal 2.60: Institutions are performing financial stability with greater.

3.2.2.2 TECHNIQUE OF ANALYSIS FOR ALTMAN Z SCORE

In order to calculate the Z Scores, ratios comprising of liquidity ratio(X1), profitability ratio(X2), operational efficiency ratio(X3) and long-term capital adequacy ratio (X4) are computed for all the banking sector. The output variable obtained after combining weighting financial ratios is Altman Z-score. A sample T test is conducted to test the statistical accuracy of analysis and computations of the Z score.

3.2.3 CAMEL MODEL

In 1979 the banking regulatory agencies of USA introduce a framework that is known as CAMEL model. After that its use is extended in different countries in order to assess the soundness and financial performance of financial industries. The CAMEL derives from the five main segments of a bank operations: Capital adequacy, Asset quality, Management efficiency, Earnings quality and Liquidity. All these five parameters are relevant indicators for assessing the financial soundness of a bank, being recommended also by the IMF and the World Bank (2005).

Total of Thirteen (13) variables have been chosen: one dependent and 12 independent.

Bank-Specific	**Variables**	**Measures**	**Notation**
Dependent Variable	Financial distress	Bankometer S Score	FD
Independent Variables	Capital Adequacy Ratio	TETL=Total Equity/ Total Liability TDTE=Total Deposits/Total Equity TCTA=Total Capital/Total Assets TETA=Total Equity / Total Assets	CAR
	Asset Quality	Non−performing loans to gross advances(total loan) NPLGA=NPL/Gross Advances GATA=Gross advances to total assets	AQ

	Management Efficiency	AEII =Admin expense /Interest income OENI =Operating expense /net income Gross advances to total deposits GATD=$GrossAdvances$/Total deposits	ME
	Earnings Quality	Return on Assets =Net Income/Total Assets	EQ
	Liquidity	LATD=Liquid Asset /Total Deposits TDTA=Total Deposits / Total Assets	LQ

This table shows all the in-dependent and dependent variables used for assessing the impact of CAMEL ratios on financial distress.

a) Capital adequacy

The expected capital to maintain balance with financial institution's risk exposure such as market risk, credit risk, and operational risk, in order to protect debt holders of financial institutions and absorbs potential losses is called capital adequacy . Deciding capital adequacy and maintaining adequate capital level is the key factors is Meeting statutory minimum capital requirement. Thus, The capital component (C) signals the institution's ability to maintain capital commensurate with the nature .As a Prevention of going to bankrupt, bank must maintain depositors. In this research we will Use Total equity to total liability used by Sebastiao, & Maria,(2019), Total deposit to Equity ratio used by Ishaq et al.,(2015), Total capital to total assets and Total equity to total assets ratio used by Romana & sargu(2013) to measure capital adequacy.

- **Total Deposit to total equity: -** Total deposit to total equity ratio shows how much deposits a bank maintain relative to its equity. This ratio shows the extent to which a bank is levered. The higher the ratio, the more levered the bank is.

TDTE = Total deposits/total equity

- **Total capital to total asset: -** total capital to total asset ratio determines the ability of Bank to have enough capital to cover its assets. The higher the ratio the more adequate the bank is.

  TCTA = Total capital/Total assets

- **Total equity to total assets:-**Total equity to total asset ratio determines the amount of equity a bank has to cover its assets. The higher the ratio the less levered the bank is.

  TETA = Total Equity/Total assets

- **Total Equity to total Liability: -** Total deposit to total liability ratio shows the percent amount of equity a bank has to repay its liability. This ratio shows the extent of leverage a bank have.

  TETL = Total Equity /total liabilities

b) Asset quality

The assessment of quality of banking assets (A) is an important parameter that reflects that strength of banks performance. Mostly risk of banking industry is associated with the quality of assets. Gross advances are the major assets of banks that covering the market and credit risk of banks. The higher rate of banking assets are the positive signal for banks performance. Gross Advances helps to cover the banks interest rate risk and liquidity risk. In this research we will find asset quality by using Gross advances to total assets and Non-performing loan to Gross advances ratio that are used by (Romana & sargu, 2013) and (Mousa, 2016).

Gross advances to total assets: - Gross advance to total asset ratio indicates the portion of bank assets that are composed of loans.

GATA = Gross Advances / Total Assets

Non-performing loan to Gross advances: - Non-performing loan to gross advance ratio measures asset quality by indicating the percentage of Non-performing loans out of total loans. The higher ratio effects asset quality.

NPL = Non-performing Loans/Gross Loans

c) Management quality

Management quality category (M) is an important element of the CAMEL Model as it reflects the efficiency of the board of directors and management to overcome the risk of insolvency and performance improvement. For this purpose management implementing new strategies and procedures to identify, measure, monitor, and control risks. In this research author used admin expenses to interest income ratio, operating expenses to interest income ratio, and gross advances to total deposit ratio (GATD) ratios to find management quality. Admin expense to interest income ratio is used by Ishaq et al.,(2015), Gross advances to total deposits used by (Biswas, 2014) and Operating income to net income ratio.

- **Admin expenses to interest income ratio: -** Admin expense to interest income ratio shows the administrative efficiency of Management of a firm. It measure the productivity and effectiveness of administration.

  AEII = Admin expense/ Interest income

- **Operating expenses to net income ratio**: - operating expense to net income ratio measure how much a business is able to generate profit. Operating-Expense ratio is a measurement of financial efficiency. Its shows how much management is efficient to generate profit from operating activities.

  OENI = operating expenses / net income

- **Gross advances to total deposit ratio: -** The advances to deposits ratio measures loans (advances) as a percentage of deposits. A ratio of 100% or less shows that the bank is funding all its loans from deposits.

  GATD = Gross Advances/ Total Deposits

d) Earnings

The quality of earnings (E) is a very important criterion that determines the ability of a bank to earn consistently. To compete in industry banks need and high rate of earning by growing its operations. Return on assets is a tool to measure the earning quality in banking system and use for forecasting about solvency of bank and its performance. (Brigham & Michael 2005) explained that the earnning quality in not only depend on the quantity and trends of earning but it also depend on the sustainability of earning. In this research the ratio we will use for earning are net income to total asset ratio ROA used by Romana & sargu(2013) .

- **Net income to total asset ratio:-** Return on assets (ROA) is a financial ratio that shows the percentage of profit a company earns in relation to its overall resources. It is commonly defined as net income divided by total assets.

  NITA (ROA) = Net income /Total Assets

e) Liquidity

Liquidity (L) reflects the adequacy of the institution's current and prospective sources of liquidity and funds management practices. Risk of liquidity is not good for banks performance it's a curse for banks. By investing in high return generating securities banks can secure from this risk and banks can take proper care in this regard. This liquidity risk unable banks to meets is current and future cash flows, if banks fail to meets this criteria its performance and goes down and liquidity ratios tends to upward and banks move into default position and insolvent. There should

be adequacy of liquidity sources compared to present and future needs, and availability of assets readily convertible to cash without undue loss. Effective management system ensures to meeting its future financial obligations by availability of their funds in efficient manner and capability of covering losses (MacDonald & Timothy, 2006).The ratios which we will use for finding the liquidity are Liquid asset to total deposits ratio used by Romana & sargu (2013)and Biswas (2014) and Total deposits to Total assets ratio used by (Mousa, 2016).

- **Liquid asset to total deposits ratio: -** Liquid assets to total deposits ratio shows the portion of total deposits maintained in form of liquid assets. The higher the ratio the more liquidity bank have.

  LATD = Liquid asset/total deposit

- **Total deposits to total assets ratio: -** deposits to assets ratio measures the relative portion of the total assets that is funded by deposits.

  TDTA = Total Deposits/ Total Assets

3.2.3.1 DATA ANALYSIS TOOLS FOR CAMEL MODEL

For the purpose of this analysis the impact on dependent variables by independent variables are examined through the statistical and financial ratios. Correlation coefficient is also used to examine the correlation between the study variables at the 5 % level of confidence. To get a better picture of the study, ratios shall be analyzed and interpreted by calculating Mean (X), Standard Deviation (S.D) and Co-efficient of variation (C.V).The study conducted regression analysis using EVIEWS 8 econometric software, to test the casual relationship between the financial distress and five determinant factors.

3.2.3.2 SUMMERY STATISTICS

The above discussed CAMELS ratios will be analyzed with the help of summary statistics like arithmetic mean, standard deviation and coefficient of variation.

a) Arithmetic Mean

The sum of all observation divided by total no of observation and outcome from this result is known as mean value in statistical term it's called Arithmetic mean and average value of selected observation.

$$\textbf{Mean} = \frac{\sum \textbf{Xi}}{\textbf{n}}$$

Whereas i = 1, 2, 3…n,

X= representing the observation i:e x_1 up to x_n

n = number of samples

b) Standard Deviation

To measure the dispersion in data set of selected variables and variations in data that relates to its mean. The calculation of square root of this variance is known as standard deviation. The range is highly effected as compare to standard deviation and the standard deviation provides accurate and closely related values to its mean. The grater the value of standard deviation in data higher the variation in the results, lower the value is good sign for better results because its closely relates to mean. Statistically standard deviation (SD) is calculated using square root of the variance. The standard formula is as follow

$$S.D = \sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

c) Co-efficient of Variation

The co-efficient of variation (CV) or relative standard deviation is a tool to measure the dispersion of data to its mean. It is demarcated as the degree of comparing standard dev. to the mean. The coefficient of variation define how much inconsistency is here in the data results and how much the standard deviation and means are significantly different from each other. It is used in this study, to check the consistency of the variables among the selected bank groups. The statistically CV is calculated with the help of given formula:

$$CV = \frac{Standard\ deviation}{Mean}\ X\ 100\%$$

3.2.4 REGRESSION MODEL

Bankometer score (BS) is used as dependent variable for the proxy of Financial distress and the regression model is as under

$$\boldsymbol{BS_{it} = \beta_0 + \beta_1 TETL + \beta_2 TDTE + \beta_3 TCTA + \beta_4 TETA + \beta_5 NPLGA + \beta_6 GATA + \beta_7 AEII + \beta_8 OENI + \beta_9 GATD + \beta_{10} NITA + \beta_{11} LATD + \beta_{12} TDTA + e_{it}}$$

So, where B Sit is the Ith observation of the dependent variable within time t, and β0,…, β11 the regression coefficient and eit is the error term with in ith time period.

BS_{it}= stands for Bankometer score

$\beta_0\ to\ \beta_{12}$= are the intercept of the selected variables

$TETL_{it}$= Shows the total equity to total liability ratio with ith observation within time t

$TDTE_{it}$= Shows the total debt to total equity ratio with ith observation within time t

$TCTA_{it}$= Total capital to total assets with ith observation within time t.

$TETA_{it}$= Total equity/total assets with ith observation within time t.

$NPLGA_{it}$= it represent the Nonperforming loan to Gross advances ratio with ith observation within time t.

$GATA_{it}$= Gross Advances to Total Assets ratio with in time t

$AEII_{it}$= Administrative Expenses to Total Assets ratios with in time t

$OENI_{it}$= Operating Expense to Net Income in time t with ith observation

$GATD_{it}$= Gross Advances to total assets ratios ith value in time t

$NITA_{it}$= Net Income to Total Assets ratios ith observation in time t

$LATD_{it}$= Liquid Assets to Total Deposit ratios ith observation in time t

$TDTA_{it}$= Total Deposit to Total Assets in time t with ith values

e_{it}= Error term

CHAPTER 04

4.1 ANALYSIS, RESULTS AND DISCUSSION

4.1.1 BANKOMETER MODEL

Bankometer model has applied to all banking sector data for the years 2008-2018. Table 01 shows solvency from 2008-2018 of all banks in Pakistan having solvency strongly above the limit, therefore it can be said that the whole banking industry during the period under study is in the healthy state and does not experience financial distress although worldwide financial crisis triumphed.

During the period 2008 to 2018 Punjab provincial corporation bank ltd shows the strongest solvency position with the highest Bankometer score of 378, followed by SME ltd (352) and samba Bank (277). The bank of Punjab shows the weakest solvency position among all the banks with the Bankometer score of 83 followed by the industrial and commercial bank of china with a Bankometer score of 85.although both of these banks are in a stable position according to the Bankometer model but relatively they are weaker than other banks.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Bankometer score		RANK
												in %	in numbers	
first women national bank	1.6346	2.0626	1.8688	2.1715	1.8301	1.7861	1.8665	2.3280	2.9762	3.1005	3.1005	2.2478	225	5
national bank	1.1094	1.1279	1.1393	1.1038	1.1110	1.0060	1.1697	1.1610	1.0667	0.9961	1.0074	1.0907	109	23
sindh bank	0.0000	0.0000	0.0000	2.6603	1.8086	1.4951	1.2802	1.1974	1.1194	1.0002	1.5108	1.0974	110	22
bank of khyber	1.4068	1.3385	1.3184	1.4547	1.5093	1.4113	1.3275	1.3010	1.1493	1.1235	0.8977	1.2944	129	17
bank of punjab	0.6834	0.7518	0.7018	0.8166	0.7769	0.8347	0.8652	0.8687	0.9360	0.8608	0.9822	0.8253	83	28
albarka bank	2.6920	2.2613	1.6965	1.6257	2.1538	1.0631	1.5987	1.6816	1.3211	1.5087	1.3051	1.7189	172	8
allied bank	1.1812	1.2768	1.3374	1.3429	1.3757	1.3964	1.4591	1.4411	1.4233	1.3999	1.1429	1.3433	134	16
askari bank	1.3116	0.9260	0.8458	0.8634	0.8911	0.8908	0.9399	0.7874	0.9011	1.4037	0.9186	0.9709	97	25
bank alhabib	0.8322	0.9888	0.9372	1.0381	1.0003	0.9734	1.0039	0.9764	0.9960	0.9521	0.8878	0.9624	96	26
bank al falah	3.2148	1.3290	1.2869	1.3490	1.3772	1.2313	1.1285	1.0524	1.1133	1.0943	0.9115	1.3717	137	16
islami bank	2.6565	1.6698	1.6565	1.3929	1.3050	1.2333	1.2722	1.2491	1.3277	1.3384	1.2924	1.4903	149	13
dubai islamic bank	1.7106	1.8645	2.1472	2.0791	1.9285	1.6392	1.5195	1.2125	1.2649	1.2901	1.0963	1.6139	161	11
faisal bank	1.3434	0.9246	0.9183	0.9579	0.9615	0.9766	0.9819	1.0176	1.0797	1.1285	1.1291	1.0381	104	23
habib bank	1.3679	0.9719	1.0272	1.0166	0.9229	0.9702	1.0193	0.9591	1.4509	1.4243	1.0398	1.1064	111	21
habib metropolitan bank	0.9105	1.1457	1.1362	0.9227	1.0510	1.0621	1.0415	1.0240	1.0326	1.4882	0.8036	1.0562	106	21
js bank	2.3684	2.3549	1.6862	1.4720	1.2677	1.4554	1.1539	1.0766	1.1457	0.9797	0.9616	1.4474	145	15
MCB bank	1.0421	1.6301	1.7488	1.2305	1.7424	1.6932	1.5088	1.4205	1.4249	1.5437	1.1003	1.4623	146	13
meezan bank	4.4225	1.3912	1.2912	1.3084	1.1920	1.0634	1.2946	1.0066	1.0498	1.0316	0.9696	1.4564	146	14
samba bank	4.6485	4.2556	3.5150	3.0380	2.9768	2.5729	2.7166	2.1475	1.8324	1.5254	1.2410	2.7700	277	3
silk bank	1.2572	1.0330	1.5804	1.5033	1.4879	1.4402	1.5166	2.5788	2.7818	2.6242	1.1293	1.7212	172	10
sonehri bank	0.9755	1.2773	0.9987	1.0273	1.0066	1.5573	1.4710	1.5645	1.4208	1.2711	0.9785	1.2317	123	17
standered chartered bank	1.2924	1.2171	1.2217	1.2270	1.2352	1.2402	1.3360	1.3726	1.2445	1.2665	1.2147	1.2607	126	16
summit bank	1.9929	1.0499	0.9849	1.0631	0.8410	0.8041	1.0580	0.9099	1.0218	0.9367	0.6675	1.0300	103	20
ubl	1.2721	1.0246	1.0406	0.9867	1.0173	0.9572	0.9458	1.4231	1.2895	1.3280	1.0279	1.1194	112	17
SME ktd	6.5662	3.9071	6.4111	5.7670	4.1983	4.7905	3.9905	5.0691	-0.7635	0.1860	-1.4481	3.5158	352	3
punjab provisional corp bank	0.2201	0.7776	2.4770	4.1078	5.3740	3.9202	5.2841	4.5807	5.2204	4.9739	4.6525	3.7807	378	1
ZTBL	1.7413	1.7073	1.8406	1.8949	1.9991	2.0170	1.8183	2.6480	2.6175	0.8783	0.0000	1.7420	174	8
citi bank	1.0821	1.1186	1.1299	1.4134	1.4492	1.6108	1.5779	1.6249	0.9515	1.3976	1.3530	1.3372	134	11
deutshe bank	1.5750	2.4405	1.9985	1.7594	2.0325	1.9088	1.7250	1.8963	1.9255	1.8091	1.7132	1.8894	189	6
industrial and commercial bank ltd	0.8578	0.6587	0.6504	1.4503	1.1340	0.8471	0.7935	0.7044	0.6144	0.6516	0.9456	0.8462	85	18
the bank of tokyo mistubushi	2.2096	2.4769	3.9941	3.8903	3.6483	3.0842	2.9093	2.1140	1.9963	1.7234	2.0180	2.7331	273	2
AVERAGE	1.7929	1.5148	1.6318	1.7398	1.6969	1.5784	1.5991	1.6256	1.4494	1.4270	1.1790			

Table 01: Bankometer Scores of Overall banking sector of Pakistan

Overall banking industry reveals a healthy position from 2008-2018 having a Solvency score greater than 70. But if we look at the average of the overall industry, financial soundness and stability decrease over the research period as S-score range from 1.79 (179) to 1.17 (117).

In 2008 all banking sectors showed strong financial soundness with an average Bankometer score of 179 (1.79%) except Bank of Panjab (Gray zone) and Punjab provisional corporation bank ltd (bankrupt). In 2009 the average Bankometer score drops to 151 (1.51%) but still, all the banks showed strong financial soundness except industrial and commercial bank ltd (gray list).

In 2010 the average Bankometer score of the banking industry goes up again to 163 (1.63%) with all the banks in sound financial position except industrial and commercial bank ltd (gray list). In 2011 All the banks are financially sound and the average Bankometer score increased to 173(1.73%).

From 2012 to 2015 All the banks showed strong financial soundness and the average industry scores were 169 (1.69% in 2012), 157 (1.57% in 2013), 159 (1.59% in 2014), and 162 (1.62% in 2015).up to 2015 the trend of s-score is between 1.7 & 1.6 but after that, it shows a decline.

In 2016 and 2017 other then SME ltd and industrial and commercial bank ltd (gray list) all banks are sound but the average Bankometer score decline to 144(1.44%) in 2016 and then further decline to 142(1.42%) in 2017 which indicates the relatively bad performance of banking industry.

In the year 2018, the summit bank and SME ltd was on the gray list, and the average industry score further declines to 117 (1.17%).

Figure 01:

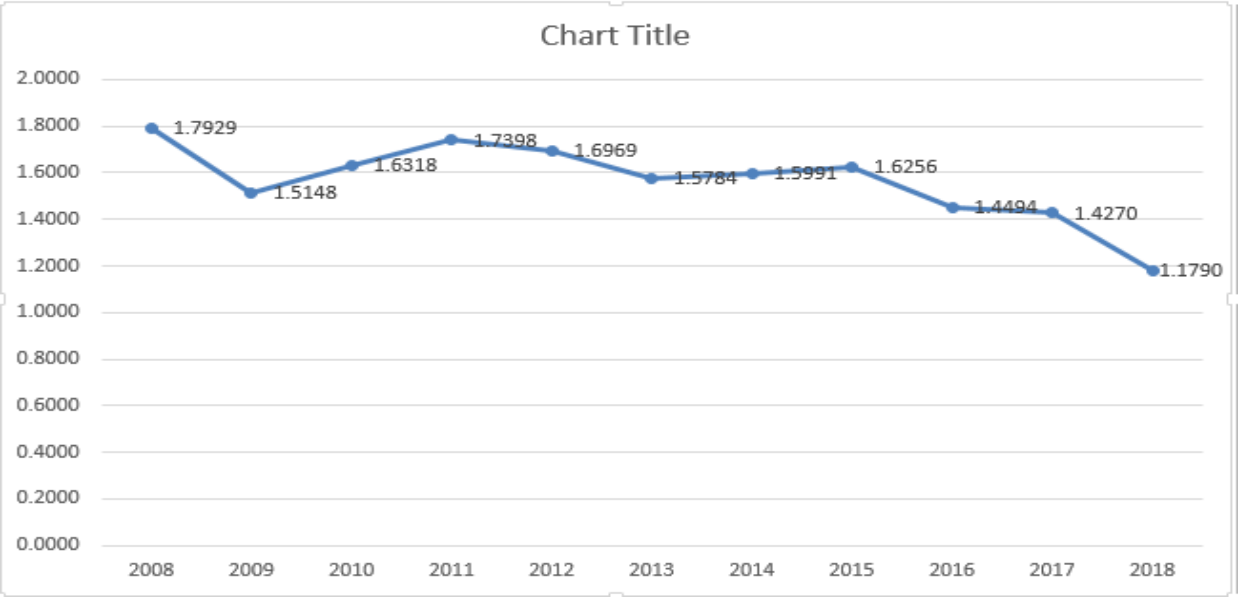

Figure 1 shows average Bankometer score of the banking sector in Pakistan for the period 2008-2018

It is clearly obvious from Figure 01 that during time period 2008-2018 Bankometer score shows a decreasing trend from 1.79 to 1.17 .Though it is falling but still shows a healthy financial position as a whole banking sector.

4.1.1.1 COMPARISON OF FOREIGN AND DOMESTIC BANKS

In order to compare the foreign and domestic banks, the first step is to find out is their normality.

1. **Normality**

Table 02. Provides the results of the jarque-Bera normality test (Figure 01, figure 02). The results demonstrated that the p-value was more than 0.05, in case of both datasets (Foreign and domestic). Thus, both datasets are said to be normally distributed.

Table 02. Normality Test results.

	P value	**Rules for test**	**results**
Foreign	0.97	P Value, > 0.05 (H1 accepted)	H1 accepted (0.97 > 0.05)
Domestic	0.056	P Value, > 0.05 (H1 accepted)	H1 accepted (0.056 > 0.05)

Table 2 shows jarque-Bera normality test between foreign and domestic banks of Pakistan.

The hypothesis generated are,

- H0: Data is not normally distributed
- H1: Data is normally distributed

On the base of the results we accepted H1.

2. Homogeneity

In order to compare the variances of foreign and domestic banks, the test of homogeneity of variances is run using Eviews.

Table 3: The Results of Test of Homogeneity of Variances (figure 03).

Equality of Variance (Levene's Test)	Rules for Test	Results
0.8008	P value, > 0.05, (H0 rejected) P value, < 0.05, (H0 accepted)	0.8008> 0.05 (H1 accepted)

Table 3 shows the results of homogeneity of variance for foreign and domestic banks.

The hypothesis generated are,

H0: The Two Variance Are Not the Same

H1: The Two Variance Are the Same

on the basis of the results for the test of homogeneity of variance in Table 3, it is noted that

The probability value of 0.8008 was greater than 0.05. Thus concluded that both Data sets have the same variance and under that assumption the T-test was conducted.

In order to examine if there was any significant difference between the solvency scores of Foreign and domestic banks in Pakistan, T-test was used.

The hypothesis generated was,

H0: X1 = X2 (no significant difference between the Bankometer scores of Foreign and domestic banks).

H1: X1 ≠ X2 (a significant difference between the Bankometer scores of Foreign and domestic banks).

Eviews is used for test conduction with a confidence degree of 95%. The testing rules were, if: P Value, > 0.05 then H0 was accepted. If P Value, < 0.05 then H0 was rejected.

Table 04: The Results of T-Test.

P value	rule	Result
0.6304	P value, > 0.05 (H0 accepted) P value, < 0.05 (H0 rejected)	0.6304> 0.05 (H0 accepted,)

Table 04 shows T Test results for comparison of Foreign and Domestic banks

It is evident from the results that the value 0.6304 is greater than 0.05 so H0 is accepted. Which states that X1=X2 (No significant difference between scores of foreign and domestic banks).

4.1.1.2 COMPARISON OF PUBLIC AND PRIVATE BANKS

For comparison purposes of public and private banks, jarque-bera normality is found out using e views.

1 **Normality**

Table 05 provides the results of the jarque-Bera normality test. (Figure 05& figure 06) shows that both data sets has a P-value greater than 0.05. Thus, it is determined that both datasets are normally distributed.

Table 5. Normality Test results on public and private banks' Bankometer scores

	P value	Rules of testing	results
Foreign	0.73	P Value, > 0.05 (H1 accepted)	H1 accepted (0.73 > 0.05)
Domestic	0.13	P Value, > 0.05 (H1 accepted)	H1 accepted (0.056 > 0.13)

Table 5 shows Normality results of public and private banks

The Hypothesis generated are,

H0: Data are not normally distributed

H1: Data are normally distributed

On the basis of the results we accepted H1.

The test of homogeneity was run to compare the variances of public and private banks.

Table 6. The Results of Test for Homogeneity of Variances (figure 07)

Equality of Variance (Levene's Test)	Rules for Test	Results
0.1623	P value, > 0.05 (H0 rejected) P value, < 0.05 (H0 accepted)	0.1623 > 0.05 (H0 rejected)

Table 06 shows results of homogeneity of variance test for public and private banks.

:The hypothesis generated are

H0: The Two Variance Are Not the Same

H1: The Two Variance Are the Same

The results of the test for homogeneity of variance in Table 6, showed that P value is more than 0.05. Thus it could be concluded that the variance of both Data sets were the same and under that assumption, the T-test was conducted. The T-test ascertain whether there is any significant variance between the solvency scores of public and private banks.

.Table 07 provides the hypothesis results,

:The hypothesis generated is,

.H0: X1 = X2 (Bankometer scores of public and private banks are not significantly different)

H1: X1 ≠ X2 (There is a substantial difference between the Bankometer scores of public and

.private banks)

The degree of confidence for the test was at 95%. The testing rules were, if

.P Value > 0.05 then H0 was accepted. If P Value, < 0.05 then H0 was rejected

Table 07: Independent Sample T-Test results.

P value	rule	Result
0.6904	P value, > 0.05 (H0 accepted) P value, < 0.05 (H0 rejected)	0.6904> 0.05 (H0 accepted)

Table 07 shows T Test results for public and private banks.

It is evident from the results that the value 0.6904 is greater than 0.05 so H0 is accepted. Which states that X1=X2 ((Bankometer scores of public and private banks are not significantly different).

4.1.2 ALTMAN Z-SCORE

Table 08: Altman results

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	AVERAGE Z-Score	condition
first women national bank	1.43	1.02	0.96	0.93	0.52	0.54	0.36	0.45	0.51	0.32	0.32	**0.67**	Default
national bank	1.66	1.40	1.36	1.30	1.25	0.74	0.66	0.94	0.84	0.69	0.79	**1.06**	Default
sindh bank			0.76	0.45	0.62	0.54	0.68	0.69	0.64	0.55		**0.62**	Default
bank of khyber	1.22	0.52	0.96	0.62	0.59	0.65	0.54	0.74	0.78	0.46	0.54	**0.69**	Default
bank of punjab	-0.20	-0.29	0.49	0.31	0.29	0.48	0.42	0.51	0.56	0.45	0.60	**0.33**	Default
albarka bank	0.47	0.46	1.03	1.04	0.81	1.59	0.67	0.90	0.99	0.55	0.54	**0.82**	Default
allied bank	0.63	0.73	0.82	0.88	0.80	0.76	0.79	0.82	0.81	0.75	0.78	**0.78**	Default
askari bank	0.68	0.73	0.56	0.65	0.63	0.39	0.45	0.57	0.58	0.51	0.48	**0.57**	Default
bank alhabib	0.79	0.65	0.64	0.66	0.70	0.64	0.60	0.61	0.59	0.56	0.63	**0.64**	Default
bank al falah	4.37	4.23	4.17	4.29	4.36	4.35	3.90	3.96	3.98	3.93	3.89	**4.13**	Stable
islami bank	5.04	4.32	3.73	3.85	3.77	3.71	3.76	3.67	3.66	3.65	3.74	**3.90**	Stable
dubai islamic bank	1.21	1.15	1.15	0.72	1.12	0.60	0.79	0.79	0.71	0.52	0.73	**0.86**	Default
faisal bank	0.65	0.39	0.58	0.55	0.56	0.56	0.43	0.54	0.70	0.69	0.48	**0.56**	Default
habib bank	1.13	1.27	1.28	1.29	1.14	1.06	1.14	1.01	1.09	0.95	0.82	**1.11**	Grey zone
habib metropolitan bank	0.80	0.63	0.63	0.57	0.63	0.69	0.54	0.82	0.65	0.57	0.62	**0.65**	Default
js bank	1.05	0.44	0.37	0.38	0.59	0.51	0.46	0.50	0.52	0.35	0.43	**0.51**	Default
MCB bank	1.33	1.17	1.20	1.23	1.11	1.23	1.08	1.18	1.09	0.95	0.89	**1.13**	Grey zone
meezan bank	0.74	0.92	1.12	0.83	0.75	0.83	0.70	0.85	0.82	0.73	0.61	**0.81**	Default
samba bank	0.19	-0.18	-0.05	-0.29	0.37	0.44	0.56	0.49	0.47	0.34	0.42	**0.25**	Default
silk bank	-0.09	-0.52	-0.34	0.09	-0.12	-0.57	-0.03	0.01	0.06	0.15	0.21	**-0.10**	Default
sonehri bank	0.92	0.52	0.48	0.52	0.57	0.58	0.63	0.61	0.53	0.47	0.52	**0.58**	Default
standered chartered bank	0.99	0.60	0.69	0.79	0.80	0.96	0.84	0.80	0.92	0.57	0.83	**0.80**	Default
summit bank	0.66	-0.06	-0.05	0.12	0.24	0.23	0.40	0.30	0.14	0.25	0.04	**0.21**	Default
ubl	1.06	1.09	1.21	1.26	1.19	1.10	1.04	1.05	1.09	0.96	0.96	**1.09**	Default
SME ktd	0.49	0.57	0.14	-0.06	-0.29	-0.76	-1.01	-0.79	-0.92	-1.17	-0.33	**-0.37**	Default
punjab provisional corp bank	1.50	0.50	0.96	2.59	1.04	1.48	1.31	1.35	1.11	1.28	0.95	**1.28**	Grey zone
ZTBL	1.46	1.46	1.09	1.15	1.06	1.08	1.03	1.29	1.24	1.24		**1.21**	Grey zone
citi bank	1.21	0.84	0.75	0.85	1.21	0.95	0.89	0.98	0.77	0.66	0.71	**0.89**	Default
deutshe bank	4.89	6.64	6.64	4.99	3.74	3.81	5.49	5.48	2.29	3.07	2.19	**4.47**	Stable
industrial and commercial bank ltd	1.64	0.75	0.81	5.57	1.87	0.64	0.68	0.53	0.47	0.44	1.31	**1.34**	Grey zone
the bank of tokyo mistubushi	3.46	4.19	4.77	5.89	5.95	4.59	4.47	3.35	2.94	2.25	3.06	**4.08**	Stable
AVERAGE	**1.38**	**1.20**	**1.26**	**1.42**	**1.22**	**1.11**	**1.11**	**1.13**	**0.99**	**0.89**	**0.96**		
overall Industry condition	Grey zone	Default	Grey zone	Grey zone	Default	Default	Default	Default	Default	Default	Default		

Table 08 shows the average Altman Z score results of overall banking sector of Pakistan for the period 2008-2018

Table 08 exposes the financial health of all the banking sector of Pakistan. The value above 2.6 indicates that the banks are in a safe zone which means they are financially healthy, if the values lie between 2.6 to 1.1 they fall under the grey zone, which implies that the banks are

carrying a low risk and the value less then 1.1 is in the distress zone, which indicates that the banks are under high risk.

The Z-Score value of the most banks lies below 1.1 means it carries a high bankruptcy risk. The value below 1.1 indicates that the banks were in a distress zone. The main reason was decrease in income before interest and tax against total assets and decline in book value of equity against total liabilities. Summit bank and Sumba bank has the lowest Z score of 0.21 and 0.25. The Z-score value of Deutsche bank, bank of Tokyo, Islamic is above 2.6, which indicates that these banks are in safe zone . Deutsche Bank has the highest z score in the overall banking industry. Habib Bank, Muslim Commercial Bank, Punjab bank, ZTBL, and industrial and commercial bank ltd have Z score between 1.1 and 2.6 showing that these banks are having a chance of having bankruptcy and are in the grey zone.

If we look at the overall banking industry during the period under study we found that banking industry performance is declining from Z-score 1.38(Grey zone) towards 0.96(Bankruptcy) as shown in figure 02.

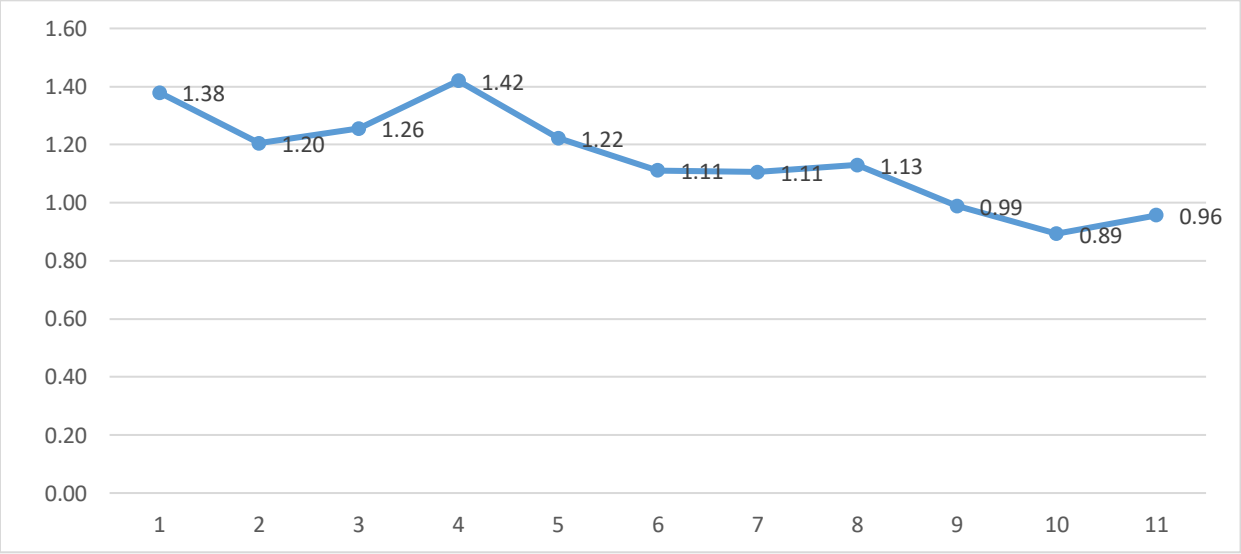

Figure 2 shows Altman Z-score average results of overall banking sector for the period 2008-2018

4.1.3 CAMEL MODEL

4.1.3.1 DESCRIPTIVE STATS

Table 09: illustrate descriptive statistics summary of dependent and independent variables for banking sector of Pakistan for the year 2008 -2018 with total 326 observations. The table demonstrates mean. Maximum, Minimum, SD, and the number of observations for independent variables and dependent Variable.

	TDTE	TCTA	TETA	NPLGA	GATA	AEII	GATD	NITA	LATD	TDTA	BS	TETL	DENI
Mean	9.78	0.097	0.117	0.304	0.4307	2.941	0.583	0.035	0.158	0.693	1.534	0.15	2.03
Median	9.025	0.06	0.09	0.18	0.435	2.075	0.58	0.01	0.11	0.75	1.28	0.09	1.74
Maximum	42.71	0.59	0.5	0.98	0.96	14.34	0.99	0.53	0.83	1.01	4.79	1.31	7.3
Minimum	0.39	0.01	0.02	0.001	0.02	0.08	0.01	-0.54	0.06	0.11	0.58	0.001	0.48
Std. Dev.	7.39	0.108	0.088	0.2844	0.1514	2.703	0.172	0.117	0.134	0.184	0.828	0.19	1.09
Observations	326	326	326	326	326	326	326	326	326	326	326	326	326

Table 09 shows Descriptive statistics of Depended and Independent variables.

Capital adequacy for all the banks was measured by four ratios, namely; total deposit to total equity ratio, total capital to total asset ratio, and equity to total assets and total equity to total liabilities ratio. The ratio of total deposit to total equity retained a mean value of 9.779, underscoring that banks maintain almost 10 times more debt(deposits) than equity in their capital structure, hence highly Leveraged. The maximum and minimum value of Total deposit/total equity is of 42.71 and 0.39 with a standard deviation of 7.38 .the value of standard deviation is high because of the large gap between minimum and maximum values. The second ratio that measures capital adequacy is total capital to total asset having a mean value of 0.097 (9.7%) with a maximum value of 0.59 and minimum value of 0.01 and standard deviation 0f 0.108230. it

means that the banking sector has 9.7% capital to cover its assets. The third measure of capital adequacy is the total equity to asset ratio that depicted a mean of 0.117 or 11.7%, with a maximum value of 0.50 and a minimum of 0.02 and variance of 0.088 .The mean is above the benchmark of 10%. This result confirms that the banks in Pakistan are highly leveraged. Total equity to total liability is the fourth ratio to guage capital adequacy and depicts a mean value of 0.1471 with a maximum value of 1.3082 and minimum value of 0.00240 and standard deviation of 0.19008 shows difference between the max and min value.

The Asset Quality ratio is measured by the ratio of Non-performing loans/total loans having a mean value of 0.3407%. The maximum provision maintained in the data set is 0.980 percent and the minimum is 0.00 of the total loan amount of the banks during the time period 2008-2018. The stdev. of Non- performing loan to total loan is 0.200 which expresses variability. The main value of 0.3407 indicates that 34% of total loans of the banking sector comprise of non-performing loans which can affect the asset quality of all the banking sector.The second measure of asset quality is Gross advance to total asset, the mean value of which is 0.4036, and the maximum and minimum value is 0.960 and 0.260 and the standard deviation is 0.151449. The mean value of 0.4036 shows that 40% of banking sector assets are composed of loans.

The management efficiency is measured by the ratio of Admin expense/Interest income, operating income to net income ratio and gross advance to total deposits. The mean of Admin expense to Interest income is 2.941012. The maximum ratio is 14.34000 which means the bank spends more than the income generated whereas the minimum was 0.08000. The standard deviation also reflects the gap having value of 2.702647 .the mean value of 2.941012 indicates that the banking sector spent at least 3 times more than interest income.The second measure of management efficiency is Gross advances/total deposits. The management efficiency mean value

is 0.583037. The maximum value in this data is 0.99000 and the minimum value is 0.1000. This discloses that on average 58.30% of banking sector deposits is converted into the loan and the banks liquidity position is maintained with the help of remaining balance. The third measure of management efficiency is operating expense to net income ratio having a mean value of 2.0301 .the maximum and minimum value of the data set of operating expense to net income ratio is 7.2963 and 0.4809.this huge gap can also be reflected from the standard deviation value of 1.08764.

Net Income to the total asset calculate earning having a mean value of 0.034755(35%). The maximum earning during the period was 0.53000(53%) and the minimum earning was (- 0.5400) or -54%. standard deviation measure the variation with the value 0.116808.(%12)

The liquidity is calculated by ratio of Liquid asset to total deposits and ratio of total deposits to Total assets .the mean value of Liquid asset to total deposits ratio is 0.158313 (16%) with the maximum value of 0.83000 (83%) and minimum value of 0.06000 (6%). the variance is showed with the help of standard deviation with value 0.134262. the mean value of 16% shows that 16% of total deposits are maintained by the banking sector in form of liquid assets.The mean value of the total deposit to total asset ratio is 0.692607 .the maximum and minimum values are 1.01000 and 0.11000 respectively. The gap between the max and minimum values is shown with the help of standard deviation having a value of 0.184163. The mean of 0.692607 shows that total deposits are 69 % of total assets .

Bankometer score which is the proxy of financial distress has a mean value of 1.533865. The maximum Bankometer score is 4.7900 and the minimum score is 0.58000. The standard deviation is 0.828237.

4.1.3.2 CORRELATION ANALYSIS

The table 10. Shows the correlation matrix among variables of this study.

	TDTE	TCTA	TETA	NPLGA	GATA	AEII	GATD	NITA	LATD	TDTA	TETL	OENI
TDTE	1.000											
TCTA	-0.179	1.000										
TETA	-0.286	0.725	1.000									
NPLGA	-0.058	0.189	0.006	1.000								
GATA	0.015	0.188	0.010	0.482	1.000							
AEII	-0.090	0.338	0.168	0.513	0.495	1.000						
GATD	-0.037	0.125	0.257	0.151	0.345	0.324	1.000					
NITA	-0.200	-0.306	0.018	0.058	-0.254	-0.232	-0.148	1.000				
LATD	-0.150	0.156	0.375	-0.068	-0.209	-0.001	0.352	0.074	1.000			
TDTA	0.233	-0.411	-0.583	-0.041	-0.015	-0.191	-0.251	0.050	-0.551	1.000		
TETL	-0.232	0.538	0.823	-0.056	-0.078	0.155	0.320	-0.029	0.488	-0.679	1.000	
OENI	0.019	0.481	0.116	0.239	0.307	0.384	0.148	-0.488	0.143	-0.139	0.096	1.000

Table: 10 results of correlation analysis of variables used in the study.

The correlation result in Table 10 shows that Gross advance to total assets and total deposit to total assets has a positive correlation with total deposit to total equity ratio. It refers that when these ratios increases, total deposit to total equity ratio will also increase. However, net income to total asset, Total capital to total asset, total equity to total asset, non-performing loan to gross advance, admin expenses to interest income, gross advance to total deposits and liquid asset to total deposits ratio has negatively correlation with total deposit to total equity ratio which indicates that when these ratios decreases, total deposit to total equity ratio will increase.

Net income to total asset, operating income to net income ratio and total deposit to total assets has a negative correlation with Total capital to total asset ratio. It refers that when these ratios increases, Total capital to total asset ratio will decrease. However,, total deposit to total equity, total equity to total asset, non-performing loan to gross advance, admin expenses to interest income, gross advance to total assets, gross advance to total deposits, total equity to total liability

and liquid asset to total deposits ratio has positively correlation with Total capital to total asset ratio which indicates that when these ratios decreases, Total capital to total asset ratio will also decreases.

Total deposit to total assets has a negative correlation with total equity to total asset ratio. It refers that when this ratio increases, total equity to total asset ratio will decrease. However, net income to total asset, and, total deposit to total equity,, non-performing loan to gross advance, admin expenses to interest income, gross advance to total assets, gross advance to total deposits, total equity to total liability, operating income to net income ratio and liquid asset to total deposits ratio has positively correlation with Total capital to total asset ratio which indicates that when these ratios decreases, Total equity to total asset ratio also decreases.

Total equity to total liability, liquid asset to total deposits ratio, and total deposit to total assets has a negative correlation with non-performing loan to gross advance ratio. It refers that when these ratios increases, non-performing loan to gross advance will also decrease. However, ,total deposits to total equity , total equity to total asset, net income to total asset , Total capital to total assets, admin expenses to interest income, gross advance to total assets ,gross advance to total deposits, operating income to net income ratio ,total equity to total liability, operating income to net income ratio has positively correlation with non-performing loan to gross advance ratio which indicates that when these ratios decreases, Total capital to total asset ratio will also decreases.

Admin expenses to interest income, operating income to net income ratio, gross advance to total deposits ratio has a positive correlation with gross advance to total assets. It refers that when these ratios increases, gross advance to total assets ratio will also increase. However, ,total deposits to total equity , total deposit to total assets ,total equity to total asset , total equity to total liability and liquid asset to total deposits ratio has negatively correlation with gross advance to

total assets ratio which indicates that when these ratios decreases, gross advance to total assets ratio will increases.

Gross advance to total deposits ratio has a positive correlation with Admin expenses to interest income ratio, total equity to total liability and operating income to net income ratio. It refers that when this ratio increases, Admin expenses to interest income ratio, total equity to total liability and operating income to net income ratio will also increase. However, ,total deposit to total equity , total deposit to total assets ,total equity to total asset , and liquid asset to total deposits ratio has negatively correlation with Admin expenses to interest income ratio which indicates that when these ratios decreases, Admin expenses to interest income ratio will increases.

Net income to total assets ratio and total deposit to total assets has a negative correlation with gross advance to total deposits ratio. It refers that when these ratios increases, gross advance to total deposits will decrease. However, ,liquid asset to total deposits ratio, total equity to total liability and operating income to net income ratio has positively correlation with gross advance to total deposits ratio which indicates that when these ratios decreases, gross advance to total deposits ratio will also decreases

Net income to total assets ratio is positively correlated with total deposit to total assets ratio and, liquid asset to total deposits ratio but negatively correlated with total equity to total liability and operating income to net income ratio.

Liquid asset to total deposits ratio is negatively correlated with total deposit to total assets ratio. It means that changes take place in one ratio will be inversely proportional to the other ratio. But positively correlated with total equity to total liability and operating income to net income ratio.

Total deposit to total asset ratio is negatively correlated with total equity to total liability and operating income to net income ratio.it means the increase in total equity to total liability and operating income to net income ratio can cause decrease in total deposit/total assets ratio. Total equity/total liability ratio is positively related with operating expense to net income.

4.1.3.3 REGRESSION ANALYSIS

This section represent the empirical relation and findings of panel regression from the selected data of domestic and foreign banks in Pakistan. The below tables defines the regression result of dependent variable Bankometer score and independent variables

Dependent Variable: BS				
Method: O L S Method				
Variables	Coefficient.	Standard. Error.	T-Statistics.	Probability.
C	1.010059	0.265649	3.802238	0.0002
TETL	0.840483	0.299787	2.803597	0.0054
TDTE	0.012272	0.002649	4.632501	0.0000
TCTA	2.255225	0.609070	3.702733	0.0003
TETA	2.644987	0.858268	3.081774	0.0023
NPLGA	-0.529037	0.183177	-2.888116	0.0042
GATA	1.074538	0.340530	3.155487	0.0018
AEII	0.011891	0.011891	1.430297	0.1537
OENI	-0.015047	0.006859	-2.193621	0.0291
GATD	-0.592287	0.176123	-3.362923	0.0009
NITA	-0.931344	0.358293	-2.599391	0.0098
LATD	0.353761	0.109425	3.232903	0.0014
TDTA	-0.541175	0.338313	-1.599630	0.1108
R-Square		0.776520	F statistc	24.06847
Adjusted R-Square		0.744257	Prob(F stat)	0.00

Table 11 shows Regression results showing impact of camel ratios on financial distress.

This section discuss the regression analysis of independent variable and its impact on dependent variable, in our regression result table-5 the first column representing the independent variable that are already defined in chapter 2 ,which are used to find out Impact of these variables on the Bankometer score that is used as financial distress proxy in banking sector. The value of R-square 0.77 shows that selected independent variables and dependent variable "Bankometer score" are having strong relationship and the value of adjusted R-square 0.7442 shows that the 74.42% variation in the dependent variable caused by these independent variables.

Capital adequacy is assessed using total equity to total liability ratio (TETL), Total deposit to total equity (TDTE) ratio, Total capital to total asset ratio (**TCTA**) and Total equity to total asset ratio (**TETA**) .The regression result shows that the coefficient of TETL (total equity to total liability) has positive and significant relation with Bankometer (BS) score used as a proxy of financial distress. The coefficient value of 0.840483 indicates that with 1% increase in TETL the value of Bankometer score increased up to 0.840483 percent and in this sense the banks performance improve and the chances of financial distress declines. The results are in line with the study of Sebastiao, & Maria (2019), A bank failure probability should be decrease by High equity to liability ratio, banks are protected against asset breakdown if it has a larger amount of equity as compared to liability. Sundararajan et al. (2002) said that those banks are less levered and need less borrowed ,which are financed more with equity, that's why they have lower interest expenses and higher interest/ net income. The bank failure probability is lowered by having less leverage and more profit.

The total deposit to total equity ratio showed positively significant relationship with the Bankometer score having a coefficient value of 0.012272 and probability value of 0.00. According

to the coefficient value, the Bankometer score will change up to 0.012272 percent with each 1% change in TDTE ratio, and with the increase in Bankometer score financial distress will decrease up to the same extend.The result is not in accordance with the study of Rusil Moch (2017) according to him the manufacturing companies financial distress listed on stock exchange in Indonesia are +ve effected by total deposit to total equity.

The coefficient of Total Capital to Total Assets (TCTA) has a +ve and highly significant relationship with Bankometer score having a value of 2.255225. This value indicates that the increase in the TCTA ratio causes an increase in Bankometer scores which in-turns the lower the financial distress of banks. The dependent variable changes up to 2.255225 percent when there is a 1 percent change in the TCTA ratio. This positive relation between independent and dependent variables causes a decrease in financial distress and banks to move toward a healthy position. This is in accordance with the results of Jia-Liu (2015) who find out that the TCTA ratio is significantly negatively correlated with bank distress.

The other parameter of capital adequacy in this regression that impacts financial distress is total equity to Total assets (TETA). TETA has a positive relationship with the Bankometer score and having a highly significant impact on financial distress with a coefficient value of 2.644987 which indicates that a 1 percent increase in TETA causes a 2.644987 percent increase in Bankometer score which point out the increase in financial performance and decrease in financial distress. The study of Betz et al (2013) also supports our results which indicates that there would be a lower probability of bankruptcy if banks are financed with more equity as compared to liability. A lower Equity to Assets ratio indicates that high leveraged banks are less supple to oppose unexpected economic shocks (Wheelock and Wilson, 2000). .from the results of all capital adequacy ratios, it can be said that capital adequacy and Bankometer score are positively correlated

which means that there is an inverse relationship between capital adequacy and financial distress. Kowanda et al. (2015) also supported the results and find out that the capital adequacy ratio has a negative relationship with financial distress.

The next measure in regression is Asset quality which is measured by two variables Nonperforming loan to Gross advance ratio (NPLGA) and Gross advances to Total Assets ratio (GATA). the coefficient value of -0.529037 of NPLGA (Non-performing loan to gross advances) indicates that there is a -ve and significant relationship with the Bankometer score. The coefficient of NPLGA represents that there are -0.529037 percent changes that occurred due to a 1 percent change in this ratio. The lower quality of assets and higher non-performing loans led to the lower return on asset and return on equity. The lower ROA, ROE decrease bank performance, and the probability of financial distress increases. According to Olweny, (2011) there is strong –ve relationship in profitability (ROA) and poor asset quality (NPL to gross loans ratio) of commercial banks of Kenya. Bridge (1998) asserted that a high level of nonperforming loans had been the major cause of bank failure in Kenya, Nigeria, Uganda, and Zambia.

The other ratio that used for finding the influence of assets quality on financial distress through Bankometer score is the Gross advances to total assets ratio (GATA). it reflects that the investment in the shape of gross advances has a positive impact on the performance of banks and a sound effect on financial distress .the higher the ratio improves, the more the Bankometer score goes up, and the lesser will be the financial distress. In regression result, it shows that there are positive and significant relationships that exist with the Beta score of 1.074538. On the other hand, a very large ratio of Gross advance to Total Assets also indicates that there is a higher failure probability with less liquidity of bank if banks most assets are in loans form.(Ploeg, 2010).

The next measurement in regression is management efficiency which is measured by three variables Administrative Expenses to Interest Income ratio (AEII), Gross advances to total deposit ratio (GATD) and Operating expense to net income ratio (OENI), the regression result indicates that AEII is not statistically significant with a probability value of 0.1537and coefficient value of 0.011891.

Operating expense to net income ratio (OENI) has a negative relationship with Bankometer score with a coefficient value of -0.015047 which indicates that with a -0.015047 percent increase in OENI ratio the Bankometer score decrease by 1% and vice versa. The decrease in Bankometer score can cause a rise in financial distress.

The other variable in this regard is Gross advances to Total deposit ratio (GATD) which has a -ve and significant relation with Bankometer score with a coefficient value of-0.5922 which indicates that when there is a 1 percent increase in GATD ratio the Bankometer score falls -0.592287 percent and due to this financial distress improves and banks shifts from healthy to the non-healthy position. Our study result is also in accordance with the findings of Aryati & Balafi (2007) and Argo & Widyarti (2010), who find out that GATD is directly proportional to banks' financial distress. This occurs because there is a high risk with the funds assigned for loan/credit, the financial distress possibility will be greater when non-performing or uncollected loans are greater, and so greater the possibility of financial distress .

Net Income to Total Assets (NITA) is used to find out the impact of earning quality on financial distress. Regression results show that the coefficient of this independent variable is negative but highly significant .the beta value is -0.931344 which indicates that there is a -0.931344 percent fall in the Bankometer score with each 1-degree increase in NITA ratio. With the decrease

In Bankometer score the chances of financial distress improves or vice versa. Our result is in accordance with the study of Nuzari & Evans, (2005) and sumantry & Jurnali, (2010) who found that NITA has a +ve effect on financial distress whereas contrary with the findings of Almilia, Spica & Herdinigtyas, (2005), Mulyaningrum, (2008) and Wi-caksana (2011) who found that NITA has an insignificant –ve effect.

Liquidity ratios is also used to access the financial distress of banking system in Pakistan through CAMEL approach .the results are analyzed using two variables LATD (Liquid assets to total deposit) and TDTA (Total deposit to total assets). With increase in liquid assets to total deposit ratio, Bankometer score is positively affected and is going up and due to this impact the financial distress decrease and vice versa. According to John Teresa A. (1993), when liquidity requirement of hard contracts are not met by its liquid assets then a firm is facing financial distress.

The beta value 0.353761 shows that 0.353761 percent changes come when there are 1% changes to be done in liquid assets to total deposit ratio. The relationship between TDTA ratio and Bankometer score is negative with a beta value of -0.541175 which represents that -0.541175 Percent changes occur in Bankometer score due to 1% change in total deposit to total assets ratio. This result of TDTA is consistent with the research of Wheelock and Wilson (2000) and Arena (2008). It is difficult to convert deposits and loans into quick cash when banks are in a difficult position. Banks in a poor liquidity position are more likely to fail.

CHAPTER 05

5.1 FINDINGS CONCLUSION AND RECOMMENDATIONS

In this chapter author is summarizing the finding and conclusion is drawn and recommendations are made from his study. This study objective is to investigate the financial soundness of the banking sector of Pakistan through the Bankometer model, Altman Z-score, and CAMEL model. For this purpose author used 11 years of data of all domestic and foreign banks that performing their services in Pakistan.

Overall soundness of the banking industry in Pakistan is in the safe zone as evident from the table 01.where the average score of the banking sector during the study period 2008-2018 is above the safe zone of .70 or 70%but it is also evident that the Bankometer score is declining from the average score of 1.79 to 1.17 during the study period. We can say that the banking sector is slowly moving from a “safe zone” toward a “gray zone” (figure-01) clearly obvious changes in the financial soundness of the banking industry from 2008 to 2018. On the other hand. Altman Z – score shows only 12% of financial institutions are performing with financial soundness and are in the safety zone and 16% of banks are in the gray zone while the remaining 72% banking sector is in the Default zone which is consistent with the study of Ilahi et al. (2015).

. If we look at the overall banking sector, it is evident from figure 02 that on average Altman Z score declines from 1.38(Grey zone) to 0.96(default zone).

year	S score		Z score	
2008	1.79	Very healthy	1.38	Grey Zone
2009	1.51	Very healthy	1.20	Grey Zone
2010	1.63	Very healthy	1.26	Grey Zone
2011	1.73	Very healthy	1.42	Grey Zone

2012	1.69	Very healthy	1.22	Grey Zone
2013	1.57	Very healthy	1.11	Grey Zone
2014	1.59	Very healthy	1.11	Grey Zone
2015	1.62	Very healthy	1.13	Grey Zone
2016	1.44	Very healthy	0.99	Default zone
2017	1.42	Very healthy	0.89	Default zone
2018	1.17	Very healthy	0.96	Default zone

Table 12 shows comparison of average score of Bankometer model and Atman model for overall banking sector for the period 2008-2018.

It's evident from above Table:12 that the Altman z score model shows a quite opposite result then Bankometer model, showing most of the banking sector in distress zone which is not True and the results are in line with the findings of Ilahi et al.(2015)according to which Altman Z score model is unable to predict distress in banking system of. Bankometer assessment of the whole industry shows healthy status while bankruptcy status prevails on the industry using Altman model. by comparing public banks with private banks, it is found that mean-variance of both types of banks are same and hence there is no such alteration between financial soundness of public and private banks and both types of banks are performing with financial soundness. Similarly, foreign and domestic banks have no difference in their mean-variance value, and due to which it is said that in case of financial soundness there is no difference in both. Both types are performing with strong financial soundness.

Bankometer score is used as a substitution of financial distress for finding out the influence of the CAMEL model ratios on financial distress. Capital adequacy is measured through four dependent variables TDTE, TCTA, TETL, and TETA. The regression results indicates that adequacy cause a positive and highly significant impact on Bankometer score. Previous studies

showed that Bankometer score are inversely related to financial distress which suggest that if the Bankometer score increases the financial distress decrease. Our results are in accordance with the study of Rusil Moch, (2017), Sundararajan, et al. (2002), and Wheelock & Wilson (2000). From the results of all capital adequacy ratios, it can be said that capital adequacy and Bankometer score are positively correlated with each other which means that there is an inverse relationship between capital adequacy and financial distress. The results are also supported by Kowanda et al. (2015) who find out that the capital adequacy ratio has a negative relationship with financial distress.

The assets quality ratio is measured through a non-performing loan to gross advances (NPLGA) and Gross advances to Total assets (GATA) ratio .the regression results show that NPLGA having negative relation with financial distress, due to this when nonperforming loans increase the return on assets and equity decrease due to this impact the financial performance declined and the financial distress increases, the result is accordance with the study of Bridge (1998).GATA is positively affecting financial distress in the banking sector. Most assets of banks are in the shape of gross advances which have a positive impact on performance and sound effects on financial distress that proved in the study of Ploeg (2010).

Management efficiency is measured with three variables namely AEII, OENI, and GATD Administrative Expenses to Interest Income ratio (AEII), Operating expense to net income ratio (OENI), and Gross advances to total deposit ratio (GATD), AEII is positively correlated with Bankometer score and is insignificant. The OENI and GATD are negatively correlated with the Bankometer score and are significant. This means an increase in these ratios will cause financial distress to decrease which results in better performance of banks. Balafi & Aryati (2007); Asmoro, Argo, & Widyarti (2010).

Earning quality is analyzed with Net Income to Total Assets (NITA) and find out that NITA having a negative and high significant impact on Bankometer score and a positive impact on financial distress. Our results are in accordance with the study of dan & Jurnali. (2010) and Naurazi, Ridwan, & Evans, (2015) who founds that NITA has a +ve effect on financial distress which is contrary with the findings of Mulyaningrum (2008), Almilia, Spica, & Herdinigtyas (2005), and Wicaksana & Wicaksana (2011) who found that NITA has an insignificant negative effect.

Liquidity of banks is measured with LATD and TDTA, these variables having a significant but mixed impact on Bankometer score, LATD has positive relation but TDTA affects negatively. But overall liquidity ratio impacts positively. With an increase in liquid assets to total deposit ratio, the Bankometer score is positively affected and is going up, and due to this impact the financial distress decrease and vice versa. John Teresa A (1993) stated that In order to meet the liquidity requirement of hard contracts, if a firm has insufficient in term of liquid assets then firm is in financial.

5.1.1 CONCLUSION

Overall financial soundness of the banking industry in Pakistan is in the safe zone. The average Bankometer score of the banking sector during the study period 2008-2018 is above the safe zone of .70 or 70%, so on this basis we accepted our alternative hypothesis which states the banking sector of Pakistan has strong financial soundness.it is also evident that the Bankometer score is declining from the average score of 1.79 to 1.17 during the study period. We can say that the banking sector is slowly moving from a “safe zone” toward “gray zone”. Altman Z –score is rejected due to fact that it shows At least 70% of the banking sector in distress which is against the reality, as the banking sector of Pakistan is among the strongest banking sectors in the world,

so we accepted our null hypothesis which states that Altman Z-score is unable to predict financial distress in the banking system of Pakistan. Comparison of public banks with private banks showed that mean-variance of both types of banks are same and hence there is no variance between financial soundness of private and public banks and both types of banks are performing with financial soundness therefore null hypothesis is accepted. Similarly, foreign and domestic banks have no difference in their mean-variance value, and due to which it is said that in terms of financial soundness there is no difference in both types. Both types are performing with strong financial soundness so the null hypothesis is accepted. It is further concluded from regression results that the camel model ratios have a huge impact on financial distress. Total equity to total liability, Total deposits to total equity, Total capital to total assets, total equity to total assets, Gross advances to total assets, Admin expenses to interest income, and Liquid assets to total deposits ratio have a +ve impact on financial distress while Non-performing loan to gross advances, Gross advances to total deposits, Net income to total assets and Total deposits to total assets ratio has a –ve impact on financial distress. All variables are statistically significant except Admin expenses to interest income ratio which is insignificant with the probability value of 0.1537.on the basis of Regression results we accepted our Alternative hypothesis which states that CAMEL ratios truly predict financial distress. As far as the implication is concerned, this study will help the banking sector by accessing its financial results and therefore helping in gaining the confidence of the public particularly customers.it also helps the public to aware of the investment situation of the banks so that they can determine easily with banks are good to invest in. This study helps researchers to find out which bankruptcy model fits best in the case of Pakistan's banking sector. Assessing the impact of camel ratios on financial distress can help researchers to incorporate appropriate ratios for future research.

5.1.2 RECOMMENDATIONS

In this research, there were some other things or ways that the researcher could have used to improve the effectiveness of the research. The study faced restrictions in terms of getting data on other variables recommended in the CAMEL model such as the number of employees, which was not readily available from firm websites. The total number of financial ratios selected for this study was 12, but to signify the CAMEL five factors there are many other financial ratios that research could use. Also, the sixth dimension of the CAMEL model stated as sensitivity to the market could also e used. Therefore, upcoming research in this dimension would make a significant influence if it considers the sixth dimension of the CAMEL model into the research, depending on the availability of the data. A study in the future with a considerably superior sample size and with the annexation of all CAMEL ratios will give a better depiction of the performance of the banking sector in Pakistan.

According to Alper & Anbar (2011) banks, performance and stability are also sensitive to macroeconomics variables. According to Ong ore & Kusa (2013) Gross Domestic Product, Real Interest rate, Inflation, and Political Instability are the four macroeconomic variables that affect a bank's performance. So using these macro-economic variables could have improved the results.

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LIST OF FIGURES

Figure 01: jarque Bera normality test for Domestic banks

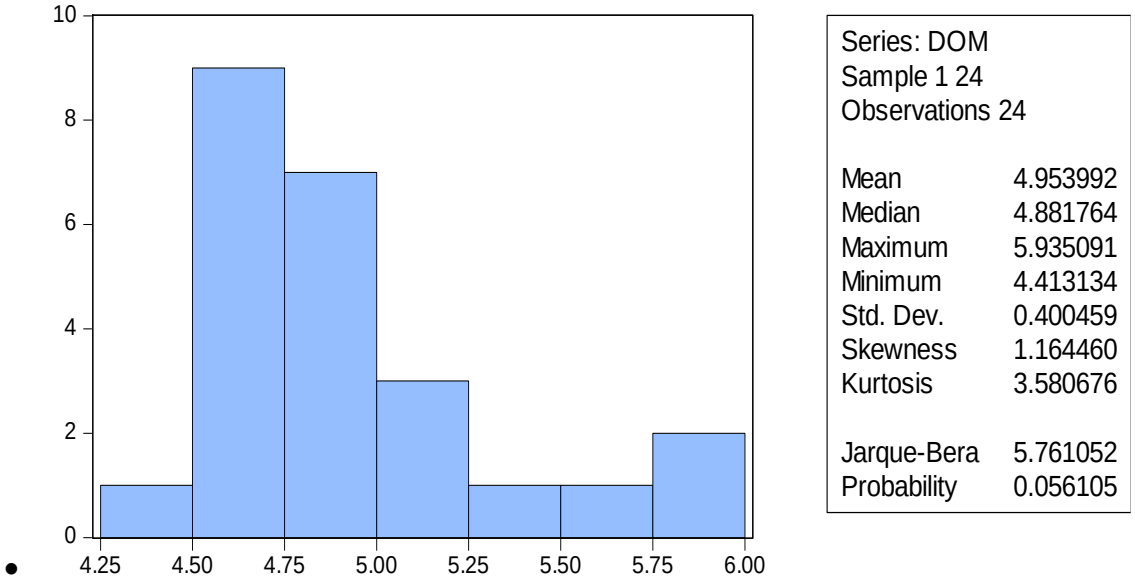


Figure 02: jarque Bera normality test for foreign banks

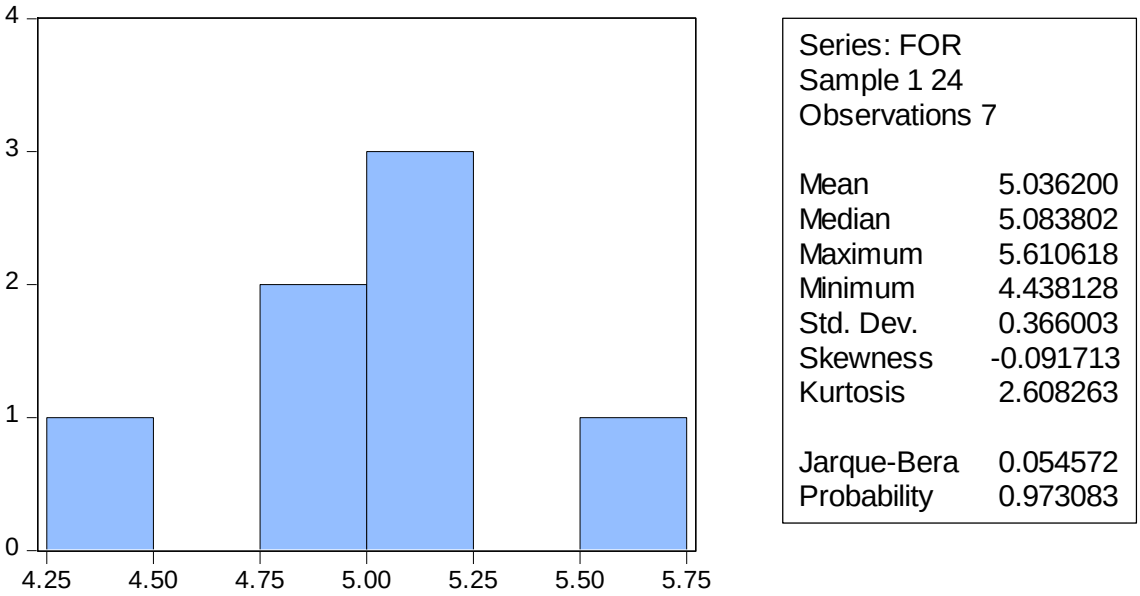


Figure 03:

Test for Equality of Variances Between Series

Date: 07/24/20 Time: 01:35
Sample: 1 24
Included observations: 24

Method	df	Value	Probability
F-test	(6, 23)	1.197145	0.6857
Siegel-Tukey		0.023623	0.9812
Bartlett	1	0.070225	0.7910
Levene	(1, 29)	0.064838	0.8008
Brown-Forsythe	(1, 29)	0.055161	0.8160

Category Statistics

Variable	Count	Std. Dev.	Mean Abs. Mean Diff.	Mean Abs. Median Diff.	Mean Tukey-Siegel Rank
DOM	24	0.400459	0.295882	0.288677	15.95833
FOR	7	0.366003	0.267970	0.261170	16.14286
All	31	0.388537	0.289580	0.282466	16.00000

Bartlett weighted standard deviation: 0.393578

Figure 04:

Test for Equality of Means Between Series
Date: 07/24/20 Time: 01:46
Sample: 1 24
Included observations: 24

Method	df	Value	Probability
t-test	29	-0.486246	0.6304
Satterthwaite-Welch t-test*	10.58487	-0.511616	0.6194
Anova F-test	(1, 29)	0.236435	0.6304
Welch F-test*	(1, 10.5849)	0.261751	0.6194

*Test allows for unequal cell variances

Analysis of Variance

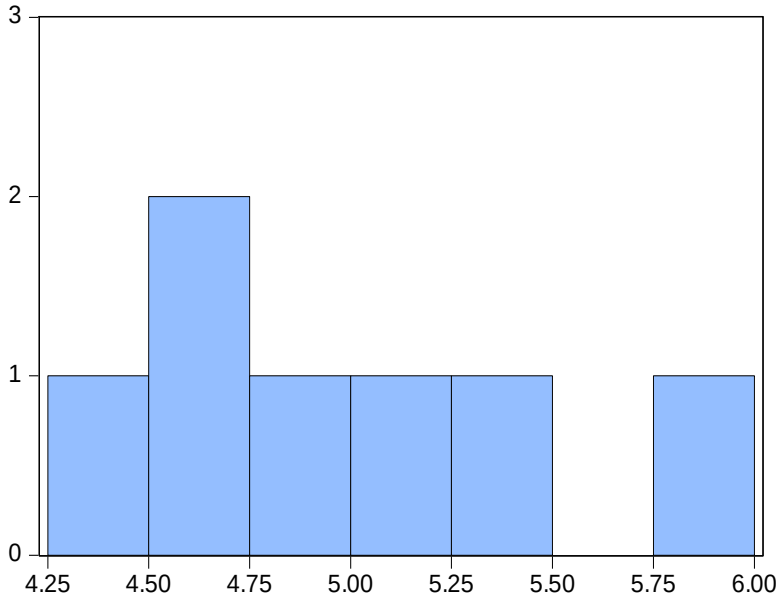
Source of Variation	df	Sum of Sq.	Mean Sq.

Between	1	0.036625	0.036625
Within	29	4.492208	0.154904
Total	30	4.528833	0.150961

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
DOM	24	4.953992	0.400459	0.081743
FOR	7	5.036200	0.366003	0.138336
All	31	4.972555	0.388537	0.069783

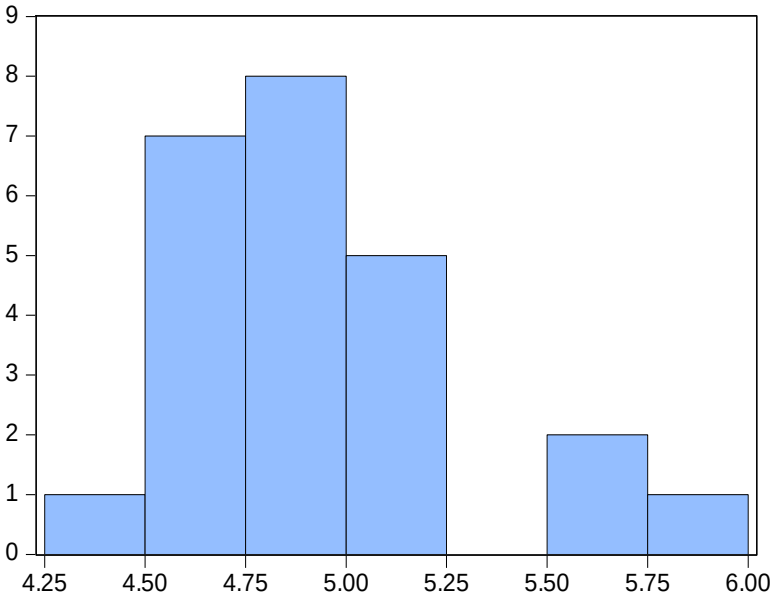
Figure 05: jarque- bera normality test for Public sector banks



Series: PUBLIC
Sample 1 24
Observations 7

Mean	5.025276
Median	4.863194
Maximum	5.935091
Minimum	4.413134
Std. Dev.	0.519134
Skewness	0.655147
Kurtosis	2.338545
Jarque-Bera	0.628365
Probability	0.730386

Figure 06: jarque- bera normality test for Private sector banks



Series: PRIVATE	
Sample 1 24	
Observations 24	
Mean	4.957178
Median	4.910760
Maximum	5.862448
Minimum	4.438128
Std. Dev.	0.354272
Skewness	0.974714
Kurtosis	3.497536
Jarque-Bera	4.047810
Probability	0.132138

Figure 07

Test for Equality of Variances Between Series
Date: 07/24/20 Time: 02:20
Sample: 1 24
Included observations: 24

Method	df	Value	Probability
F-test	(23, 6)	2.147257	0.3471
Siegel-Tukey		1.110271	0.2669
Bartlett	1	1.503331	0.2202
Levene	(1, 29)	2.056151	0.1623
Brown-Forsythe	(1, 29)	1.241419	0.2743

Category Statistics

Variable	Count	Std. Dev.	Mean Abs. Mean Diff.	Mean Abs. Median Diff.	Mean Tukey-Siegel Rank
PRIVATE	24	0.354272	0.261152	0.258152	17.00000
PUBLIC	7	0.519134	0.409885	0.386730	12.57143

All	31	0.388537	0.294737	0.287186	16.00000

Bartlett weighted standard deviation: 0.394081

Figure 08:

Test for Equality of Means Between Series
Date: 07/24/20 Time: 02:23
Sample: 1 24
Included observations: 24

Method	df	Value	Probability
t-test	29	-0.402272	0.6904
Satterthwaite-Welch t-test*	7.703610	-0.325645	0.7534
Anova F-test	(1, 29)	0.161823	0.6904
Welch F-test*	(1, 7.70361)	0.106045	0.7534

*Test allows for unequal cell variances

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	0.025131	0.025131
Within	29	4.503702	0.155300
Total	30	4.528833	0.150961

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
PRIVATE	24	4.957178	0.354272	0.072316
PUBLIC	7	5.025276	0.519134	0.196214
All	31	4.972555	0.388537	0.069783

Figure 09: Overall banks of banking system in pakistan

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Bankometer score		RANK
												in %	in numbers	
first women national bank	1.6346	2.0626	1.8688	2.1715	1.8301	1.7861	1.8665	2.3280	2.9762	3.1005	3.1005	2.2478	225	5
national bank	1.1094	1.1279	1.1393	1.1038	1.1110	1.0060	1.1697	1.1610	1.0667	0.9961	1.0074	1.0907	109	23
sindh bank	0.0000	0.0000	0.0000	2.6603	1.8086	1.4951	1.2802	1.1974	1.1194	1.0002	1.5108	1.0974	110	22
bank of khyber	1.4068	1.3385	1.3184	1.4547	1.5093	1.4113	1.3275	1.3010	1.1493	1.1235	0.8977	1.2944	129	17
bank of punjab	0.6834	0.7518	0.7018	0.8166	0.7769	0.8347	0.8652	0.8687	0.9360	0.8608	0.9822	0.8253	83	28
albarka bank	2.6920	2.2613	1.6965	1.6257	2.1538	1.0631	1.5987	1.6816	1.3211	1.5087	1.3051	1.7189	172	8
allied bank	1.1812	1.2768	1.3374	1.3429	1.3757	1.3964	1.4591	1.4411	1.4233	1.3999	1.1429	1.3433	134	16
askari bank	1.3116	0.9260	0.8458	0.8634	0.8911	0.8908	0.9399	0.7874	0.9011	1.4037	0.9186	0.9709	97	25
bank alhabib	0.8322	0.9888	0.9372	1.0381	1.0003	0.9734	1.0039	0.9764	0.9960	0.9521	0.8878	0.9624	96	26
bank al falah	3.2148	1.3290	1.2869	1.3490	1.3772	1.2313	1.1285	1.0524	1.1133	1.0943	0.9115	1.3717	137	16
islami bank	2.6565	1.6698	1.6565	1.3929	1.3050	1.2333	1.2722	1.2491	1.3277	1.3384	1.2924	1.4903	149	13
dubai islamic bank	1.7106	1.8645	2.1472	2.0791	1.9285	1.6392	1.5195	1.2125	1.2649	1.2901	1.0963	1.6139	161	11
faisal bank	1.3434	0.9246	0.9183	0.9579	0.9615	0.9766	0.9819	1.0176	1.0797	1.1285	1.1291	1.0381	104	23
habib bank	1.3679	0.9719	1.0272	1.0166	0.9229	0.9702	1.0193	0.9591	1.4509	1.4243	1.0398	1.1064	111	21
habib metropolitan bank	0.9105	1.1457	1.1362	0.9227	1.0510	1.0621	1.0415	1.0240	1.0326	1.4882	0.8036	1.0562	106	21
js bank	2.3684	2.3549	1.6862	1.4720	1.2677	1.4554	1.1539	1.0766	1.1457	0.9797	0.9616	1.4474	145	15
MCB bank	1.0421	1.6301	1.7488	1.2305	1.7424	1.6932	1.5088	1.4205	1.4249	1.5437	1.1003	1.4623	146	13
meezan bank	4.4225	1.3912	1.2912	1.3084	1.1920	1.0634	1.2946	1.0066	1.0498	1.0316	0.9696	1.4564	146	14
samba bank	4.6485	4.2556	3.5150	3.0380	2.9768	2.5729	2.7166	2.1475	1.8324	1.5254	1.2410	2.7700	277	3
silk bank	1.2572	1.0330	1.5804	1.5033	1.4879	1.4402	1.5166	2.5788	2.7818	2.6242	1.1293	1.7212	172	10
sonehri bank	0.9755	1.2773	0.9987	1.0273	1.0066	1.5573	1.4710	1.5645	1.4208	1.2711	0.9785	1.2317	123	17
standered chartered bank	1.2924	1.2171	1.2217	1.2270	1.2352	1.2402	1.3360	1.3726	1.2445	1.2665	1.2147	1.2607	126	16
summit bank	1.9929	1.0499	0.9849	1.0631	0.8410	0.8041	1.0580	0.9099	1.0218	0.9367	0.6675	1.0300	103	20
ubl	1.2721	1.0246	1.0406	0.9867	1.0173	0.9572	0.9458	1.4231	1.2895	1.3280	1.0279	1.1194	112	17
SME ktd	6.5662	3.9071	6.4111	5.7670	4.1983	4.7905	3.9905	5.0691	-0.7635	0.1860	-1.4481	3.5158	352	3
punjab provisional corp bank	0.2201	0.7776	2.4770	4.1078	5.3740	3.9202	5.2841	4.5807	5.2204	4.9739	4.6525	3.7807	378	1
ZTBL	1.7413	1.7073	1.8406	1.8949	1.9991	2.0170	1.8183	2.6480	2.6175	0.8783	0.0000	1.7420	174	8
citi bank	1.0821	1.1186	1.1299	1.4134	1.4492	1.6108	1.5779	1.6249	0.9515	1.3976	1.3530	1.3372	134	11
deutshe bank	1.5750	2.4405	1.9985	1.7594	2.0325	1.9088	1.7250	1.8963	1.9255	1.8091	1.7132	1.8894	189	6
industrial and commercial bank ltd	0.8578	0.6587	0.6504	1.4503	1.1340	0.8471	0.7935	0.7044	0.6144	0.6516	0.9456	0.8462	85	18
the bank of tokyo mistubushi	2.2096	2.4769	3.9941	3.8903	3.6483	3.0842	2.9093	2.1140	1.9963	1.7234	2.0180	2.7331	273	2
AVERAGE	1.7929	1.5148	1.6318	1.7398	1.6969	1.5784	1.5991	1.6256	1.4494	1.4270	1.1790			

Figure 10: list of public sector banks

public sector banks	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
ZTBL	1.7413	1.7073	1.8406	1.8949	1.9991	2.0170	1.8183	2.6480	2.6175	0.8783	0.0000	1.7420
national bank	1.1094	1.1279	1.1393	1.1038	1.1110	1.0060	1.1697	1.1610	1.0667	0.9961	1.0074	1.0907
first women national bank	1.4678	1.7408	1.5148	1.8134	1.4434	1.3564	1.8665	2.3280	2.9762	3.1005	3.1005	2.0644
sindh bank	0.0000	0.0000	0.0000	2.6603	1.8086	1.4951	1.2802	1.1974	1.1194	1.0002	1.5108	1.0974
bank of khyber	1.4068	1.3385	1.3184	1.4547	1.5093	1.4113	1.3275	1.3010	1.1493	1.1235	0.8977	1.2944
bank of punjab	0.6834	0.7518	0.7018	0.8166	0.7769	0.8347	0.8652	0.8687	0.9360	0.8608	0.9822	0.8253
punjab provisional corp bank	0.2201	0.7776	2.4770	4.1078	5.3740	3.9202	5.2841	4.5807	5.2204	4.9739	4.6525	3.7807
	0.9470	1.0634	1.2846	1.9788	2.0032	1.7201	1.9445	2.0121	2.1551	1.8476	1.7359	

Figure 11: List of private banks

private banks	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
albarka bank	2.6920	2.2613	1.6965	1.6257	2.1538	1.0631	1.5987	1.6816	1.3211	1.5087	1.3051	1.7189
allied bank	1.1812	1.2768	1.3374	1.3429	1.3757	1.3964	1.4591	1.4411	1.4233	1.3999	1.1429	1.3433
askari bank	1.3116	0.9260	0.8458	0.8634	0.8911	0.8908	0.9399	0.7874	0.9011	1.4037	0.9186	0.9709
bank alhabib	0.8322	0.9888	0.9372	1.0381	1.0003	0.9734	1.0039	0.9764	0.9960	0.9521	0.8878	0.9624
bank al falah	3.2148	1.3290	1.2869	1.3490	1.3772	1.2313	1.1285	1.0524	1.1133	1.0943	0.9115	1.3717
islami bank	2.6565	1.6698	1.6565	1.3929	1.3050	1.2333	1.2722	1.2491	1.3277	1.3384	1.2924	1.4903
dubai islamic bank	1.7106	1.8645	2.1472	2.0791	1.9285	1.6392	1.5195	1.2125	1.2649	1.2901	1.0963	1.6139
faisal bank	1.3434	0.9246	0.9183	0.9579	0.9615	0.9766	0.9819	1.0176	1.0797	1.1285	1.1291	1.0381
habib bank	1.3679	0.9719	1.0272	1.0166	0.9229	0.9702	1.0193	0.9591	1.4509	1.4243	1.0398	1.1064
habib metropolitan bank	0.9105	1.1457	1.1362	0.9227	1.0510	1.0621	1.0415	1.0240	1.0326	1.4882	0.8036	1.0562
js bank	2.3684	2.3549	1.6862	1.4720	1.2677	1.4554	1.1539	1.0766	1.1457	0.9797	0.9616	1.4474
MCB bank	1.0421	1.6301	1.7488	1.2305	1.7424	1.6932	1.5088	1.4205	1.4249	1.5437	1.1003	1.4623
meezan bank	4.4225	1.3912	1.2912	1.3084	1.1920	1.0634	1.2946	1.0066	1.0498	1.0316	0.9696	1.4564
samba bank	4.6485	4.2556	3.5150	3.0380	2.9768	2.5729	2.7166	2.1475	1.8324	1.5254	1.2410	2.7700
silk bank	1.2572	1.0330	1.5804	1.5033	1.4879	1.4402	1.5166	2.5788	2.7818	2.6242	1.1293	1.7212
sonehri bank	0.9755	1.2773	0.9987	1.0273	1.0066	1.5573	1.4710	1.5645	1.4208	1.2711	0.9785	1.2317
standered chartered bank	1.2924	1.2171	1.2217	1.2270	1.2352	1.2402	1.3360	1.3726	1.2445	1.2665	1.2147	1.2607
summit bank	1.9929	1.0499	0.9849	1.0631	0.8410	0.8041	1.0580	0.9099	1.0218	0.9367	0.6675	1.0300
ubl	1.2721	1.0246	1.0406	0.9867	1.0173	0.9572	0.9458	1.4231	1.2895	1.3280	1.0279	1.1194
SME ktd	6.5662	3.9071	6.4111	5.7670	4.1983	4.7905	3.9905	5.0691	-0.7635	0.1860	-1.4481	3.5158
citi bank	1.0821	1.1186	1.1299	1.4134	1.4492	1.6108	1.5779	1.6249	0.9515	1.3976	1.3530	1.3372
deutshe bank	1.5750	2.4405	1.9985	1.7594	2.0325	1.9088	1.7250	1.8963	1.9255	1.8091	1.7132	1.8894
industrial and commercial bank ltd	0.8578	0.6587	0.6504	1.4503	1.1340	0.8471	0.7935	0.7044	0.6144	0.6516	0.9456	0.8462
the bank of tokyo mistubushi	2.2096	2.4769	3.9941	3.8903	3.6483	3.0842	2.9093	2.1140	1.9963	1.7234	2.0180	2.7331

Figure 12: List of Foreign banks

FOREIGN BANKS	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	average
citi bank	1.0821	1.1186	1.1299	1.4134	1.4492	1.6108	1.5779	1.6249	0.9515	1.3976	1.3530	1.3372
albarka bank	2.6920	2.2613	1.6965	1.6257	2.1538	1.0631	1.5987	1.6816	1.3211	1.5087	1.3051	1.7189
deutshe bank	1.5750	2.4405	1.9985	1.7594	2.0325	1.9088	1.7250	1.8963	1.9255	1.8091	1.7132	1.8894
industrial and commercial bank of china	0.8578	0.6587	0.6504	1.4503	1.1340	0.8471	0.7935	0.7044	0.6144	0.6516	0.9456	0.8462
the bank of tokyo mistubushi	2.2096	2.4769	3.9941	3.8903	3.6483	3.0842	2.9093	2.1140	1.9963	1.7234	2.0180	2.7331
standered chartered bank	1.2924	1.2171	1.2217	1.2270	1.2352	1.2402	1.3360	1.3726	1.2445	1.2665	1.2147	1.2607
dubai islamic bank	1.7106	1.8645	2.1472	2.0791	1.9285	1.6392	1.5195	1.2125	1.2649	1.2901	1.0963	1.6139
	1.6314	1.7197	1.8340	1.9207	1.9402	1.6276	1.6371	1.5152	1.3312	1.3781	1.3780	

Figure 13: List of Domestic Banks

domestic banks	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
first women national bank	1.4678	1.7408	1.5148	1.8134	1.4434	1.3564	1.8665	2.3280	2.9762	3.1005	3.1005	2.0644
national bank	1.1094	1.1279	1.1393	1.1038	1.1110	1.0060	1.1697	1.1610	1.0667	0.9961	1.0074	1.0907
sindh bank	0.0000	0.0000	0.0000	2.6603	1.8086	1.4951	1.2802	1.1974	1.1194	1.0002	1.5108	1.0974
bank of khyber	1.4068	1.3385	1.3184	1.4547	1.5093	1.4113	1.3275	1.3010	1.1493	1.1235	0.8977	1.2944
bank of punjab	0.6834	0.7518	0.7018	0.8166	0.7769	0.8347	0.8652	0.8687	0.9360	0.8608	0.9822	0.8253
allied bank	1.1812	1.2768	1.3374	1.3429	1.3757	1.3964	1.4591	1.4411	1.4233	1.3999	1.1429	1.3433
askari bank	1.3116	0.9260	0.8458	0.8634	0.8911	0.8908	0.9399	0.7874	0.9011	1.4037	0.9186	0.9709
bank alhabib	0.8322	0.9888	0.9372	1.0381	1.0003	0.9734	1.0039	0.9764	0.9960	0.9521	0.8878	0.9624
bank al falah	3.2148	1.3290	1.2869	1.3490	1.3772	1.2313	1.1285	1.0524	1.1133	1.0943	0.9115	1.3717
islami bank	2.6565	1.6698	1.6565	1.3929	1.3050	1.2333	1.2722	1.2491	1.3277	1.3384	1.2924	1.4903
faisal bank	1.3434	0.9246	0.9183	0.9579	0.9615	0.9766	0.9819	1.0176	1.0797	1.1285	1.1291	1.0381
habib bank	1.3679	0.9719	1.0272	1.0166	0.9229	0.9702	1.0193	0.9591	1.4509	1.4243	1.0398	1.1064
habib metropolitan bank	0.9105	1.1457	1.1362	0.9227	1.0510	1.0621	1.0415	1.0240	1.0326	1.4882	0.8036	1.0562
js bank	2.3684	2.3549	1.6862	1.4720	1.2677	1.4554	1.1539	1.0766	1.1457	0.9797	0.9616	1.4474
MCB bank	1.0421	1.6301	1.7488	1.2305	1.7424	1.6932	1.5088	1.4205	1.4249	1.5437	1.1003	1.4623
meezan bank	4.4225	1.3912	1.2912	1.3084	1.1920	1.0634	1.2946	1.0066	1.0498	1.0316	0.9696	1.4564
samba bank	4.6485	4.2556	3.5150	3.0380	2.9768	2.5729	2.7166	2.1475	1.8324	1.5254	1.2410	2.7700
silk bank	1.2572	1.0330	1.5804	1.5033	1.4879	1.4402	1.5166	2.5788	2.7818	2.6242	1.1293	1.7212
sonehri bank	0.9755	1.2773	0.9987	1.0273	1.0066	1.5573	1.4710	1.5645	1.4208	1.2711	0.9785	1.2317
summit bank	1.9929	1.0499	0.9849	1.0631	0.8410	0.8041	1.0580	0.9099	1.0218	0.9367	0.6675	1.0300
ubl	1.2721	1.0246	1.0406	0.9867	1.0173	0.9572	0.9458	1.4231	1.2895	1.3280	1.0279	1.1194
SME ktd	6.5662	3.9071	6.4111	5.7670	4.1983	4.7905	3.9905	5.0691	-0.7635	0.1860	-1.4481	3.5158
punjab provisional corp bank	0.2201	0.7776	2.4770	4.1078	5.3740	3.9202	5.2841	4.5807	5.2204	4.9739	4.6525	3.7807
ZTBL	1.7413	1.7073	1.8406	1.8949	1.9991	2.0170	1.8183	2.6480	2.6175	0.8783	0.0000	1.7420