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Response of Bank Profitability to Bank Size and Macroeconomic Indicators for Chinese and Pakistani listed Banking Companies

Dr Muhammad Kashif Majeed[1,a,*] , Dr Faisal Mahmood[2]

[1] National School of Management Studies, The University of Faisalabad, 38000, Pakistan
[2] Faculty of Business and Management Sciences, Superior University Faisalabad, 38000, Pakistan.
a. kashif5049ntu@gmail.com
**corresponding author*

Abstract: The main goal of this research work is to find the impact of bank size and macroeconomic variables on profitability (ROA) of Chinese and Pakistani listed banks. Therefore, the stable banking sector is very crucial for the financial system. Economic theory uncovered the control of the large and established banks in the native marketplace. It's operated in different atmosphere at higher rate of lending, but larger institutions give low rates on deposit as they are thought safer. This research work identified that bank size affects the profitability of Pakistani and Chinese banks by using longitudinal data from 2009 to 2018. We employed Ordinary Least Square (OLS) technique with E-View statistical software to analyze the association among the size of bank and profitability of Pakistani and Chinese listed banks. The empirical analysis defines the case of Pakistani and Chinese listed banks; the size of the bank has significantly but negatively associated with the bank's profitability. Findings revealed that the economy of scale is necessary for Pakistani and Chinese listed bank's profitability. The macro-economic factors, GDP, inflation, and exchange rate have all strong associations with Pakistani and Chinese listed bank's profitability and efficiency.

Keywords: Bank size, China, Financial sector, Pakistan, Profitability, Listed banks

1. Introduction

The monetarist sector performs an important role to support the economy and movement of finance from the depositors to lenders. The profitability should be improved, if the monetary structure is efficient, the streaming of finance is increased depositor's end to lenders and provide superior quality services to his customers. The banking sector of any country also performs an imperative role in the monetary sector and economic rapidity utilizing converting savers into borrowers and investors.

The roles of commercial banks are very important in supporting financial markets and have extensive behavior for the betterment of financial sector [1]. The main role of a monetary segment of the economy is to alleviate the flow of capital from a depositor to a lender. [2] suggests the banking sector borrow funds from different individuals in the economic system and give to other individuals, collect data of debtors, set terms and condition are well diversified and assign loan. The

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large issues of securities are typically divisions of borrowers and lenders, which have distinct interest ratios from one to another. Commercial banks of Pakistani and Chinese manage and control the financial sector of the country, which suggests that the failure of this area could adversely affect the economic development of the state.

[3] identified that the failure of one bank has an extensive effect on the financial system of the country and the whole economic system. It's important to set the indicator for observing the weakness in the financial sector. Return on assets (ROA) and return on equity (ROE) are the key signs of any financial institution. [4] said that financial organizations have the superior capacity and potential to face challenges and increase the profit of the business sector and its growth.

The determining factor of bank's financial performance can allocate in different sections. The bank-specific factor that's encouraged by policymaker and management decision and the macroeconomic factors that shows the economic condition of the country under which the banks are working. The bank-specific factor, incorporated in current research work is the size of the bank, capital adequacy, liquidity, quality of assets and age of bank. The macro-economic variables include GDP, inflation and the Exchange rate of country.

1.1. Review of The Pakistani Banking Sector

A bank is accepting the business transaction for purpose of lending, deposits from the public, repayable on demand; withdraw through cheque, ATM, draft order and transfer. Banks are financial mediators in any economy. The role of the financial intermediate is to sell its responsibilities at good features, received a lower price than paid at a high price. The bank received a big interest in selling its responsibilities and bears some interest in buying.

The first central financial institution started on July 1, 1948, named as State Bank of Pakistan (SBP), indicates the beginning journey of Pakistani banking sector. While 1950 to 1960 the banking sector gain growth due to development projects. The banking sector is working under the Government of Pakistan as from1974 as state-owned institutions.

State-owned bank's functioning declined because of employee protection from the government, production of poorer quality products and inferior quality services. Furthermore, overseas investors and private financial organizations are discouraged. Due to the continuous inefficient functioning of nationalized banks, the government of Pakistan decided to modify and denationalize the banking sector in 1990. Pakistani financial and banking sector evolved during the past few decades, by transforming the conventional banking system into the Islamic banks.

Banks act as a financial mediator to govern the economy of any country with banks. The previous statement is true in the context of Pakistan, where the banks paly a very important role between savers and borrowers, that's very important to stabilize the financial sector. While the determinants of profitability are important for a stable economy. Same as other developing economies, the sector of Pakistani Banking has also promoted from macroeconomic stability. Merger and expansions are taking place and the structure of banks and the banking institutions' size are changing. The banking sector has become competitive when we have compared with the past.

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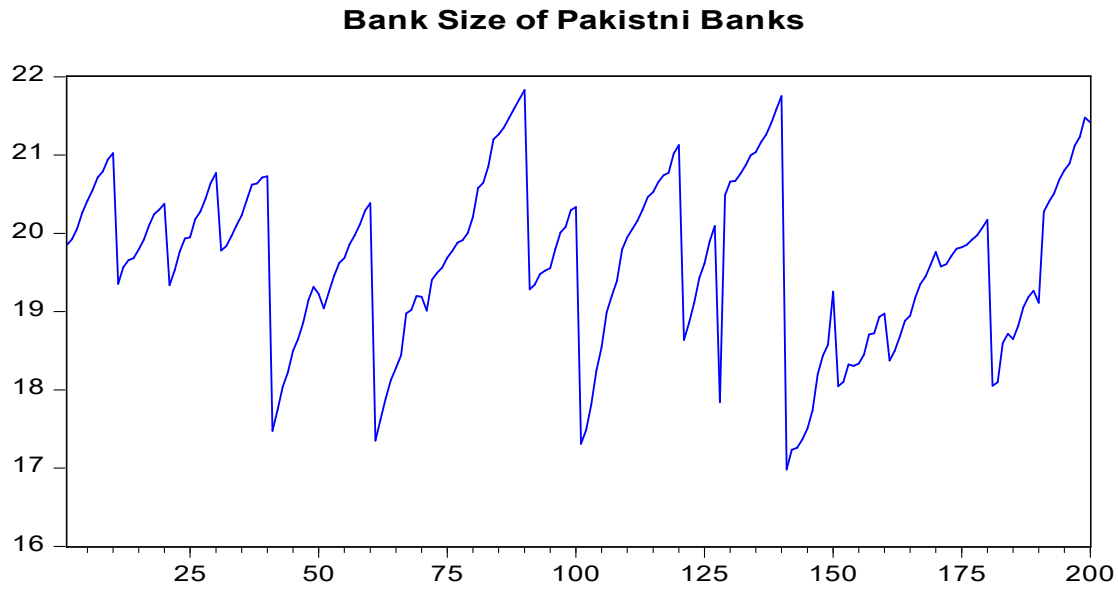

Figure 1: Bank Size of Pakistni banks.

According to the Mid-Year Performance Review, the central bank of Pakistan is released the performance of Pakistani banking sector on 21st October 2019. The banking sector sustained his growth during the first half of 2019 due to an increase in deposits. On the liabilities side, deposit growth enhanced to 6.8 percent in first half for 2019, from 5.7 percent in the comparison with the same period of last year. On the assets side, private sector advances observed slowdown, while the public sector advances declined because of lower utilization of financing and cut off of the energy sector. Resultantly, bank's borrowings decreased by 12.7% and advances to deposit ratio 53.2 in June 2019 compared to 55.8 in December 2018. Overall, the risk profile of the banking sector remained satisfactory and Capital Adequacy Ratio at 16.1%. The benchmark of local and international is 11.9% to 10.5% respectively.

Table 1: Listed banks size in Pakistan and China.

	Bank size (Total Asset)		
Year	Pakistan (In thousand PKR)	China (In thousand RMB)	Source
2009	5,682,531,018.00	594,319,689.00	Annual Financial Statement
2010	6,387,276,900.00	794,863,022.00	
2011	7,449,649,906.00	605,720,484.00	
2012	8,908,970,306.00	1,038,321,076.00	
2013	9,682,144,321.00	823,953,594.00	
2014	11,128,494,549.00	1,117,707,606.00	
2015	12,983,979,183.00	1,557,913,890.00	
2016	13,875,381,631.00	1,350,870,447.00	
2017	17,147,218,715.00	1,589,266,873.00	
2018	18,834,531,077.00	1,232,719,196.00	

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1.2. Chinese's Banking Sector

The financial system of China is relying on financial institutions like banks. The economic growth of a nation is enhanced by the banking sector over the past few decades. From the last 30 years, the Banking segment of china mainly served as channels for government endowments and funds, but banks started working on commercial bases from the past few decades. The banking sector of China has been uncertain about productivity, because of high loan losses that are the amount set for provisions. On the other side, government influence many heavily restriction in the process of lending, the practices of risk management underdeveloped, while the experience in risk management is a little bit, bad debts have increased because of a large percentage of the loans prolonged over the years. Moreover, the profitability, solvency, and capitalization of banks are below from standards of the international financialsector.

The Chinese government had started an inclusive reform in banks with the main objective banking sector transforming in separate markets and profitable sector in 1997. The main reform has only restructuring of big four commercial banks, which is under the State-Owned. These banks have long facilitated to State-Owned Enterprises provide lending and business transaction. The government of China has taken actions to register the financial system with parallel to the restructuring of State-Owned Commercial Banks (SOCB).

Developments have brought great challenges for the banking sector of China because the environment has rapidly transformed in which they operated; furthermore, productivity and profitability indicators had consequently impacted on banks. In 1978 the initiation of economic policy has announced by the government of China, the financial system of China has been operating by Moan bank. The establishment of monetary and exchange policies were responsible People's Bank of China, including deposit, foreign reserve management, financing of development projects and loaning activities for profit-making [18]. At present, the financial sector of China has contained two controlling bodies and a breather of monetary structure.

The monetary policy of country-made and supervised by the central Bank of China and responsible to perform other tasks. Now the duties of the Chinese's central bank are to make a draft and fiscal policy for the Chinese nation; also supervise Chinese loan flea market, bond, gold market, and foreign exchange; furthermore, give guidance to implement the policies against money-launders. The people's Bank of China also announces a rate of interest for browsers and savers, reserves and further factors influence the bank's liquidity.

State Council established in 2003, the primary agency of the Chinese's government is the China Banks-Regulatory Commission (CBRC), this agency plays a role as a bridge between the Chinese government and commercial banks. Supervision of commercial bank's operations is under the China Banking-Regulatory Commission (CBRC), also liable to articulate the laws and regulatory policies for the banking sector and conducting their operations within the country and outside the country. The objective is that gives the protection to creditors and maintains market self-reliance through sensible and better supervision.

The Chinese banking industry are pillars of the economy. Now the Chinese's banking industry incorporates three policies about banks, four SOCB, twelve Shared Stock units, City Banks, urban and rural credit companies. The nationalized money-making Banks and Joint Stock Banks are the main two groups, which captured above 70 % of total assets from banking industry.

SOCB consists of four financial bodies, The Agricultural Bank of China, The Bank of China, China Construction Bank, Industrial and Commercial Bank of China (ICBC). The Commercial Banks of publicly Owned have also wide branches network with above than 42000 branches and above than seven lack personnel [18].

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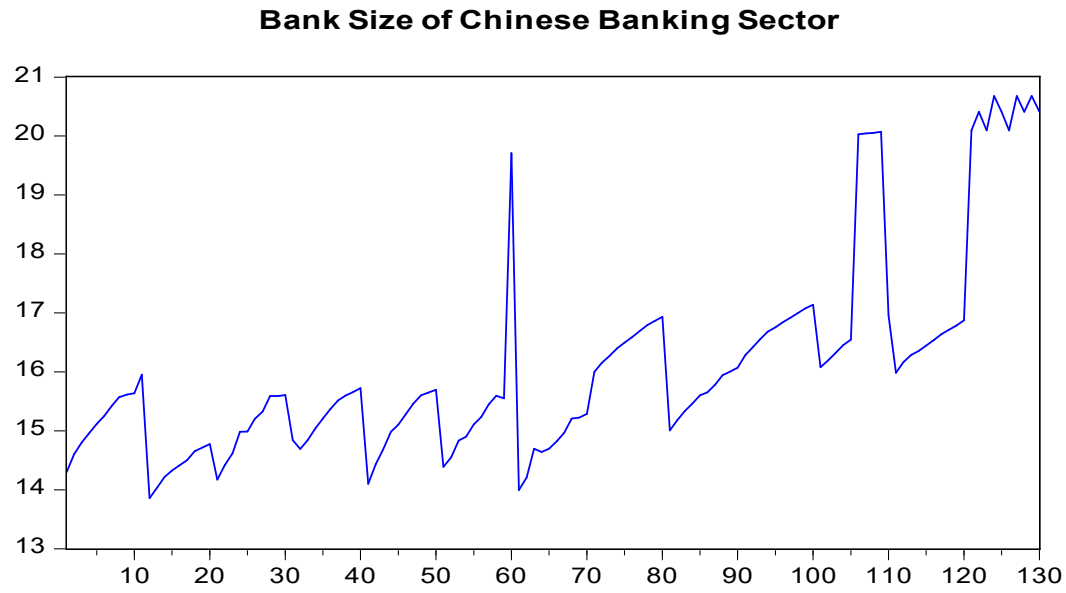

Figure 2: Bank size of Chinese banking sector.

1.3. Statement of The Problem

Since the world monetary deadlock and confrontation emerged from the year 2007/08, the size of the bank has intensified debatable. Large numbers of organizations have become much large in total assets. Additionally, the literature about productivity and profits of banks showed that size of bank impact on profitability of Pakistani and Chinese listed banks, the study such as this was not unified in earlier research work. The number of findings related to profitability determinants of business-related banks. [5] uncovers that the profit and productivity of banks are affected by intervening factors. [30] identified factors affecting the financial performance of banks. [6] uncovers that the bank's profitability and efficiency are affected by macro-economic variables. This piece of literature clears the research gap by discovering the effect of size on Pakistani and Chinese listed bank's profit and productivity.

This research report develops the following research questions:

- Is bank specific-variables impact on profitability of Pakistani and Chinese listed banks?
- Is macro-economic factors impact on profitability of Pakistani and Chinese listed banks?

1.4. Study Objectives/ Purpose of The Study

The aim of this research is identify the effect of Pakistani and Chinese listed bank's size on profitability. Hence the threshold objective is to:

i. Identify the impact of distinctive bank factors on profitability of Pakistani and Chinese listed banks.

ii. Identify the impact of macroeconomic indicators on the profitability of Pakistani and Chinese's listed banks.

1.5. Significance of The Study

If the financial bodies and banks are in profit because the stable financial system of country [7,8]. The financial industry and banks accumulate and assign investments, weathers import/export or risk

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variation. Hence in this way the economic growth is encouraging in country [9]. However, conclude the mention research questions should be imperative factors that determine effective commercial banks, so these policies increase bank profitability.

Current research supports the main research by offering new observed proof on the bank size has impact on Pakistani and Chinese listed bank's profit. Additionally, this sort of research has not performed in Pakistani and as well as the Chinese banking industry.

2. Literature Review

The subject matter which obtained much attention in the latest years is the banking sector and profitability. There is significant writing material on the profitability of banks, which has played a magnificent role to enhance the bank's profitability as a management resource. It is usually categorically stated that if the management quality is better, it act as a main factor, influencing the profitability of bank, as demonstrated by many studies that have engrossed the financial structure of United States [10,11,12]. The developed and western-nations banking systems [13,14,15,16,17].

In contrast, some research work has observed the bank's efficiency and profit in developing countries. [18] uncover the profitability contributing factor in the Malaysian banking sector. The sample size is seventeen commercial banks covering the period 1986-1995. The profitability contributing factor is split up into two sets; the first one is inside determinants (liquidity, expenses management, and capital adequacy) and the second one is outside determinants (ownership, financial situations, and size of business). The conclusion uncovers expenses management has substantial effects the bank's profit. But a macroeconomic indicator, higher interest ratio has decreased the productivity of banks and price-rise has significant constructive effect on profitability. The board size coefficient value positive for ROA and negative for ROE, but insignificant for Pakistani banking companies, while Chinese banking companies the coefficient value of board size positively for ROA and ROE at 10% significance level. The board composition coefficient shows significant with ROA, but insignificantly related to ROE for Pakistani banking companies. However, the coefficient value of board composition is insignificant for both ROA and ROE for Chinese banking companies [19].

[20] identify the characteristics of banks and financial institution, their structure and macro-economic situations impact on Tunisian bank's profitability for the period 1980-2000. They uncover that if the bank holds a large amount of investment and a large number of overhead expenditures, it enhances the profit and net-interest surplus, while the profitability of the bank is negatively associated with bank size. Furthermore, has identified the encouraging connection between profit and development of the stock market. The empirical findings uncover that the SOCB is less profitable as compared to private banks. The finding uncovers that macro-economic situations have a non-significant association with bank's profitability of Tunisian.

2.1. Theoretical Review

The stewardship, agency and inverted U-curve theories clarify the association between bank size and bank's profit. Agency theories uncover that constant conflict between the interests of managers and shareholders. The personal gains are skewed towards the actions and decisions of managers. The manager gains more power and earns higher salaries by increasing the bank size. In context of this theory, the bank profitability would be negatively affected by bank size. The theory of stewardship identified that managers are reliable and do not mismanage the reserve of the firm [21]. The theory of stewardship suggests that managers are better agents of firm's assets.

Theory of upturned U-curve identified that when bank size increases the profitability will rise first, therefore bank becomes extremely large leads to profitability begin to fall. This is finding in

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saving of cost, which indications more profits. However, the large bank will get the advantage of economic conduction. The opposite opinion is that if the bank size becomes to be large, the fall of profits will start due to bureaucratic causes, therefore finding a non-linear association among the size of bank and bank's productivity.

2.1.1. The Effect of Bank Size on The Profitability of Banks

In the banking sector, the bank size is to determine the economies and diseconomies of scale. Bank size calculates the Natural log of aggregate assets. [22] investigate the positive significant relationship among the bank size and profitability of bank, the period span is 2002 to 2010 in Croatia.

[23] uncover that the bank size is calculated through a log of overall assets by applying the GMM technique. The finding suggests that the size of the bank leads to advantages of exploit cost, those identified that would increase the contribution and improved efficiency of management, that's finding leads to increase profitability. The accordance with previous research work uncovers the significant association among bank size and bank's profit [3,24,25]. The mentioned results were changed from the concluding of [20] to identify the effect of monetary composition, macro-economic factors and bank specified variables on the Tunisian bank's profitability, covering the span 1980-2000. The study identified that size of bank had a negative association with the profitability of bank. [10] the negative association of diseconomies of scales that relationship with substantial banks particularly after enhanced expansion periods.

[26] investigate the Chinese bank's profitability by used GMM covering the period 1999-2006 and uncover that size of bank had a non-substantial effects the financial performance of bank. The above conclusion is associated with the finding of [27,4].

[28] suggest that if bank size is growing, it's a positive impact on profitability, but also realized that if more increases the bank size would negatively impact on bank's profitability. For main banks, growth seems improved above average, where it could efficient with the interest of shareholders [29].

In the existence of an extensive scale of economies, bank size has constructive relationship with profitability of bank [30]. They suggest that probability has an adverse relationship among size of bank and profitability [31,32].

[33] suggest that non-substantial association among size of bank and bank's profitability. However, the context of the literature review identified the effect the size of bank on bank's profitability as not decisive. This study built the relationship between bank size and profitability of Pakistani and Chinese listed banks.

3. Methodology

The identified, how the bank's profitability is enhanced by bank size showed in this section. Factors to be used in research work define the data sources and also performed the diagnostic tests on data.

3.1. Sample Selection

In this research work, annual data of 20 Pakistani listed banks and 13 Chinese listed banks are used, which Pakistani listed banks are registered on Pakistan Stock Exchange as well as Chinese listed banks are registered on the Shanghai stock exchange.

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Table 2: Pakistani's listed banks.

Sr #	Banks Name	Sr #	Banks Name	Source
i.	Allied Bank Limited	ii.	JS Bank Limited	Pakistan Stock Exchange
iii.	Askari Bank Limited	iv.	Muslim Commercial Bank Limited	
v.	Bank Al-Habib Limited	vi.	Meezan Bank Ltd.	
vii.	Bank Al-Falah Limited	viii.	National Bank of Pakistan	
ix.	The Bank of Khyber	x.	SAMBA Bank Ltd.	
xi.	The Bank of Punjab	xii.	Silk Bank Ltd.	
xiii.	Bank Islami Pakistan Ltd.	xiv.	Soneri Bank Limited	
xv.	Faysal Bank Limited	xvi.	Standard Chartered Bank(Pakistan) Limited	
xvii.	Habib Bank Limited	xviii.	Summit Bank Limited	
xix.	Habib Metropolitan Bank Limited	xx.	United Bank Limited	

Table 3: Chinese's listed banks.

Sr #	Banks Name	Sr #	Banks Name	Source
i.	Shanghai Pudong Development Bank	ii.	The Agricultural Bank of China Ltd.	
iii.	Huaxia Bank Co, Limited	iv.	Bank of Communication Co, Limited	
v.	China Minsheng Bank Corp, Ltd.	vi.	Industrial and Commercial Bank of China	
vii.	China Merchants Bank Co, Limited	viii.	China Construction Bank Ltd.	
ix.	Industrial Bank Co, Limited	x.	Bank of China Ltd.	
xi.	China CITIC Bank Corp, Limited	xii.	Bank of Beijing Limited	
xiii.	China Everbright Bank Co, Ltd.			

3.2. Data Sources

Annual statistics of bank-specified factors excreted from yearly statements of Pakistani and Chinese listed banks within the period 2009 to 2018. Macro-economic variables are collected from (WED) world economic development site.

3.3. Explanation of Variables

3.3.1. Dependent Variables

3.3.1.1 Return on Assets (ROA)

The bank's profitability is measure by return-on-asset in this study. Return on asset computed as:

$$= \frac{\text{Net profit after tax}}{\text{Total Assets}}$$

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3.3.2. Bank Specific Characteristics

3.3.2.1 Bank Size (BS)

The computed bank size is taking the natural log of total assets. BS can also calculate as natural log total payment of buyers. However, some research papers explained as total assets natural log to define the bank size [31,3,29].

Tentative results of bank size on bank's profitability are mixed. Therefore, we identified an association between bank size and the bank's profitability.

3.3.2.2 Asset Quality (AQ)

It's calculated as the Non-functioning loans over total mortgages or loans. It defines a loan portfolio of a bank [34]. We investigate a definite relationship among asset value and bank's profitability.

3.3.2.3 Capital Adequacy (CA)

It's calculated of overall shareholder equity over the bank's aggregate assets. The capital adequacy shows the financial leverage of the bank. Higher capital adequacy implies high risk and gives protection from defaulting-risk. [35] suggests that capital cost reduces due to the high amount of equity that encouraging influence on the bank's profitability. Many kinds of research findings explained the positive association among the extraordinary capital and profit [36,31,22]. We found that capital adequacy have a positive impact on the bank's profitability.

3.3.2.4 Liquidity (LI)

Liquidity ratio describes the capacity, how much can be accommodated to liabilities. A total loan to assets tells bank liquidity. A higher ratio defines that banks have a large number of assets in the loan segment. If credit risks high, which determinate charge higher rate of interest influence profitability [37]. However, we expected that higher liquidity will influence the profitability of banks.

3.3.2.5 Age of Bank (AG)

Bank age is the total numeral years from operation to till 2018. This will be used to compute the age of the bank. We expect a negative association among bank age and bank's profitability.

3.3.3. Macroeconomic Variables

3.3.3.1 Gross Domestic Product (GDP)

GDP calculated as the general position of the economic condition of the country. A various study found dissimilar finding of macroeconomic variables. Many studies identified counter relationships among GDP growth and profitability of the bank [38]. While many researchers are identify straight association [22,31]. However, we have anticipated that GDP optimistically impacts on bank's profitability.

3.3.3.2 Inflation (INF)

Inflation shows the stability macro-economic and it's calculated through the consumer price index. The annual inflation rate is defined in fisher's equation. Fishers' equation suggests that inflation rates built on marketplace prospects in upcoming years, those nominal rates of interest are

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conversant, therefore increase the difference among interest income and expense [39]. Higher price rises are decreasing the capability to pay back loans, therefore negatively effect of bank's profitability. However, we expected that inflation has negative affect the profitability of banks.

3.3.3.3 Exchange Rate

The local currency of the country valued against US$ is used in this study.

Table 4: Indicator variables and it's expected sign.

Variable	Calculation	Expected sign	Source
Return on Assets (ROA)	Net profit after tax over total assets	Profitability indicator	LB(FS)
Bank-specific Factors/Indicators			
Bank size (BS)	LN of total assets	(-)	LB(FS)
Capital Adequacy(CA)	Total equity over total assets	(+)	LB(FS)
Liquidity(LI)	Total loans over total assets	(+)	LB(FS)
Age of bank (AG)	Bank operation start to till 2018	(-)	LB(FS)
Asset Quality(AQ)	Non-performing loans over total loans	(+)	LB(FS)
Macro-economic Factors/Indicators			
Gross Domestic Product Rate (GDP)	Annual GDP	(+)	WED
Inflation (INF)	Growth in a consumer price index	(-)	WED
Exchange Rate (EX)	Local currency against US$	(-)	WED

3.4. Theoretical Framework

In this study effect of bank size on profitability investigated. We also used some other self-determining variables that impact on bank's profitability, such as liquidity, capital adequacy, quality of asset, age of bank and macro-economic variables. We employed three theories in this study, stewardship, agency and inverted U-curve theory. The theory of stewardship identified that size of bank will positively affected the profitability of banks. The theory of agency suggests that size of bank will negatively affected the profit of banks. Therefore, the theory of inverted U-curve forecast that the profitability of banks will grow firstly as size of the bank enhance and then start to fall when the size of the bank becomes tremendously large.

Establishing the association among size of bank and bank's profitability will assist policymakers to express policies to improve the listed bank's profitability. The modular equation used to estimate is:

$$ROA_{it} = \beta_0 + \beta_1 lnBS_{it} + \beta_2 lnCA_{it} + \beta_3 lnAQ_{it} + \beta_4 lnLI_{it} + \beta_5 lnAG_{it} + \beta_6 lnGDP_{it} + \beta_6 lnINF_{it} + \beta_6 lnEX_{it} + \epsilon it \text{----------(1)}$$

Where BS is the bank size, liquidity (LI), capital adequacy (CA), asset quality (AQ), gross domestic product (GDP), inflation (INF), exchange rate (EX) and age of bank (AG) in years. The researchers use the panel-data of Pakistani and Chinese listed banks span period 2009 to 2018.

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4. Empirical Results and Discussion of Pakistani Listed Banks

4.1. Explanatory Statistics

Table 5 illustrates the factual statistics of Pakistani listed banks. Average and standard deviation for return on asset is within the estimated series from 2009 to 2018. The average ROA is 0.0133 (median, 0.0097). Additionally, there is an extensive range among minimum and maximum of the return on asset. ROA series from minimum -5.53% to maximum 12.06 % with a median of 0.97% and an average of 1.13 % identified that all observations show above the mean. The positive average of ROA indicates that the Pakistani listed banks are profitable. This finding confirms by [30] who uncover that return on asset positive effect in his study the financial execution determinants of Kenyan banks.

Secondly, table 5 is describing the descriptive of all independent variables that are mean and median values are different from one another identity. Table 5 is concerned about bank-specific variables in table1 that presented the descriptive information. The BS means of Pakistani listed banks sample is 19.6460 (median, 19.7783) in thousand Pakistani Rupees. Therefore, the natural logarithm is taking for the distribution of BS to normalize for regression models. The average of CA 0.0832 (median 0.0700), LI mean 0.4400 (median 0.4059), AG average 2.8819 (median 2.9444) and AQ mean 0.2150 (median 0.0230) are respectively.

Finally, the summary of the descriptive statistics of the bank's macroeconomic variable showed in Table 5. The average of GDP 3.7910 (median, 3.9450), INF 7.9480 (median, 7.4400) and EX average 97.4712 (median, 101.2597) are respectively.

Table 5: Summary of descriptive statistics.

Variables	ROA	BS	CA	LI	AG	AQ	GDP	INF	EX
Mean	0.0113	19.6460	0.0832	0.4400	2.8819	0.2150	3.7910	7.9480	97.4712
Median	0.0097	19.7783	0.0700	0.4059	2.9444	0.0230	3.9450	7.4400	101.2597
Maximum	0.1206	21.8305	0.5023	5.5594	4.3438	2.7566	5.7900	13.8800	112.2377
Minimum	-0.0553	16.9824	-0.0310	0.1215	0.0000	-0.0537	0.3600	2.5300	81.8135
Std. Dev.	0.0211	1.0727	0.0584	0.3789	0.8894	0.4598	1.4356	3.9728	9.6032
Skewness	1.9429	-0.2994	2.9114	12.4153	-0.2315	3.3463	-1.0134	0.2387	-0.3079
Kurtosis	12.1263	2.5280	17.4660	168.3747	2.7130	14.7670	3.8830	1.6257	1.8099
Jarque-Bera	819.9086	4.8450	2026.4220	233044.6000	2.4728	1527.1040	40.7282	17.6387	14.9624
Probability	0.0000	0.0887	0.0000	0.0000	0.2904	0.0000	0.0000	0.0001	0.0006
Sum	2.2600	3929.1970	16.6485	87.9945	576.3707	43.0019	758.2000	1589.6000	19494.2400
Sum Sq. Dev.	0.0883	228.9763	0.6776	28.5658	157.4028	42.0641	410.1098	3140.7830	18351.9200
Observations	200	200	200	200	200	200	200	200	200

4.2. Analysis of Correlation

Correlation analysis shows in table 6. According to Kennedy (2008), if the coefficient of correlation is above 0.70, so the problem of multicollinearity exists. However, the positive association among bank's profitability (ROA) and bank size (BS), capital adequacy (CA), liquidity (LI), age of bank

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(AG), asset quality (AQ), GDP growth & exchange rate (EX). But the inflation rate is adversely correlated with ROA. So if the bank size increases, the bank's profitability begins to rise. The funding cost is low, when banks have well-capitalized and as well as capitalization rises, the profitability of banks rises receptively. Therefore, as banks become bigger and more established, the bank's profitability begins to rise. That means the confirmation of the learning effect. The inflation (INF) has a negative association with profitability of banks and return on assets. It's mean inflation negatively impacts the bank's profitability.

Table 6: Correlation Matrix.

Variables	ROA	BZ	CA	LI	AG	AQ	GDP	INF	EX
ROA	1								
BANK SIZE	0.1913	1							
CAPITAL ADQUACY	0.0611	-0.4275	1						
LIQUIDITY	0.2904	-0.1251	0.4289	1					
AGE	0.3206	0.7527	-0.2015	-0.0228	1				
ASSET QUALITY	0.0909	0.0486	-0.1481	0.0249	0.0762	1			
GDP GROWTH RATE	0.2089	0.3663	-0.1914	-0.0342	0.2208	-0.2114	1		
INFLATION RATE	-0.1836	-0.3705	0.2084	0.0206	-0.2237	0.1248	-0.7695	1	
EXCHANGE RATE	0.1629	0.3881	-0.2035	-0.0167	0.2321	-0.1704	0.8631	-0.9140	1

4.3. Regression Analysis Results

In Table 9, we presented the estimation Equation results in first column. The results of ROA in the first column as profitability indicator. The random effect and fixed effect methods among choosing to apply the Husman specification test. The presented in table 9, the accepted the expected sings among individual and regressors effects. Therefore, the fixed effect estimator is desired for Eq. (2) and the random effect is estimated.

As presented the first in Table 6, the bank size estimated coefficient is negatively significant with ROA at a 1% significance level. As accepted the expected sing among bank size and profitability indicator of banks. The size and profitability indicator is associated with each other.

We concluded that the relationship is statistically non- significant among capital adequacy with the ROA bank profitability indicator. So that concerning this result the expected sing is rejected that capital adequacy is a non-significant profitability indicator. The observed result of this study has care resource dependency and agency theories.

Liquidity (LI) has positive and significant impact on ROA at 1% level of significance, the profitability indicator of Pakistani banks. In the context of our investigation, the possibility that the profitability of Pakistani listed banks has affected by this prospect. The age (AG) of the bank has been positive and significant affected by return on an asset at 1% level of significance. While the asset quality (AQ) is identify to be positively association with ROA at 5% significance level. This represents that banks asset is well managed and liability is positive effects on banks return. So there

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is positive and significant association among GDP and bank's profitability at 1% level of significance. The association among inflation and profitability of banks is negatively, but significantly at a 1% level to be found in the study. Therefore, the relationship of the exchange rate with bank's profitability is negatively, but significantly at 1% level with ROA found in our study.

5. Empirical Results and Discussion of Chinese's Listed Bank

5.1. Statistical Description

Table 7 describes the statistical description of the Chinese's listed banks. Average and standard deviation for return on asset is within the estimated series from 2009 to 2018. The average ROA is 0.1653 (median, 0.1592). Additionally, there is an extensive range among minimum and maximum of the return on asset. ROA series from a minimum of 0.78 % to a maximum of 158.90 % with a median of 16.53 % and an average of 15.92 % identified that capital adequacy is below the mean other all observations fell above the mean. The positive average of ROA indicates that the Chinese listed banks are profitable. This finding confirms by [40] who uncover that return on asset positive effect in his study the economic performance determinants of Kenyan banks.

Secondly, table 7 is describing the descriptive statistics of independent factors that are mean and median values are different from one another identity. Table 1 shows the bank-specific variable that's descriptive information presented in table 7. The BS means of Chinese's listed bank's sample is 16.0780 (median, 15.6011) in thousand Chinese RMB. Therefore, the natural logarithm is taking for the distribution of BS to normalize for regression models. The average of CA 0.0772 (median 0.0646), LI mean 0.4961 (median 0.5008), AG average 41.8886 (median 26.5000) and AQ mean 0.2942 (median 0.2933) are respectively.

Finally, the summary of the descriptive statistics of banks' macroeconomic variables is showed in Table 7. The average of GDP 7.9530 (median, 7.5350), INF 2.2260 (median, 2.0350) and EX average 6.4982 (median, 6.5479) are respectively.

Table 7: Summary of descriptive statistics.

Variables	ROA	BZ	CA	LI	AG	AQ	GDP	INF	EX
Mean	0.1653	16.0780	0.0772	0.4961	41.8846	0.2942	7.9530	2.2260	6.4982
Median	0.1592	15.6011	0.0646	0.5008	26.5000	0.2933	7.5350	2.0350	6.5479
Maximum	1.5890	20.6783	0.9457	0.6083	111.0000	0.6342	10.6400	5.5500	6.8325
Minimum	0.0078	13.8550	0.0358	0.3322	14.0000	0.1047	6.6000	-0.7300	6.1450
Std. Dev.	0.1331	1.7135	0.0976	0.0533	30.3549	0.1152	1.3523	1.4957	0.2482
Skewness	9.4643	1.4948	7.8853	-0.6580	1.2388	0.6559	0.7823	0.3356	-0.1502
Kurtosis	102.3034	4.4963	65.3134	3.5882	3.0476	3.5597	2.1844	4.0558	1.4723
Jarque-Bera	55355.4500	60.5397	22379.9000	11.2553	33.2622	11.0173	16.8648	8.4789	13.1306
Probability	0.0000	0.0000	0.0000	0.0036	0.0000	0.0041	0.0002	0.0144	0.0014
Sum	21.4849	2090.1410	10.0358	64.4965	5445.0000	38.2524	1033.8900	289.3800	844.7671
Sum Sq. Dev.	2.2855	378.7475	1.2297	0.3666	118863.3000	1.7131	235.8955	288.5849	7.9455
Observations	130	130	130	130	130	130	130	130	130

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5.2. Correlation Analysis

Correlation analysis shows in table 8. According to Kennedy (2008), if the coefficient of correlation is above 0.70, so the problems of multicollinearity exist. However, the positive association among bank's profitability (ROA) and bank size (BS), liquidity (LI), asset quality (AQ) GDP growth & exchange rate (EX). Therefore, the negative association among capital adequacy (CA), age (AG) and inflation rate (INF). So, if bank size increases, the bank's profit begins to rise. The funding cost is low, when banks have well-capitalized and as well as capitalization rises, the profitability of banks rises receptively. Therefore, as banks become established, the profitability begins to rise. That means the confirmation of the learning effect.

Capital adequacy (CA), age (AG) and inflation (INF) have a negatively correlated with bank's profitability and return on asset. It's mean these variables negatively impact on bank's profitability.

Table 8: Correlation Matrix.

Variables	ROA	BZ	CA	LI	AG	AQ	GDP	INF	EX
ROA	1								
BANK SIZE	-0.1788	1							
CAPITAL ADQUACY	-0.1907	-0.0100	1						
LIQUIDITY	0.0153	-0.1506	0.0123	1					
AGE	-0.1425	0.1183	-0.0381	0.2654	1				
ASSET QUALITY	0.0771	0.0888	-0.1268	-0.3067	-0.1357	1			
GDP GROWTH RATE	0.2102	-0.2398	0.1166	0.2039	-0.0856	-0.0154	1		
INFLATION RATE	-0.0757	-0.0483	-0.1066	-0.0625	-0.0088	0.0557	0.2865	1	
EXCHANGE RATE	0.0258	-0.0224	0.1166	0.2378	-0.0066	-0.0771	0.3001	-0.2797	1

5.3. Regression Analysis Results

In Table 9, we presented the estimation Equation results. The results of ROA in the second column as a profitability indicator. The random effect and fixed effect methods among choosing to apply the Husman specification test. The presented in table 9, the accepted the expected sings among individual and regressors effects. Therefore, the fixed effect estimator is the desired equation and random effect is estimated.

As presented in Table 9 in column second, the bank size estimated coefficient is negative and significant with ROA significant at the level of 1%. As accepted the expected symbol between size and profitability pointer of banks. The bank size and the bank's profitability indicator are associated with each other.

We concluded that the relationship is negatively statistically significant among capital adequacy with the ROA bank profitability indicator. So that concerning this result the expected sing is accepted that capital adequacy is a significantly correlated with profitability indicator. The observed result of this study has not to care about resource dependency and agency theories.

Liquidity (LI) has negatively and non-significantly impact on ROA Chinese's banks. In this context of our investigation, the possibility is that the profitability of Chinese listed banks has not affected by this prospect. The age (AG) of bank has been negative and non-significant affected by ROA. While the asset quality (AQ) is find to be positively correlated with ROA at 5% significance level. This represents that banks asset is well managed and liability is positive effects on banks return. So, there is a constructive and substantial association among the GDP and profitability of banks at a 1% level of significance. The association between inflation and profit is positive and significant at the level of 10% found in the study. Therefore, the relationship of the exchange rate

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with the profitability of banks is negatively, but significant at 1% level with ROA found in our study.

Table 9: Regression analysis.

Independent variables	Pakistani listed banks ROA	Chinese's listed banks ROA
CONSTANT	0.1301 (2.2054) [0.0286]	0.6506 (10.2476) [0.0000]
BANK SIZE	-0.0050*** (-1.5787) [0.1161]	-0.0119* (-5.4508) [0.0000]
CAPITAL ADQUACY	0.0039 (0.1575) [0.875]	-0.2598* (-8.7237) [0.0000]
LIQUIDITY	0.0134* 4.5880 [0.0000]	-0.089 (-1.6573) [0.1004]
AGE	0.0107* (3.0723) [0.0024]	-0.0002 (-1.2787) 0.2038
ASSET QUALITY	0.0042** (2.0818) [0.0387]	0.0647** (2.1295) [0.0355]
GDP GROWTH RATE	0.0047* (4.4640) [0.0000]	0.0101* (4.5998) [0.0000]
INFLATION RATE	-0.0012* (-2.6615) [0.0084]	0.004*** (1.7502) [0.0829]
EXCHANGE RATE	-0.0007* (-2.7977) [0.0057]	-0.0527* (-6.5113) [0.0000]
Sample size	200	130
Number of banks	20	13
F-Statistics	15.0117* [0.0000]	32.5669* [0.0000]
Within R-squared	0.3860	0.7069
Hausman	6.0747 [0.2990]	10.9784 [0.0268]

Parentheses contain t-statistic and square bracket on P-value

* 1% level of significance, ** 5% level of significance and *** 10% significance level

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6. Conclusions /Interpretations

Present research work identifies the bank size and its impact on profitability of Pakistani and Chinese's listed banking companies. The bank size affects the profit and productivity of the bank. This phenomenon examined by implying a structure that incorporated the bank-specified variables and macro-economic factors. We used annual longitudinal data in this study of Pakistani and Chinese banks covering the period 2009 to 2018.

Empirical finding uncovers that bank size enhances the profitability of Pakistani as well as Chinese listed banks. Bank size has a negatively, but significantly impact the profitability of banks. GDP has a positively and substantial influence the profitability of Pakistani and Chinese listed banks. The inflation affects the productivity of banks negatively to Pakistani listed banks, on the other hand, the inflation impact on bank's profitability is positively and significantly of Chinese listed banks. The implication is that listed banks in Pakistan and China projected inflation and the rates of essential services regulate consequently. The exchange rate has negatively, but statistically significantly affected the bank's profit and efficiency of Pakistani and Chinese listed banks.

The general context of results in the present study has identified that bank size, liquidity, bank age and assets qualities affect the profitability of Pakistani listed banks. Therefore, bank size, capital adequacy and asset qualities impact on profitability of Chinese listed banks. However, we have found that GDP positive, but inflated prices and exchange rates negatively and statistically significant with Pakistani listed bank's profit. While the GDP and inflation positive, but exchange rate negatively and substantially impact on the profitability of the Chinese's listed bank.

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Appendix