
The impact of Bank Specific and Macroeconomic Indicators on the Profitability of Commercial banks

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This study has been carried out with the aim to investigate the impact of the bank specific variables: Asset size , Credit Risk , Total deposits to total assets ratio, and macroeconomic indicator : interest rate(Discount rate) on the profitability measures, ROE and ROA of commercial banks in Pakistan during the period of 2006-2010.. There are two measures of profitability Return on equity (ROE) & Return on assets (ROA). All 32 commercial banks were selected and by using regression the results show that there is a significant impact of bank specific variables(asset size, total deposits to total assets, credit risk)and macroeconomic indicator (interest rate) on ROE and credit risk and interest rate have also a significant impact on ROA.

Keywords: ROE, ROA, Credit Risk, Operating Efficiency, Bank Deposits & loans

JEL Classifications: G-21

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1. Introduction

In Pakistan the banking sector is comprised of commercial banks, Islamic banks, foreign banks, microfinance banks, DFIs and specialized banks. State Bank of Pakistan is the only regulatory & supervisory jurisdiction to monitor all the banks being operated in Pakistan. There are five banks in the Public sector, seventeen private sector banks, six foreign banks, two specialized banks, eight DFIs, five Islamic banks and seven microfinance banks in Pakistan.

A progressive banking sector plays a vital role the economic growth of the country and Profitability is essential for the well functioning banking sector, it supports to absorb losses resulting from the banking operations.

Therefore, it is important to understand those factors which have some affect on banks' profitability. During the last few years, financial markets and institutions in Pakistan have witnessed the significant change in terms of consolidation as well as diversification. Since 2000, more than 40 transactions of Mergers and acquisitions have been executed within banks and between banks and non-bank Finance companies and was intended to enhance competition in the banking sector, mobilize savings and lead to a more efficient allocation of resources. Moreover the Global Financial Crisis also affects the performance of banks in Pakistan. It is reasonable to assume that all of the above changes pose great challenges to Pakistani Banks as the environment in which they operate has changed rapidly. This research paper was initiated by a series of questions: Why are some commercial banks more successful than others? To what extent internal factors impact and to what extent, do external factors impact the financial performance of the banks? Answers to these questions would be helpful to identify the determinants of successful commercial banks in order to formulate policies for improved profitability of these institutions.

The main objective is to find the impact of bank specific indicators such as: Asset size, Credit Risk, Total deposits to total assets ratio, and macroeconomic indicator such as: interest rate (Discount rate) on the profitability measures, ROE and ROA of commercial banks in Pakistan over the period 2006-2010. The study proposes the under mentioned hypotheses:

H1: There is a significant impact of Asset size, Credit Risk, Total deposits to total assets and interest rate on ROE.

H2: There is a significant impact of Credit Risk and interest rate on ROA.

The above hypotheses are based on the literature, Bennaceur and Goaid (2008) examined the impact of specific variables as well as macroeconomic indicators on the profitability and the financial structure's effect on banks' profitability in Tunisia from 1980 to 2000 period. Athanasoglou, Brissimis and Delis (2008) investigated the influence of the determinants related to banks, industry and macroeconomic on the profitability of the banks in Greece during 1985-2001. Singh and Chaudary (2009) studied the impact of assets, advances deposits and macroeconomic indicators on the profitability of banks in India. Hannan and Prager (2009) investigated the correlation between small banks' profitability related to single market and the banks of large organization, which were operated in urban and rural markets in USA during the period of 1996 to 2003. Sufian and Habibullah (2009) studied the influence of bank's internal factors & macroeconomic indicators on the profitability of commercial banks in China during 2000-2005. Liu and Wilson (2010) studied the determinants of profitability of banks with different ownership structures in Japan during 2000 to 2007. Sufian (2010) studied banks' internal factors and macroeconomic indicators' influence on the banks' profitability in Thailand during the period 1999 to 2005. Alper and Anbar (2011) studied the influence of internal factors of bank and macroeconomic indicators on commercial banks' profitability in Turkey during 2002 - 2010.

2. Literature Review

A number of studies were conducted in many countries around the world to examine the impact of bank specific variables and macroeconomic indicators on profitability. Most of the studies consider internal factors (i.e., bank's specific characteristics) and external factors (i.e., financial industry and economic environment) and examine either a particular country or a number of countries. Alper and Anbar (2011) studied the impact of specific variables as well as macroeconomic indicators on the profitability of 10 listed commercial banks, in Istanbul stock exchange, in Turkey from 2002 to 2010 and results showed a positive impact of asset size on ROE and non-interest income to total assets on ROA. Whereas size of credit and loan portfolio's influence on the profitability was negative and interest rate (real) had positive influence on the banks' profitability in Turkey. Liu and Wilson (2010) studied the determinants of profitability of banks with different ownership structures in Japan during 2000 to 2007 and found that there was a positive correlation between capital adequacy ratio and profitability, negative relationship between capital adequacy and Net interest margin (NIM) in the banks of Shinkin and city. It was analyzed that there was a negative impact of Market share on the regional banks, whereas there was a positive influence on the banks of Shinkin. Banks of credit cooperative in Japan had also a positive influence of market share. GDP growth (real) increased competition among banks and might result in decrease in profits. The development of Stock market had negative influence on the profitability of banks other than banks of city and trust in Japan. Shinkin banks had the ability to maintain profit persistence as compared to the other credit cooperatives which had not much ability to maintain the profits.

Bennaceur and Goaid (2008) examined the impact of bank specific variables and macroeconomic indicators and financial structure's effect on banking sector's profitability in Tunisia from 1980 to 2000 period.

It was concluded Capital adequacy ratio had positive effect on profitability and there was a negative impact of size on profitability. There was no impact of macroeconomic indicators on bank's profitability in Tunisia. The development in the stock market had positive impact on profitability, since Tunisian banks had extended their earnings through the revenues, earned from the intermediation and the management of portfolio of stock market .It was found that private banks performed better as compared to state owned banks. There was a negative impact of partial interest rate liberalization on interest margin and positive impact of complete interest rate liberalization of banks in Tunisia.

Aburime (2009) investigated the influence of corruption on the Nigerian banks' profitability during 1996 to 2006, and found that corruption had positive impact on the banks' profitability. Annan and Prager (2009) investigated the correlation between small banks' profitability related to single market and the banks of large organization, which were operated in urban and rural markets in USA during the period of 1996 to 2003. The bank of single market was defined as bank having total assets of at least one billion and which was not an auxiliary of a holding company of multi-bank and at least generates minimum 90% of deposits by the bank of single local market and the bank of outside the less than thirty percent of deposits was derived. The large or big banks are those having more than or equal to one billion total banking assets. Local markets were urban markets whereas others were rural markets(out of market).it was concluded that small banks' profitability ,related to the single market, had positive relationship with both small & large banks which were out of the market on the other hand there was no significant relationship in the rural market. Singh and Chaudary (2009) investigated the influence of bank characteristics and macroeconomic indicators on the profitability of Indian public, private and foreign banks during 2001 to 2007 and after regression analysis it was

concluded that investments, per capita income and index of industrial production had positive impact, wholesale price index, exports as well as foreign exchange reserves had also positive impact on the operating profit of public sector, private sector and foreign banks whereas the advances, deposits as well as assets had no impact on public sector's banks' profitability and there was a positive impact on private sector and foreign banks' profitability.

Sufian and Habibullah (2009) studied the influence of bank's internal factors and macroeconomic indicators on the profitability of banks in China including all joint stock (JSCBs) commercial banks, state owned (SOCBs) and city commercial banks during 2000 to 2005. The findings revealed that liquidity had the positive influence and there was also a positive influence of capitalization and credit risk on the profitability of State owned banks. On commercial banks of joint stock the cost influence on the profitability was negative. But in the case of commercial banks of city, the influence of size was negative and the impact of costs was also negative. Diversification impact was positive. The economic growth's influence was positive and there was a negative influence of money supply growth on profitability of the state owned and city commercial banks in China. Athanasoglou et al. (2008) investigated the influence of bank's internal factors, industry related factors and indicators related to macro economy on the profitability of banks in Greece during 1985-2001. By using GMM technique, the estimated results showed that capital, credit risk, operating, expense management, inflation, productivity growth, and business cycle (cyclical output) had positive as well significant influence on the banks' profitability where as there was a negative influence of size on the profitability.

Dietrich and Wanzenried (2010) studied the impact of profitability determinants (banks specific, industry specific and macroeconomic) before and during the crisis in Switzerland from 1999 to 2009, for 372 commercial banks. From 1999-2006 was considered the pre-crisis

period and from 2007-2009 was considered crisis years, Averages of ROE,ROA and Net interest margin had been used as profitability measures whereas average values were used to capture the changes during the year. By using GMM estimator technique it was concluded that competent banks showed high profitability as compared to less competent banks, the growth in loan volume, which was above the average, affects positively on the profitability. There was a negative impact of higher funding costs and diversification had positive impact on profitability. Sufian (2010) studied the influence of bank's internal factors and macroeconomic determinants on the Korean banks' profitability during 1994 to 2008. The period was divided into 4 sub-periods: the first period was tranquil period (1994-1996) which was before the financial crisis in Asia. Second period was from 1997 to 1998 and called Asian financial crisis then the tranquil period which was in between Asian Financial crisis and financial crisis (1999-2008) After the regression analysis it was concluded that both Asian financial and global financial crisis had negative impact on profitability, while during tranquil periods the banks were more profitable but credit risk had negative influence on profitability. Capitalization showed a positive impact during the both financial crisis (Asian & Global) as well as tranquil periods. The business cycle effect was mixed; inflation showed pro-cyclical effect, whereas GDP showed counter-cyclical impact on banks' profitability. There was a positive and significant influence of National banking system's Industry concentration on the Korean banks profitability.

Gilbert and Wheelock (2007) measured the profitability of different banks and concluded that usefulness of the measures of profitability can be influenced by the laws set by the tax law authorities, since the banks' earnings, which were operated under sub-chapters, taxes were exempted on their income, on the contrary, on the stockholders of those "S banks" taxes were levied on their proportionate investment share of the bank's income. Corporations which were not elected as

‘S’ status operated under the federal tax code’s sub-chapter ‘C’. Generally the incomes after deduction of taxes of ‘S’ banks were higher as compared to commercial banks(C banks). The growth in the sub-chapter ‘S’ had influenced the usefulness of profitability measures (ROA & ROE) and stressed on pretax earnings measures to gauge the profitability of banking sector but there was not any findings of the study to show that any specific profitability measure was better for the profitability comparison among banks. It also showed the caution that which profit measures should be used by analysts. Sufian (2011) studied the influence of bank’s internal factors and macroeconomic indicators on the Korean banks’ profitability during 1992 to 2003. On the basis of regression it was concluded that liquidity had negative impact on profitability. Banks with lower liquidity level showed higher profitability. Diversification regarding banks’ income sources had positive impact on profitability. Credit risk had negative impact. Business cycle particularly inflation showed pro-cyclical impact on bank profitability. Size had positive impact on the profitability where as there was a negative influence of financial crisis in the Asia on the Korean banks, Korean banks showed more profitability during the period of pre-crisis than the post crisis period. Gunji and Yuan (2010) investigated the impact of monetary policy on bank lending for Chinese banks during 1985 to 2007. After analysis by GMM estimator it was concluded there was a weak influence of monetary policy for large banks and banks having low liquidity. It was also concluded that for banks with high profitability there was a small impact of monetary policy, since the strategy of tightening monetary policy causes fall in the deposits but banks with high profitability tends to finance this shortage easily as compared to banks with less profitability, which had to bear high cost of capital. Olson and Zoubi (2011) compared accounting profitability measures with the economic determinants in the ten countries of Middle East and MENA during the period of 2000 to 2008. Accounting profitability was ROA and

ROE and economic determinants were cost and profit efficiencies (ratio of net income and provisions for loan losses). It was concluded that bank size had positive impact on the bank's Accounting measures of profitability. The banks of MENA showed high profitability and did not show much contradiction between the cost and profit efficiency although they were smaller in size. If these banks were larger, would be more efficient in terms of cost & profit. It was also concluded that there was a negative impact of Cost efficiency on the profitability. MENA banks were less efficient in terms of cost efficiency than the European banks but MENA banks were similar to the banks in the developing countries. Sufian (2010) studied the impact of bank specific factors and Macroeconomic indicators on the Accounting measures of profitability (ROA and ROE) for the banks in Thailand during 1999 to 2005, which was the period of post financial crisis in Asia. After regression analysis it was concluded that size and capitalization had positive impact on profitability, whereas non-interest income, credit risk and overhead costs had negative relationship with profitability of banks. Credit risk had negative impact on ROA but positive impact on ROE. There was a positive impact of higher economic growth and inflation on the banks in Thailand but per capita GDP had negative impact on the profitability.

After reviewing the literature, it was revealed that the bank specific and macroeconomic indicators have significant impact on the profitability of banks. In past, different research studies were conducted to find out the determinants of profitability for banking sector, some researchers considered only the bank specific indicators, whereas others included the bank specific, industry specific and macroeconomic factors as well in most of the studies; profitability is defined by ROA, ROE, Net interest margin and operating profit. In Pakistan some studies were conducted to study the impact of internal factors only and in some studies only listed commercial banks were studied but this research will be conducted to fulfill the gap in the

literature by studying the impact on the all commercial banks using two profitability parameters ROA & ROE.

3. Data Source and Methodology

Currently, there are 32 commercial banks in Pakistan .All the commercial banks' data is collected over the period of 2006-2010, consisting of 141 observations. The data of Bank specific variables is derived from the publications of State bank of Pakistan, regarding macroeconomic variables the data has also been obtained from the publications of State bank of Pakistan. For the empirical analysis ten variables have been included, out of them; two variables (ROE & ROA) are dependent and four variables are independent and four are control variables. The independent variables and control variables include bank-specific and macroeconomic determinants. Previous studies support that profitability is measured by Return on Equity(ROE) and Return on Assets(ROA).(Fadzlan & Habibullah,2009; Panayiotis , Sophocles & Matthaios, 2008; Deger & Adem ,2011; Timothy & Robin,2009;Andreas & Gabrielle ,2011). The variables are defined as follows:

Return on equity (ROE): ROE is calculated as net profit divided by stockholders' equity.

Return on assets (ROA): ROA shows how efficiently assets are managed by the banks to generate profits. ROA is calculated as net profit divided by total assets.

Asset size (LNTA): Total assets of the banks are used to represent the bank size by taking natural logarithm of total asset.

Credit Risk (CR): CR is calculated as total loss provision divided by total loans. Theory suggests that increase in credit risk is associated with the decrease in profitability.

Total deposits to total assets (TD/TA): The Deposits are an important source for banks funding. Increase in the deposits transformation into

loans also increases the interest margin and profit. Deger & Adem (2011).

Interest rate (IR): Interest rates effect on the bank's profitability and Discount rate has been used for analysis.

Control Variable: There are some other bank specific and macroeconomic factors which can somewhat impact on the profitability of banks. Hence, we have included the following control variables in the study:

Operating efficiency (OE): It is calculated as total operating expenses divided by net interest income.

Total loan to total assets (TL/TA): It measures the source of income for banks.

GDP growth rate (GDP): It measures the growth in the economic activities after adjustment of inflation.

Consumer price Inflation rate (CPI): It measures the increase in the overall percentage in Consumer Price Index (CPI) for all goods and services.

Model Development

This study used multiple regression analysis technique to test the hypotheses. This shows the influence of independent variables on dependent variable. Log of total assets: \ln -total assets, Reciprocal of total deposits to total assets: rec-TD to TA , Difference of inflation rate: DIFF (inflation rate) and Log of ROA: \ln ROA have been taken to make the variables' data linear because if data is analyzed without those transformations then observations are shown dispersed on the graph. The majority of studies on bank profitability support the regression model to estimate the influence of different factors on the profitability. (Rajesh, 2009; Fadzlan & Habibuhhal, 2009; Panayiotis, Sophocles & Matthaios, 2008; Deger & Adem, 2011; Andreas & Gabrielle, 2011). Therefore the following model has been constructed:

$$\text{Prof}_{it} = \beta_1 \text{LN}TA_{it} + \beta_2 \text{CR}_{it} + \beta_3 \text{OE}_{it} + \beta_4 \text{TD}/TA_{it} + \beta_5 \text{TL}/TA_{it} + \beta_6 \text{GDP}_t + \beta_7 \text{CPI}_t + \beta_8 \text{IR}_t + \varepsilon_{it}$$

Where

i=individual bank

t= year

β_i are co-efficient of regression

Prof: Profitability measured by ROE & ROA

LN TA : Asset size (logarithm of total assets)

CR: Credit Risk (total loss provisions to total loans)

OE: Operating efficiency (total operating expenses to net interest income)

TD/ TA : Total deposits to total assets

TL/ TA : Total loan to total assets

GDP: Annual real GDP growth rate

CPI: Consumer price Inflation rate

IR: Interest rate

4 RESULTS

In the regression analysis by using enter method the following results have been drawn.

Table 4.1

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715 ^a	.511	.481	.10396

a. Predictors: (Constant), interest_rate, ln_Total_Assets, GDP_growth_rate, Credit_Risk, O_E, DIFF_inflation, TL_TA, rec_TD_TA

b. Dependent Variable: ROE

If ROE is taken as dependent variable the above model summary table 4.1 shows that at 0.05 significance level, using all the predictors simultaneously the adjusted R² is 48.1%, meaning that 48.1% of the variance in profitability can be predicted by the independent variables.

Table 4.2**ANOVA^b**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.459	8	.182	16.878	.000 ^a
	Residual	1.394	129	.011		
	Total	2.854	137			

a. Predictors: (Constant), interest_rate, ln_Total_Assets, GDP_growth_rate, Credit Risk, O_E, DIFF_inflation, TL_TA, rec_TD_TA

b. Dependent Variable: ROE

The above Anova table 4.2 shows that the value of F is 16.8 and is significant. This indicates that the combination of the predictors significantly ($P < 0.05$) predict the profitability.

Table 4.3

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.025	.159		-6.458	.000		
	ln_Total_Assets	.054	.007	.702	8.016	.000	.493	2.027
	Credit_Risk	-.347	.084	-.266	-4.158	.000	.922	1.084
	O_E	-.003	.001	-.143	-2.119	.036	.829	1.206
	rec_TD_TA	.087	.016	.533	5.318	.000	.377	2.654
	TL_TA	.198	.095	.193	2.090	.039	.446	2.240
	GDP_growth_rate	.004	.007	.035	.545	.587	.926	1.080
	DIFF_inflation	-.002	.001	-.155	-2.298	.023	.835	1.198
	interest rate	-.013	.004	-.195	-2.942	.004	.862	1.160

a. Dependent variable ROE

The above table 4.3 shows that in the analysis, when all independent and control variables are included, Ln of total assets, Total deposits to total assets ratio, credit risk, Total liabilities to total assets ratio,

operating efficiency, interest rate and inflation rate are significantly related to ROE since their significance values are less than 0.05. The next important part is to check the tolerance and VIF values for the existence of multi-co linearity. In this analysis there is no multi-co linearity exists. So the variables are significant and co linearity does not seem to be an issue here among predictor variables. Beta values show that credit risk, O.E and interest rate and inflation rate are negatively correlated with the ROE and Ln total assets, T.D to T.A GDP growth and T.L to T.A are positively correlated with the ROE. It provides the following empirical model:

$$\text{ROE} = -1.025 + 0.702 \text{LN} \text{TA} - 0.266 \text{CR} - 0.143 \text{OE} + 0.533 \text{recTD/TA} + 0.193 \text{TL/TA} - 0.155 \text{diff_IR} - 0.195 \text{IR}$$

Table 4.4

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.341 ^a	.117	.071	.86059

a. Predictors: (Constant), interest_rate, O_E, GDP_growth_rate, Credit_Risk, DIFF_inflation

b. Dependent Variable: ln_ROA

The above model summary table 4.4 shows that by using the ln ROA, to make the data linear log of ROA has been taken, as dependent variable the adjusted R² is 7.1% which means that 7.1% of the variance can be predicated by independent variables. In this analysis we have excluded the Ln total assets, TD to TA and TL to TA because their effect will eliminate with ROA as dependent variable.

Table 4.5

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.572	5	1.914	2.585	.031 ^a
	Residual	72.580	98	.741		
	Total	82.152	103			

a. Predictors: (Constant), interest_rate, O_E, GDP_growth_rate, Credit_Risk, DIFF_inflation

b. Dependent Variable: ln_ROA

The above Anova table 4.5 shows that the value of F is 2.5 and is significant at 0.05 ($P < 0.05$) significance level which indicates that the combination of the predictors significantly predict the ROA.

Table 4.6

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-3.661	.663		-5.525	.000		
	Credit_Risk	1.671	.909	.187	1.839	.069	.871	1.148
	O_E	.034	.019	.176	1.761	.081	.903	1.107
	GDP_growth_rate	.067	.065	.101	1.033	.304	.936	1.068
	DIFF_inflation	.000	.009	-.003	-.031	.975	.815	1.227
	interest_rate	-.083	.043	-.204	-1.960	.053	.828	1.208

a. Dependent variable: ln_ROA

The above table 4.6 shows that interest rate is significant at 5% significance level and credit risk and operating efficiency are significant at 10% significance level. Beta values show that inflation rate and interest rate have negative relation with ln ROA and credit risk and operating efficiency and GDP growth have positive relationship with ln ROA. VIF and tolerance are acceptable show that there is no multicollinearity. It provides the following empirical model:

$$\text{Ln ROA} = -3.661 + 0.187\text{CR} + 0.176\text{OE} - 0.204\text{IR}$$

The similar results have been found in literature, Rajesh and Sakshi (2009) found the significant impact of Asset size and inflation on the profitability. It has also found in the study that there is a significant

impact of asset size on the ROE and CP inflation has also significant impact on ROE. Fadzlan & Muzaffar (2009) also found the significant impact of Credit risk on the profitability. It has also found that there is a significant impact of credit risk on ROE. Deger and Adem (2011) found significant impact of asset size and real interest rate on the profitability. Interest rate has significant on ROE and ROA have also found. Panayiotis, Sophocles and Matthaïos (2006) found that the inflation rate and the credit risk have significant influence on the profitability of banks.

5. Conclusion

This study examined the impact of bank specific indicators: Asset size (logarithm of total assets), Credit Risk, Total deposits to total assets ratio and macroeconomic indicators: interest rate, on the commercial banks' profitability in Pakistan from 2006 to 2010. The regression results accepted both hypotheses and show that credit risk, interest rate (discount rate), total assets and TD to T.A have significant impact on ROE. Credit risk and interest rate also has a significant influence on the ROA. The study will help the policy makers to identify the determinants of successful commercial banks in order to formulate policies for improved profitability of these institutions.

References

- Alper Deger & Anbar Adem. (2011). Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey. *Business and Economics Research Journal*, 2, 139-152
- Athanasoglou P.Panayiotis, Brissimis N.Sophocles . & Delis D. Matthaïos. (2008). Bank-specific, industry-specific and macroeconomic Determinants of bank profitability. *Journal of International Financial markets, Institutions and Money*, 18, 121-136

- Aburime Uhomoibhi Toni. (2009). Impact of Corruption on Bank Profitability in Nigeria. *EuroEconomica*, 2, 50-57
- Bennaceur Samy & Goaid Mohamed. (2008). The Determinants of Commercial Bank Interest Margin and Profitability: Evidence from Tunisia. *Frontiers in Finance and Economics*, 5, 106 – 130
- Dietrich Andreas & Wanzenried Gabrielle. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions & Money*, 21, 307–327
- Gunji Hiroshi & Yuan Yuan. (2010). Bank profitability and the bank lending channel: Evidence from China. *Journal of Asian Economics*, 21, 129–141
- Gilbert Alton R. & Wheelock C. David. (2007). Measuring Commercial Bank Profitability: Proceed with Caution. *Federal Reserve Bank of St. Louis Review*, 89, 515-532.
- Hannan H. Timothy & Prager A. Robin. (2009). The profitability of small single-market banks in an era of multi-market banking. *Journal of Banking & Finance*, 33, 263–271
- Liu Hong & Wilson S. O. John. (2010). The profitability of banks in Japan. *Applied Financial Economics*, 20, 1851-1866
- Olson Dennis & Zoubi A. Taisier. (2011). Efficiency and bank profitability in MENA countries. *Emerging market review*, 12, 94–110
- Sufian Fadzlan & Habibullah Shah Muzafar. (2009). Bank specific and macroeconomic determinants of bank profitability: Empirical evidence from the china banking sector. *Frontiers of Economics in China*, 14, 274–291
- Sufian Fadzlan. (2010). Financial Depression and the profitability of the banking sector of the Republic of Korea: Panel Evidence on bank specific and macroeconomic determinants. *Asia-Pacific Development Journal*, 17, 65-92

Sufian Fadzlan. (2010). Developments in the profitability of the Thailand banking sector: panel evidence from the post Asian crisis period. *Int. J. Economics and Accounting*, 1, 161-179

Sufian Fadzlan.(2011). Profitability of the Korean Banking sector: Panel evidence on bank specific and macroeconomic determinants. *Journal of Economics and Management*, 7, 43-72

Singh Kumar Rajesh & Chaudary Sakshi. (2009). Profitability Determinants of Banks in India. *International Journal of Global Business*, 2, 163-180