

Determinants of the Profitability of Commercial Banks

--the case of Industrial Bank Co. Ltd

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ABSTRACT. *Banks play significant roles in the world economic system; the profitability is challenge to most banks facing the global financial environment. The aim of this study is to examine a feasible model to reflect the determinants of bank profitability. Annually data this research used is from 2006 to 2017 from Industrial Bank Co. Ltd. The Industrial Bank was established at 1988, which was the one of the most representative joint-stock bank in China. Therefore, the result shows some significant factors influence the profitability of banks.*

Keywords: *Banks Profitability, Panel Data*

1. Introduction

As the progress of financial market development, financial liberalization, and internationalization of banking operations, banks play significant roles in the world economic system. The essence of banking competitiveness is the ability of banks to develop continuously and well. The main goal of bank management is profitability.

Back to our country, the profitability also has the most core and fundamental significance. According to the Global Top 1000 banks by The Banker magazine in 2018, top 4 listed are Chinese State-owned banks. What's more, the Industrial Bank Co. Ltd ranked twenty-sixth in the first rank capital and ranked twenty-eighth in total assets. All these performance made it become one of the most representative

joint-stock banks in China.

The profitability has been found is affected by internal and external factors. Internal factors are influenced by management decisions and goals to be achieved by the management of the bank; such as capital ratio, credit risk, productivity growth and size of the bank performance. External factors also can be called environmental factors which are affected by external forces such as financial market structure, trade interdependence, economic growth, inflation, market interest rates and ownership structure (Mohammad Abdelkarim, 2013). Since all banks in the same country don't not affected much by the external factors, we focus on the internal factors in this analysis.

2. Review of Related Empirical Literature

The study on banks profitability has been covered by many academic researches. In order to find the proper determinants of this problem, this study do the regression of all three model using the selected data.

2.1 MeiRong Ni (2011) used the panel data model to analyze the influencing factors of bank profitability of 14 commercial banks in China for the period between 2004 and 2010. It indicates the determinants CAR, Liquidity and Ota have positive related with banks profitability. Moreover, NPLR had affected bank profit in a negative way. The model also has a determinant of Lta, which means the Bank credit rate. Since the Lta consults the Government benchmark interest rate, which is ascribe to an external factor. Therefore, we omit it to focus on the internal determinants of bank profitability.

The model it used as follows

$$ROA = C + \beta_1 CAR + \beta_2 NPLR + \beta_3 Ota + \beta_4 Liquidity + \beta_5 Lgta + \varepsilon$$

CAR: Tier 1 capital + Tier 2 capital / Risk weighted Assets

NPLR: non-performing loans (NPLs) / total gross loans

Ota: Operating expenses/ Average balance of assets for the whole year

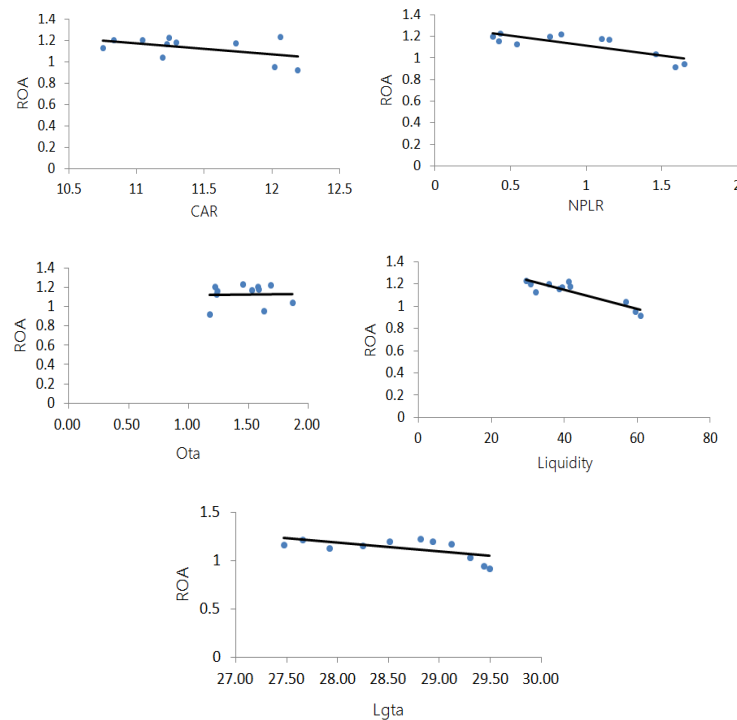
Liquidity: Current Assets/ Current Liability

Lgta: Logarithm of assets

Results and Discussion:

	Coefficients	Standard error	t Stat	P-value
Intercept	1.503211	0.688422	2.183559	0.080749
CAR	0.011086	0.031404	0.353022	0.738467
NPLR	-0.062207	0.084454	-0.736579	0.494464
Ota(%)	0.1872599	0.068975	2.714904	0.042029
Liquidity	-0.006941	0.003384	-2.050960	0.095526
Lgta	-0.014863	0.022553	-0.659019	0.539018

R^2 : 0.9305, Adjusted R^2 : 0.8609, Observation: 11



The results of this study show that the CAR seized positive relation with banks profitability. As we expect, the CAR and Ota have significant positive correlation with the profitability. The higher NPLR, the worse quality with the assets, the greater risk the bank exposed to. Hence, it would reduce the bank's profit level.

2.2 Jianbo Sun (2015) do the demonstration of State-owned commercial bank

using financial data from bank of China (2005-2012). Results suggest CAR (Capital adequacy Ratio), FLS and NPLR do not have sound correlation with the bank profitability. The ratio ZA (as the intangible assets is hard to measure, total asset can reflect the size of bank) have positively related to the profitability. However, higher LAR would reduce the bank profitability.

The following model is Jianbo Sun (2015) constructed for the study,

$$ROA = C + \beta_1 CAR + \beta_2 FLS + \beta_3 ZA + \beta_4 NPLR + \beta_5 LAR + \varepsilon$$

ROA (Return on assets): net income/ average total assets

CAR: Tier 1 capital + Tier 2 capital / Risk weighted Assets

FLS: Non Interest Income/ Revenue

ZA: Total Assets

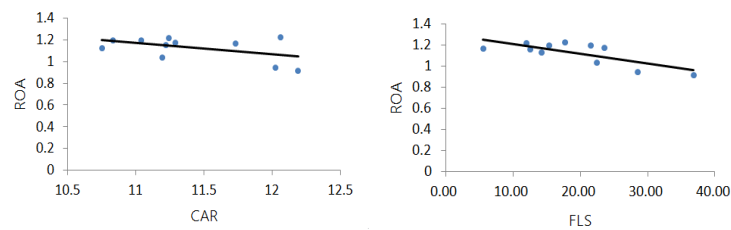
NPLR: Non-performing loans (NPLs) / total gross loans

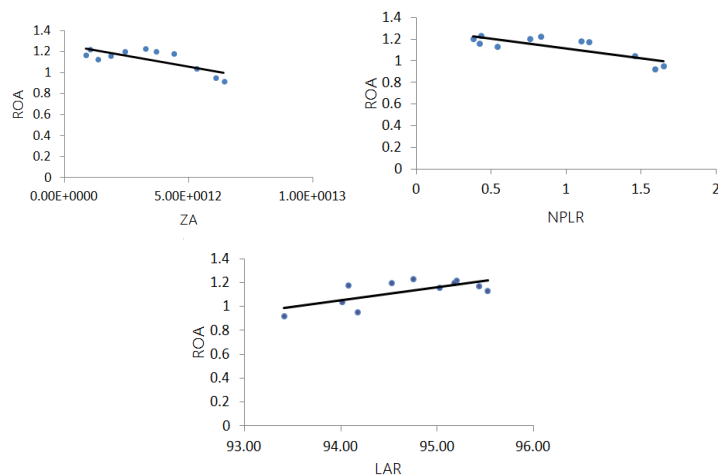
LAR: Total Liability/ Total Asset

Results and Discussion:

	Coefficients	Standard error	t Stat	P-value
Intercept	15.140130	9.711698	1.558958	0.179748
CAR	-0.014100	0.046750	-0.301600	0.775098
FLS	-0.010633	0.007493	-1.419046	0.215104
ZA	0.000000	0.000000	-0.397384	0.707482
NPLR	-0.149749	0.064348	-2.327173	0.067448
LAR	-0.142149	0.100980	-1.407697	0.218247

R^2 : 0.8306, Adjusted R^2 : 0.6612, Observation: 11





The regression as performed shows an R square 0.8306 and adjusted R square of 0.6612. This is a rather strong relationship. It concluded that bank's profitability is inversely influenced by the levels of NPLR, FLS and LAR thereby exposing them to great risk of illiquidity and distress. Results also suggest that the larger with better capitalized banks are more profitable than others.

2.3 According to the analysis from Edward Bace (2016), there exists a negative relationship between NPLs and LADR and bank profitability, and Equity to assets shows a positive relation with profitability.

Edward Bace (2016) examined the profitability with the following regression equation: $ROAA = \alpha + \beta_1 NPLs + \beta_2 Equity + \beta_3 LADR + \epsilon$

Return on assets (ROA): net income/ average total assets

NPL: non-performing loans (NPLs) / total gross loans

Equity: book equity/ assets

LADR: liquid assets/ customer deposits

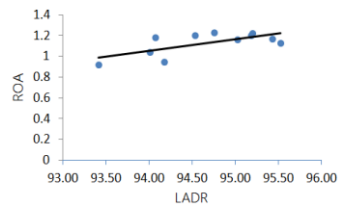
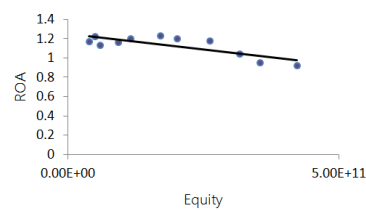
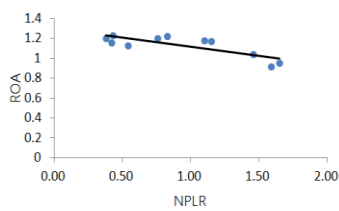
The intercept (Constant)= The slope which represents the degree with which bank performance changes as the independent variable changes by one-unit variable.

ϵ : error component

Results and Discussion:

	Coefficients	Standard error	t Stat	P-value
Intercept	19.2971736	9.6889216	1.9916740	0.0866770
NPLR	-0.1039967	0.0544942	-1.9084001	0.0979879
Equity	0.0000000	0.0000000	-2.3554456	0.0506797
LADR	-0.1883260	0.1013670	-1.8578628	0.1055421

R^2 : 0.8224, Adjusted R^2 : 0.7463, Observation: 11



The regression as performed shows an R square is 0.8224 which means this regression can explain the data well. This result shows the NPL is negatively correlated with the ROA. Equity to assets does not seem to have a significant relation with profitability. In support of this hypothesis, a slightly negative relationship can be observed between the LADR and profitability.

3. Methodology

The aim of this study is to examine a feasible model to reflect the determinants of bank profitability. All the selected factors are based on the previews analysis above, and the results make some sense solving this problem to some extent.

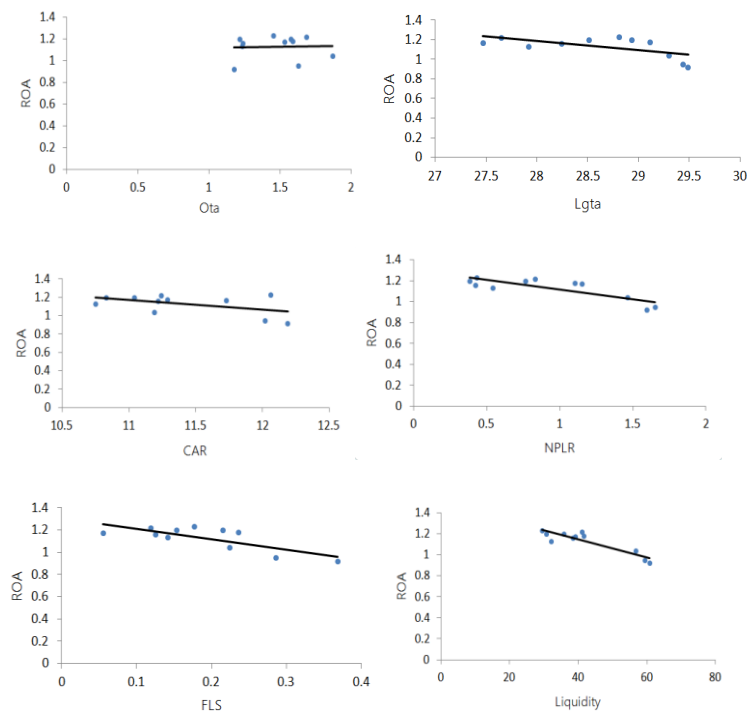
The model as follows,

$$ROA=C+\beta_1Lgta+\beta_2CAR+\beta_3NPLR+\beta_4FLS+\beta_5Liquidity+\beta_6Ota+\varepsilon$$

	Coefficients	Standard	t Stat	P-value
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		error		
Intercept	1.95869	1.51045	1.29676	0.26446
Lgta	-0.03324	0.058274	-0.57046	0.598884
CAR	0.012504	0.034828	0.359018	0.737731
NPLR	-0.07305	0.098082	-0.7448	0.49777
FLS	0.200541	0.575164	0.348668	0.744918
Liquidity	-0.00707	0.003746	-1.88746	0.132138
Ota	0.209005	0.098291	2.12639	0.100616

$R^2: 0.9325$, Adjusted $R^2: 0.8313$, Observation: 11



5. Conclusion

This study uses the ROA as the dependent variable since the ratio indicates performance. ROA measures the profit earned per dollar of assets and reflect how well bank management uses the bank's real investments resources to generate profits (Naceur, 2003). What's more, return on assets (ROA) is a comprehensive measure

of overall bank performance from an accounting perspective (Sinkey, 1992). Thus, ROA seems to be an appropriate factor to show the effectiveness of the utilization of the assets of a commercial bank.

Capital Adequacy Ratio is a measure of the amount of bank's capital expressed as a percentage of its risk weighted exposure. Theoretically, banks with good capital adequacy ratio have a good profitability. A bank with a strong capital adequacy is also able to absorb possible loan losses and thus avoids bank's insolvency and failure. In this case, the CAR would enhance the performance of bank as the hypotheses.

The results of the regression also revealed that there is a positive association among non-interest income and profitability of commercial banks. This result shows the increase of non-interest income will lead a higher profit of bank owing to the strategic transformation of commercial banks in China. Recent years, the proportion of intermediary business income is growing steadily because of the innovation.

From the empirical results, we can see the deviation of loan quality and the rate of non-performing loan, which is an important factor that restricts the profitability. Hence, we should strengthen the management and supervision of the loan and establish a perfect loan credit risk prevention system. In other words, establishing a proper credit risk management strategy benefits the banks by conducting sound credit evaluation before granting loans to customers.

The Ota Ratio, however, has a positive correlation with the ROA, that's opposite to our expectation. As far as I'm concerned that this is because the commercial banks gradually convert from extensive form to intensive form, the growth rate of their returns is higher than the growth rate of capital and labor input. Consequently, the increase of operating cost effectively increases the profitability.

However, in this study, effects of only bank specific factors on profitability of the selected bank are investigated. There are still some independent variables are insignificant, which still need more research. What's more, a more forceful model also need to consider the macroeconomic factors like interest rate in, which is not covered in this study. In addition, in terms of profitability of State-owned banks and joint-stock banks, specific problems are supposed to be analyzed in detail because the differences in assets size, management mode and national policy etc. As a result,

some new results can be generated if studying the comparison of profitability between the two kinds of banks.

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