RESEARCH OF OPERATINOAL RISK MANAGEMENT AND ITS DETERMINANTS: AN ANALYSIS OF HUA XIA BANK IN CHINA

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Abstract

With the development of science and technology and economy, more and more financial intermediaries are appearing in the financial market to ensure more efficient and stable processes in the financial system. As the main part of financial intermediary, the bank plays a vital role in the whole financial market system. In recent years, China's banking industry has been developing rapidly, but there are many potential problems, such as the operational risk management. At the present stage, the operational risk management authority of China's commercial banks is overly centralized, there is no clear loan risk responsibility system, and no effective long-term credit mechanism has been established, and the problem of non-performing loans still exists. This paper takes Hua Xia Bank as the objective of study and its analysis of the data based on its annual report between 2013 to 2017. The result of analysis shows that the ratio of firm-specific factor which can influence operating ratio mostly is leverage. Moreover, for the macroeconomic part, the significant influential factor is GDP. Therefore, this study suggest the bank should manage the leverage ratio effectively and efficiently for preforming well in the operational risk management.

Keywords: *Operating Ratio, Leverage, GDP*

1.0 Introduction

During this part, it will introduce the overview of Hua Xia Bank which is be chose as the object of study. Moreover, this chapter also includes problem statements, research objectives, scope of study and organizations of the study as well.

1.1 Overview of Hua Xia Bank

Hua Xia bank was established in Beijing in October 1992 and implemented shareholding reform in March 1995. Then, in September 2003, the bank became the fifth Chinese bank to go public with an initial public offering.

Hua Xia bank has experienced many development processes since its establishment. By the end of June 2018, the total assets of this bank was 2.57 trillion yuan, and 42 first-level branches and 61 second-level branches have been set up in 106 cities are above the prefecture level in China, which with a total business network of 993 and a staff of more than 40,000. This bank gradually becoming a bank under the institutional system that meets the political call and demand of China. At the same time, the bank has established more than 1,600 domestic and foreign correspondent banks in 375 cities of 115 countries and regions are across five continents, it is gradually building a settlement network covering the major trading areas of the world. Besides, in the UK's banker global ranking of 1,000 Banks in July 2018, Hua Xia Bank ranked 65th in terms of core tier 1 capital which increased 2 places compare with last year. It is also achieved the 120th position among the list of top 500 industries in China.

1.2 Problem Statement

Operational risk management identifies, measures, supervises, controls and reports the operational risk of the whole enterprise. For the financial service industry, especially for financial intermediaries such as banks, risk is always an inevitable thing to carry out business. However, due to the mistakes of banks, the uncertainty of the market and the fluctuation of the capital market, the harmfulness of risks and the consequences caused by adverse risk management are more serious. The growing volume of transactions and the need for automation and speed have driven up the cost of risk.

As one of the biggest commercial bank in China, the operations of Hua Xia Bank are extremely various. Such as issuing short-term medium-term and long-term loans, issuing financial bonds, issuing and underwriting government bonds on behalf of others, providing l/c (letter of credit) services and other businesses approved by the People's Bank Of China which is the central bank of China. During these a variety of operating activities, Hua Xia Bank must face lots of risks, if the managers make the wrong

decisions under the different regulatory and economic environment, it will cost a huge amount of losses.

1.3 Research Objectives

In a word, the purpose of this study is determine what is the determinations of operational risk management. Objectives of this paper particularly are:

1. To investigate the bank-specific factors towards operational risk.
2. To investigate the macroeconomic factors towards operational risk.
3. To investigate the bank-specific factors and macroeconomic factors towards operational risk.

1.4 Research Questions

1. Is there any relationship between bank-specific factors and operational risk ?
2. Is there any relationship between macroeconomic factors and operational riskt?
3. Is there any relationship between operational risk and this group includes both bank-specific factors and macroeconomic factors?

1.5 Scope of Study

The sample of this paper is Hua Xia Bank while the financial ratio were calculating based on the bank's annual report between 2013 to 2017.

1.6 Organization of the Study

This paper contains total five chapters. In chapter one, it concludes the overview of bank, problem statement, research objectives and questions, scope of study and organization of study as well. Chapter two is about literature review which is related to the operational risk management and the influenced factors. Chapter three discusses the methodology and it introduces what kind of tools will be used in this study. Chapter four focuses on the data analysis from SPSS which includes the descriptive statistical analysis, correlation and diagnostic test and so on. The last chapter which is chapter five is a conclusion for summarizing the whole study.

2.0 Literature Review

This chapter includes the review of literature which is related to the paper. This chapter consist of three sections. The first section discusses the operational risk, the second section discusses the influential factor of firm-specific factor while the third section introduces the influential factor of macroeconomic factor.

2.1 Operational Risk

The New Basel Accord thinks that the operational risk has become the radical risk of modern commercial risk. The operation risk frequently occurs recently so that the control for them would become an important domain of risk management. The inner control is the valid method to control operational risk and the reasonable inner control would improve the control efficiency of operational risk control.(Zhang, T.J 2008)

Operational risk has always existed as one of the core risks in the financial industry. However, over the recent past, the globalization and deregulation of financial markets, the growing complexity in the banking industry, large-scale mergers and acquisitions, increasing sophistication of financial products as well as greater use of outsourcing arrangements have raised the susceptibility of banking activities to operational risk. Although there is no agreed upon universal definition of operational risk, it is commonly defined as the risk of loss some adverse outcome, such as financial loss, resulting from acts undertaken (or neglected) in carrying out business activities, such as inadequate or failed internal processes and information systems, from misconduct by people (e.g., breaches in internal controls and fraud) or from external events (e.g., unforeseen catastrophes) (Basel Committee, 2004, 2005, and 2006b; Coleman and Cruz, 1999); (Jobst, A 2007).

2.2 Leverage

The managing of leverage is closely to the bank's attempt to target a particular credit rating. To the extent that the "passive" credit rating should fluctuate with the financial cycle, the fact that a bank's credit rating remains constant through the cycle suggests that banks manage their leverage actively, so as to shed exposures during downturns(Adrain, 2010). Kashyap and Stein (2003) draw implications from such behavior for the pro-cyclical impact of the Basel II bank capital requirement.

2.3 GDP

Gross domestic product (GDP) is an indicator of economic activity. It measures the total value of all final goods and services that are newly produced within the borders of a country over the course of a year. (O'Neill, 2014).

3.0 Methodology

Methodology is defined as the methods and techniques that researchers used for forming, collecting and analyzing data to produce the evidence which can support the study (Ustazkenali, 2013).

3.1 Population/Sampling Technique

The sample of study, researcher select one of the bank of China as the both population and sample. The bank is Hua Xia Bank and the data is collecting from the annual reports of the bank between year 2013 and year 2017 to measure the dependent variable which is operating ratio and independent variables which are both bank-specific factors and macroeconomic factors

3.2 Statistical Technique

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There are two types of data in this study, one of them is calculated financial ratio from bank-specific factors. Here researcher chose ROA, leverage, liquidity, operating ratio, net interest margin and non-performing loans as the variables based on the annual report of Hua Xia Bank from year 2013 to year 2017.

The other type is macroeconomic factor and researcher chose GDP, unemployment and inflation of China from year 2013 to year 2017 as the variables to analyze.

3.3 IBM SPSS

IBM SPSS is a famous official and business application for analyzing the collected data. This study use this software for analyzing the calculated financial ratio and macroeconomic factors. The researcher used three models for different objective questions and all of them are used by stepwise methods.

3.3.1 Bank-specific factors determinants of operational risk in model 1

$$\text{Operational risk} = b_0+b_1+\text{ROA}_{i+}b_2+\text{Leverage}_i+b_3+\text{Liquidity}_i+b_4+\text{Operating Ratio}_i+b_5+\text{Net Interest Margin}_i+b_6+\text{Non Performing Loans}_i + e_{it}$$

3.3.2 Macroeconomic factors determinants of operational risk in model 2

$$\text{Operational risk} = b_0+b_1+\text{GDP}_{i+}b_2+\text{Unemployment Rate}_i+b_3+\text{Inflation}_i+e_{it}$$

3.3.3 Bank-specific factors and macroeconomic factors determinants of operational risk in model 3

$$\text{Operational risk} = b_0+b_1+ROA_{i+}b_2+Leverage_i+b_3+Liquidity_i+b_4+Operating\ Ratio_i+b_5+Net\ Interest\ Margin_i+b_6+Non\ Performing\ Loans_i+b_7+GDP_{i+}b_8+Unemployment\ Rate_i+b_9+Inflation_i+e_{it}$$

4.0 Finding and Analysis

Financial statements can make researchers find and determine the differences of financial ratios and compare it for knowing the trend of corporations and banks during five years period. This paper use two main elements of financial statements which are balance sheet and income statement. Researcher can calculate the data via these two financial statement to measure the return on asset (ROA), leverage, liquidity, net interest margin, operating ratio and also non-performing loans.

4.1 Operational Risk

Operational risk is decided by calculating the operating ratio of Hua Xia Bank for five years (2013-2017). The formula for calculating is operating expenses divide operating net income. The higher operating ratio, the higher operating expenses or lower operating net income, that means lower the bank's ability to generate profit.

Descriptive Statistics

	Mean	Std. Deviation	N
Operating Ratio	.223580	.0246376	5
ROA	.011800	.0010677	5
LEVERAGE	15.8860	1.94916	5
LIQUIDITY	1.2980	.24519	5
Net Interest Margin	.049860	.0146350	5
Non-performing loans	.067820	.0105630	5
GDP	.07120	.004382	5
Unemployment	.04040	.000894	5
Inflation	.01920	.004604	5

Based on the descriptive statistics of Model 3, the mean value for operating ratio is 0.2236 or 22.36%. That refers to 22.36% of operating expenses generate by one yuan (Chinese currency) of operating net income. While the standard deviation of operating ratio is only 0.0246 which shows that the variations are small in operating ratio between 2013 to 2017.

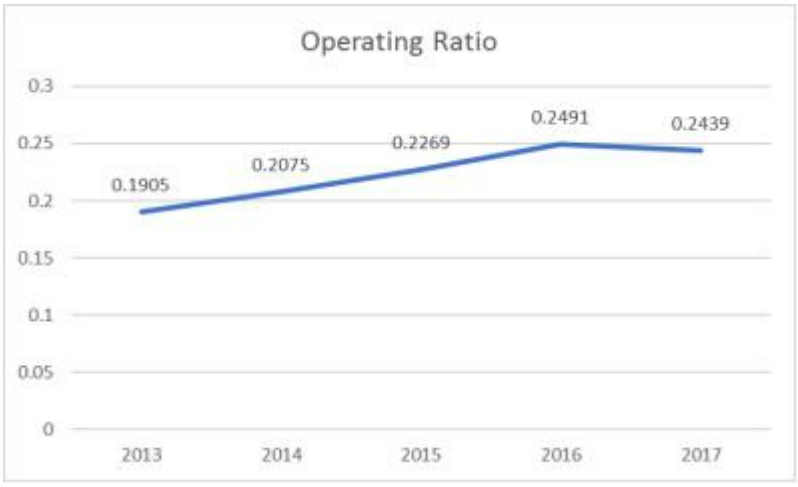

Figure 4.1 Operating ratio of Hua Xia Bank from 2013 to 2017.

Based on the figure 4.1 above, it shows the trend of operating ratio of Hua Xia Bank from 2013 to 2017. It indicates that the operating ratio is gradually increase in 2013 to 2016 from 19.05% to 24.91%. However, after 2016, the trend becomes a lightly decrease from 24.91% to 24.39% between year 2016 and year 2017. That means during this whole year, the operating ratio is decreased so that the operating expenses decreased or the operating net income increased. It refers to the bank chased more financial profit at that year compare to last year. The operating ratio arrived a highest in 2016 which is 24.91% and reached lowest in 2013 and the number is 19.05%. Lower operating ratio refers to bank is more ability to gain more profit and manage the operation efficiently and effectively.

4.2 Leverage

Leverage results from using borrowed capital as a funding source when investing to expand the firm's asset base and generate returns on risk capital. Leverage is an investment strategy of using borrowed money specifically, the use of various financial instruments or borrowed capital, to increase the potential return of an investment. The calculation of that is the amount of debt divide the amount of equity. Leverage can also refer to the amount of debt a firm uses to finance assets. When one refers to a company, property or investment as "highly leveraged," it means that item has more debt than equity.

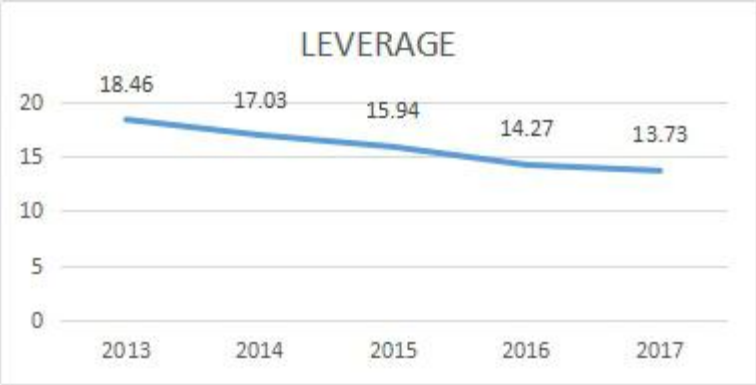

Figure 4.2 Leverage of Hua Xia Bank from 2013 to 2017.

Based on the figure 4.2 above, it indicates the trend of leverage of Hua Xia Bank between year 2013 and year 2017. The trend showed that the leverage ratio is gradually declined between this continued five years from 18.46 to 13.73. That means to Hua Xia Bank, it is an extremely good news because it indicates that the the debt compare to equity is gradually decreased. The amount of equity is increased or the amount of debt is decreased. The leverage reached a highest in 2013 is 18.46 and lowest in 2017 which is 13.73. Lower leverage ratio means the use of funds for investing or operating of Hua Xia Bank is greater.

4.3 Market Risk

Market risk can be defined as systematic risk or undiversified risk. This paper chooses the GDP, unemployment rate and inflation rate as the considered factors for analyzing market risk.

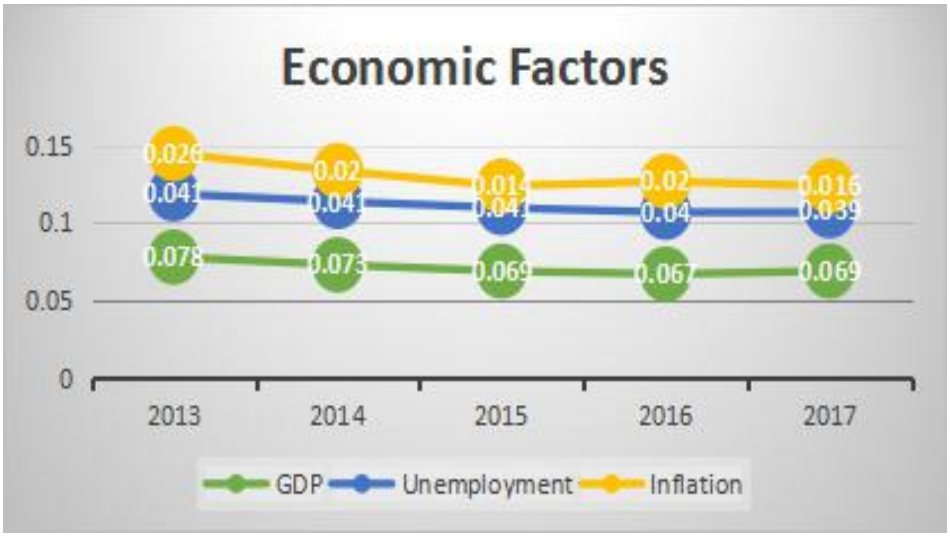

Figure 4.3 Economic factors in China from 2013 to 2017.

Based on the figure 4.3, it is clear that the GDP in China is not extremely unstable but it still has some slight differences. Between year 2013 and year 2016, GDP is gradually slightly declined from 7.80% to 6.70% while after year 2016, it has a light increase from 6.70% to 6.9%. That means from year 2013 to year 2016, economic of China was gradually becoming worse and the reason might be the amount of production was decreased at that time period based on the lack of consumers demand. While after 2016, GDP increased. It might because of the demand of consumer increased.

The unemployment rate was keeping constant at first three years and the number is 4.1%. That refers to the unemployment rate is absolutely stable from year 2013 to year 2015. Moreover, after year 2015 which means between 2016 and 2017, the unemployment rate was declined slightly. The number in 2016 is 4.0% and in 2017 is 3.9%. The reason of unemployment rate declined from 2016 to 2017 is there was an increase of GDP at that two years period. It is obviously that, higher GDP means higher production of country which can let more people be employed, therefore, the unemployment rate can decrease.

In addition, the rest is inflation rate. The inflation rate in China indicated the unstable trend between 2013 and 2017. From year 2013 to year 2015, it was decreased gradually which from 2.60% to 1.40%. After that, it increased to 2.0% on year 2016 while declined to 1.6% on year 2017. Higher inflation will decrease the growth of economic and reduce the purchasing power as well. If the inflation rate is low, the bank or a company is more stable for operating, because it is more easily to predict and analyze the future cost so that it can encourage the investment.

4.4 Correlations

Correlation (Table 4.1)										
		OR	ROA	LEVERAGE	LIQUIDITY	NIM	NPL	GDP	Unemployment	Inflation
Pearson Correlation	OR	1	-0.8	-0.981	0.132	0.298	0.737	-0.957	-0.751	-0.66
	ROA	-0.8	1	0.864	-0.025	0.007	-0.898	0.598	0.969	0.336
	LEVERAGE	-0.981	0.864	1	-0.222	-0.156	-0.84	0.907	0.85	0.661
	LIQUIDITY	0.132	-0.025	-0.222	1	0.033	0.122	-0.146	-0.246	-0.099
	NIM	0.298	0.007	-0.156	0.033	1	-0.365	-0.33	0.105	0.252
	NPL	0.737	-0.898	-0.84	0.122	-0.365	1	-0.596	-0.922	-0.609
	GDP	-0.957	0.598	0.907	-0.146	-0.33	-0.596	1	0.549	0.778
	Unemployment	-0.751	0.969	0.85	-0.246	0.105	-0.922	0.549	1	0.34
	Inflation	-0.66	0.336	0.661	-0.099	0.252	-0.609	0.778	0.34	1
Sig. (1-tailed)	OR	.	0.052	0.002	0.416	0.313	0.078	0.005	0.072	0.113
	ROA	0.052 *	.	0.029	0.484	0.496	0.019	0.143	0.003	0.29
	LEVERAGE	0.002 **	0.029	.	0.36	0.401	0.038	0.017	0.034	0.112
	LIQUIDITY	0.416	0.484	0.36	.	0.479	0.422	0.407	0.345	0.437
	NIM	0.313	0.496	0.401	0.479	.	0.273	0.294	0.433	0.341
	NPL	0.078 *	0.019	0.038	0.422	0.273	.	0.144	0.013	0.138
	GDP	0.005 **	0.143	0.017	0.407	0.294	0.144	.	0.169	0.061
	Unemployment	0.072 *	0.003	0.034	0.345	0.433	0.013	0.169	.	0.288
	Inflation	0.113	0.29	0.112	0.437	0.341	0.138	0.061	0.288	.

Note: * p < 0.10, ** p < 0.05, ***p <0.001. OR is operating ratio=operating expenses/operating net income, ROA= net income/total assets, Leverage=total debt/total equity, Liquidity= current assets /current liabilities, NIM is net interest margin=(investment returns-interest expenses)/average earning assets, NPL is non-performing loans=the amount of non-performing loans/total amount of outstanding loans, GDP, unemployment and inflation is chosen between year 2013 to 2017

Pearson correlation chart is used to analyze the relationship between dependent variable which is operating risk and independent variables which are both bank-specific factors and macroeconomic factors.

Based on the correlation table, it is clear that ROA is negatively significantly correlated to operating ratio with the p-value is equal to 0.052 and the number of Pearson correlation is -0.8. This indicates that when ROA decreased, operating ratio will increase, then cause the operating expenses increase or operating net income to decrease of banks. The reason of this is ROA is equal to net income divide total assets, if ROA decrease, that means the amount of net income decrease or total assets increase, so that the expenses increase or liabilities increase. For banks it is not good because it will cause them chase less profit. So that remind bank it should reduce the operating expenses appropriately for managing more effectively.

Moreover, it also shows that the leverage is negatively significantly correlated OR. The number of Pearson correlation is -0.981 and p-value is equal to 0.002. That means when leverage increase, the operating ratio will decrease, the operating expenses will decrease or operating net income increase. The reason of that is leverage is equal to total debt divide total equity, when leverage increase, total debt will increase or total equity will decrease. If the reason is total debt increase, and the debt can be defined as notes payable so that the expenses is decrease actually. So that operating ratio will decrease. For bank, leverage and operating ratio should not be very high, if leverage is too high, it means bank should reduce the borrowings which is debt.

Besides, non-performing loans is positively significantly correlated to OR. The number of Pearson correlation is 0.737 and p-value is 0.078. It indicates that when NPL increases, the OR will increase as well. That is because non-performing loans cannot be defined as the earning loans, so that it only caused the cost increase and no profits. So that operating ratio will increase. If NPL of bank is high, the bank should not purchase these kind of loans or sell some non-performing loans directly.

Meanwhile, GDP is negatively significantly correlated to OR. The number of Pearson correlation is -0.957 and p-value is 0.005. It shows that when GDP decrease, the operating ratio will increase. The reason is when GDP decrease, the amount of production decrease, the economic goes down and it will influence the operating activities. Because when economic goes down, investors will gain less profit from the operating activities, it cause bank pay more money or gain less, which means the operating expenses of bank will increase or operating net income will decrease. So that operating ratio will increase. If GDP decline, bank can reduce the use of funds to operating activities.

Furthermore, unemployment rate is negatively significantly correlated to OR. The number of Pearson correlation is -0.751 and p-value is 0.072. It means when unemployment rate increase, the operating ratio will decrease. The reason is when unemployment rate increase, the number of employees will decrease, so that it will reduce some expenses such as salary, so that operating ratio will decrease.

In addition, it also have some other factors but all of them are not significant. First of all, liquidity, it is positively but not significant with the operating ratio and the p-value of that is 0.416. The second factor is net interest margin, it is also positively but not significant with OR and the p-value is 0.313. And the last factor is inflation while it is negatively but still not significant with OR. The p-value of it is 0.113.

4.5 Coefficients

Table 4.2 Table of multiple regression coefficient (Model 3: Firm-specific factors and macro-economic factors)

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std.Error	Beta			Tolerance	VIF
1	(Constant)	.421	.023		18.519	.000		
	LEVERAGE	-.012	.001	-.981	-8.725	.003	1.000	1.000

a. Dependent Variable：Operating Ratio

Excluded Variables [a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	ROA	.187[b]	.782	.516	.484	.253	3.953	.253
	LIQUIDITY	-.090[b]	-.716	.548	-.452	.951	1.052	.951
	Net Interest Margin	.149[b]	1.643	.242	.758	.976	1.025	.976
	Non-performing loans	-.292[b]	-1.994	.184	-.816	.295	3.389	.295
	GDP	-.378[b]	-2.020	.181	-.819	.178	5.618	.178
	Unemployment	.300[b]	1.965	.188	.812	.277	3.605	.277
	Inflation	-.021[b]	-.113	.920	-.080	.563	1.778	.563

a. Dependent Variable：Operating Ratio

b. Predictors in the Model：(Constant), LEVERAGE

Table 4.3 Table of multiple regression coefficient (Model 1 : Firm-specific factors)

Coefficient [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Colinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.421	.023		18.519	.000		
	LEVERAGE	-.012	.001	-.981	-8.725	.003	1.000	1.000

a. Dependent Variable：Operating Ratio

Excluded Variables [a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	ROA	.187[b]	.782	.516	.484	.253	3.953	.253
	LIQUIDITY	-.090[b]	-.716	.548	-.452	.951	1.052	.951
	Net Interest Margin	.149[b]	1.643	.242	.758	.976	1.025	.976
	Non-performing loans	-.292[b]	-1.994	.184	-.816	.295	3.389	.295

a. Dependent Variable：Operating Ratio

b. Predictors in the Model：(Constant), LEVERAGE

When using stepwise in Model 1 to analysis the firm-specific factors towards operating ratio, leverage is also negative and mostly significant toward operating ratio compare to other firm-specific factors. The p-value and t-value of that is same with Model 3 which are 0.003 and -8.725. Furthermore, ROA, liquidity, NIM, NPL are not significant with operating ratio so these independent variables are not really important and influence the dependent variable.

Table 4.4 Table of multiple regression coefficient (Model 2 : Macro-economic factors)

Coefficient [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Sig. Error	Beta			Tolerance	VIF
1	(Constant)	.607	.067		8.990	.003		
	GDP	-5.379	.946	-.957	-5.685	.011	1.000	1.000

a. Dependent Variable：Operating Ratio

Excluded Variables [a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Unemployment	-.323[b]	-3.486	.073	-.927	.699	1.431	.699
	Inflation	.213[b]	.730	.541	.459	.394	2.535	.394

a. Dependent Variable：Operating Ratio

b. Predictors in the Model：(Constant), GDP

For the table above, when using the stepwise to analyze the macro-economic factors toward operating ratio, it is obviously that GDP is the negative and most significant with OR. The p-value of it is 0.011 and t-value is equal to -5.685. GDP is gross domestic product and it can be defined as one factor of market risk. So that if bank want to perform well in operational risk management, it should predict the GDP based on a variety of data, and when GDP decrease, it should reduce the use of funds into the investment for reducing the losses.

Based on the table of coefficients, the independent variables that has influence on operating ratio can be determined through the significant level which is the amount of p-value. If p-value is less than 0.001, it means the independent variable has the most influenced power to the dependent variable. If p-value is less than 0.05, it indicates that the independent variable has a moderate influence on the dependent variable. If p-value is less than 0.1, it means the independent variable has the least influence.

This analysis used stepwise as the method, and it shows that leverage is negative and mostly significant toward operating ratio with p-value is less than 0.05 which is 0.003 and t-value is equal to -8.725. It indicates that when leverage increase, the operating ratio will decrease. Leverage is one way for measuring the size of operating risk. If bank can perform well in operating risk management, it will decrease the leverage, and then it will make more profits from operating activities.

4.6 Model Summary

Table 4.5 Model summary result (Model 3 : bank-specific factors and macroeconomic factors)

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.981[a]	.962	.949	.0055392	1.944

a. Predictors：(Constant), LEVERAGE

b. Dependent Variable：Operating Ratio

Table 4.6 ANOVA result (Model 3: bank-specific factors and macroeconomic factors)

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	76.133	.003[b]
	Residual	.000	3	.000		
	Total	.002	4			

a. Dependent Variable：Operating Ratio

b. Predictors：(Constant), LEVERAGE

Based on the Model Summary table above, the adjusted R square is equal to 94.9%, around 95%. The variables used in this model is leverage which can explains 94.9% of the variances in the operating ratio of Hua Xia Bank. While still has 5.1% of the adjusted R Square remain unknown. That means the remaining of 5.1% of the adjusted R Square indicates that the variance in the operating ratio of Hua Xia Bank is unable to be explained by the both bank-specific factors and macroeconomic factors in Model 3. Moreover, the ANOVA table above shows the significant value is 0.003

which is below 0.05. That means the variable is truly significant to represent the model.

Table 4.7 Model summary result (Model 2 : macroeconomic factors)

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.957[a]	.915	.887	.0082913	1.281

a. Predictors：(Constant), GDP

b. Dependent Variable：Operating Ratio

Table 4.8 ANOVA result (Model 2 : macroeconomic factors)

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	32.319	.011[b]
	Residual	.000	3	.000		
	Total	.002	4			

a. Dependent Variable：Operating Ratio

b. Predictors：(Constant), GDP

Based on the Model Summary table above, the adjusted R Square is equal to 88.7%. It means the variable is not extremely but still reliable. It indicates that by using all the macroeconomic factors in Model 2 which are GDP, unemployment rate and inflation rate were used in the model are able to explain the 88.7% of the GDP in the operating ratio of Hua Xia Bank. While still 11.3% remained unknown. Through the ANOVA table, the significant value is 0.011 which is less than 0.01. Therefore, the significant value of this table is reliable and acceptable.

Table 4.9 Model summary result (Model 1: bank-specific factors)

Model Summary b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.981[a]	.962	.949	.0055392	1.944

a. Predictors：(Constant), LEVERAGE

b. Dependent Variable：Operating Ratio

Table 4.10 ANOVA result (Model 1: bank-specific factors)

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	76.133	.003[b]
	Residual	.000	3	.000		
	Total	.002	4			

a. Dependent Variable：Operating Ratio

b. Predictors：(Constant), LEVERAGE

Based on the table above, the adjusted R Square is equal to 94.9%. That implies that by using all the internal factors in Model 1 which are ROA, leverage, liquidity, net interest margin and non-performing loans that, the 94.9% of the variance in the operating ratio of Hua Xia Bank can be explained by the bank-specific factors and only 5.1% remains unknown. Besides, based on the ANOVA table, the significant value is 0.03 which is lower than 0.05 so that it is significant.

5.0 Discussion and Conclusions

This study aims to analyze the operational risk faced by Hua Xia Bank and its determinants. To achieve this objective, this study selects bank-specific factors (ROA, Leverage, Liquidity, Net interest margin and Non performing loans) and macroeconomic factors (GDP, Unemployment rate and Inflation) for using and analyzing.

5.1 Discussion of result

This study aims to determine the operational risk of Hua Xia Bank and its determinants. The objectives of this study are:

1. *To investigate the bank-specific factors towards operational risk.*
2. *To investigate the macroeconomic factors towards operational risk.*
3. *To investigate the bank-specific factors and macroeconomic factors towards operational risk.*

Based on the table 4.1 and table 4.3, it can be concluded as operating ratio has been influenced and affected by bank-specific factors in terms of leverage. Table 4.1 which is correlation table indicates that leverage is negatively and significantly correlated to operating ratio with p-value is lower than 0.05. That means when leverage decrease, the operating ratio will increase. Furthermore, lower leverage, lower the differences of profits, so that lower operational risk. Based on the table 4.3 which is coefficient table, leverage is negative and mostly significant as well with p-value is equal to 0.003 and t-value is -8.725. It indicates that if leverage changes, the operating ratio will change and also influence the level of operational risk. On the other hand, leverage representing the performance of the bank. Therefore, the better bank's performance will reduce the operational risk. The reason is leverage is not only used to measure how many debt is greater than equity in bank, but also used to analyze how effective and efficient management has been running in the bank.

Meanwhile, for objective 2, the table 4.1 also indicates that GDP and unemployment rate is negatively and significantly correlated to operating ratio. Based on table 4.4, the coefficient table shows that GDP is the most significant independent variable among all the macroeconomic factors which are GDP, unemployment rate and inflation. The p-value of GDP is less than 0.05 and t-value is -5.685.

Besides, for objective 3, this study also used stepwise method to investigate the bank-specific factors and macroeconomic factors towards operational risk. The table 4.2 indicates that leverage is still the most significant factor which can influence the operating ratio. Therefore, leverage is extremely significant and high relationship to operating ratio. Hence, if Hua Xia Bank wants to reduce their operational risk, they should control the ratio between total debt and total equity which is decrease the leverage.

Overall the whole study, table 4.5 which is model summary table shows that 94.9% of the model is explained by the variable which is leverage from both bank-specific factors and macroeconomic factors. Table 4.6 which is ANOVA table also indicates that the significant value is 0.003 and that refers to the model is reliable and acceptable. Therefore, based on the whole data, it can be concluded that bank-specific factors have more effects rather than macroeconomic factors in influencing the operating ratio and the operational risk of the bank.

5.2 Limitations

This study also have some limitations. Fist of all, this study only chooses one bank which is Hua Xia Bank as the sample to analyze. Secondly, this study only takes data between five years time period from 2013 to 2017. Thirdly, this study only selects total 9 variables to analyze. Therefore, the information of this study is still limited.

5.3 Recommendations

During this study, it is clear that leverage and GDP are the most two significant variable with operating ratio and the operational risk. Thus, it is important for bank make the correct financial decisions for controlling leverage and also change the decisions based on the differences of GDP.

For controlling leverage, bank should decrease the total debt. They can reduce the loan borrowing transactions, or reduce leverage by issuing equity would improve the value of the bank's debt, thus transferring resources from equity holders to debt holders. (Admati,2013). For make the correct decision when GDP changes, bank can reduce the use of funds into investment when GDP decreases while might increase the investment when economic recovered.

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