# Research on the Relationship between Non-Performing Loans and Economic Development of Financial Institutions

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**Abstract:** In Recent years, with the rapid development of China's economy, the financial industry has also achieved rapid development. But at the same time, the problem of credit risk in the financial industry has gradually increased, and the non-performing loans of financial institutions have continued to rise in recent years. The increase of non-performing loans will have a negative impact on the macroeconomic development. Therefore, based on the least square method, this paper makes linear regression between GDP and non-performing loans, and finds that the increase of GDP will lead to the increase of non-performing loans. Based on the research results, this paper puts forward reasonable suggestions on how to reduce non-performing loans of financial institutions and promote economic development, in order to provide a reasonable basis for the sustainable development of China's economy.

**Keywords:** Linear regression; Least square method; Non performing loans; Economicdevelopment

## 1. Introduction

The non-performing loans of financial institutions have always been an important factor affecting the development of China's financial industry. In recent years, the non-performing loan rate of financial institutions in China has been on the rise. As an important economic development unit, the rise of non-performing loans will affect the economic development of China. With China's economic development entering a new stage, the impact of non-performing loans on economic development of financial institutions has gradually become a topic of concern. At present, China's economic development mode has gradually changed from extensive mode to efficient mode, but the corresponding risks and problems are gradually exposed, which makes China's financial industry has been greatly affected, mainly reflected in the gradual increase of non-performing loans of financial institutions. Therefore, this paper studies the relationship between non-performing loans of financial institutions and economic development, and studies the non-performing loans of financial institutions in China, aiming to reduce the non-performing loans of financial institutions and promote the economic development of China.

## 2. Literature Review

In the research field of the influence of macroeconomic factors on the non-performing loans of commercial banks, [1] thinks that China's economy has been growing continuously since the reform and opening up, but also faces a large credit risk problem. Based on the VAR model, he tests the impact of macroeconomic factors on the non-performing loans of commercial banks, and thinks that macro There is a one-way causal relationship between economic factors and non-performing loans, and the increase of non-performing loan rate will lead to a vicious circle of non-performing loans. [2] established an empirical model of non-performing loans of commercial banks by HP Filtering and decomposing the quarterly GDP data. He believed that there was no correlation between cyclical GDP and non-performing loans, short-term trend GDP reduced the non-performing loan rate, and long-term trend GDP slowly increased the non-performing loan rate. [3] studied the influencing factors of non-performing loans, analyzed the current situation and causes of non-performing loans from the macro and micro perspectives, and selected five state-controlled commercial banks and joint-stock commercial banks as the research objects to analyze the influencing factors of non-performing loans. [4] analyzes the current situation of non-performing loans of commercial banks, analyzes the credit behavior of commercial banks from two aspects of endogenous and exogenous causes, selects the data of non-performing loan rate and GDP growth rate from 2004 to 2017, constructs VAR model, obtains the relationship between non-performing loan rate and economic fluctuation, and considers that the impact of early economic fluctuation on non-performing loans is negative After a period of time, it shows a positive impact, and the impact will gradually weaken over time. [5] took Heilongjiang rural credit cooperatives as an example to explore the causes of non-performing loans. They believed that the particu-

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larity of rural economy and the low cultural quality of residents generally increased the risk of loans. Wang [6] Based on GMM regression method, collected the data between regional corruption and non-performing loans of banks in 2005-2013, and concluded that there is a positive correlation between corruption and non-performing loans. At the same time, the expansion of bank credit scale will also lead to the increase of non-performing loans. They believed that government intervention should be improved to curb the increase of non-performing loans of banks. [7] analyzed the impact of macro-economy, foreign trade demand and overcapacity on non-performing loans, and believed that the capital market should be developed and the transformation of foreign trade structure should be promoted to reduce non-performing loans of commercial banks, while the government should actively regulate the real estate industry.

To sum up, many scholars think that non-performing loans will cause economic fluctuations in the field of non-performing loans and macroeconomic impact. Therefore, this paper collects the non-performing loans and GDP data of financial institutions in 2008-2017, uses the least square method to establish the model, studies the relationship between non-performing loans and economic development of financial institutions, and aims to put forward scientific and reasonable suggestions for reducing non-performing loans of financial institutions and promoting economic development.

## 3. Empirical Analysis

### 3.1. Data collection

Through EPS database, this paper selects the data of non-performing loans and GDP of financial institutions, and calculates the growth rate of non-performing loans and GDP, as shown in Table 1.

**Table 1. Non performing loans and GDP data**

| Year | Non performing loans of financial institutions | Gross domestic product | Growth rate of non-performing loans | GDP growth rate |
|---|---|---|---|---|
| 2008 | 4865.3 | 319515.5 | -0.14 | 0.08 |
| 2009 | 4264.5 | 349081.4 | 0.66 | 0.15 |
| 2010 | 12437 | 413030.3 | -0.18 | 0.16 |
| 2011 | 10533.4 | 489300.6 | 0.02 | 0.09 |
| 2012 | 10746.3 | 540367.4 | 0.09 | 0.09 |
| 2013 | 11762.7 | 595244.4 | 0.18 | 0.08 |
| 2014 | 14334.7 | 643974 | 0.27 | 0.07 |
| 2015 | 19624.4 | 689052.1 | 0.11 | 0.07 |
| 2016 | 21935.6 | 744127.2 | 0.08 | 0.09 |
| 2017 | 23892.2 | 820754.3 | Non-existent | Non-existent |

According to the data collection results, it can be seen that the non-performing loans of financial institutions decreased in 2009 and 2011, and increased in other years, and gradually increased with the passage of time, while the GDP kept a steady growth. For the sake of viewing intuitiveness, this paper uses the line chart for further observation, as shown in Figure 1. It can be seen that the non-performing loans of financial institutions have a positive correlation with GDP.

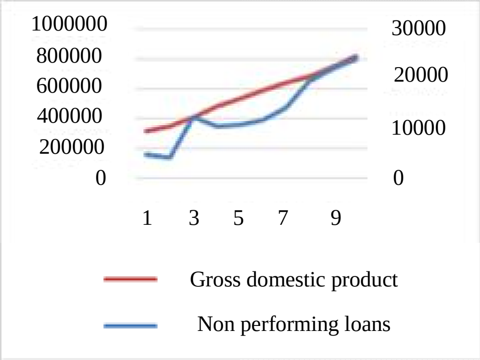


**Figure 1. Line chart of GDP and non-performing loans of financial institutions**

Eviews software is used to test the correlation of data. See Table 2 for details. It can be seen that the correlation between GDP and non-performing loans of financial institutions is strong. Therefore, it can be seen that there is a correlation between GDP and non-performing loans of financial institutions, which also proves the research significance of GDP and non-performing loans of financial institutions.

**Table 2. Correlation test**

| | Non performing loans of financial institutions |
|---|---|
| Gross domestic product | 0.9419 |

### 3.2. Model building

Set GDP as $x_t$, NPL of financial institutions as $y_t$, there is $y_t = \hat{a} + \hat{b}\, x_t$, where $\hat{b}$ is the estimated value of parameters, recorded $u_t$ as residual. According to the principle of the least square method, the sum of the squares of the residuals should be minimized. $\hat{b} = \frac{\sum x_t y_t - T\overline{xy}}{\sum x_t^2 - T\overline{x}^2}$, $\hat{a} = \overline{y} - \hat{b}\,\overline{x}$.

### 3.3. Model solving

In this paper, SPSS software is used to make linear regression between non-performing loans and GDP of financial institutions in 2008-2017. See Table 3 for details.

**Table 3. Linear regression results**

| Coefficient[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | Non standardized coefficient | | | Standardized coefficient | T | Saliency |
| | B | Standard error | Beta | | | |
| 1 | Constant | -7361.686 | 2726.793 | | -2.700 | .027 |
| | Gross domestic product | .037 | .005 | .942 | 7.933 | .000 |

It can be seen from the estimation results that the model has strong significance and good fitting degree. There is a positive correlation between non-performing loans and GDP of financial institutions. That is to say, one unit of GDP growth will increase non-performing loans by 0.037 units.

## 4. Policy Recommendations

With the further development of China's macro-economy, the loan balance of China's financial institutions develops rapidly. But at the same time, due to the influence of various factors, the loan scale of financial institutions in China has increased, but the non-performing loan rate has also been increasing. The continuous rise of non-performing loans will make the financial institutions industry have a greater risk problem, which will make the macro-economy be negatively affected. According to the results of this study, we can see that there is a positive correlation between GDP and non-performing loans of financial institutions, that is, with the economic development of our country, non-performing loans of financial institutions will increase. Therefore, based on the goal of promoting the sustainable development of economy, this paper puts forward the following suggestions:

First, financial institutions should actively adapt to the new economic development model. At present, China's economic development has entered a new normal. Financial institutions should adapt to the new economic development model, find new profit growth points, and actively cooperate with the policy of maintaining stable growth. At the same time, financial institutions should actively adjust the structure of credit products, and constantly explore new credit models, so as to ensure the continuous growth of profits and reduce the non-performing loan rate.

Second, the government should improve the credit risk mechanism. First of all, for the financial institutions that do not have the problem of large risk, the government should strengthen the supervision and management of the loan risk of these departments to prevent the emergence of large non-performing loans. Secondly, for the financial institutions with large loan risk problems, the government should establish a sound risk resolution mechanism, improve the policy guarantee system, which can cause less losses when non-performing loans appear. Finally, after the loss caused by bad credit, we should establish a risk prediction and summary mechanism to prevent bad credit from causing greater harm to the economy.

Third, government departments should establish incentive and disciplinary mechanisms. Most financial institutions operate for the purpose of profit, which provides more development opportunities for the further increase of non-performing loans. Therefore, the government should actively encourage financial institutions to carry out loan business in a scientific and reasonable way, and severely punish those financial institutions that carry out unreasonable loans and lead to the increase of credit risk, so as to prevent the rapid increase of non-performing loans.

Fourth, financial institutions should determine the advantages of their own loans. Each financial institution should define its own market positioning and form its own characteristic product development mode, which will reduce the credit risk of financial institutions and the non-performing loan rate. At the same time, for some large financial institutions, they should give full play to their own advantages, enrich more financial products, provide more comprehensive financial services for small enterprises, and form new market advantages.

## References

[1] Jiang X.C. Empirical study on the impact of macroeconomic factors on non-performing loans of commercial banks. Jinan University. 2018

[2] Wang J.M. Empirical study on economic growth and non-performing loan ratio of commercial banks based on VAR model. Journal of Mudanjiang University. 2017, 26(07), 37-40

[3] Gao X.L. Research on the influencing factors and resolving strategies of non-performing loans of Chinese commercial banks under the new normal of economy. Capital University of Economics and Trade. 2018

[4] Gao Y.A. study on the dynamic relationship between China's economic fluctuation and non-performing loans in the banking industry. Capital University of Economics and Trade. 2018

[5] Sun J.Y., Wang Y.B. Analysis on the causes of bad loans in Heilongjiang rural credit cooperatives. Jilin Agriculture. 2017, (01), 104

[6] Wang X.R., Wang K.X. The impact of corruption on non-performing loans of banks: based on the GMM method of dynamic panel data of China's provincial level. Finance and Economics Review. 2016, (08), 36-43

[7] Gao J. Analysis of non-performing loans of commercial banks and prevention and control measures from the perspective of economic transformation. Financial Circle. 2018, (06), 84-85.