

## **Effects of Credit Distribution to Economic Sectors Toward Commercial Bank's Operating Profit in Indonesia**

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### **ABSTRACT**

Bank as a financial institution has a core business, which is distributing credit. Basically, lending money happened because bank believes that the borrower can return the loan in accordance with the agreements. Therefore, bank should consider well to whom it lends its money. Wrong decision in lending could lead to bad loans that resulted in a loss of profit.

Grouping of debtor into economic sectors can help analyze the economic sectors that have the promising prospects to the bank. Due to the volatility of economic sector, research needs to be held to analyze the effect of distribution of credit based on economic sector its impact on banks. The income of credit is counted as operating profit bank. Hence, it is appropriate to analyzed operating profit as the impacted factor.

This research only analyzes lending by banks to the economic sector in Indonesia from 2003-2011 and their impact on the bank's operating profit. Data were obtained from Indonesia Banking Statistic. Multiple linear regressions were used to know the relationship of each of the economic sectors to commercial bank's operating profit. The result of the paper can be used as by bank as a consideration in distributing credit.

Based on the analysis Electricity, Gas, and Water Sector, Construction Sector, Transportation, Warehousing, and Communication Sector, Business Services Sector, and Consumer Loans Sector have significant effect and very strong relation toward commercial bank's operating profit

Keyword: Bank, Economic Sectors, Credit.

### **1. INTRODUCTION**

Referred to *Undang-Undang Pokok Perbankan* (basic banking law) no. 14 year 1967, Bank is a financial institution in which one of its core businesses is to distribute credit. Therefore the core business of bank is supposed to be significant to its profit especially operating profit because income from credit is counted as operating profit. Generating operating profit shows indicates that bank can cover its daily expenses or operating

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expenses and therefore bank is sustainable. Logically, as distribution of credit increase, bank's profit should be increase as well.

However, bank has to face challenge and need to be careful in giving credit because there is risk that debtor cannot fulfill their obligation or payback the credit to the bank, which will result in bank's loss of profit. Therefore bank should know to whom it lend its money to. One of the views in credit distribution is based on economic sectors.

As economic sectors are volatile, the trend is changing through time, bank should be careful in lending money to each economic sector Bank in Indonesia divide economic sector to ten sectors using United Nations system for classifying economic data called: International Standard Industrial Classification of All economic Activities (ISIC). The ten sectors based on the classification are: Agriculture, Hunting and Agriculture Facilities (Agrihun), Mining, Manufacturing (Manuf), Electricity, Gas, and Water (Elwaga), Construction (Construct), Trade, Restaurants and Hotels (Traseshtl), Transportation, Warehousing and Communication (Transwaco), Business Services (Busserv), Social Services (Socserv), and Consumer Loans (Conlo). It would be an advantage if bank know which economic sector is important and hold significant effect to bank's productivity. Therefore, it feels necessary to analyze the influences of credit based on each economic sector toward bank's operating profit.

By doing the research, the relation between each economic sector to bank's operating profit can be determined. There should be a research made to detect which type of credit that has the most significant effect based on its distribution as well as the least or insignificant effects to bank's operating profit. Solving this research will lead to the founding of which economic sector(s) that bank should distribute more credit to.

## **2. RESEARCH VARIABLES AND HYPOTHESIS**

Derived from the Introduction, the dependent variables and the independent variables had been determined which are:

- Independent Variables: Distribution of credit to each economic sector (Agrihun, Mining, Manuf, Elwaga, Construct, Traseshtl, Transwaco, Busserv, Socser, and Colon).
- Dependent Variable: Commercial bank's operating profit.

### **2.2 Simultaneous Hypothesis**

It is a hypothesis of the influences of credit distributions simultaneously toward commercial bank's operating profit.

H<sub>0</sub>: Distribution of credit based on the economic sectors simultaneously does not give significant effect toward Commercial bank's Operating Profit

H<sub>1</sub>: Distribution of credit based on the economic sectors simultaneously gives significant effect toward Commercial bank's Operating Profit

## **2.2 Partial Hypothesis**

It is a hypothesis of the influences of credit distributions for each economic sector toward commercial bank's operating profit.

H<sub>0</sub>: Distribution of credit based on the economic sector partially does not give significant effect toward Commercial bank's Operating Profit

H<sub>1</sub>: Distribution of credit based on the economic sector partially gives significant effect toward Commercial bank's Operating Profit

Referred to the introduction, credit distribution to each economic sector should have positive effect and significance to operating profit because distributing credit is the core business of bank, while economic sector is only to classify the distribution.

## **3. METHODOLOGY**

### **3.1 Data Collection**

Data that is used in this research is secondary data. The data is obtained from Indonesian Banking Statistic January 2004 until January 2012 which is available in Bank of Indonesia's website. Since the documentation show each month during a year therefore, this research used monthly data. So, the timeline of the data that is used is credit distribution to each economic sector and the populations of the data in this research are all commercial banks in Indonesia. The data from Indonesia Banking Statistic are available in each category of commercial bank, which are State Owned Bank, Foreign Exchange Commercial Bank, Non-Foreign Exchange Commercial Bank, Regional Development Bank, Joint Venture Bank and Foreign Owned Bank. Since all categories of commercial bank are available therefore, taking sample. The data is appropriate to conduct the research for the entire population. This kind of data is classified as panel data or pooled data. Panel data is data that have cross-sections and time series data at the same time.

### **3.2 Data Processing**

All data that have been gathered is processed using EVIEWS software. This software is appropriate in dealing with panel data because EVIEWS has some certain ways in analyzing cross-section and time series data in the same time. Data that have been processed through EVIEWS will be analyzed to interpret the result of the research.

Before the data can be used for regressions, there are several test and transformation that need to be conducted to ensure that the data is appropriate for regressions. Failure to pass the tests will result in a low accuracy of result. Transformation is needed to help the data pass the test. The tests and transformation are: Natural Log Transformation, Unit Root Test, Multicollinearity, Heteroscedasticity, Normality and Autocorrelation. All of the variables in the research have been transformed to Log Natural form. In the unit root test, it was found that only Operating Profit is stationary. So, the other ten variables were transformed into its first difference form. After passing unit root test, the normality of the data were checked and it was found that all of the data is normal. The other three tests were done during the regressions.

## 4 Analysis and Finding

### 4.1 Multiple Linear Regression Model

Table 4.1 Fixed Multiple Regression Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.700170	1.191522	1.426889	0.1541
AGRIHUN	-0.043827	0.064404	-0.680511	0.4964
MINING	0.050801	0.043665	1.163413	0.2451
MANUF	0.041794	0.064283	0.650160	0.5158
ELWAGA	0.034216	0.012474	2.742966	0.0063
CONSTRUCT	0.341466	0.063477	5.379336	0.0000
TRARESHTL	0.003659	0.110477	0.033123	0.9736
TRANSWACO	-0.039275	0.053381	-0.735745	0.4622
BUSSERV	-0.211686	0.059188	-3.576495	0.0004
SOC SER	-0.116533	0.075887	-1.535618	0.1251
COLON	0.508570	0.064276	7.912261	0.0000

In table 4.1, coefficient of each variable has been determined. Variables with negative coefficient indicates that they have negative impact on operating profit. Hence, Agrihun, Transwaco, Busserv and Socser have negative correlation toward operating profit. It means, increasing credit distribution toward those sector result in the decreasing the operating profit. It means that bank needs to be careful it distributing credit toward those sectors.

### 4.2 Coefficient Correlation Analysis

Table 4.2 Statistic Output

Weighted Statistics			
R-squared	0.866954	F-statistic	274.5481
Adjusted R-squared	0.863796	Prob(F-statistic)	0.000000
S.E. of regression	0.980627		

From table 4.2, it can be seen that the value of the adjusted R-Squared is 0.863796. By calculating the root square of the R-squared, the coefficient correlation can be found, which is 0.92941.

Table. 4.3 Coefficient Correlation and Its Interpretation

Interval	Relation
0.00 – 0.199	Very Weak
0.20 – 0.399	Weak
0.40 – 0.599	Moderate
0.60 – 0.79	Strong
0.80 – 1.000	Very Strong

Source: Sugiyono, 2002

Based on the table above, the coefficient correlation of 0.92941 indicates that the independent variables have very strong relationship with the dependent variable.

### 4.3 Coefficient of Determination Analysis

Based on table 4.2 Statistic Output, the R-squared is 0.863796. Therefore the coefficient of determination for this research is 86.3796%. It indicates that distribution of credit toward the ten economic sectors (independent variables) has influences 86.3796% toward commercial bank’s operating profit (dependent variable). While, the rest 13.6204% is influenced by other factors which are not observed in this research.

### 4.4 Simultaneous Hypothesis Test (F-Test)

This test is to determine the effect of independent variables simultaneously toward the dependent variable.

Indicators:

If  $\text{Prob}(F\text{-Statistic}) \geq 0.05$ , then,  $H_0$  is rejected, do not reject  $H_1$

If  $\text{Prob}(\text{F-Statistic}) < 0.05$ , then, do not reject  $H_0$ , reject  $H_1$

Based on the output in table 5.2 it can be found that the Prob (F-Statistic) value is 0.0000. As the value is lower than 0.05 then,  $H_0$  is rejected. In short, distribution of credit based on the ten economic sectors simultaneously gives significant effect toward Commercial bank's operating profit.

#### 4.5 Partial Hypothesis Test (T-Test)

This test is to determine the effect of each independent variable toward the dependent variable

Indicators:

If independent variable's probability  $\geq 0.05$ , then,  $H_0$  is rejected, do not reject  $H_1$

If independent variable's probability  $< 0.05$ , then, do not reject  $H_0$ , reject  $H_1$

Referred to table 4.1, there are 4 Independent variables that has significant effects toward commercial bank's operating profit which are Distribution of credit to Electricity, Gas and Water sector, Construction sector, Business Services sector, and Consumer Loans Sector. The rest of economic sectors give effect to commercial bank's operating profit but they are not significant.

By eliminating the least significant independent variables in a multiple regression, higher precision in R-Squared value can be achieved. Furthermore, new significant variables can also be obtained by eliminating insignificant variables. Out of the 6 insignificant variables, Trareshtl was eliminated first because it has the highest probability, which means it is the most insignificant variable. After that, the regression was done using fixed method. Based on the output there were 5 insignificant variables. Therefore, another regression was done using fixed method; the variable eliminated was Agrihun. Next, Manuf was eliminated because it has the least significant effect. The fifth regression was also done after eliminating Mining. The model still had two insignificant variables Socser was eliminated because it has higher prob. than Transwaco.

#### 4.6 Multiple Linear Regression Model (2)

Table 4.4 Multiple Regression Output (2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.132236	0.649043	1.744469	0.0816
ELWAGA	0.048285	0.008444	5.718624	0.0000
CONSTRUCT	0.333518	0.041129	8.109159	0.0000

TRANSWACO	-0.075616	0.035660	-2.120472	0.0344
BUSSERV	-0.174061	0.049523	-3.514786	0.0005
COLON	0.515640	0.061816	8.341475	0.0000

On the last output, Transwaco became a significant variable along with Elwaga, Construct, Busserv, and Colon. The model now has five significant variables to be analysis. Since it is proven to be significant, therefore it does not need to be tested with T-Test In Table 4.4, coefficient of each significant variable had change. From the coefficient above, there are two independent variables that has negative significant effect toward commercial bank's operating profit. Therefore, bank needs to be extra careful and reconsider in distributing credit to Busserv and Transwaco.

#### 4.7 Coefficient Correlation Analysis (2)

Table 4.5 Statistic Output (2)

Weighted Statistics			
R-squared	0.854088	Mean dependent var	2.151358
Adjusted R-squared	0.851797	S.D. dependent var	6.799862
S.E. of regression	0.988747	Sum squared resid	622.7445
F-statistic	372.8637	Durbin-Watson stat	1.135588
Prob(F-statistic)	0.000000		

Referred to Table 4.5, the value of the adjusted R-Square is 0.851797. So, the coefficient Correlation value is 0.9229. Using Table 5.3 it is located in the very strong relation area. It means that the five significant independent variables have a very strong relation with the dependent variable.

#### 4.8 Coefficient of Determination Analysis (2)

In Table 4.5, the adjusted R-Square of this research can be found which is 0.851797. Therefore, the coefficient of determination for this research is 85.1797%  $\approx$  85.18%. It indicates that the five economic sectors (independent variables) influence 85.18% of commercial bank's operating profit (dependent variable). While the rest of 14.82% is influenced by other factors, which are not observed in this regressions.

#### 4.9 F-Test (Simultaneous Hypothesis Test) (2)

Based on the output in table 4.5 it can be found that the Prob(F-Statistic) value is 0.0000. As the value is lower than 0.05 then,  $H_0$  is rejected. So, distribution of credit based on the four economic sectors simultaneously, give significant effect toward Commercial bank's

operating profit.

## 5. Conclusion and Recommendation

Based on the overall exposure of the test analysis of the statistical calculation of correlation, coefficient of determination test, and testing of simultaneous hypothesis, it can be concluded that the credit distribution based on economic sector has significant effect and a very strong relation with commercial bank's operating profit. Simultaneously the credit distribution influence 86.3796% of commercial bank's operating profit. While, the other 13.6204% is influenced by other factors, which are not observed in the research.

On the further regression to test the significant independent variables only, it was found that Electricity, Gas, and Water Sector, Construction Sector, Transportation, Warehousing and Communication Sector, Business Services Sector, And Consumer Loan sector are the significant variables toward commercial bank's operating profit. The five of them influence 85.1797% of commercial bank's operating profit. It can be concluded that the other five sectors only influence 1.1999% of commercial bank's operating profit. Even though the percentage dropped, Electricity, Gas, and Water Sector, Construction Sector, Transportation, Warehousing and Communication Sector, Business Services Sector, And Consumer Loan sector can still maintain a very strong relation to commercial bank's operating profit.

Below is the result of the independent variables' hypothesis test as well as its correlation to commercial bank's operating profit.

- **Independent Variables With Positive Significant Effect**

1. Electricity, Gas and Water Sector
2. Construction Sector
3. Consumer Loan sector

- **Independent Variables with Negative Insignificant Effect**

1. Agriculture, Hunting and Agriculture Facilities Sector
2. Social Services Sector

- **Independent Variables with Insignificant Effect**

1. Mining Sector
2. Manufacturing Sector
3. Trade, Restaurant and Hotel Sector
4. Transportation, Warehousing and Communication Sector
5. Business Services Sector



**Recommendations for bank:**

Distribute more credit to sectors which has significant positive effect because they will have more result in generating commercial bank's operating profit. However, do not forget to consider the risk that high return investment may bear. Try to diversify the credit distribution to minimize the risk of loss.

Recheck the history of the credit distribution and compared to the findings of this research as consideration in order to maximize the use of asset for credit distribution.

Reconsider in distributing credit to sectors which have negative effect as they will result in decreasing the operating profit. Nevertheless, as it is mentioned in the background of the research, the economic sector is volatile. Therefore, commercial bank should update the latest news and the possibilities of the project.

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