



Credit Crunch Detection in Indonesia

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Abstract

This research analyzes the credit crunch phenomenon in Indonesia using the Simultaneity method. The data taken is time series data on the demand and supply side of credit. The research results show that the credit crunch phenomenon occurs from the demand and supply sides. The factors of credit demand are Credit Interest Rate (CIR) and Inflation. Meanwhile, from the supply side, namely Credit Interest Rate (CIR), Third Parties Fund (TPF), Net Interest Margin (NIM), and Non-Performing Loans (NPL). The results of research using the Two Stage Least Square approach show that, simultaneously, the variables inflation, CIR, NPL, NIM, TPF have an influence on the demand and supply of credit which triggers a credit crunch during the Covid-19 pandemic.

Keywords: *Credit Crunch; Two Stage Least Square; Covid-19 Pandemic*

Introduction

Banks have been considered as promising centers of business activities. Therefore, if a bank experiences financial difficulties, the government will take policies to save the economic situation in the midst of the current crisis. A financial crisis with different dimensions occurred during the Covid-19 pandemic, whose impact on almost all countries was marked by the real economy experiencing a sharp decline, even though it only lasted a short time. Will a credit crunch happen? Sometimes this cannot be allowed. Because every fragility of the financial system has the potential to trigger a new debt crisis. The Credit Crunch phenomenon was also experienced in Indonesia in 1998, where there was a shock to the economy which was marked by disruption to export performance and a weakening of the rupiah.

The Covid-19 pandemic has forced every country to limit the provision of credit, resulting in a global scarcity of funding sources. From a macroeconomic perspective, the credit crunch phenomenon can hamper the economic recovery process because the source of financing for the business world is very dependent on bank credit. For those interested in monetary control, this credit crunch has closed access to monetary policy transmission channels to the real sector, namely the interest rate channel, money supply channel, credit channel and balance sheet channel (Agung et al., 2000).

Basically, the Covid-19 pandemic has a systematic impact, not only impacting the health crisis, but also the crisis in the economic sector, financial sector, banking sector, etc. which causes many

problems so that overcoming this crisis cannot only be resolved in one sector alone, but must be side by side. The conditions of the Covid-19 pandemic have encouraged the government to carry out credit restructuring as an effort to improve credit for debtors who experience difficulties in paying credit.

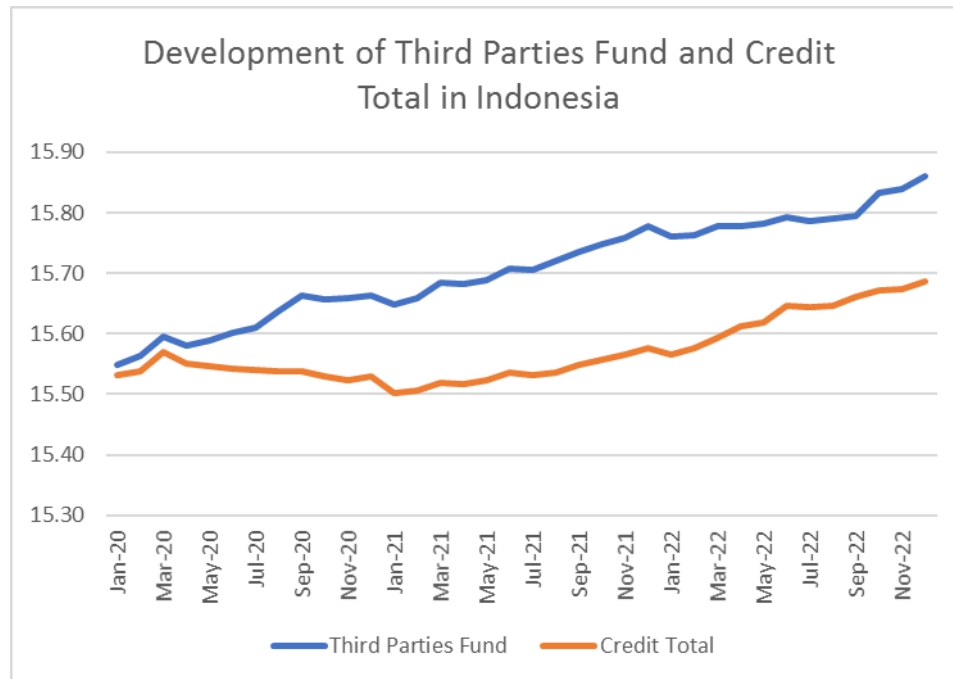


Figure 1. Development of Third Parties Fund and Credit Total in Indonesia

Figure 1 explains that the reduction in interest rates due to credit restructuring cannot stimulate credit but instead increases the Third Parties Fund (TPF). Third Parties Fund which originates from the community and is entrusted by the community to the bank based on a fund storage agreement in the form of current accounts, deposits and savings. Throughout 2020 to 2022, the Third Parties Fund continues to increase amidst worsening economic conditions due to the Covid-19 Pandemic. This shows that the banking problem is not about declining liquidity, but rather the sluggish real sector. It can be concluded that the credit crunch during the Covid-19 pandemic was caused by credit demand which experienced a decline from May 2020 to January 2021.

The credit market is regulated by the dynamics of the demand side and supply side of credit. The main problem in the credit market is how understanding the demand side and supply side of credit influences its function, especially its role in transmitting financial shocks to the credit system. The contraction in the credit market was driven by two factors, namely reduced capital available to be lent to economic actors and decreased demand for loans from households and companies (Ghosh & Ghosh, 1999), (Agung et al., 2000) and (Hakim & Aisyah, 2007). With the decline in banks' willingness to distribute credit, the relatively loose monetary policy cannot be transmitted to the real sector through lending activities.

This research will estimate the credit supply and demand function. The offering function will be measured using Credit Interest Rate (CIR), Third Parties Fund (TPF), Net Interest Margin (NIM), and Non-Performing Loans (NPL). Meanwhile, we will measure the credit demand function using the Credit Interest Rate (CIR) and inflation. We can use estimates of these functions to determine whether during the Covid-19 pandemic, credit supply or demand was more dominant in hampering economic activity in Indonesia.

Literature Review

a. Definition of Credit Crunch

Credit Crunch can be interpreted as an imbalance between demand and supply of credit. The benchmark for the credit crunch phenomenon can be seen from interest rates. As with the monetary events of 1998, interest rates experienced an increase in the first months after the crisis. Interest rates were initially increased sharply to restore public confidence and maintain the exchange rate. The fluctuating interest rates before, during and after the crisis create difficulties in determining the behavior of interest rates. The credit crunch was caused by a sharp increase in interest rate differences, especially the difference between bank loan interest rates and bond yields (Wei et al., 1998). The increasing spread between interest rates on bank loans and bonds indicates that credit conditions are tightening, which has a negative impact on borrowers from the start.

b. Causes of Credit Crunch

The credit crunch phenomenon makes financial institutions experience difficulties in making credit loans. The reason banks reduce the amount of credit disbursement is due to several factors. Some of this is due to lack of capital and the high number of bad loans which encourage banks to be more selective in disbursing credit. Apart from the bank's internal parties, another factor that causes banks to be reluctant to provide credit is the economic recession. An economic recession is a condition in which the economic situation of a country worsens. This condition causes prospective debtors not to take out loans and investors withdraw their investments from banks (Barney & Souksakoun, 2021).

Methodology

The method used in this research is a simultaneous equation model. In analyzing the data, this research uses Eviews 12 software. The analysis steps in this research are:

- a. Test the Unit Root of each variable
- b. Identify systems of simultaneous equations
- c. Parameter estimation using the Two Stage Least Square approach
- d. Detect the Credit Crunch phenomenon

The simultaneous equation model adopts the Keynesian model with the following formulation:

Credit Demand Equation

$$\text{CREDIT}_t^D = \alpha_0 + \alpha_1 \text{Inflation}_t + \alpha_2 \text{CIR}_t + \varepsilon_t$$

Where :

D : Demand (Credit Demand)

CREDIT: Total conventional commercial bank credit

α_0 : Constant in the credit demand equation

α : Equation regression coefficient (i=1,2)

Inflation: Price Development Index

CIR: Credit Interest Rate

Credit Supply Equation

$$\text{CREDIT}_t^S = \alpha_0 + \alpha_1 \text{NIM}_t + \alpha_2 \text{TPF}_t + \alpha_3 \text{NPL}_t + \alpha_4 \text{CIR}_t + \varepsilon_t$$

CRED: Total conventional commercial bank credit

S : Supply (Credit Offer)

α_0 : Credit supply equation constant

α : Equation regression coefficient (i=1,2,3,4)

NIM: Net Interest Margin

NPL: Non Performing Loan

CIR: Credit Interest Rate

TPF : Third Parties Fund This type of research is quantitative research.

The type of data used is time series data for the 2019-2023 period obtained from the official website of the Central Statistics Agency and Financial Services Authority. The independent variables used are the variables Inflation, Credit Interest Rates, Net Interest Margin, Non-Performing Loans and Third Parties Fund. Meanwhile, the dependent variable used is Total Conventional Bank Credit.

Findings and Discussion

a. Data Stationary (Unit Root Test)

This research uses Philip Peron's test. If the data in research is stationary, then the data can be estimated directly, whereas if the data in research is not stationary, then the data contains elements of trend. Here is Philip Peron's test:

Table 1. Unit Root Test

Variable	Level Probability	1 st Difference	Result
Credit Total	0.9991	0.0000	Stationary
Inflation	0.5007	0.0000	Stationary
Credit Interest Rates	0.6784	0.0000	Stationary
Net Interest Margin	0.3275	0.0000	Stationary
Non Performing Loan	0.9264	0.0000	Stationary
Third Parties Fund	0.8922	0.0000	Stationary

b. Identify Systems of Simultaneous Equations

The rule for identifying a system of simultaneous equations is if $K-k = m-1$, the equation meets the Just Identified condition. Meanwhile, if $K-k > m-1$, the equation meets the Overidentified condition.

Table 4.1 Identify systems of simultaneous equations

Equation	m	k	K	K-k > m-1	Identification
Demand	2	3	8	Yes	<i>Overidentified</i>
Supply	2	5	8	Yes	<i>Overidentified</i>

c. Parameter Estimation Using the Two Stage Least Square Approach

1. Estimation Results

$$\text{CREDIT}_t^D = 16.75741 + 0.020082\text{INFLATION} - 0.112973\text{CIR}$$

$$\text{CREDIT}_t^S = 12.82973 - 0.051653\text{NIM} - 0.147609\text{NPL} + 0.268276\text{TPF} - 0.073115\text{CIR}$$

2. F test

Table 4.2 F test

Equation	F Statistic	F Table	Prob
Demand	76.44808	3.16	0.0000
Supply	193.2604	2.54	0.0000

Based on the F test, F statistics > F table so that simultaneously Credit Interest Rate (CIR), Third Parties Fund (TPF), Net Interest Margin (NIM), and Non-Performing Loans (NPL) and Inflation have an influence on credit demand and supply.

3. Partial Test

Demand

Table 4.3 Partial Test

CREDIT _t ^D	INFLATION	CIR
t-statistic	4.243027	-9.588898
t-table	2.39	2.39
Probability	0.0000****	0.0000****
Result	passed the test	passed the test

Based on Table 4.3 it can be concluded that:

- The Inflation variable has a t-statistical value > t-table (4.243027 > 2.39) with a variable significance level value of 0.0000 < 0.01 and a positive coefficient, so it can be stated that the Inflation variable has a significant positive effect on credit demand during the Covid-19 Pandemic. This result is not in accordance with the theory which states that inflation has a negative influence on credit demand (Sabar & Kuslin, 2018).
- The Credit Interest Rate variable has a t-statistic value < t-table (-9.588898 < -2.39) with a variable significance level value of 0.0000 < 0.01 and a negative coefficient, so it can be stated that the Credit Interest Rate variable has a significant negative effect on credit demand during the Covid-19 Pandemic. This result is in accordance with the theory which states that inflation has a negative influence on credit demand (Siwi et al., 2019). Credit interest rates will of

course affect credit demand. If interest rates are high, people will not take credit because they remember the amount of interest they will pay.

Supply

Table 4.4 Partial Test

CREDIT ^D	NIM	TPF	NPL	CIR
t-statistic	-2.008911	1.978600	-8.381129	-2.569247
t-table	1.67	1.29	2.39	1.67
Probability	0.0470**	0.0503*	0.0000***	0.0115**
Result	passed the test	passed the test	passed the test	passed the test

Based on Table 4.4 it can be concluded that:

- The NIM variable has a t-statistical value $<$ t-table ($-2.008911 < -1.67$) with a variable significance level value of $0.0470 < 0.05$ and a negative coefficient, so it can be stated that the NIM variable has a significant negative effect on credit supply during the Covid-19 pandemic. The results of this research are not in accordance with the theory which states that NIM has a positive influence on credit distribution (Jhean et al., 2022). Net Interest Margin is the ratio between net interest income to the amount of credit provided (outstanding credit).
- The TPF variable has a t-statistical value $>$ t-table ($1.978600 > 1.29$) with a variable significance level value of $0.0503 < 0.10$ and a positive coefficient, so it can be stated that the TPF variable has a significant positive effect on credit supply during the Covid-19 Pandemic. The results of this research are in accordance with the theory which states that TPF has a positive and significant influence on credit distribution (Andariyani, 2018). TPF is the most reliable source of funds to be managed by the Bank in the form of credit so that if TPF increases, the credit supply will also increase.
- The NPL variable has a t-statistical value $<$ t-table ($-8.381129 < -2.39$) with a variable significance level value of $0.0000 < 0.01$ and a negative coefficient, so it can be stated that the NPL variable has a significant negative effect on credit supply during the Covid-19 Pandemic. These results are in accordance with theory and also research conducted by (Andariyani, 2018). If the NPL is high, the bank will reduce credit distribution to avoid a higher risk of default. During the Covid-19 Pandemic, the community experienced a significant impact so that they were unable to repay credit, which caused banks to experience difficulties in distributing credit.
- The CIR variable has a t-statistic value $<$ t-table ($-2.569247 < -1.67$) with a variable significance level value of $0.0115 < 0.05$ and a negative coefficient, so it can be stated that the CIR variable has a significant negative effect on credit supply during the Covid-19 Pandemic. This result is not in accordance with the law of supply where if the price level increases, the quantity also increases (Kasmir, 2012).

4. Goodness of Fit (R^2) Test

Table 4.5 goodness of fit (R^2) test

Equation	Adjusted R-Squared
Demand	0.718909
Supply	0.928748

Based on Table 4.5, it can be concluded that credit demand has an R^2 of 0.718909 where the independent variable is able to explain the dependent variable by 71% and the remaining 29% is explained by other variables outside the model. Meanwhile, from the supply side, R^2 is 0.928748 where the independent variable is able to explain the dependent variable by 92% and the remaining 8% is explained by other variables outside the model.

d. Detect the Credit Crunch Phenomenon

Credit crunch occurs due to an imbalance between credit supply and demand. If the demand curve is above the supply curve, then there is a supply shock (shortage). Conversely, if the supply curve is above the demand curve, then there will be an excess supply.

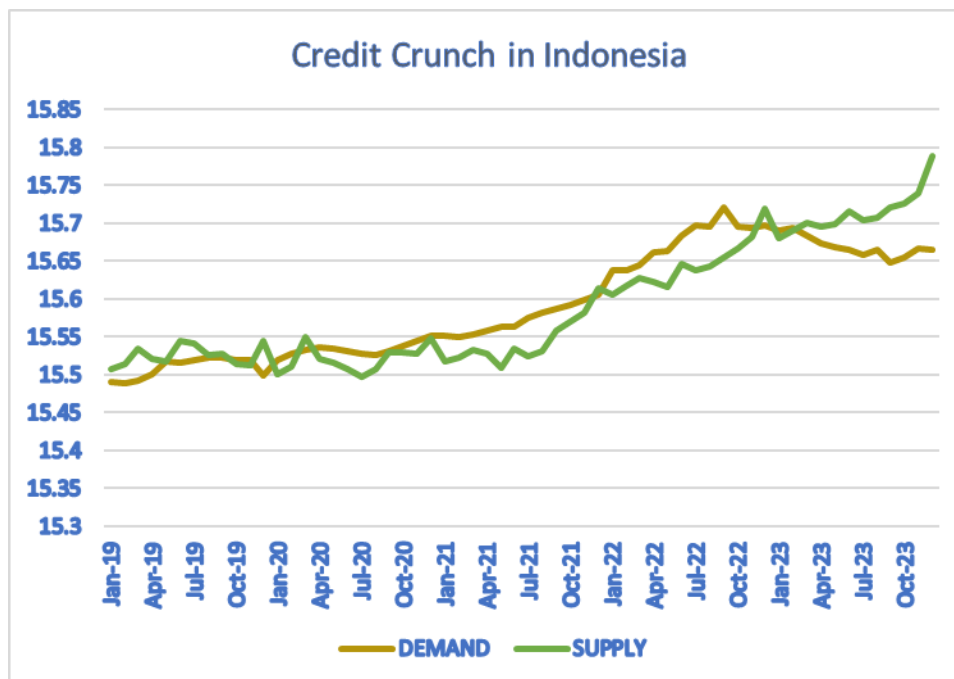


Figure 2. Credit Crunch in Indonesia

In Figure 2, there is a credit crunch from the supply and demand side. In 2020, when the Covid-19 pandemic entered Indonesia, there was excess demand and weakening supply. This is due to the increasing number of Covid-19 cases. Apart from that, the policy issued by Bank Indonesia was to reduce the BI7DRR (BI-7 Day Reverse Repo Rate) policy interest rate. The decline in BI7DRR until the end of 2020 reached 3.75 percent, which is the lowest level in history. This causes a supply shock (shortage). The policy of reducing interest rates is carried out in stages by taking into account the rate of inflation and maintaining the competitiveness of domestic financial assets.

In April 2023, there will be a demand shock (shortage) as Covid-19 conditions begin to improve. The government's efforts to overcome the burden on communities affected by Covid-19 can be used as a sustainable policy to overcome future crises. Policies in the form of reducing interest rates, converting credit into capital investment, increasing credit facilities, extending credit terms are expected not only to be given to certain banks but to all banks so that economic stability is maintained.

In general, economic stimulus in order to deal with the Covid-19 pandemic is very necessary. It can be seen from almost all sectors carrying out stimulus when the Covid-19 pandemic occurred. Policies

and stimulus will remain beneficial if they are carried out in a timely and targeted manner and there needs to be strict monitoring so that the benefits are optimal.

Conclusion and Suggestions

Based on the research results, it can be concluded that:

1. Inflation has a significant negative influence on credit demand
2. CIR has a significant negative influence on credit demand
3. NIM has a significant negative influence on credit offers
4. TPF has a significant positive influence on credit offers
5. NPL has a significant negative effect on credit offers
6. Credit Crunch occurs on the supply and demand side of credit

This research is a study that explains the relationship between demand and supply of total credit in general in conventional banking, so it is recommended to conduct research in the Islamic banking sector and use different variables.

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