CREDIT CRUNCH AND MONETARY POLICY DURING COVID-19 PANDEMIC

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ABSTRACT

Under crisis conditions, the significant decline in bank credit growth is associated with the credit crunch phenomenon. The ability of the banking system to provide credit in the economy is limited compared to the demand for credit. During the COVID-19 pandemic, credit growth in Indonesia reached its lowest point when compared to the pre-COVID-19 period. However, the causative factor is still ambiguous. Using a credit market disequilibrium model estimated with Maximum Likelihood, this study tested whether the decline in credit during the COVID-19 pandemic was a credit crunch phenomenon or not. The results of this study show that the parameter of the probability of credit decline during the COVID-19 pandemic is an insignificant credit crunch phenomenon. This means that the estimated demand for credit is less than the excess supply. Thus, the implications for the role of monetary policy by lowering interest rates have been hampered due to the decline in economic activity during the COVID-19 pandemic.

Keywords: Credit crunch, Monetary policy, Disequilibrium model
JEL: E44; E51; G28

Introduction

The uncertainty caused by the COVID-19 pandemic has triggered various negative effects on the economic condition (Fernández et al., 2021; Wang & Sun, 2021). One of them has an impact on the financial sector, namely a very sharp decline in credit growth (Engler et al., 2020). Furthermore, banks face increased credit risk, decreased capitalization and increased liquidity risk during the COVID-19 pandemic (Barua & Barua, 2020). The resulting decline in credit or disintermediation of banks is an issue of credit crunch (Wehinger, 2014). Economics professions do not have a clear definition of what is meant by "credit crunch". According to Bernanke & Lown (1991) and Berger & Udell (1994), credit crunch is defined as a shift to the left of the supply curve, causing an excess demand for credit that indicates limited lending. In general, credit crunch is a significant decrease in credit that occurs as a result of a decrease in credit supply or so-called excess demand due to economic uncertainty.

Recently, the uncertain conditions during the COVID-19 pandemic have caused the credit growth trend, especially in Indonesia, to decline every month (Bank Indonesia, 2021). A particularly deep decline occurred in early 2021, reaching -3.65%. The main concern in this study is whether the decline in credit growth during the COVID-19 pandemic is caused by the

supply side (credit crunch phenomenon) or the demand side. This test is important because the policy treatment will differ depending on whether the credit decline is caused by the demand side or the supply side. Furthermore, for financial authorities such as the Central Bank, this information becomes part of the consideration in implementing monetary policy (Reznakova & Kapounek, 2015).

In response to declining credit, some countries have lowered the benchmark interest rate to stimulate credit growth (Wu & Olson, 2020). The Central Bank implements monetary policy by reducing the benchmark interest rate. Consistent with (Safuan & G.Laksono, 2007) perspective, monetary policymakers utilize short-term interest rates to impact the cost of investment capital. For example, the Central Bank of Indonesia gradually reduced the benchmark interest rate from the beginning of the COVID-19 pandemic to reach 3.5% (Bank Indonesia, 2022). However, credit growth still tends to decline and the level of credit risk in the market or non-performing loan (NPL) tends to increase during the COVID-19 pandemic. Credit has become less sensitive to changes in interest rates. This is in line with the opinion of (Armas & Montoro, 2022), which revealed that the credit crunch will have implications for the effectiveness of monetary policy, mainly due to the blocking of transmission lines from monetary variables to economic activity. Wehinger (2014) revealed that the credit crunch will have implications for the effectiveness of monetary policy, mainly due to the blocking of transmission lines from monetary variables to economic activity (Narayan, 2021).

Up until this point, research on the credit decline that occurred during the previous crisis has produced mixed results. Some studies, such as those conducted by Agung et al. (2001), Girardi & Ventura (2021), Harmanta & Ekananda (2005) confirmed that the decline in lending during the financial crisis was caused by the supply side (credit crunch). On the other hand, contrasting results show that in crisis conditions, the decline in credit is not a credit crunch phenomenon because it is more influenced by the demand side (Reznakova & Kapounek, 2015).

There are also different research results such as the study of (Wiratno et al., 2018), which presents the results that the decline in lending was caused by factors from the demand and supply side. The difference in results can be attributed to various crisis conditions. The credit crunch phenomenon tends to occur during crisis and post-crisis periods, such as the 1998 Asian financial crisis and the 2008 global financial crisis. However, in some cases, it is also found that the credit crunch phenomenon is caused by regulations implemented by monetary authorities (EL-Moussawi et al., 2023). Therefore, it can be concluded that previous studies show a variety of results regarding the causes of the credit downturn.

Furthermore, studies related to the decline in credit growth during the COVID-19 pandemic in Indonesia were researched by Darjana et al. (2022) explained that the COVID-19 pandemic had a direct impact on the financial sector, one of which was a significant decrease in credit. However, the cause of the dominant credit decline is still ambiguous whether the decline is more due to the demand side or the supply side. This study does not explain in detail regarding this matter so the condition of the credit crunch phenomenon cannot be concluded

Therefore, this study aims to complement the shortcomings of previous studies. This study analyzes the cause of the credit decline whether it is caused by the demand or supply side using a disequilibrium model. So far, this approach is still limited to identifying credit crunch during the COVID-19 pandemic, especially in Indonesia. The advantage of this model is that it will provide information related to the dominant factor affecting the decline in credit, caused by the supply side or the demand side (Ghosh & Ghosh, 1999). This methodological approach has been used by several previous researchers such as Karmelavičius et al. (2022), Reznakova & Kapounek (2015), Harmanta & Ekananda (2005), Kim et al. (2002) to examine the credit crunch phenomenon in various countries. With the maximum likelihood approach, the disequilibrium model can answer problems related to the existence of the credit crunch that is being discussed. Based on the above explanation, this research is important because

the policy treatment will be different if the decline in credit is a credit crunch or a decline in credit caused by demand. This study implies that it is expected to be a consideration for policy authorities in dealing with banking disintermediation problems.

Literature Review

Concept Of Credit Crunch

Credit crunch is a situation where there is a significant decrease in the supply of credit compared to the demand for credit, thus forming a new equilibrium (Belke & Polleit, 2009). The IMF also defines credit crunch as a decrease in the supply of credit from banking institutions as a result of a decline in the capital value of banks as well as the effects of regulators and certain situations that make banks decide to hold more of their capital. Meanwhile, some other researchers emphasize that credit crunch occurs due to crises and abnormal situations that result in a decrease in credit supply stemming from the reluctance of banking institutions to lend regardless of interest rate conditions (Barney & Souksakoun, 2021; Bernanke & Lown, 1991; Pazarbaşioğlu, 1997). Credit crunch can also come from reduced domestic capital flows from foreign loans, which also has an impact on domestic credit flows (Guo et al., 2021). Agung et al. (2001) further emphasized that the credit crunch caused a sharp decline in credit growth as a result of the limited credit provided by banks (excess demand). Overall, it can be concluded that credit crunch is a significant decrease in credit that occurs due to a decrease in credit supply compared to credit demand (excess demand) because the economy is in a state of uncertainty.
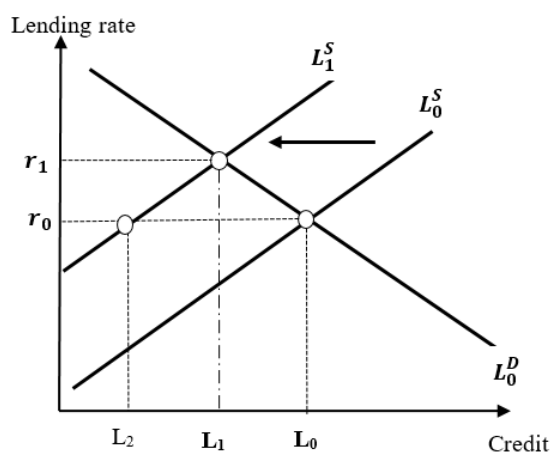

Figure 1 : Credit Crunch
Source : Belke & Polleit (2009)

If the gap between the amount of credit demanded and offered becomes very large, then the supply curve shifts to the left so that the amount of credit offered structurally decreases sharply (excess demand), this condition is referred to as a credit crunch as shown in the figure 1. (L_t^D) as well as credit supply (L_t^S), Prices or interest rates are variables that greatly affect demand and supply (ceteris paribus). Ekananda (2019) explained that when there is an imbalance between the demand and supply of credit, it will cause changes in prices or interest rates to rise or fall, which can be written in the form of a disequilibrium equation, namely $\Delta P = \gamma \left(L_t^D - L_t^S \right)$. This means that if the demand for credit is greater than the supply of credit, the price change will be positive or the price will increase. If the price will increase, the credit realized in the market will be more due to factors from the credit supply and the opposite condition. If the credit supply is smaller than the credit demand, it will result in price changes going down so that the factors that determine credit in the market are factors of credit demand. The intuition can be simplified into $l_t = \min \left(L_t^D, L_t^S \right)$.

Furthermore, Clair & Tucker (1993) stated that credit crunch can be caused by (i) Reserve Requirement (RR) or banking reserves that continue to increase or are higher than

normal, which has an impact on the decline in the ability of banks to provide credit. (ii) High non-performing loans, with implications for tightening requirements and lending due to greater risk. (iii) Ineffectiveness of the intermediation function leading to panic, which resulted in a large portion of customer portfolios being turned into cash when liquidity in the market was limited. (iv) Significant depreciation of the domestic currency resulting in a massive withdrawal of cash, which resulted in further liquidity constraints. (v) Interest spreads widen as a result of defaulted bonds. The credit crunch phenomenon also occurs due to strict policies implemented by monetary authorities such as increasing the minimum reserve requirement of banks and tightening interest rate policies (Girardi & Ventura, 2021; Kim, 1999).

Empirical Study of Credit Crunch

Various studies have been conducted to identify credit crunch in various crisis periods. Various credit crunch studies include the 1997 Asian financial crisis and the 2008 global financial crisis, among others, as conducted by Ghosh & Ghosh (1999) using the maximum likelihood approach disequilibrium model. The results showed that the decline in credit in Korea was more caused by a shock from the supply side or the so-called credit crunch phenomenon, where the credit crunch occurred only in the 4th quarter of 1997. The same results were confirmed by Agung et al. (2001) and Harmanta & Ekananda (2005) using a disequilibrium model, the results showed that the decline in credit that occurred in Indonesia during the Asian crisis period in 1997/1998 was a credit crunch phenomenon caused by a decrease in capital and an increase in credit risk that occurred. This is also in line with the results of the study by Shahchera et al. (2018) that explains that the capital ratio has a significant effect on credit crunch in the Iranian banking system. Meanwhile, during the global financial crisis, interestingly, the study conducted by Schmidt & Zwick (2018) has different results, namely when there is a global financial crisis, the decline in credit that occurs is the result of a decrease in credit demand, because debtors seek financing other than banking. These results are different from the study conducted by Rottmann & Wollmershäuser (2013) who used a micro approach (survey) which identified the existence of a credit crunch. Bijapur (2010) confirmed that the credit crunch phenomenon that occurs during a crisis influences monetary policy because it blocks the transmission path from monetary variables to economic activity. Banks are more cautious in providing credit to the market not only because of liquidity problems or the availability of credit funds, but the increase in credit risk is a consideration for banks to provide credit.

In contrast to the crisis due to the COVID-19 pandemic, previous findings show that the cause of the crisis tends to be caused by the financial sector. Meanwhile, the crisis due to the COVID-19 pandemic is very complex, where the current crisis starts from a health crisis to have an impact on the economy, one of which has an impact on the banking sector. The study conducted by Gönül & Öztekin (2021) using banking panel data from 125 countries with the DID model shows the results that after the COVID-19 pandemic (post-COVID) the cause of the decline in credit is not entirely driven by weakening credit demand. The results show with a sample of banks from all countries and US non-banks explain that the decline in credit that occurred was driven by the supply side of credit compared to the credit demand effect.

Darjana et al. (2022) using the Differencing-in-Differences (DID) model identified a significant decline in credit during the COVID-19 pandemic, the results showed a decline in banking assets during the COVID1-9 pandemic and concluded that a credit crunch occurred. However, this study is only limited to the identification of pre and post-COVID-19 credit. However, this study does not provide complete information on the cause of the decline in credit due to the demand or supply side. Therefore, this study tries to complement previous research by using a different model, namely the maximum likelihood approach disequilibrium model to determine the credit crunch phenomenon and its causal factors during the COVID-19 pandemic.

Data and Research Methods

Data

This study uses secondary data with the type of time series data, and the data used is monthly data, from January 2010 to July 2022. The data describes two different economic conditions, namely before COVID-19: January 2010 to December 2019 (120 months) and during the COVID-19 pandemic: January 2020 to July 2022 (31 months). So the total research observations were 151 months. The data is obtained from Bank Indonesia reports, the Financial Services Authority (OJK) and other macro data obtained from the Central Statistics Agency (BPS) and CEIC data. In general, the data is used to analyze the credit crunch before and after the COVID-19 pandemic. EViews 12 is used for economic and statistical calculations and data processing.

Table 1: Data

Variable	Description	Unit	Source
Credit (L)	Total value of working capital loans disbursed by banks and generated in logarithmic form.	Billion Rupiah	Bank Indonesia
Credit Supply (L^S)			
Credit Capacity $(LCAP)$	Total liabilities minus bank capital, minus required reserves, minus cash in vault and is generated in logarithmic form	Billion Rupiah	Bank Indonesia
Capital/Asset ratio (CAR)	The ratio between capital and assets at risk shows the availability of capital in the company.	Percent (%)	OJK
Non Performing Loan (NPL)	Credit risk or credit default is the percentage of non-performing loans to total loans.	Percent (%)	OJK
BI Rate (RBI)	Monetary policy instruments using the BI7DRR interest rate	Percent (%)	Bank Indonesia
Credit Demand (L^D)			
Output (PDB)	Total Gross Domestic Product (GDP) at constant 2010 prices interpolated with the help of EViews 12. To convert quarterly data into monthly data and generate in logarithmic form.	Billion Rupiah	CEIC Data
Credit Interest Rate (rl)	Represents the interest rate on working capital loans	Percent (%)	OJK
Inflation (INF)	Explaining the increase in prices of goods and services proxied by the CPI (Consumer Price Index).	Percent (%)	BPS
Exchange rate $(KURS)$	The intended exchange rate is the nominal exchange rate, namely the value of the rupiah against the dollar and is generated in logarithmic form.	Rupiah	CEIC data

Model Specifications

Maximum Likelihood Approach Disequilibrium Model

This credit crunch study examines the imbalance between the demand and supply of credit. This study will use a research model, namely the disequilibrium model. Identify whether the credit decline that occurred during the COVID-19 pandemic was caused by credit supply or demand factors. The identification is carried out using the "switching regression" method to explain the cause of the credit decline. This method assumes that credit demand is not always equal to credit supply, in other words, there is an imbalance in the credit market. Therefore, the actual credit level can be formulated as $l_t = \min(L_t^D, L_t^S)$ (Ekananda, 2019). This model will be used to analyze supply and demand imbalances by examining shocks on the supply or demand side.

From the following empirical model, the factors that affect the demand and supply of credit are adopted from the research of Harmanta & Ekananda (2005), Herrera et al. (2013) and Reznakova & Kapounek (2015) to identify variables that affect credit demand and supply. The factors that explain the credit demand function are as follows:

The variables used, for the demand for credit consist of X_t variables are lending interest rates, Output (GDP), inflation and exchange rates. So that the credit demand function is as follows:

$$L_t^D = \alpha_0 + \alpha_1 PDB_t + \alpha_2 rl_t + \alpha_3 INF_t + \alpha_4 KURS_t + \varepsilon_t \tag{1}$$

Where: L_t^D denotes the amount of credit demanded, GDP is the national output, rl is the lending rate (working capital loan), INF is inflation and $KURS$ is the exchange rate of rupiah against the dollar. While ε_t is error.

Meanwhile, credit supply is determined by several variables, including LCAP, which is the capacity of credit that can be lent, lending interest rates, non-performing loans (NPL), bank capital (Capital Adequacy Credit) and policy interest rates (RBI). Here is the credit supply function:

$$L_t^S = \beta_0 + \beta_1 Lcap_t + \beta_2 CAR_t + \beta_3 NPL_t + \beta_4 RBI_t + \varepsilon_t \tag{2}$$

his study adopts the disequilibrium model developed by Amemiya (in Ekananda, 2019) by solving equations (1) and (2) into the following simultaneous equation form:

$$L_t^D = \alpha_t X_t + u_t \tag{3}$$

$$L_t^S = \beta_t Z_t + v_t \tag{4}$$

Where X_t is an exogenous variable of demand function and Z_t is an exogenous variable of supply function, and u_t and v_t are uncorrelated residuals (serially independent random variables of zero means) of supply and demand functions, respectively. On the other hand, assuming that the price level is not flexible enough to balance supply and demand at any time so that the market is in disequilibrium, the quantity of credit (L_t) is as follows:

$$L_t = \min(L_t^D, L_t^S) \tag{5}$$

If $L_t^D > L_t^S$, the observed decrease in actual distribution (L_t) is caused by the supply function. On the other hand, if $L_t^D < L_t^S$, the observed decrease in actual distribution (L_t) is more influenced by the demand function. And

$$\triangle P_t = \gamma(L_t^D - L_t^S) \tag{6}$$

Where $\triangle P_t$ represents the change in price or the change in the interest rate. While γ is an unknown scalar parameter with a positive value. The above model can be reformulated by considering the period of price increase (interest rate) or $\triangle P_t > 0$ and the period of price decrease (interest rate) $\triangle P_t < 0$. When there is a price increase, there will be excess demand, so the actual amount of credit will be equal to the amount of credit offered.

Furthermore, to find the estimator value of the disequilibrium equation above, the maximum likelihood approach is used.

$$L = \prod_t \{g_1(L_t)[1 - G_2(L_t)] + g_2(L_t)[1 - G_1(L_t)]\} \tag{7}$$

Where:

$g_1(L_t)$: The probability density of loans granted in the credit supply is assumed to be normally distributed.

$g_2(L_t)$: The probability density of loans disbursed in credit demand assumed to be normally distributed

$G_1(L_t)$: Cumulative distribution function in credit supply.

$G_2(L_t)$: Cumulative distribution function in credit demand.

In summary, the estimation of the disequilibrium model with the maximum likelihood approach can be obtained from solving the simultaneous equation and iterating the likelihood function above which is done by the Newton-Raphson method. Furthermore, based on the maximum log-likelihood estimation results obtained, the next step is to find the estimated amount of credit demand L_t^D and the estimated value of the amount of credit supply L_t^S. The results of the two estimates are then compared;

1. If $L_t^D > L_t^S$, then the observed quantity of L_t is in the supply function (L_t^S) and it can be said that the decline in lending that occurred during the COVID-19 pandemic was more due to the credit supply function. This condition is called the credit crunch phenomenon.
2. Meanwhile, if $L_t^D < L_t^S$, then the observed quantity of L_t is in the demand function (L_t^D). Or it can be said that the decline in lending that occurred during the COVID-19 pandemic was more caused by credit demand.

Result and Discussion

Research Result

Table 2: Maximum Likelihood Approach Disequilibrium Model Estimation Results Credit Demand and Supply Equation

Variable	Before the COVID-19 Pandemic		During the COVID-19 Pandemic	
	Coefficient	**z-Statistic**	**Coefficient**	**z-Statistic**
Credit Supply (L_t^S)				
Konstanta	2.2228	6.478763	4.520467	1.042063
LCAP	0.618517*	8.649314	0.423328	0.6736
CAR	0.014641*	2.473299	-0.00993	-0.7313
NPL	-0.02905*	-1.92941	-0.13359*	-3.37009
RBI	-0.00128	-0.23085	-0.04018	-1.05379
Credit Demand (L_t^D)				
Konstanta	-6.82567	-6.1754	3.163876	1.195085
PDB	2.165337*	14.55288	0.527955 *	3.360304
RI	-0.01846*	-2.19624	-0.02013	-2.06803
INF	0.032032*	4.6444	0.024121*	3.29492
KURS	-0.00651*	-6.1687	-0.00021	-0.18465
gamma (γ)	2.185679*	11.75077	3.019649*	4.292432
sigma (σ_u)	0.032876	10.42176	0.006563	2.992213
sigma (σ_v)	0.03379	11.23963	0.01728	3.752246

Notes : *p<0.05

Maximum Likelihood estimation results of the credit demand and credit supply equations of commercial banks with a disequilibrium model for the period 2010 to 2022 (before and during the COVID-19 pandemic). The initial value of credit demand and supply is obtained through TSLS calculation. Furthermore, the initial value is used to obtain the coefficient value of the disequilibrium model using the maximum likelihood approach. The analysis results show that the maximum likelihood function values before and during the

pandemic are 378.754 and 154.2438, respectively. The maximum likelihood function value was reached after evaluating the function and converged after 18 and 14 iterations using the Newton-Raphson method, respectively. In summary, the parameter estimation results of the credit supply and demand functions are presented in Table 2.

Table 2 shows the variables that affect credit from the supply and demand side of credit during the COVID-19 pandemic. Variables such as credit capacity (LCAP), capital availability (CAR), and policy rate (RBI) have no significant influence on credit offered by banks. Meanwhile, non-performing loan (NPL), which is the level of risk of credit default, has a very significant influence on credit disbursed by banks. Meanwhile, from the demand function, during the COVID-19 pandemic, the GDP and inflation variables have a significant influence on credit demand. The decline in economic activity, which can be reflected in the level of GDP and inflation, has a significant effect on credit demand during the COVID-19 pandemic. This situation causes economic actors to reduce business expansion amid economic uncertainty, so investors are reluctant to take credit from banks. In line with the opinion of Schmidt & Zwick (2018) and Gönül & Öztekin (2021), who revealed that when the market is in a state of uncertainty due to a crisis, businesses are reluctant to invest so credit demand decreases. Furthermore, other variables such as lending rates and exchange rates do not have a significant influence on credit demand during the COVID-19 pandemic.

Discussion

Credit Crunch during COVID-19 Pandemic

The actual decline in credit in the market will directly impact the real sector (Darjana et al., 2022). The decline in credit that occurred during the COVID-19 pandemic is one question of whether it is a credit crunch phenomenon or not. The credit crunch phenomenon is characterized by an excess demand for credit compared to the supply of credit. To review the occurrence of credit crunch, this study calculates the estimation results by comparing the demand and supply of credit based on the estimation results from Table 2. The results of the calculation of the estimated imbalance between demand and supply of credit before and during the COVID-19 pandemic are presented in the figure below.
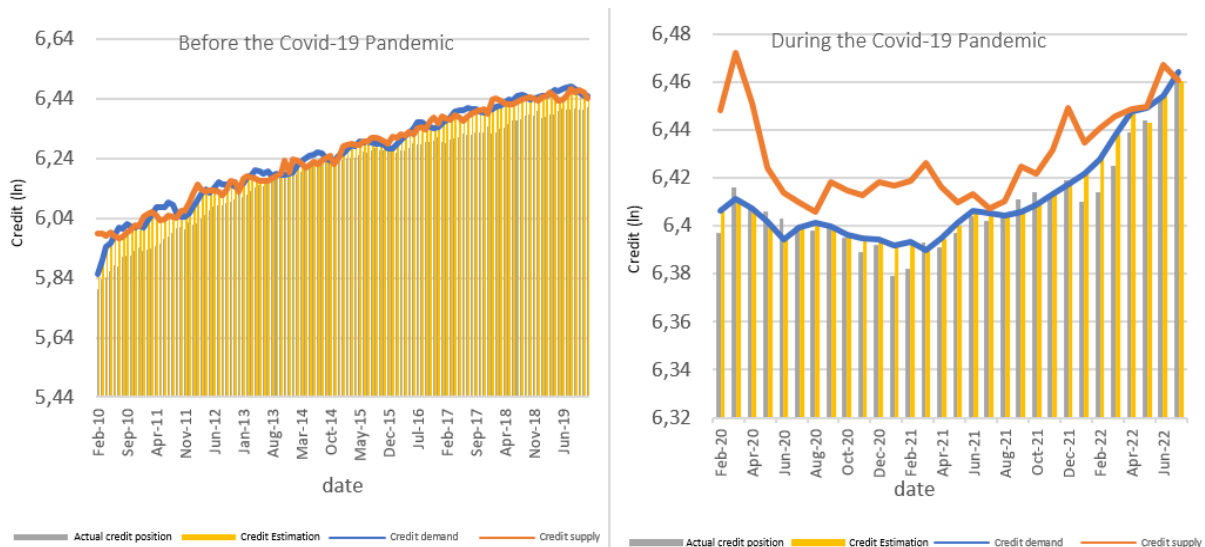

Figure 2: Credit Supply and Demand Estimation Results During COVID-19

From the results of credit estimation calculations, before the crisis, credit demand and credit supply were relatively stable, driving credit growth. Meanwhile, during the COVID-19 pandemic, it can be seen that the credit supply is greater than the credit demand side. In other words, the decline in credit during the COVID-19 pandemic is more due to the demand side. Therefore, the actual credit in the market is more dominantly determined by factors on credit

demand. This result confirms that the decline in credit that occurred during the COVID-19 pandemic is not a credit crunch phenomenon. In general, the COVID-19 pandemic has an impact on the real sector and the banking sector. This is in line with the opinion of Guerrieri et al. (2022) revealed that the decline in credit that occurred during the COVID-19 pandemic was the result of a shock originating from the supply side and the demand side. However, the credit crunch phenomenon did not occur because, during the COVID-19 pandemic, the decline in credit was caused by the demand side being more dominant than the credit supply side. The same result was found by Gönül & Öztekin (2021) that there was a decrease in credit demand which was more dominant than credit supply during the COVID-19 pandemic. The decline in credit demand occurred due to the economic downturn disrupted by the COVID-19 pandemic (Dursun-de Neef & Schandlbauer, 2022). COVID-19 countermeasure policies such as restrictions on community mobility make people's demand or purchasing power limited. As a result, it will have an impact on the performance of the business sector, which has decreased. The implications that occur have an impact on the decreasing demand for credit, both for working capital credit, investment and credit for consumption. Meanwhile, from the supply side, banking liquidity is still healthy enough to fulfill credit demand. However, the increase in credit/NPL risk is a consideration for banks in providing credit in the market during the COVID-19 pandemic.

The same results occurred in the global financial crisis 2008 where no credit crunch phenomenon was found amidst the downward pressure on credit that occurred in Indonesia (Mustika et al., 2015). Wiratno et al. (2018) explained that during the global financial crisis, the banking sector in Indonesia was still quite stable so banking liquidity and capital were able to meet existing credit demand. However, conditions were different from the conditions of the 1998 monetary crisis, where the credit crunch phenomenon was found as a result of previous studies, namely the study of Agung et al. (2001) and Harmanta & Ekananda (2005). Credit crunch conditions that occurred during the 1998 monetary crisis were caused by a decrease in bank liquidity and an increase in non-performing loans/NPL (Agung et al., 2001; Harmanta & Ekananda, 2005)

In short, during the COVID-19 pandemic, the credit crunch phenomenon did not occur. This is not least the result of various policies issued by financial authorities in maintaining the supply side. For example, Bank Indonesia supported the adequacy of banking liquidity by implementing a reduction in the Statutory Reserve Requirement to 9% and injecting liquidity for banks to continue the intermediation function during the COVID-19 pandemic. This is confirmed by Armas & Montoro (2022) explaining that the implementation of a liquidity injection program for the financial system will avoid the credit crunch problem. Then the Financial Services Authority (OJK) through POJK No. 11 of 2020 provides relaxation for banks in the form of credit restructuring in the form of postponement of principal and interest installments to reduce the increase in non-performing loans (NPL). However, according to Darjana et al. (2022) reducing bank stress through credit restructuring will increase banking loans at risk (LAR).

Analysis of the Decline in Credit During the COVID-19 Pandemic: Credit Demand and Supply Factors

Credit Demand

The results of this study found that Gross Domestic Product (GDP) has a unidirectional (positive) and significant relationship with credit demand, which means that increasing economic growth will increase credit demand, and vice versa in weak economic conditions (recession), credit demand tends to decline. This relationship supports the rationale for using this variable as an important proxy for credit demand. This is also in line with existing conditions, where the decline in credit is in line with the decline in economic growth due to COVID-19 (Barua & Barua, 2020). As argued earlier, the low demand for bank credit during the COVID-19 pandemic is a logical consequence of the contraction in aggregate demand and

the fall in output due to the COVID-19 pandemic. The crisis caused by the COVID-19 pandemic has caused real GDP to contract deeply, reaching -6.21% in July 2020. Gönül & Öztekin (2021) explain that declining economic performance will also make the credit decline depressed. The economic downturn makes companies reduce their production and from the public side hold back their consumption, which ultimately leads to a decrease in lending (Horvath et al., 2021).

Then the results of this study found that one of the other factors that determine credit demand in Indonesia is inflation. Inflation has a significant positive effect on credit. This result indicates that economic agents will consider persistent inflation in determining their decisions on future credit demand. However, temporary inflation, such as in certain months, does not affect economic agents in determining credit demand in Indonesia. Inflation reflects the expectation that future increases in the relative prices of goods and services will lead to an increase in the amount of credit demanded (Armas & Montoro, 2022). Thus, inflation during the pandemic has been moderate and low, leading to the expectation that the economy will decline amidst uncertainty, which in turn has restrained the pace of credit.

Credit Supply

From the banking side, the banking indicator that determines lending during the pandemic period is the non-performing loan (NPL) which explains banking risk. In this case, it was found that NPL had a significant negative effect on total credit during the COVID-19 pandemic. The higher the NPL owned by the bank, the lower the credit that can be disbursed. High NPL cause banks to form larger write-off reserves so that fewer funds can be channeled through lending. The results of this study are in line with the study of Sinkala et al. (2022) who also found that high NPL reduce lending.

Other indicators such as credit capacity and capital adequacy ratio (CAR) are not very influential in determining lending. During the COVID-19 pandemic, the decline in lending was not due to limited credit capacity. During the COVID-19 pandemic, capital adequacy ratio (CAR) did not influence lending. From the beginning of the crisis, the liquidity and capital conditions of banks were still maintained during the COVID-19 pandemic. This is in line with the results of the study of Safuan et al. (2022) explained that the banking system in Indonesia was still in the safe category after testing financial stress during the COVID-19 pandemic. Although there was a significant decline in credit growth from Q2-2020 to Q1-2021, which was accompanied by an increase in NPL, it did not cause a banking crisis.

Effectiveness of Monetary Policy on Credit During the COVID-19 Pandemic

The estimation results of the above model show that the decline in credit during the COVID-19 pandemic is more caused by the demand side or it is concluded that there is no credit crunch phenomenon. The decline in economic activity during the COVID-19 pandemic, which led to a decrease in the value of the company's balance sheet, made economic actors prefer to hold back on expanding their business amid uncertain conditions. So far, the Central Bank has responded by lowering the benchmark interest rate. Bank Indonesia has gradually reduced policy rates from the beginning of the COVID-19 pandemic 6 (six) times with a total of 150 bps and maintained the BI7DRR interest rate of 3.5% until July 2022 to maintain economic conditions due to the COVID-19 pandemic. So far, the reduction in policy rates has been followed by a reduction in credit facility interest rates. This is part of the adjustment of bank lending rates to monetary policy. But the opposite happened, credit growth even tended to decline along with the decline in interest rates. The results of this study confirm that a reduction in lending rates does not encourage an increase in credit demand or that policy transmission is hampered due to a contraction on the demand side. The decline in the value of the company's balance sheet explains the decline in productivity and profitability of the company as well as the decline in people's purchasing power. Moreover, the implementation of the social restriction policy (PSBB) has weakened household purchasing power and reduced aggregate demand for goods and services.

During the COVID-19 pandemic, monetary policy by lowering policy rates did not respond to credit in the market. This is because, during COVID-19, the fundamental consideration for economic actors in taking credit is the risk involved (Zhang & Sogn-Grundvåg, 2022). Some other risks include credit risk, liquidity risk and market risk. These occur through various issues such as liquidity crunch, credit squeeze, increase in non-performing assets and loan default rates, reduced returns from loans and investments, decrease in market interest rates, and trigger bank runs (Barua & Barua, 2020). From the community side, the risks considered are the decline in economic activity as shown by the declining economic growth rate and the risk of economic uncertainty so people tend to refrain from taking credit (Ahmed et al., 2022). However, expansionary monetary policy still needs to be implemented to improve economic conditions. In line with the opinion of Fikri (2018), who revealed that the Central Bank implementing an expansionary policy rate will maintain price expectations for the market.

In improving economic conditions amid the COVID-19 pandemic, it is evident that it is not enough to implement an expansionary monetary policy by implementing a low policy interest rate cut. However, it is also necessary to apply non-conventional monetary policy and fiscal policy (Yilmazkuday, 2022). One of the unconventional monetary policies implemented in Indonesia during the COVID-19 pandemic period was the purchase of government bonds. Furthermore, in the monetary policy response to encourage economic recovery due to the COVID-19 pandemic in addition to interest rate policy, Bank Indonesia has injected liquidity (quantitative easing) reaching IDR 796.50 trillion from 2020 to mid-2021. In addition, Bank Indonesia must continue to relax the down payment provisions for motor vehicles and loan to value (LTV) for property loans and strengthen the macro-prudential intermediation ratio (RIM) policy to accelerate economic recovery and to support the effectiveness of lending in Indonesia during the COVID-19 pandemic.

Conclusion

The COVID-19 pandemic has caused economic uncertainty, which has an impact on the financial sector, namely a significant decline in bank credit. This study tries to answer the problem of the decline in credit. Is the decline in credit that occurs more due to the demand side (excess supply) or is it caused by the supply side, which is called the credit crunch phenomenon (excess demand)? Furthermore, the purpose of this study is to examine the determination of factors affecting credit and the role of monetary policy on credit.

By using the maximum likelihood approach disequilibrium model, the results of this study can be concluded that the estimated credit demand is greater than the estimated credit supply (excess supply). Therefore, the demand component of credit determines the actual credit available in the market. In other words, the decline in credit that occurred during the COVID-19 pandemic was not a credit crunch phenomenon, but due to a shock on the demand side. Some of the factors affecting credit during the pandemic are the decline in national income and the low inflation rate. This shows that the economy is weakening until it experiences an economic recession due to the COVID-19 pandemic. From a credit supply perspective, an increase in NPL can reduce the amount of credit offered. Banks have become cautious in providing credit due to the increase in non-performing loans during the COVID-19 pandemic. In addition, this study found that monetary policy that lowered interest rates (BI7DRR) during the pandemic period was less effective in influencing credit. Although the policy rate has been lowered, the reduction in lending rates did not increase the demand for credit. This is due to the main problem from the demand side, namely the decline in economic conditions, which makes investors and businesses reluctant to conduct credit transactions and business expansion.

Suggestions and Policy Implications

1. This study shows that the decline in credit during the pandemic is not a credit crunch phenomenon, but is more influenced by a decline in demand. Therefore, it is necessary

to focus on capital assistance and stimulus policies for the community and businesses.

2. The increase in non-performing loans (NPL) during the pandemic shows that targeted credit restructuring policies are needed to maintain banking stability and reduce the risk of default.

3. As the decline in credit is more demand-side driven, monetary policy that only lowers interest rates is considered insufficient to increase credit. This indicates that loose monetary policy may not be effective in stimulating economic activity, so unconventional monetary policy is needed to encourage real sector recovery.

Declaration

This research is free and does not conflict with the interests of anyone. All authors contributed fully to this research, both in obtaining data, processing data, writing, and checking the manuscript.

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