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The Impact of the Credit Crunch on Initial Public Offering Decision During the Covid-19 Pandemic

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Abstract

This study aims to analyze the impact of a credit crunch on a firm's likelihood of conducting an IPO during the COVID-19 pandemic. The data used is unbalanced panel with a total of 178 IPO companies (n) during a four-year (t) from 2018 to 2021. In this study, a logistic regression equation model is used. The study on credit crunch is still limited, the majority of which focuses on the financial crises of 1998 or 2008. Studies on the effects of the COVID-19 pandemic's financial crunch on Indonesian IPO businesses have never been done. When the COVID-19 crisis hit the Indonesian market, it appears from the number of IPO companies and the number of shares outstanding during IPOs in Indonesia that the decline was not as severe and that companies continued to undertake IPOs. While credit growth in the banking sector is more sensitive in Indonesia than in other nations, it nevertheless tends to slow down and even turn negative during the COVID-19 epidemic. By using the logistic regression test, the results show that when funding is becoming increasingly scarce (credit crunch), it would be increasing the probability of a company going for an IPO during the COVID-19 pandemic.

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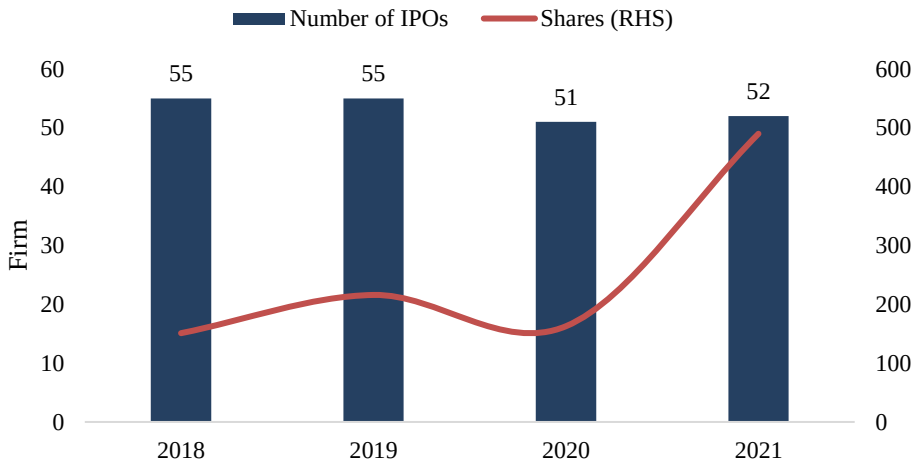
1. Introduction

The COVID-19 pandemic has created supply and demand problems in the financial sector, causing the credit crunch phenomenon or scarcity of funding. If the credit crunch lasts for a long time, it is not impossible for many corporations to fail to survive. The reason is that if the condition of scarcity of funding continues, it will be difficult for the company to pay off the debt obligation that will be due and has the potential to go bankrupt. One of the efforts that can be made by corporations to pay off short-term debt during a credit crunch is to seek funding in the capital market by conducting an IPO. According to Fan & Uchida (2019) companies with high level of short-term debt, when a credit crunch occurs, will tend to carry out an IPO to obtain funding, even though capital market conditions are bearish.

In the Indonesian context, despite the bearish market, the number of companies conducting IPOs has not decreased drastically compared to the year before the COVID-19 pandemic (Figure 1). Even the value of shares outstanding in 2021 is higher than in 2018 and 2019.



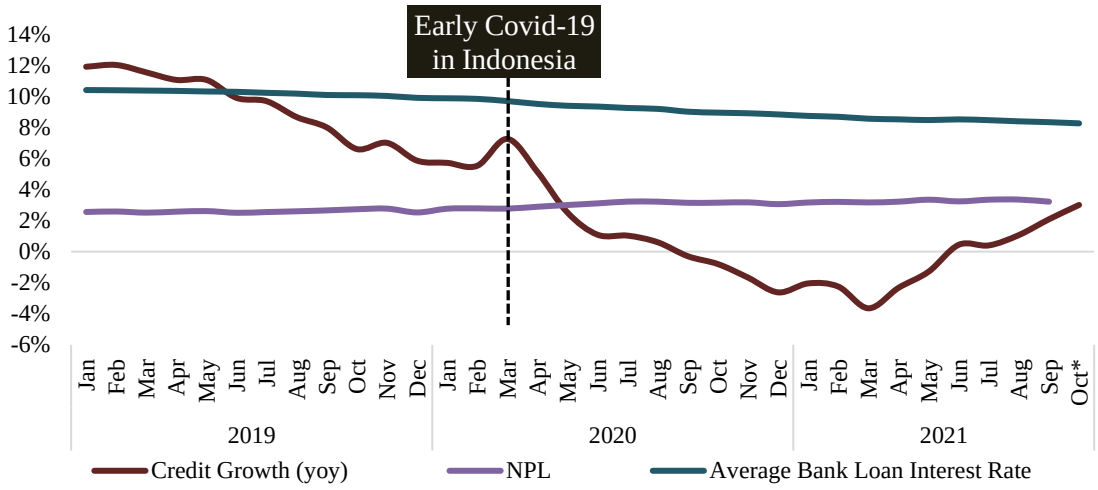
Source: BEI (2015)

Figure 1. Number of IPO companies and outstanding shares

Fan & Uchida (2019) highlight that companies that carry out IPOs when the risk on the financial market is high due to the uncertainty of the COVID-19 pandemic is driven by many factors. One of the possible factors is the difficulty in obtaining bank loans. The purpose of this study is to investigate this phenomenon in Indonesia. During the COVID-19 pandemic, banks tended to be more careful in extending credit to the real sector, which was still weak, given the high level of uncertainty that drives credit risk. This high level of risk awareness has discouraged banks to lower lending rates, even though the benchmark interest rate (BI7DRR) has been lowered considerably (Bank Indonesia, 2021).

A credit crunch is a decline in bank loans despite stable real interest rates and consistent quality among prospective borrowers (Bank Indonesia, 2021). Based on

definition of "credit crunch," Indonesia is experiencing a credit crunch, as shown in Figure 2. The credit slowdown has been occurring since mid-2019.



Source: Bank Indonesia (2021)

Figure 2. Investment Credit Growth, Investment Credit NPL and Average Bank Credit Interest Rates in Indonesia

According to Bank Indonesia (2019) several factors, both from the demand and supply sides, has contributed to this unfavorable credit development. On the demand side, corporations tended to hold back credit requests, which was attributable to the declining performance of exports and non-construction investment activities. Meanwhile, from the supply side, banks were more cautious in extending credit, considering the growing uncertainty in global market due to the trade war between the United States and China, which could affect the performance of domestic corporations.

Considering the importance role of bank credit plays in financing the economy, which can be a driving force for economic growth, many research have been conducted to examine the impact of crises on credit crunch (Fan & Uchida, 2019; Ishikawa & Tsutsui, 2013). However, most of these studies were carried out decades ago and in the case of developed countries. Not only that, the triggers for the credit crunch in previous crises were shocks to the financial sector, unlike COVID-19 pandemic which is the context being investigated in this study.

There are previous studies that explore the impact of the COVID-19 on the stock market directly across countries (Baig & Chen, 2022; Topcu & Gulal, 2020; Zhang, Hu, & Ji, 2020). A study on stock markets in developing countries was conducted by Topcu & Gulal (2020), which showed that developing country stock markets in Asia were more affected by the COVID-19 pandemic than Europe.

This research will be closer to Fan & Uchida, (2019) which includes credit crunch variables in relation to IPO decisions and economic crises. Fan & Uchida (2019) conducted research on companies that continued to conduct IPOs when the credit

crunch phenomenon occurred or when the market was bearish by taking a sample of companies in Japan. That study found that companies with a high amount of short-term debt are more likely to go public in a bearish market than companies with relatively smaller amounts of short-term debt.
The main difference is that this research will focus on measuring the effect of profitability on moderating the impact of the credit crisis on the possibility of companies conducting an IPO when COVID-19 occurs. In addition to the possibility of an IPO decision during a credit crisis due to the COVID-19 pandemic, the economic crisis starts in the real sector. There has never been a study linking the three credit crunch variables, IPO decisions, and profitability, so this is a contribution to this research. Studies on the effect of profitability during the credit crunch due to the COVID-19 pandemic on IPO companies in Indonesia have never been carried out.

Not to mention that the country context is different; this study will concentrate on developing countries, specifically Indonesia. Indonesia was chosen as a research location on the grounds that the Indonesian capital market is a developing and attractive market, even during the COVID-19 crisis, which was reflected in the increasing number of outstanding IPO shares. Another reason is that in the financial sector, credit growth in Indonesia is more responsive compared to other countries, and even credit growth tends to slow down and even go negative during the COVID-19 pandemic.

This paper also contributes to: (1) Academic literature regarding the COVID-19 pandemic, especially to assess the credit crunch can cause companies to conduct IPOs, so that they can change the company's funding structure; (2) Input for regulators, that the company's funding structure can use the stock market to overcome the credit crunch phenomenon that occurred during the COVID-19 pandemic; (3) lesson learned for investors purchasing IPO shares in a bearish market.

This study focuses on measuring the effect of a credit crunch on a company's probability of conducting an IPO during the COVID-19 pandemic. The rest of the paper is organized into several sections. Section two provides literature review of the impact of credit crunch. Section three presents research methods. Whilst the next sections consist of results and discussion, and conclusion.

2. Literature Review

Pecking Order Theory

The pecking order theory shows that companies turn to external funding due to pressure from a lack of internal funds. In general, companies consider debt the most preferred option over equity in the capital structure to finance deficits because it is cheaper than equity and companies may have better negotiations with lenders (Bhama, Jain, & Yadav, 2018). Other research Yıldırım & Çelik (2021) show that the pecking order theory holds true for the decision-making of enterprises listed on the Borsa Istanbul and that, as investment levels rise, internal funds and debt

sensitivity increase. Meanwhile, according to (Guizani, 2020), the pecking order paradigm promoted by Saudi Islamic enterprises is unfounded.

The theory and findings based on the pecking order theory, which are different in each country, underlie the purpose of this research, namely, that with limited external funding options due to the credit crunch due to the COVID-19 pandemic in Indonesia, companies can conduct IPOs as an alternative funding source. This option makes sense, considering that the COVID-19 crisis has made internal funding choices even tighter. The COVID-19 crisis is likely to have disrupted the trend of corporate savings in the short term due to decreased revenues and has led to a decrease in the dependence of the corporate sector on bank loans (Demary, Hasenclever, & Hüther, 2021).

Credit Crunch

The term "credit crunch" was first recognized in mid-1966 when the Federal Reserve enacted a tighter monetary policy to slow down the demand for goods and services to fight inflation. The tight monetary policy has increased short-term interest rates beyond the set ceiling on deposit rates. This resulted in the withdrawal of deposit funds from banks to allocate them to other financial instruments in order to obtain higher interest rates, resulting in a significant reduction in deposits, which hampered the supply of bank credit. Since financial deregulation was enacted in the early 1980s, the limit on deposit interest rates was removed so that banking disintermediation did not occur again as a result of this policy.

Broadly speaking, the definition of a credit crunch is a supply-driven contraction of credit (Cingano, Manaresi, & Sette, 2013). More technically, the credit crunch is a tightening of the household financial conditions and a shift in borrowing criteria that results in a new steady state with less debt (Alonso, 2018).

On the other hand, Ishikawa & Tsutsui (2013) proposed a new concept for identifying the credit crunch phenomenon as a shift in the supply and demand curves for credit. Ishikawa & Tsutsui (2013) credit crunch measure is more effective than the concepts in previous studies because it considers the factors of decreasing credit supply and increasing credit demand as causes for tighter loans. By simultaneously estimating the two functions, this measure can better describe the effect of each factor on reducing total credit.

3. Research Methods

This study aims to analyze the company's probability of going public during the COVID-19 pandemic due to the credit crunch. The data is an unbalanced panel, with a sample size (n) of up to 178 IPO businesses, and a time period (t) of four years from 2018 to 2021. This study uses the logistic regression equation model and is developed based on the pecking order theory, model in Baig & Chen (2022) and Fan & Uchida (2019). Logistic regression is a technique for building predictive models, often known as linear regression or least squares regression (OLS). In contrast, the dependent variable in logistic regression is predicted on a dichotomous scale. The dichotomous scale considered is a nominal data scale with two

categories. Examples include "up" and "down," "yes" and "no," "good" and "bad." OLS requires a regularly distributed residual variance. In contrast, logistic regression follows a logistic distribution, so assumptions like those of OLS are unnecessary. The maximum likelihood method is used to estimate parameters in logistic regression. The logistic regression model uses binary, ordinal, and multinomial responses.

The aspects studied are total assets, total debt, short-term debt, long-term debt, and the company's ROA. The dependent variable used is a dummy variable, namely companies that carry out an IPO in the pandemic year (2020-2021) or when a credit crunch occurs. It has a value of 1 and 0 for other years.

Hypothesis 1: Increasingly scarce funding (credit crunch) increases a company's probability of going public during the COVID-19 pandemic.

Then the equation becomes as follows:

$$CovidIPO_i = Ln\frac{P1}{1-P1} = \alpha_0 + \alpha_1 CCrunch_{i,t} + \alpha_2 SDebt\_TC_{i,t} + \alpha_3 LDebt\_TC_{i,t} + \alpha_4 DebtRatio_{i,t} + \alpha_5 LnAsset_{i,t} + \alpha_6 LnAge_{i,t} + \alpha_7 ROA_{i,t} + \alpha_8 LnIHSG_{i,t} + E_{i,t}$$

Furthermore, to see the effect of profitability on moderating the impact of a credit crunch on the probability of a company going for an IPO.

Hypothesis 2: Profitability reduces the effect of the credit crunch phenomenon on a company's possibility of going public during the COVID-19 pandemic.

Then the equation becomes as follows:

$$CovidIPO_i = Ln\frac{P1}{1-P1} = \gamma_0 + \gamma_1 CCrunch_{i,t} + \gamma_2 SDebt\_TC_{i,t} + \gamma_3 LDebt\_TC_{i,t} + \gamma_4 DebtRatio_{i,t} + \gamma_5 LnAsset_{i,t} + \gamma_6 LnAge_{i,t} + \gamma_7 ROA_{i,t} + \gamma_8 LnIHSG_{i,t} + \gamma_9 ROAxCCrunch_{i,t} + E_{i,t}$$

Where is,

i	=	Individual 1,2,3....x
α_0	=	Constant
$\alpha_{1,2...n}$	=	Regression Coefficient
CovidIPO	=	Dummy variable, value 1 for IPO in 2020-2021 (pandemic year), and value 0 for other years
Ln P1/(1-P1)	=	Comparison between the number of expected probabilities (IPO during COVID-19) and those that are not expected.
$CCrunch_t$	=	Dummy variable, value 1 when credit growth is negative, and value 0 otherwise.

$SDebt\_TC_t$	=	The ratio of short-term debt to the total equity of the IPO company
$LDebt\_TC_t$	=	The ratio of long-term debt to the total equity of the IPO company
$DebtRatio_t$	=	Ratio of total debt to total assets
$LnAsset_t$	=	Total Assets in the IPO Year
$LnAge_t$	=	Firm Age at IPO
ROA_t	=	Return on asset
$LnIHSG_t$	=	The price of the Jakarta Composite Index (IHSG) at the time of the IPO
$ROAxCCrunch_t$	=	Return on Assets that interact with CreditCrunch
E	=	Error

4. Results

This study uses logistic regression model to examine the probability of companies to carry out IPOs despite bearish market conditions due to COVID-19. One of the main factors driving companies to carry out IPOs during bad market conditions is the scarcity of funding from bank credit (Fan & Uchida, 2019). Logistic regression is used because the dependent variable has a binary value, namely a value of 1 if the company conducts an IPO during the COVID-19 pandemic and a value of 0 if the company does not carry out an IPO during the COVID-19 pandemic. Descriptive statistics related to the variables used in this study are presented in Table 1.

Table 1. Variable descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
$SDebt\_TC_t$	178	62.0719	74.4808	0.2	461.5
$LDebt\_TC_t$	178	30.4011	44.4938	0	252.8
$DebtRatio_t$	178	38.5747	21.4943	0.3	85.8
$LnAsset_t$	178	26.8	1.3140	23.2	30.1
$LnAge_t$	178	2.5870	0.7556	0.7	4.2
ROA_t	178	1.9174	9.0684	-66.2	24.9
$LnIHSG_t$	178	8.6814	0.0971	8.4	8.8
$ROAxCCrunch_t$	178	0.6314	3.4371	-10.6	24.9

Source: Researcher, 2022, processed

Table 2. Dummy Variable descriptive statistics

CovidIPO	Freq.	Percent	Cum.
0	126	70.79	70.79
1	52	29.21	100.00
CCrunch	**Freq.**	**Percent**	**Cum.**
0	107	60.11	60.11
1	71	39.89	100.00

Source: Researcher, 2022, processed

The data used is including data on IPO Decisions (CovidIPO), Credit crunch ($CCrunch_t$), Short Term Debt ($SDebt\_TC_t$), Long Term Debt ($LDebt\_TC_t$), Total Debt to Total Assets ($DebtRatio_t$), Total Assets ($LnAsset_t$), Company Age at IPO ($LnAge_t$), Return on asset (ROA_t), The price of the Jakarta Composite Index (IHSG) at the time of the IPO ($LnIHSG_t$) and Return on Assets that interact with CreditCrunch ($ROAxCCrunch_t$).

IPO decisions during the COVID-19 pandemic is the main dependent variables tested in this study. The IPO decision variable is a dummy variable, so the lowest value is 0 and the highest is 1. The value 1 represents the IPO company from the 7th month of 2020 to the 12th month of 2021, while the value 0 is the period other than that. The COVID-19 pandemic period in Indonesia itself started in the 3rd month of 2020, but before a company is declared an IPO, the process will take 3–4 months (BEI, 2015). This means that there is a time lag; the company's decision to conduct an IPO will be based on conditions 3–4 months before the company is officially called an IPO; therefore, the dependent variable for IPO decisions during COVID-19 starts in the 7th month of 2020. Companies that carry out an IPO from the 7th Month of 2020 to the 12th Month of 2021 total 52.

Furthermore, the credit crunch variable (CCrunch) is a dummy variable; a value of 1 indicates a period when bank credit growth is declining, and a value of 0 indicates another. Conditions of scarcity in funding are indicated by periods of negative credit growth.

The coefficients in logistic regression cannot be directly interpreted, the results of these coefficients can only show the direction of the correlation or the influence of the relationship between the independent variables on the dependent variable. In Table 3, all variables except $LnAsset_t$, ROA_t, $ROAxCCrunch_t$ (Table 3 and Table 4) have positive coefficient values. A positive slope indicates that if there is an increase in an independent variable, it will increase the probability of a company conducting an IPO during the COVID-19 pandemic, and vice versa for a negative coefficient. According to the sign of the slope coefficient from the test results on the model, the following is obtained:

- When compared to normal conditions, the credit crunch (CCrunch) has boosted the probability of companies conducting IPOs when the market is bearish due to the COVID-19 pandemic.

- The higher the total debt (DebtRatio), the higher the probability of a company conducting an IPO in bearish market conditions.
- Even though the JCI price condition is declining (LnIHSG), the probability that the JCI price condition will encourage companies to conduct an IPO during the COVID-19 pandemic remains positive.
- Increasing company age (LnAge) will increase the probability of companies conducting IPOs during the COVID-19 pandemic.
- Increasing short-term debt (SDebt_TC), increasing the probability of a company conducting an IPO in a bearish market condition due to the COVID-19 pandemic.
- Similarly, the higher the company's long-term debt (LDebt_TC), the more likely it will conduct an IPO during a bear market.
- As for total assets (LnAsset), an increase in the company's total assets will reduce the probability of the company conducting an IPO in bearish market conditions.
- An increase in the company's profitability (ROA_t) will reduce the probability of the company conducting an IPO in bearish market conditions.

Coefficient values need to be transformed into odds ratios so they can be interpreted. The odds ratio is the ratio of two probabilities, namely the chance of success to the chance of failure. The chance of success in this context is the probability of a company having an IPO during the COVID-19 pandemic, while the chance of failure is the opposite.

Table 3. Logistic Regression Output for Hypothesis 1

Number of obs	=	178
LR chi2(8)	=	33.61
Prob > chi2	=	0.0000
Pseudo R2	=	0.1563

CovidIPO	Coef.	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
$SDebt\_TC_t$*	0.012	0.989	0.006	1.90	0.058	0.000	0.023
$LDebt\_TC_t$	0.011	0.989	0.007	1.63	0.104	-0.002	0.024
$DebtRatio_t$***	0.069	1.071	0.024	2.86	0.004	0.022	0.116
$LnAsset_t$***	-0.427	0.653	0.152	-2.81	0.005	-0.724	-0.129
$LnAge_t$*	0.503	1.654	0.268	1.88	0.061	-0.022	1.029
ROA_t	-0.010	1.010	0.025	-0.41	0.685	-0.059	0.039
$CCrunch_t$***	0.744	2.104	0.375	1.98	0.047	0.009	1.479
$LnIHSG_t$***	3.745	0.024	1.794	2.09	0.037	0.229	7.261
_cons	39.598	1.57E+17	15.987	2.48	0.013	8.263	70.932

Significant at the significant level of 1% (***), 5% (**), 10% (*)
Source: Researcher, 2022, processed

According to the pecking order theory, the choice before the IPO is debt. Companies (whether they are new, medium-sized, or old) consider debt the most preferred option over equity in their capital structure to finance deficits. The reason is that debt is cheaper than equity, and companies may have better negotiations with lenders (Bhama et al., 2018). However, the credit crunch conditions made banking distribution tighter, so an IPO was an option that could be taken in this case. The credit crunch ($CCrunch_t$) has a high odds ratio, which is equal to 2.1, meaning that when credit growth conditions are declining or there is a scarcity of funding (credit crunch), the probability of a company going public increases 2.1 times during COVID-19. This finding answers the first hypothesis, in which increasingly scarce funding (the credit crunch) increases a company's probability of going public during the COVID-19 pandemic.

Meanwhile, the profitability or ROA variable has a negative direction with an odds ratio value of 1.01. This figure shows that the more ROA increases, the lower the probability of a company holding an IPO by 1.01 times. The findings for companies in Indonesia follow the pecking order theory: internal funding is the first choice, while the issuance of common stock is the last alternative source of funding. The IPO option is an alternative when banks are unable to channel their funding.

Table 4. Logistic Regression Output for Hypothesis 2

Number of obs	=	178
LR chi2(8)	=	55.03
Prob > chi2	=	0.0000
Pseudo R2	=	0.2559

CovidIPO	Coef.	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
$SDebt\_TC_t$	0.009	0.991	0.006	1.62	0.105	-0.002	0.021
$LDebt\_TC_t$	0.007	0.993	0.007	0.99	0.325	-0.006	0.020
$DebtRatio_t$***	0.066	1.068	0.024	2.70	0.007	0.018	0.114
$LnAsset_t$***	-0.515	0.597	0.166	-3.10	0.002	-0.841	-0.189
$LnAge_t$*	0.484	1.622	0.276	1.75	0.080	-0.058	1.025
ROA_t***	-0.023	0.976	0.021	-1.11	0.269	-0.066	0.018
$CCrunch_t$***	0.809	2.246	0.408	1.99	0.047	0.010	1.608
$ROAxCCrunch_t$***	-0.304	1.355	0.122	-2.49	0.013	-0.542	-0.065
$LnIHSG_t$***	4.218	0.015	1.904	2.22	0.027	0.486	7.949
_cons	45.601	6.37E+19	16.925	2.69	0.007	12.429	78.774

Significant at the significant level of 1% (***), 5% (**), 10% (*)
Source: Researcher, 2022, processed

The second logistic regression model is a logit model that includes or interacts with the variable profitability or ROA with credit crunch. The aim is to identify the effect of moderating profitability on credit crunch in influencing company IPO decisions during COVID-19.

In Table 3, the results or relationship between credit crunch and profitability on IPO decisions are contradictory. Companies will use external funds if there are no debt capacity concerns because debt is preferred over equity and is consistent with the pecking order theory. However, with the occurrence of a credit crunch that has an impact on increasingly stringent financing options from banks, it raises concerns about debt capacity. Credit crunch has a positive influence on company IPO decisions, while profitability is the opposite. In Table 4, the two variables interact to see the different effects. According to the direction of the coefficient, when ROA interacts with the credit crunch variable, the relationship is negative, so the effect of the credit crunch to encourage IPOs during a pandemic becomes weaker if there is an increase in company profitability.

Based on the results of logit regression, when the ROA variable is interacted with credit crunch conditions ($ROAxCCrunch_t$), the result is that companies with increasing ROA amid credit crunch conditions will reduce the probability of a company conducting an IPO by 1.35 times. It can be concluded that companies that experience an increase in profitability during a credit crunch have a lower probability of conducting an IPO compared to companies that experience an increase in profitability when a credit crunch does not occur.

This finding answers the second hypothesis, that the pecking order theory applies to the Indonesian context, where, according to the pecking order theory, companies will finance their activities with retained earnings whenever possible. If retained earnings are inadequate, then the next option is debt. Then it will only use financing with new equity. Thus, the sequence of financial sources used is: (1) internal sources of funds from profits; (2) short-term securities; (3) debt; (4) preferred stock; and lastly, common stock.

5. Conclusion and Suggestion

Based on the results of this study using a logistic regression test, it was identified that a credit crunch ($CCrunch_t$) increased a company's probability of going public during the COVID-19 pandemic. These results simultaneously answer the first hypothesis.

- The odds ratio of the credit crunch ($CCrunch_t$) is quite high compared to the other independent variables in model one, which is 2.1. This figure shows that a decrease in credit growth or a scarcity of funding (credit crunch) is a factor that increases the probability of a company holding an IPO by 2.1 times during COVID-19.
- This result is closely related to the company's need to obtain external funding. Companies experienced more financial constraints as the financial crisis worsened because it became more difficult to find sources of funding. It was this lack of financing options or credit crunch that prompted companies to choose to conduct an IPO when the COVID-19 crisis occurred.

In the second model, it is identified that profitability reduces the effect of the credit crunch phenomenon on the possibility of a company going for an IPO during the

COVID-19 pandemic. The results for companies in Indonesia also answer the second hypothesis.

- The odds ratio of ROA when interacted with credit crunch ($ROAxCCrunch_t$) is 1.35 with a negative sign. This figure shows that the scarcity of funding did not encourage companies to carry out IPOs during COVID-19 if the companies were still experiencing an increase in profitability.
- Companies with declining profitability or weak internal funding will tend to carry out IPOs during a credit crunch, while companies experiencing increased profitability will not conduct IPOs in a bearish market and tend to seek security with internal funding.

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