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The Impact of Debt Maturity Structure on Startup Profitability

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Abstract

Companies that are just starting out have a better chance of success by taking advantage of the various financial resources available to them. In terms of economic impact, the study of start-ups is considered a positive viewpoint in terms of the positive changes they generate in terms of cash flow as they enable the expansion of economic operations in the Asian region. Debt financing is one form of financing and research on debt financing for start-ups can help them to grow. When a start-up is allowed to take on debt, it is generally assumed that the company will have a reasonable chance of achieving its operational goals and repaying its debts. This chapter presents the results and discussion of the empirical analysis, selecting the FEM as the best model for this study through the p-value and Hausman tests, using the FEM to derive regression results and finally using stability tests to ensure robustness of the results by swapping both dependent and control variables. The study delves into the structure of debt maturities, the findings are that the debt maturity structure has a negative impact on the profitability of start-ups.

Keywords: Debt financing, Startup, Profitability, Signaling Theory.

Introduction

Due to the prolonged COVID-19 crisis, it is difficult to predict the future (Barua, 2020). The market needs new, innovative things. Competition between companies has intensified, and companies should generate revenue through creative business models (Jeong et al., 2020). start-ups face many difficulties and problems in their development process, resulting in their short life cycle and high bankruptcy rate (Chong et al., 2014). As the epidemic eases and business performance recovers, it is crucial to investigate the capital structure of the business, which includes both debt and equity. Start-ups have been hit the hardest, and their risk aversion is lacking compared to the strong risk aversion of larger companies (Cantamessa et al., 2018). Studying the capital structure of start-ups, particularly debt financing, is beneficial to start-ups.

Startups are businesses that provide and develop innovative services and products, often utilizing technologies such as robotics, telecommunications, computers, e-commerce, and the Internet (Cole & Sokolyk, 2018). Start-ups are also a small company that explores new business opportunities, with limited economic, human and material resources (Giardino et

al., 2014). It is a human institution designed to provide new products or services under extremely uncertain conditions (Ries, 2010). Startups are perceived differently by different individual based on their perceptions. In essence, it is all doing new things, which is a continuous trial and error process (Livingston, 2008). During the Great Depression, startups emerged for the first time in the 1920s. Silicon Valley's business community was formed by startups such as International Business Machines Corporation (IBM). In 1911, IBM was founded. Software, middleware, and hardware have been produced by the company since then. Similarly, Apple and Google laid the foundation for all the companies we know today. According to a report published by the China Centre for Service Outsourcing Research (coi.org.cn), the number of start-ups in the US will increase by 26% in 2020, from 3.5 million in 2019 to 4.4 million in 2020. Chile, Turkey and the UK also saw a 24% increase in the number of start-ups. However, other economies were less active in terms of startups, such as Portugal and Russia, where numbers fell by 25%, and China, where startups increased slightly, by 3% year-on-year in the first three quarters of 2020.

Background

Bamata et al (2019) found that most fledgling SMEs are aware of the availability of external sources of finance. However, the biggest challenge to accessing these funds is the complex application process for government grants and bank financing. This is followed by bank interest rates, although interest rates in the banking or corporate sector are generally perceived to be high. China's banking sector and other financial institutions play an instrumental role in stimulating the economy and providing financing assistance to start-ups. Statistics on the number of banking and financial institutions operating in China as at 30 June 2022 are shown in the table below. It includes not only financial institutions, but also other institutions that provide debt financing, such as banks, lease-bond-issuing institutions.
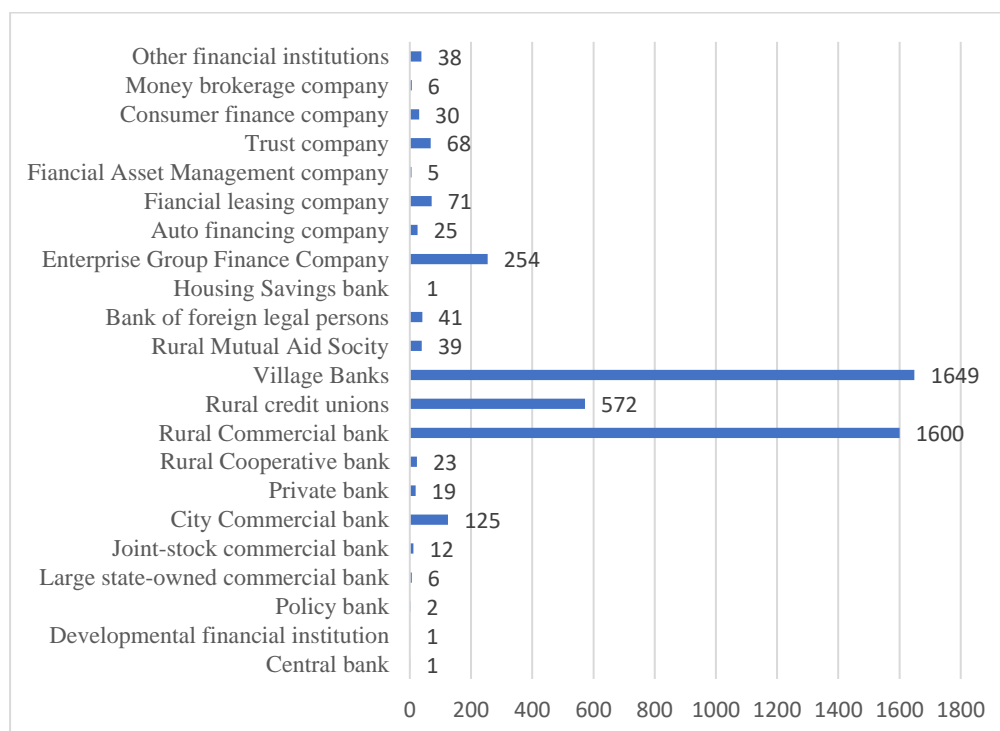

Figure 1.3 Statistics of banking financial institutions
*Source: China Banking and Insurance Scheme Supervision (June 2022)

As shown in Figure 1.3, there is a wide variety of banks and financial institutions in China. According to the FDIC (FDIC: www.fdic.gov), as of June 2020, there were 5,156 banking institutions in the US, compared to 4,588 in China. As a result, there are a multitude of institutional channels through which businesses can obtain financing assistance. Although central banks, housing savings banks, policy banks, conglomerate finance companies, auto finance companies, financial asset management companies, trust companies, consumer finance companies, money economy companies and other financial institutions are not able to provide loan services to enterprises. There are also 41 foreign-incorporated banks, but they may face more challenges when operating in China compared to local firm, and according to Ng & Curran (2016), foreign firms incur overseas operating costs when operating outside their local firm, which include the costs of gathering information to better understand the economy, language, laws and politics of the country, as well as the firms' exposure to costs of discrimination from the local community. However, village banks and rural commercial banks, with 1,649 and 1,600 respectively, have the highest proportions. There are also 71 financial leasing companies, which provide services related to operating leases for businesses.
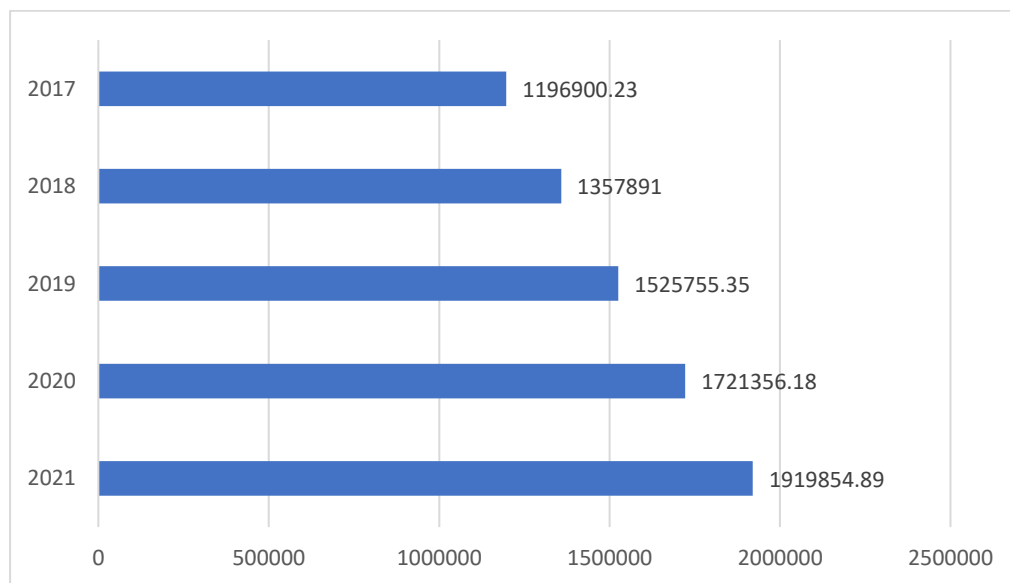
Figure 1.4 Financial institutions use various loans (million)
*Source: China Statistical Yearbook (2018)

Figure 1.4 depicts a statistical table of the number of loans granted by financial institutions to the community each year. The number of loans granted by financial institutions to the non-financial sector (enterprises, administrative institutions and individuals) has increased each year over the past five years, indicating a rising demand for loans on the market. However, the volume of loans in this data includes not only loans to enterprises, but also loans to individuals and administrative bodies. As a result, there is no objective reflection of the demand for small business loans. The volume of financial institutions, on the other hand, is relatively objective as it includes not only all commercial banks, but also other financial institutions that provide loans.

Literature Review
Signaling Theory

Due to the existence of information asymmetry, companies can aim to release certain signals by communicating internal company information to the outside world. In signaling theory, common signals include (1) profit announcements, (2) dividend announcements and (3) financing announcements. However, adjustments to debt ratios can also send signals to the outside world, as they can affect changes in equity ratios. The likelihood of insolvency is inversely proportional to the quality of the business, but positively proportional to the debt ratio. If a firm chooses a higher debt ratio, it means that the firm retains more equity. This can reflect the confidence of the firm's managers in the firm's future ability to service its debt. It can serve to signal to the outside world the future trend of the firm and increase the number of potential investors. This also explains why a company's stock price rises when it borrows and falls when it repays its debt. High-quality companies are therefore more likely to issue bonds, while low-quality companies are less likely to do so, as creditors have a reason to opt for bankruptcy and liquidation if they cannot repay the interest, forcing the company to cease operations. Trade-off theory argue that the optimal capital structure is to choose the maximum expected level of debt. This communicates to the market that the greater the value of the company's stock, the greater the value of the company's projects. According to Ahmed et al. (2020), newly established firms typically borrow external funds at higher interest rates. Furthermore, early-stage firms are hindered by higher idiosyncratic volatility, high finance costs, rising insolvency risk, higher cash holdings, lower production processes and negative returns on invested capital. How the proportion of debt financing is adjusted is therefore of significant importance to the business.

Empirical Review

Most of the studies have focused on large firms. For example, Sun and Ouyang (2019) argued that the research on the relationship between debt financing structure and financial performance in China started late and is a single study. The study selected 120 listed companies with a total of 600 electronic equipment manufacturing industries from 2014-2018, and used SPSS21 software to conduct multiple regression analyses on three aspects of debt: overall level structure, maturity structure and type structure, respectively. The relationship between debt and financial performance was studied. It was found that the asset-liability ratio, short-term debt ratio and long-term debt ratio, mercantile credit ratio and bank financing ratio were all significantly and negatively related to financial performance. Yin and Pi (2017) selected 797 listed manufacturing companies in Shanghai and Shenzhen for the five-year period from 2010 to 2014 and found that either current or non-current liabilities, bank financing, mercantile credit or bonds payable had a negative impact on company performance, which was not conducive to improving company performance.

However, there are also slightly different findings. Chen and Zou (2019) used a regression analysis with agricultural companies as a research sample and obtained the conclusion that the long-term debt ratio of public agricultural companies is positively related to corporate financial performance, while the short-term debt ratio is negatively related to corporate financial performance. Yan (2017) analyzed five different modes of transport in the transport industry and found that, except for the significant relationship between mercantile credit ratio and financial performance, the total debt financing ratio, long-term debt ratio, short-term debt ratio, bank financing ratio and financial performance of public companies in

the transport industry were negatively related. Xu (2019) found that during the maturity period of the development of listed companies in the wholesale and retail sector, long-term debt ratio has a positive effect on financial performance improvement, while short-term debt ratio has a negative effect. Some other scholars have come to the exact opposite conclusion. Cai et al (2008), by studying listed companies in China, noted that long term debt would to some extent Barclay and Smith (1995), in order to investigate the impact of the signaling theory on the maturity structure of corporate debt financing, empirically analyzed the financial data of commercial and industrial enterprises in the US from 1974 to 1991. Barclay and Smith (1995), in order to investigate the impact of the signaling theory on the maturity structure of corporate debt financing, empirically analyzed the financial data of public industrial firms in the US from 1974 to 1991 and found that the large-scale use of short-term debt financing by firms conveys better financial performance to investors.

Some findings suggest that debt can have a negative impact on the financial performance of start-ups. For example, Nguyen and Ramachandran (2006) examined the relationship between the maturity structure of debt financing and firm performance of selected SMEs in Vietnam by using the factors influencing the maturity structure of debt financing as the independent variable and found that higher long-term debt ratios are detrimental to firm performance, with an inverse relationship. There are also studies that reach the exact opposite conclusion. Wahba (2013) uses a random effects model from the perspective of Egyptian SMEs and concludes that debt maturity structure plays a determinant role in financial performance and that short-term debt ratios have an opposite effect on financial performance to long-term debt ratios. There are similar findings, Hall et al (2000) uses factor analysis and regression analysis to study 36 unquoted firms in the UK and finds that short-term debt ratios are negatively correlated to firm performance. This reports on a study of 3500 unquoted UK small and medium-sized enterprises (SMEs). The purpose of the study is to test various hypotheses regarding the determinants of SME capital structure and to determine if and how these determinants relate to long-term and short-term debt in different ways by industry. Long-term debt was found to be positively related to asset structure and company size and negatively related to age; short-term debt was found to be negatively related to profitability, asset structure, size and maturity, and positively related to growth. Significant differences across industries were found for most of the explanatory. However, the effect of short-term debt on profitability was consistent across industries, while long-term debt had no effect on profitability in any industry. There are also studies that hold the opposite view. Abubakar (2016) used financial data from five companies in the healthcare sector of the Nigerian Stock Exchange between 2005-2014 and used pooled OLS models and fixed effects models to conclude that both types of debt in the debt maturity structure have a positive impact on financial performance.

In summary, it can be seen that studies on the impact of the maturity structure of debt financing on corporate performance have not reached consistent conclusions among domestic and international scholars, and this is because the industries involved in the studies differ. From the empirical analysis, it can be seen that there are positive and negative effects of long-term and short-term debt on corporate performance, which take different forms depending on the industry. A firm decides how much debt and equity it needs to determine whether its capital structure is appropriate. Short-term debt has higher interest rates and shorter maturities than long-term debt, putting more pressure on business managers. As a result, when a company's gearing is too high, it is perceived by outsiders as an excessive risk of insolvency. Entrepreneurs must therefore weigh whether a significant percentage of debt

is used to deduct more tax benefits or whether debt poses a significant financial risk. The optimal capital structure is when the two are equal, so finding an appropriate level of financing is crucial for any business.

Hypotheses Development

Due to the importance of the hypothesis development process in the startup financing research process, there is an undeniable cascade between the structure of debt maturities and the profitability of startups. Operating income growth rates, company market capitalization, company assets and board size are all inextricably linked. Debt structure has a direct impact on future external financing, investment and financial performance. According to Zhang (2021), when a start-up's share of short-term debt increases, the amount of loans and interest that must be repaid also increases, leading to a decrease in profitability and a financial crisis for the start-up. In turn, a decrease in profitability leads to a decrease in the startup's ability to finance its debt, which in turn leads to a decrease in long-term debt financing. A decline in the proportion of long-term debt will increase the proportion of short-term debt, creating a vicious circle. Based on the above, Figure 3.1 is proposed to depict the logic of the hypothetical conjecture.
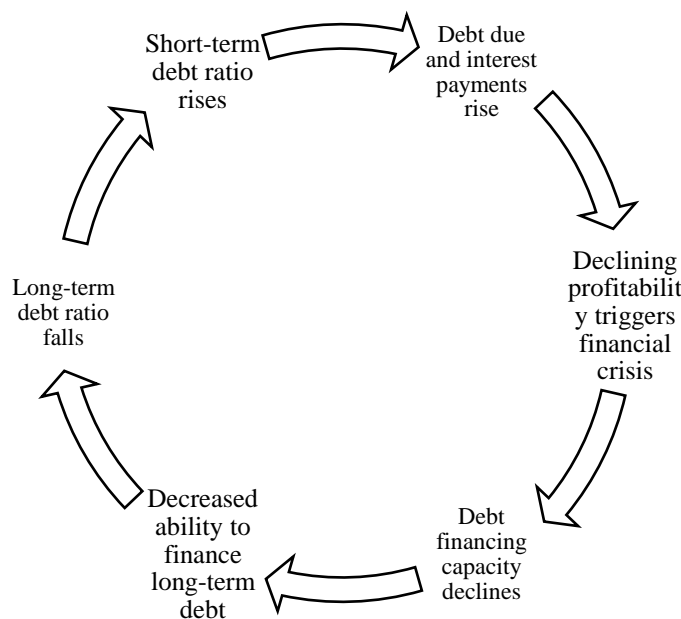

Figure 1 The unbalanced operation mechanism of debt financing for start-ups

The term structure of debt refers to debt classified according to different debt maturities, including long-term debt ratios and short-term debt ratios. Short-term debt ratios have short maturities and high interest rates, while long-term debt ratios have long maturities and low interest rates. When the short-term debt ratio is too high, the risk of bankruptcy rises. Short-term debt is mainly used in situations where there is a sudden shortage of funds and the need to make timely payments. Long-term debt is mainly used by start-ups to invest in long-term operational projects. To gain the most from debt financing, start-ups need to adjust of short-term and long-term debt, and exploring the ratio of short-term to long-term debt will help to improve the profitability of the start-up. However, an inappropriate mix of short-term and long-term debt can lead to a break in capital flows or exacerbate the financial risks of the business. Compared to large corporations, start-ups have less access to short-term

and long-term debt and more stringent approvals, making them more costly. In a related study, Yin and Pi (2017) found a negative relationship between current or non-current debt and firm performance in a related study. By analyzing the impact of debt of different maturities on the profitability of startups, it can help companies optimize their debt structure. Based on the theoretical analysis and the findings of scholars, the following hypotheses are made.

      Hypotheses 1: The long-term debt ratio has a negative impact on profitability.
      Hypotheses 2: The short-term debt ratio has a negative impact on profitability.

Model Setting
      The model in this study was built using panel data. Panel data is a type of sample data which is formed by selecting a sample of observations from numerous components of a time series simultaneously. Due to the research characteristics of this work, it is necessary to collect financial data from each organization each year and panel data meets the requirements. OLS, REM and FEM are the three panel data measures. This study uses the panel tests of Sandberg et al. (2022) and Ahmed, M. (2018) to find the best model and this study uses p-values to compare the best model between POLS and FEM models. When the P-value was less than 0.05, FEM was considered to be superior to the POLS model. Next, the POLS model was compared with the REM model and when the p-value was less than 0.05, the REM model was determined to be superior to the POLS model. Finally, the Hausman test was used to determine which model was better between the FEM and REM models. When the Hausman test was greater than 0.05, the REM model was considered to be more suitable for regression analysis than the FEM model.

$$A_{it} = a_0 + a_1 L_{it} + a_2 S_{it} + x_3 M_{it} + x_4 B_{it} + x_5 G_{it} + d \qquad (1)$$
Where

      In the formula, A_{it} represents the dependent variable, which is the rate of return on total assets. On the right-hand side of the formula, a0 is a constant term, L_{it} is the long-term debt ratio, S_{it} is the short-term debt rate. And $x_3 M_{it}$, $x_4 B_{it}$ and $x_5 G_{it}$ are control variables, where M is the market value of the company, G is the revenue growth rate, B is the Board size and d represents a random disturbance term.

Table 1
Description of Variables

Type	Name	Symbol	Description
DV	Return on assets	A	Net income / Total assets
	Return on equity	E	Net income/Total equity
	Long-term debt ratio	L	Non-current liabilities / Total assets
	Short-term debt ratio	S	Current liabilities/Total assets
CV	The market value of the company	M	The total market value of the company at the end of a period
	The company's assets	C	The stock of assets owned by the company
	Board size	B	number of board members
	Revenue growth rate	G	the increase in operating income this year / total operating income last year

*Source: wind database (2021)

As the research sample, financial data of 850 listed companies on the National Stock Exchange and Quotation System from 2012 to 2021 were used for this study. The Wind database was used for data collection. The NEEQ was chosen because it is a national, unlisted share-based equity trading platform for small, medium and micro enterprises. There are six requirements for NEEQ listing, which are (1) be prescribed by law and last for two years. (2) Clearly defined business with the ability to continue operations. (3) Sound corporate governance procedures and legal and consistent operations. (4) Clear shareholding and legal compliance with the issuance and transfer of shares. (5) Recommend them and continue to pay attention. (6) Other conditions as required by NEEQ. The listing conditions for companies listed on the National SME Stock Transfer System are simple, with a complete business model and the ability to continue operations, which is consistent with the potential start-ups that are the subject of this study.

Results

Descriptive Statistics

Table 1 presents the descriptive statistics for the variable of the study. It shows that on average return on assets of the China's startups is 1.891 percent of net income by total assets. Return on assets has a standard deviation of 11.771 with a maximum value of 29.068 and a minimum value of -49.116, indicating a wide range of returns on assets across start-ups.

The mean and standard deviation for long-term debt ratio is 4.413 and 7.490, respectively. The mean value suggests that on average, long-term debt ratio is at a low level in China's startups. The mean and standard deviation for short-term debt ratio is 33.880 and 18.640, respectively. The average value shows that the short-term debt ratio is at a high level. The maximum value reaches 86.954% and is higher than the long-term debt ratio.

The control variables used in this study are the market value of the company, revenue growth rate and board size. On average, the market value of the company is 963,000,000 with a standard deviation of 238,000,000. The minimum value is 7,950,000. This indicates that the size of the companies listed on the NEEQ varies greatly. The revenue growth rate is 15.844 with a standard deviation of 58.4206. The high standard deviation implies that the revenue growth rate varies significantly between companies. In addition, on average, board size is 6.103 with a standard deviation of 1.475. The lowest value of sample board size is 5 and the highest value of sample board size is 10. This clearly shows that board size varies considerably from firm to firm.

Table 2

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
A	6,507	1.891	11.771	-49.116	29.068
L	6,507	4.413	7.490	0.000	38.180
S	6,507	33.880	18.642	1.942	86.954
M	6,502	963000000	2380000000	7950000	16300000000
G	6,507	15.844	58.421	-85.670	345.936
B	6,507	6.103	1.475	5.000	10.000

Note: this table provides descriptive statistics for all continuous variables of the present study. A denotes return on assets. L denotes long-term debt ratio. S denotes short-term debt ratio. M denotes the market value of the company. G denotes revenue growth rate. B

denotes board size. Obs denotes the number of observations. Std. Dev denotes standard deviation. Min denotes minimum values. Max denotes maximum values.

Pairwise Correlation

Table 2 shows the pairwise correlations between the variables. This was done to check for multicollinearity between the variables, as the variables may be strongly correlated with each other and may lead to multicollinearity problems. According to Javed et al. (2014) if the correlation value is less than or equal to 0.2 then the correlation is weak, if the correlation value is less than or equal to 0.4 but greater than 0.2 then the correlation is poor, if the correlation value is between 0.4 and 0.6 then the correlation is acceptable, if the correlation value is between 0.6 and 0.8 then the correlation is acceptable, and if the correlation value is higher than 0.8 then the correlation is strong. However, in the coefficient correlation table, the correlations between the variables were relatively low, not exceeding 0.6, and the variables all had an autocorrelation coefficient of 1. Therefore, the results suggest that multicollinearity was not an issue in this study.

Table 3
Correlation Matrix

Variables	A	L	S	M	G	B
A	1					
L	-0.104***	1				
S	-0.212***	-0.008	1			
M	-0.015***	0.289***	0.050***	1		
G	0.280	-0.006***	-0.001	0.061***	1	
B	-0.028**	0.147***	0.031**	0.363***	-0.026**	1

Note: this table provides the correlation among the independent variables. A denotes return on assets. AR denotes debt to asset ratio. F denotes bank financing ratio. C denotes mercantile credit ratio. M denotes mercantile credit ratio. G denotes revenue growth rate. B denotes board size.

Select the Model

In Table 3 it is shown that when the two models, POLS and FEM, are contrasted, the p-value is 0 and is less than 0.05, so the FEM model is better. When the two models, POLS and REM, are compared, the p-value equals 0 and is less than 0.05, proving that the REM model is better. When the two models of FEM and REM were compared, the p-value was equal to 0 and less than 0.05, proving that the FEM model was more accurate. Based on the above, the FEM model was selected for this study.

Table 4
Select the Model

	P-VALUE	OLS	FEM	REM
OLS VS FEM	0.00		√	
OLS VS REM	0.00			√
FEM VS REM	0.00		√	

Note: This table determines the model of this study. OLS denotes ordinary least squares.

FEM denotes fixed effects model. REM denotes random effects model. P-value denotes a parameter used to determine the hypothetical test results. When OLS vs FEM, if p-value<0.05, FEM is better. When OLS vs REM, if p-value<0.05, REM is better. When FEM vs REM, if p-value<0.05, FEM is better.

Regression Analysis

Table 4 presents the results of the impact of debt maturity structure on return on assets (company's assets) (Eq.1) using a fixed effects model. The long-term liabilities used in this study being non-current liabilities and short-term liabilities being current liabilities. According table 4, the P-value of the long-term debt ratio and the short-term debt ratio are -0.234 and -0.182 respectively. And the results are remarkable. This implies that the use of either long-term or short-term debt by start-ups reduces the profitability of the firm.

Table 5
Impact of debt maturity structure on return on assets

VARIABLES	A
L	-0.234***
	(-10.14)
S	-0.182***
	(-17.70)
M	0.000***
	(7.95)
G	0.052***
	(26.88)
B	-0.103
	(-0.70)
Constant	15.707***
	(12.79)
Individual effects	Yes
Time effects	Yes
Observations	6,502
Number of id	865
R-squared	0.279

Note: This table determines the results of impact of debt type structure on return on assets (Eq.3) using fixed effects model. A denotes return on assets. L denotes long-term debt ratio. S denotes short-term debt ratio. M denotes the market value of the company. G denotes revenue growth rate. B denotes board size. t-statistics in parentheses. Which is the p-values. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Robustness Test

The robustness test in this study was conducted by swapping variables. This was done by swapping the dependent variable from ROA to ROE and by reversing the control variable from company market value to company assets. This was done to ensure that the results were reliable.

Table 5 presents the results of the impact of debt level structure on return on equity (Eq.1) using a fixed effects model. By swapping the dependent variable from ROA-ROE, the study can examine the impact of debt financing on the profitability of start-ups. The results show

that after swapping the dependent variables, the effect of long-term debt ratio and short-term debt ratio on return on equity is negative. The results are extremely significant, in line with the results of the regression analysis. This further establishes that there is an inverse relationship between the profitability of a start-up and the debt maturity structure, with the long-term debt ratio and the short-term debt ratio will have a negative impact on the profitability of startup. Hypothesis was further confirmed.

Table 6

Impact of debt maturity structure on return on equity

VARIABLES	E
L	-0.638***
	(-12.82)
S	-0.566***
	(-25.48)
M	0.000***
	(12.05)
G	0.095***
	(22.83)
B	-0.044
	(-0.14)
Constant	37.906***
	(14.32)
Individual effects	Yes
Time effects	Yes
Observations	6,502
Number of id	865
R-squared	0.294

Note: This table determines the results of impact of debt type structure on return on assets (Eq.3) using fixed effects model. A denotes return on assets. L denotes long-term debt ratio. S denotes short-term debt ratio. M denotes the market value of the company. G denotes revenue growth rate. B denotes board size. t-statistics in parentheses. Which is the p-values. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 7 presents the results of the impact of debt maturity structure on return on assets (company's assets) (Eq. 1) using a fixed effects model. By swapping, the impact of different control variables on the profitability of start-ups is examined by reversing the control variables from the firm's market capitalization to the firm's assets. From the results, it can be seen that after swapping the control variables, the effect of long-term debt ratio and short-term debt ratio is negative. That the results are extremely significant, in line with the results of the regression analysis. This also implies that there is an inverse relationship between profitability and debt maturity structure of start-ups, with the higher the long-term debt ratio and short-term debt ratio of start-ups, the lower the profitability, in line with hypothesis.

Table 7

Impact of debt maturity structure on return on assets (company's assets)

VARIABLES	A
L	-0.244***
	(-10.43)
S	-0.192***
	(-18.58)
C	0.000***
	(4.12)
G	0.053***
	(27.56)
B	-0.032
	(-0.22)
Constant	15.293***
	(12.40)
Individual effects	Yes
Time effects	Yes
Observations	6,507
Number of id	865
R-squared	0.273

Note: This table determines the results of impact of debt type structure on return on assets (Eq.3) using fixed effects model. A denotes return on assets. L denotes long-term debt ratio. S denotes short-term debt ratio. M denotes the market value of the company. G denotes revenue growth rate. B denotes board size. t-statistics in parentheses. Which is the p-values. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Conclusion and Suggestions

This study analyses the reasons for the existence of an impact of debt financing on the profitability of startups in terms of signaling theory. A fixed-effects panel model is also used to test whether debt maturity structure has an impact on the profitability of start-ups. The aspects of debt maturity structure are investigated to examine long-term debt ratio and short-term debt ratio effects on the profitability of start-ups respectively. This study found that different maturities have the same negative effect on the profitability of start-ups. A higher proportion of short-term debt than long-term debt was found in the study, and exacerbating their insolvency risk. Although the cost of short-term debt is relatively low, its liquidity is considerably higher. Although the cost of short-term debt is low, excessive short-term debt can lead to an imbalance in the financing structure and can also increase the debt servicing pressure of a company. It can exacerbate business risks, which is not conducive to improving the profitability of start-ups. In line with hypothesis, long-term debt, despite having less liquidity, has higher interest rates and higher financing costs, thereby reducing the profitability of start-ups. The findings are consistent with Wahba (2013); contrary to the results of (Yazdanfar and Öhman, 2015; Hall et al., 2000; Abubakar, 2016). This study concludes that debt maturity structure can reduce the profitability of start-ups, including long-term debt and short-term debt.

The study's findings demonstrate that the debt maturity structure can negatively affect a start-profitability, up's putting most start-ups at danger of decreased profitability and bankruptcy. Optimizing the structure of debt financing and reducing the cost of financing is a

way to reduce the risk of debt financing for each start-up. Both short-term and long-term debt have a detrimental effect in the context of the current start-up debt. In order to play a part in the business, start-ups should evaluate their financial structure and change the ratio of long-term to short-term debt. Debt financing will often be less expensive when short-term interest rates decline, but short-term debt has a shorter maturity and is more difficult to repay. Long-term debt, on the other hand, has a longer maturity and is less difficult to repay, but higher interest rates will raise the cost of borrowing money with debt. The coming repayment period for long-term debt will also be a major test of a start-up's capital chain. It is imperative for start-ups to optimize the structure of their debt sources, which should not be concentrated at a certain point. Otherwise, the approaching repayment date will easily cause a strain on their capital chain and a repayment crisis. Optimizing the debt financing structure to enhance profitability is conducive to increasing the business results of start-ups. Building and maintaining a positive reputation for a business also benefits from optimizing the debt structure and increasing financial performance. The image of a company in the minds of its customers is not only formed in the course of its economic dealings with them, but it can also be conveyed to them through economic data published by the company. Customers, for instance, can judge whether a firm can continue as a going concern and whether there is a risk of bad debts depending on the condition of the company's debt financing structure. Publicly available information, as well as partially published information, can negatively impact a company's image.

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