

The Influence of Corporate Leverage Ratio on Business Performance

-- Empirical Analysis based on Shanghai and Shenzhen A-share Listed Companies

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Abstract

Enterprises are the main body of China's economic development and need a lot of funds to expand the scale, but too much debt is easy to increase the risk. In order to prevent risks and ensure the steady operation of enterprises, the government proposed to reduce the leverage ratio of enterprises and issued a series of measures to steadily promote deleveraging. In order to study the impact of corporate leverage on operating performance, taking the relevant data of Shanghai and Shenzhen A-share listed companies from 2007 to 2019 as samples, the model is established by Using Stata software to make an empirical analysis on leverage and operating performance. The empirical results show that after controlling the impact of variables such as enterprise scale and growth on enterprise performance, enterprise leverage has a significant negative effect on enterprise performance. At the same time, the control variables such as enterprise size, age and growth also have a significant impact on enterprise performance.

Keywords

Leverage Ratio; Business Performance; De-leveraging; Fixed Effect Model.

1. Introduction

When economic growth turns to high-quality development, enterprises are facing challenges. If they want to gain a foothold in today's increasingly competitive society, they must constantly develop products that consumers like, introduce scientific production technology during technological progress, improve production efficiency, and use good raw materials to ensure product quality, so as to obtain market recognition and win more market share. In recent years, the development of real economy has been the focus of the state, and many measures have been introduced to alleviate the financing difficulties of enterprises, especially small and medium-sized enterprises. The capital of the enterprise is an important pillar for the survival and sustainable progress of the enterprise. In order to improve its own operating efficiency, the enterprise expands its operating scale by raising external funds. Moderate leverage ratio is beneficial to improve the business performance of enterprises, but too high leverage ratio is easy to cause risks and threaten the steady operation of enterprises. After the financial crisis, international banks introduced leverage as a regulatory index. At the micro level, the leverage ratio reflects the asset liability ratio of an enterprise, expressed as the ratio of total liabilities to total assets. In December 2015, "deleveraging" was first proposed at the central economic work conference. Subsequently, in 2016, the State Council issued a document on relevant opinions on reducing the leverage ratio of enterprises, in which it was clearly proposed to reduce the leverage ratio of enterprises through market and legal means, actively carry out debt to equity swap, and effectively prevent and reduce debt risks to promote economic transformation and

upgrading, Once again, we should actively and steadily promote the reduction of enterprise leverage. The supply side structural reform has been continuously promoted. "Deleveraging and risk prevention" has become an important background for the development of enterprises. The healthy operation of enterprises is conducive to high-quality economic development. The leverage ratio is one of the important factors affecting the business performance of enterprises. The mismatch between the leverage ratio and the development scale of enterprises will increase the business risk of enterprises, threaten the production and operation of enterprises and affect the benefits of enterprises. In order to make enterprises better improve business performance, this paper studies the leverage ratio and enterprise business performance. Under the current situation that enterprises pay much attention to reducing leverage ratio, it is of great significance to study the impact of leverage ratio on enterprise business performance.

2. Literature Review

Leverage ratio is one of the important regulatory indicators of commercial banks. Many scholars have studied the relationship between leverage ratio and operating performance of commercial banks. Liu Xinjiang, Liu Jiangtao (2013) [1] through the empirical analysis of the panel data of China's listed commercial banks from 2004 to 2011, the results show that, on the whole, the leverage ratio of China's listed commercial banks has a negative impact on operating performance. Yu Huahua(2017)[2] used factor analysis to calculate the comprehensive performance of banks as the explanatory variable, and then conduct panel regression with leverage and leverage volatility. The empirical analysis results show that the leverage level and leverage volatility have a significant negative effect on the operating performance of commercial banks. However, in recent years, the importance of enterprise leverage ratio to business development has become increasingly apparent. Under the background of reducing enterprise leverage, the research on the impact of leverage level on enterprise operating performance is also increasing. Zhu Lifan(2020) [7] through the empirical analysis, we find that the overall leverage level and the long-term leverage level have significant negative effects on the business performance of A manufacturing enterprises. Wan Guangcai, Zuo Zhengdong (2019)[3] used the panel echelon regression method to study 22 listed commercial banks, the results show that under different significance levels, the leverage ratio has different effects on operating performance. After "deleveraging" was put forward, the research on analyzing problems from the perspective of leverage ratio is increasing, especially the impact of leverage ratio on enterprise performance. However, scholars hold different views. Some scholars have found that the leverage ratio has a positive impact. China's economy is in the new normal and the market competition is becoming more and more fierce. Enterprises obtain funds through liabilities and continue to expand production and operation profits. Therefore, the leverage ratio has a positive effect on the business performance of enterprises. Jiao Yongxiang(2020) [4] studied the leverage ratio and operating performance of ten listed P2P online loan enterprises in the United States, and uses the data of these ten enterprises for grouping regression. It is found that the impact of leverage ratio on enterprise operating performance is different at different leverage levels. When the leverage level is lower than 60%, the relationship between leverage ratio and enterprise operating performance is positively correlated. Yang BaoXia (2020) [5] selected 128 listed real estate enterprises from 2007 to 2018 to study the operating performance by using dynamic panel model. It is found that the leverage ratio has an inverted U-shaped relationship with listed real estate companies. When the leverage ratio is at the left end of the threshold, the leverage ratio has a positive effect on the operating performance. The other part believes that it is the reverse effect. After the financial crisis, in order to stimulate economic growth, loose policies have continuously increased the leverage ratio of enterprises. When the economy changes from high-speed growth to medium and high-speed growth, when the profit growth of enterprises is lower than the leverage growth, the financial risk increases,

and enterprises will face the possibility of loss, so the leverage ratio of enterprises will have a negative impact on business performance. Liang Yu(2019) [6] divided the A-share non-financial enterprises in Shanghai and Shenzhen into state-owned and private enterprises. It is found that the asset liability ratio of both are relatively high, and the increase of leverage ratio will reduce the operating performance of listed companies. Cheng Kequn, Zhan Zixian(2020)[8] made an empirical study on the leverage ratio and operating performance of Listed Companies in automobile manufacturing industry, and selects the data of Listed Companies in automobile manufacturing industry from 2013 to 2018 as a sample. The empirical results show that the improvement of enterprise leverage ratio has a significant inhibitory effect on operating performance. At present, supporting the development of real economy is an important part of economic work, and reducing enterprise leverage is required for steady economic growth. Most of the existing studies analyze China's debt risk from the perspective of macro leverage, but enterprises are the main body of real economic development, and it is also very important to analyze the impact of leverage on business performance from the micro enterprise level. There is a lack of research on the impact of leverage on real enterprises in China, and most of them are analyzed by industry. This paper studies the impact of enterprise leverage on business performance as a whole.

3. Research Design

3.1. Data Source and Sample Selection

This paper selects the data of A-share listed companies in Shanghai and Shenzhen from 2007 to 2019 as the sample, screens the data, excludes ST companies, * ST companies, financial listed companies and listed companies with missing data, and finally selects the data of 1040 listed companies as the sample. The data used in this paper comes from guotai'an CSMAR database.

3.2. Variable Setting

3.2.1. Enterprise Leverage Ratio

Enterprise leverage ratio is an indicator to measure the risk of enterprise liabilities. Leverage ratio can better evaluate and measure the level of enterprise liability risk. An enterprise's leverage ratio is equal to the ratio of capital and assets on the balance sheet. Most literatures choose asset liability ratio to represent leverage ratio, which affirms the representativeness of asset liability ratio. Therefore, this paper selects asset liability ratio (Lev) Represents leverage.

3.2.2. Operating Performance

The operating performance of an enterprise is reflected in profitability, operating efficiency, development space and other aspects, mainly through profitability. There are many indicators reflecting profitability, such as gross profit margin on sales, net profit margin on total assets, return on net assets, etc. The net interest rate of total assets reflects the level of profits obtained by enterprises using assets and the operation efficiency of assets, and can comprehensively reflect the performance of enterprises during the operation period. Therefore, this paper selects the net interest rate of total assets, that is, ROA, to represent the operation performance of enterprises.

3.2.3. Control Variable Selection

In order to better study the impact of leverage on enterprise performance, this paper selects growth (GRO), enterprise size (size), total asset turnover (TAT), enterprise age (age), per capita GDP growth rate (PGR) and ownership concentration (HLD) as control variables. Growth is measured by the growth rate of operating income. The enterprise scale is the value after the logarithm of total assets. The ownership concentration uses the shareholding proportion of the largest shareholder. The impact between enterprise growth and business performance is positive. The stronger the growth, the stronger the enterprise scale expansion ability, and the

easier it is to earn profits. Huang Xiaobo, Gong Xinying, Han huai(2019) [9] through empirical test, it is found that growth has a significant positive impact on business performance. Enterprise scale also has a positive impact on business performance. Generally speaking, the larger the enterprise scale, the wider the range of products involved, and it is easier to improve the efficiency of the enterprise. Similarly, the higher the ownership concentration, the higher the business performance of the enterprise. Equity concentration can make the shareholders holding more shares pay more attention to the operation of the enterprise, restrict the operators of the enterprise, and is conducive to the improvement of the operation performance of the enterprise. The macroeconomic background also has an impact on the business performance of enterprises. Under the prosperous economic background, the business performance of enterprises is relatively good. The higher the turnover rate of total assets, the better the operation capacity of the enterprise, which is conducive to the improvement of business performance. Generally speaking, the longer the enterprise exists, the more mature the enterprise develops, the rising space is limited, and the more difficult it is to improve the business performance of the enterprise.

3.3. Model Building

This paper uses the fixed effect model to study the relationship between enterprise leverage and enterprise business performance, and controls the impact of enterprise growth, company size, enterprise age, macroeconomic environment and other variables on business performance. As shown in Table 1, the results of mixed regression, fixed effect model and random effect model show that there is a significant negative correlation between enterprise leverage and operating performance. In order to better analyze the leverage ratio and operating performance, we should choose a more realistic model for analysis. The mixed regression of panel data assumes that there is no individual effect, but because the situation of each enterprise is different, there may be missing variables that do not change with time, so the fixed effect model should be considered. Table 1fe_ Robust column constant term (_cons) is the average value of individual effects, which is significant at the level of 5%. The results of LSDV method show that many individuals are significant. Therefore, it is considered that individual fixed effects exist, and the fixed effect model should be considered instead of mixed regression. However, individual effects can also exist in panel data as random effects. The random effects of individuals are tested by LM, and the p value is 0, which is rejected The original assumption that "there is no random effect on individuals" is that there is random effect. However, whether to use the fixed effect model or the random effect model needs Hausmann test. After the test, because the p value is 0, it is rejected that "the individual effect is not related to the explanatory variable" According to the original hypothesis, the fixed effect model should be used instead of the random effect model. The fixed effect can also consider the time fixed effect. As shown in the column of table 1fe_trend, the time trend term is not significant, so the time fixed effect is not considered. The following fixed effect model is established by Using Stata software.

$$ROA_{it} = \alpha_1 LEV_{it} + \alpha_2 SIZE_{it} + \alpha_3 GRO_{it} + \alpha_4 TAT_{it} + \alpha_5 PGR_{it} + \alpha_6 AGE_{it} + \mu_i + \varepsilon_{it}$$

4. Empirical Analysis

4.1. Descriptive Statistics

The descriptive statistical analysis of relevant variables in this paper is shown in Table 2. The sample size of each variable is about 13500. The average value of the proxy variable ROA of enterprise business performance is 0.0381, the maximum value is 0.2539 and the minimum value is -0.2119, indicating that the gap between enterprise business performance is obvious. The overall business performance of the selected enterprises is at a low level and the

improvement of enterprise performance is slow. The average leverage ratio (Lev) is 0.5009, the maximum value is 1.2083, the minimum value is 0.0710, and the maximum leverage ratio has exceeded 1, indicating that there is a high leverage ratio, it is necessary to reduce the leverage ratio of enterprises, and the leverage ratio gap between enterprises is also large. However, the overall leverage ratio of the enterprise is within a reasonable range. For the control variables, the age of enterprises is more than seven years, but there is still a big gap in enterprise growth ability, and there is still growth potential as a whole. The scale gap of enterprises is small, and the average equity concentration is high, indicating that the equity is controlled by a few people. The macroeconomic background of the enterprise is also good, which is conducive to the forward development of the enterprise and improve the business performance of the enterprise.

Table 1. Comparison of model results

| | OLS | FE_robust | FE_trend | FE | RE |
|-------|--------------------------|---------------------------|-------------------------|---------------------------|----------------------------|
| LEV | -0.128*** (0.00662) | -0.133*** (0.00844) | -0.133*** (0.00845) | -0.133*** (0.00339) | -0.131*** (0.00295) |
| SIZE | 0.00849*** (0.000895) | 0.00750*** (0.00176) | 0.00748*** (0.00176) | 0.00750*** (0.000867) | 0.00751*** (0.000591) |
| GRO | 0.0148*** (0.00116) | 0.0133*** (0.00114) | 0.0133*** (0.00114) | 0.0133*** (0.000636) | 0.0138*** (0.000620) |
| TAT | 0.0155*** (0.00201) | 0.0266*** (0.00365) | 0.0266*** (0.00365) | 0.0266*** (0.00168) | 0.0211*** (0.00131) |
| PGR | 0.134*** (0.0145) | 0.0814*** (0.0135) | 0.0816*** (0.0135) | 0.0814*** (0.0121) | 0.102*** (0.0113) |
| HLD | 0.0103 (0.00675) | 0.0186 (0.0115) | 0.0186 (0.0115) | 0.0186** (0.00640) | 0.0134** (0.00496) |
| AGE | -0.000443* (0.000188) | -0.00117*** (0.000282) | -0.00148 (0.00209) | -0.00117*** (0.000198) | -0.000864*** (0.000151) |
| year | | | 0.000310 (0.00209) | | |
| _cons | -0.113*** (0.0190) | -0.0795* (0.0351) | -0.697 (4.165) | -0.0795*** (0.0178) | -0.0832*** (0.0126) |

*Note: t value is in brackets, $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Descriptive statistical analysis

| Variable | Sample size | Standard deviation | Average value | Maximum | Minimum |
|----------|-------------|--------------------|---------------|---------|---------|
| ROA | 13520 | 0.0637 | 0.0381 | 0.2539 | -0.2119 |
| GRO | 13489 | 0.7042 | 0.2108 | 5.5798 | -0.6269 |
| SIZE | 13518 | 1.3639 | 22.2559 | 25.9490 | 19.0316 |
| HLD | 13520 | 0.1497 | 0.3504 | 0.7402 | 0.0861 |
| LEV | 13518 | 0.2090 | 0.5009 | 1.2083 | 0.0710 |
| TAT | 13498 | 0.5290 | 0.7221 | 3.0301 | 0.0471 |
| PGR | 13520 | 0.0499 | 0.1181 | 0.2244 | 0.0650 |
| AGE | 13520 | 5.2227 | 17.5790 | 30 | 7 |

4.2. Fixed Effect Model Regression Analysis

According to the model construction part, this paper selects the fixed effect model to analyze the leverage ratio and business performance. Results as shown in Table 3, the regression coefficient is significantly not 0, the F value is large, and the p value is significant, indicating that the fitting degree of the model is high. After controlling the impact of other variables on business performance, the regression coefficient of leverage ratio is -0.1334 and the T value is -15.80, which is significantly negative, indicating that the enterprise leverage ratio is significantly negatively correlated with business performance at the level of 1%, and the enterprise leverage ratio has a significant inhibitory effect on business performance. According to the regression coefficient, the operating performance will decrease by 0.1334 units for every increase of enterprise leverage ratio by 1 unit. The results of the fixed effect model show that the enterprise pole ratio has a significant negative impact on business performance. For the control variables, in addition to the ownership concentration, the regression coefficients of the control variables such as enterprise scale, growth and total asset turnover are significant, and the coefficient symbols accord with the theoretical significance, indicating that the control variables also have a significant impact on the business performance of enterprises.

Table 3. Regression results of fixed effect model

| ROA | Coefficient | Robust standard error | t | P> t |
|-------|-----------------|-----------------------|---------------|-------|
| LEV | -0.1334 | 0.0084 | -15.80 | 0.000 |
| SIZE | 0.0075 | 0.0018 | 4.27 | 0.000 |
| GRO | 0.0133 | 0.0011 | 11.62 | 0.000 |
| TAT | 0.0266 | 0.0036 | 7.28 | 0.000 |
| PGR | 0.0814 | 0.0134 | 6.03 | 0.000 |
| HLD | 0.0186 | 0.0115 | 1.62 | 0.106 |
| AGE | -0.0012 | 0.0003 | -4.16 | 0.000 |
| _cons | -0.0795 | 0.0351 | -2.26 | 0.024 |
| | F(7,1039)=99.01 | | Prob>F=0.0000 | |

4.3. Robustness Check

In this paper, the fixed effect model is used to analyze the relationship between enterprise leverage and operation and performance. Considering the heterogeneity of enterprises, the analysis results are accurate and scientific, but the impact of the endogenous problem of the model can not be completely avoided. Therefore, this paper makes a robustness test on the analysis results. The return on net assets is used to replace the net interest rate of total assets to represent the enterprise's operating performance, and the capital intensity is used to replace the total asset turnover to measure the enterprise's operating capacity. Then, the panel data after changing variables are regressed by using the fixed effect model. The results show that after changing variables, Leverage ratio still has a significant negative impact on operating performance, which is consistent with the conclusion of this paper. This further strengthens the conclusion of this paper that enterprise leverage has an inhibitory effect on business performance, and reducing enterprise leverage is conducive to the improvement of business performance.

5. Conclusions and Recommendations

5.1. Conclusion

At present, reducing enterprise leverage is an important part of national economic work. Reducing enterprise leverage is conducive to preventing risks, promoting steady development

and improving business performance. Using the relevant data of 1040 A-share listed companies in Shanghai and Shenzhen from 2007 to 2019, this paper measures the enterprise operating performance with the total asset net interest rate and the asset liability ratio. After controlling the variables such as enterprise scale, total asset turnover and enterprise growth, this paper makes a regression analysis on the leverage ratio and operating performance. According to the regression results, the increase of enterprise leverage has a significant negative impact on the improvement of business performance. The increase of leverage will reduce the business performance of enterprises. At the same time, most of the control variables also have a significant impact on business performance. It can be seen that the decrease of enterprise leverage ratio will increase the efficiency of the enterprise to a certain extent. Enterprises should appropriately reduce the leverage ratio and improve business performance according to their own situation.

5.2. Proposals

5.2.1. Strengthen Enterprise Self-management

The production and operation of enterprises mainly rely on their own profits, so we should ensure the smooth operation of enterprises and maintain the leverage ratio at an appropriate level. Once the leverage ratio is too high, it is very easy to affect the operating efficiency of enterprises. If an enterprise wants to reduce the leverage ratio, it may involve all links of enterprise production and operation. It must objectively and realistically analyze the leverage ratio level and risk level of the enterprise from the actual situation of the enterprise. To reduce leverage ratio and reduce liabilities, enterprises need to make detailed and scientific plans in combination with their own operation ability, risk resistance and deleveraging objectives, and reduce leverage step by step to ensure the steady development of enterprises. After the enterprise formulates the deleveraging plan, it needs to be implemented and supervised by a specially assigned person to ensure the timely and effective implementation of the plan. Assets guarantee the ability of enterprises to repay debts, and strengthening enterprise asset management can effectively and timely pay off debts. Enterprises should clean up invalid assets in time, integrate the assets owned by enterprises, make good use of existing assets, and avoid idle and waste of assets. Enterprises effectively revitalize stock assets is one of the ways to reduce leverage mentioned by the government, which can safely deleverage.

5.2.2. Strengthen Enterprise Equity Financing

Enterprises need a lot of funds to expand their production and operation scale. It is far from enough to rely on their own profit accumulation. They need external capital investment. Therefore, enterprises obtain funds through creditor's rights and equity. If enterprises want to reduce leverage, they should strengthen financing through equity. To increase equity financing, enterprises should enhance their competitiveness, actively innovate products, make enterprises have huge development space, and attract external funds to take shares in enterprises. The development of enterprises needs a lot of funds, but at present, most enterprises have difficulties in financing. In order to alleviate this problem, while the government has introduced measures, financial institutions are also constantly innovating, actively developing new financial products and trying to provide convenience for enterprises to obtain funds. Enterprises can attract equity funds through financial products, such as issuing perpetual bonds, so as to reduce enterprise leverage. Enterprises can also increase equity financing through debt to equity swap. Debt to equity swap, as the name suggests, converts creditor's rights into equity, and financial asset management companies convert bank's creditor's rights to enterprises into their equity. Actively promoting the market-oriented debt to equity swap and increasing the equity financing of enterprises can reduce the liabilities of enterprises and reduce the leverage ratio.

5.2.3. Optimize the Debt Structure of Enterprises

Debt financing is an indispensable part for enterprises to obtain funds. In order to reduce the risk of enterprises and effectively manage the leverage ratio of enterprises, enterprises should optimize the debt structure and carry out debt financing reasonably according to the actual situation of enterprises. For the funds obtained through debt, the enterprise only has the right to use the funds for a certain period of time and needs to return the funds when the debts are due, so the enterprise should try to optimize the debt structure. Debt financing needs to consider many factors, such as debt scale, financing cost and so on. The scale of debt financing should be in line with its own strength and controlled within the acceptable range of the enterprise. Secondly, there are many ways of debt financing. Enterprises should choose the financing way with lower financing cost after comparing the financing cost. Debt maturity is also an extremely important factor. The debt maturity should correspond to the asset maturity. Enterprises can choose to repay the debt when the asset generates cash flow. In this way, the risk faced by enterprises is relatively small, and the cash flow generated by assets is equivalent to a powerful guarantee.

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