An Empirical Study on the Correlation between Debt Financing Methods and Business Performance of Listed Real Estate Development Companies

Ai-qin Li

e-mail: 552557066@qq.com

Department of Business Management, Wuhan Business University, Wuhan, China

Abstract: This article uses Stata16.0 statistical software tools and WPS2016 office software to analyse the data from RESSET financial research database. Select real estate development industry in 2015-2019 a-share listed companies annual reports and related data in nearly five years of financial statements, sum up the relationship between operating liability ratio, short-term loan ratio and long-term loan ratio and business performance of the real estate development industry. A theoretical basis and reference suggestions for real estate development industry in terms of financing decision to be provided.

Keywords: debt structure, business performance, empirical research

1 INTRODUCTION

The real estate development industry is a pillar industry of the national economy, and occupies an important position in the process of national economic development. It not only plays an important role in promoting national economic development and industrial linkage, but also plays an important role in improving people's living environment and improving people's quality of life. However, as the booming development of real estate development industry in recent years, rising prices, there are plenty of speculation and it is contrary to the idea that is the house is used to live in.High real estate price seriously exceeds the bear range of the citizen , and it is bad for the stable development of society. To that end, the state has issued a series of policies and regulations to regulate the development of real estate.In order to achieve sustainable and healthy development, real estate development industry must adjust the financing structure timely according to the macro-control environment and respond to the introduction of relevant monetary policies.

2 MODERN CAPITAL STRUCTURE THEORY

2.1 MM Theory

MM theory was first proposed by Modiglianih and Miller, and after constant modification and exploration by a large number of scholars in the later stage, it has gone through three stages: the tax-free MM theory, the modified MM theory and the Miller model. The tax-free MM theory holds that in the absence of corporate income tax, the value of enterprises with debt and without debt is equal, and no matter how the debt financing structure of enterprises changes, the value of enterprises will not be affected. The modified MM theory takes into account the existence of corporate income tax and holds that the debt interest expense can be deducted before tax, the debt interest has tax deductible income, and the value of enterprise of the indebted enterprise is more than the present value premium of the debt interest tax deductible income than that of the unindebted enterprise at the same risk level. Miller model is a further supplement to the tax-free MM theory, the modified MM theory. Miller model studies the relationship between capital structure and enterprise value under the premise of comprehensive consideration of corporate income tax and individual income tax, and finds that under the premise of consideration of corporate income tax, debt has the role of interest tax deduction. But the existence of personal income tax will weaken the effect of debt interest tax deduction. In general, MM theory is based on the perfect market hypothesis, which believes that enterprise value can be maximized only when the debt ratio reaches 100% [1].

2.2 Trade-off theory

The trade-off theory is a supplement to the MM theory which only considers the interest tax deduction of debt financing and ignores the financial crisis caused by debt financing. Trade-off theory holds that debt brings the tax revenue to the enterprise at the same time, will bring enterprises into financial difficulties and improve the bankruptcy risk of the enterprise, so the debts of the enterprise is not the more the better, to effectively weigh advantages and disadvantages of debt of the enterprise, only when the benefits of debt tax shield effect effectively eliminate financial distress cost, Trade-off theory considers that companies have a point, When the enterprise is in the optimal capital structure point, the enterprise value is the maximum.

2.3 Agency theory

In modern enterprises, general ownership and operating rights are separated. In the process of fund raising, shareholders may prefer debt financing to prevent their control rights from being diluted, while managers may prefer equity investment. At this time, there will be a conflict of interests between shareholders and managers, resulting in equity agency costs. In addition, when facing with investment decisions, shareholders are generally inclined to invest in projects with high risks, while creditors are just the opposite. The benefits and risks enjoyed by creditors and shareholders are asymmetrical. In this case, conflicts of interests between shareholders and creditors will appear, resulting in creditor's agency costs. According to Agency theory, there is a substitution relationship between the cost of equity agency and the cost of creditor's rights. When the cost of equity agency and the cost of creditor's rights reach a balance point, the enterprise value will be the maximum.

2.4 Pecking Order Theory

Pecking order theory is based on the theory of information asymmetry, on the basis of information asymmetry, investors tend to judge the enterprise business performance through the enterprise's financing behavior.If the enterprise selects the equity financing and debt financing, investors will think that the turnover of enterprise capital is ineffective, the solvency of enterprises has declined. So pecking order theory holds that enterprises in financing, the order of financing is internal financing, that is using the profits and retained earnings obtained by the enterprise to meet the needs of the enterprise for funds, followed by raising funds through debt financing, and finally by issuing shares, that is through equity financing.

On the one hand, debt financing can bring a certain tax shield effect to enterprises to promote the development of business performance; on the other hand, the existence of debt financing will increase the financial risk of enterprises, and at the same time generate creditor's rights agency cost. How to effectively use the leverage effect has theoretical and practical significance.

3 THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

From the results of previous studies, there are mainly the following viewpoints on the relationship between debt structure and enterprise business performance:

The first is that there is no mutual influence between the debt structure and the business performance. Wang Wanqiu and Jiang Yan analyzed the relationship between the ratio of short-term debt and the return on equity, the growth rate of operating receipt and Tobin's Q, and believed that there was no causal relationship between the business performance of enterprises and the length and duration of debt[2]. Song Yanping selected 50 listed real estate companies continuously operated in Shanghai and Shenzhen A-shares from 2005 to 2013 as sample enterprises, and used the software SPSS21.0 to conduct correlation regression analysis on the sample data. The regression results showed that the long-term debt financing ratio of the real estate industry had an insignificant linear correlation with the performance of the real estate listed industry[3].The second is that the debt structure of the enterprise has an inverted U-shaped influence on the enterprise value. Liu Fujie selected the financial data of listed companies in China's A-share real estate industry from 2008 to 2017 as research samples, and made an empirical analysis by using factor analysis method and panel threshold model. He believed that the impact of capital structure on corporate value was nonlinear inverted U shape, and corporate value could be maximized when the asset-liability ratio was 68.56% [4].Wang Xiuxia and He Xuefeng made an empirical regression analysis of 4,560 observed values of 190 sample companies in the A-share trading circulation enterprises listed in Shanghai and Shenzhen , and believed that the ownership concentration degree showed an inverted U-shaped nonlinear relationship with the business performance of trading circulation enterprises[5]. The third, the debt structure of enterprises has a positive impact on business performance. Yang Shaofan used the factor analysis method to conduct an empirical analysis on the relevant data of 117 real estate companies listed in Shanghai and Shenzhen stock markets, and concluded that the higher the short-term debt ratio, the better the business performance of the enterprise[6]. Zhangyang used SPSS19.0 to analyse sample data of 85 listed

real estate companies, he thought the short-term debt on the one hand, had a constraint effect on management of excessive consumption, on the other hand made operators cautious investment, reduced the management risk of the enterprise, short-term debt proportion presented a positive effect on firm's performance[7].The fourth is that debt structure has a negative impact on business performance. Duan Yiran selected the financial data of 106 A-share listed real estate companies listed in Shanghai and Shenzhen stock markets from 2015 to 2017 as the research object, conducted GLS regression on the relevant data, and the research results showed that the asset-liability ratio of listed real estate companies had a weakening effect on the business performance of enterprises [8].Liu Yangyang selected relevant data of listed companies in the logistics industry from 2014 to 2018 and made a regression analysis of the data by using SPSS24.0. The results showed that the higher the asset-liability ratio and non-current liability ratio of listed companies in the logistics industry, the worse the business performance of listed companies in the logistics industry[9]..

To sum up, the study of the relationship between debt structure and corporate performance mainly concentrated in the aspect that the proportion of assets and liabilities, capital structure, short-term debt ratio influence on the enterprise business performance. The data which is about the relationship between operating liabilities ratio, proportion of short-term debt financing, long-term financing liabilities ratio and the corporate performance is less. However, operating liabilities are the liabilities arising from business activities of an enterprise, which are the financing behavior based on commercial credit. Operating liabilities can enhance the capital flow of an enterprise without the cost of capital use, bring less financial risk to the enterprise, and promote the business performance of the enterprise. Based on this, hypothesis 1 is proposed:

Hypothesis 1: the real estate development industry operating debt ratio has a positive impact on the business performance of enterprises

Short-term financial liability period is short, will bring pressure that is about repaying the capital and interest to the enterprise, affect the service efficiency of funds of enterprises, and real estate development industry cycle is long, need to turnover amount is large, short-term financial liabilities ratio is higher, will bring financial risk to the development of real estate development industry, and thus affect the business performance of the enterprise. Based on this, putting forward hypothesis 2:

Hypothesis 2: The short-term loan ratio of the real estate development industry has a negative impact on the business performance of enterprises

On the one hand, long-term financial liabilities can meet the real estate development industry's demand for funds, on the other hand, can ease the real estate development industry's short-term solvency. Meanwhile, long-term financial liabilities have a large interest expense, which can be deducted before tax and has a tax shield effect. Based on this, hypothesis 3 is proposed:

Hypothesis 3: The long-term loan ratio of the real estate development industry has a positive impact on the business performance of enterprises

4 IV.SAMPLE SELECTION AND DATA SOURCES

In this paper, A total of 110 listed companies in the A-share real estate development industry are selected. In order to ensure the accuracy, reliability and integrity of the data, the sample is processed as follows:(1) Companies with incomplete and discontinuous data are eliminated; (2) Exclude listed companies whose stocks are ST and *ST. After screening, the balance sheets and profit statements of 98 A-share real estate development companies from 2015 to 2019 that meet the requirements are finally selected as the research objects. Short-term borrowing and long-term borrowing data are directly derived from the balance sheet of RIS Resset Financial Research Database, while the operating liability data are collected manually after analyzing the relevant project data in the balance sheet of RIS Resset Financial Research Database.

5 VARIABLE SELECTION AND MODEL CONSTRUCTION

5.1 Variable selection

According to the industry classification standard of Rises Industry Classification (2016), this paper takes the mutual influence relationship between the business performance of A-share listed companies in the real estate development industry and the debt source structure of debt structure as the research object, takes the return on equity as the representative of the business performance index and set the return on equity as the explained variable. For the study of the more clearly the impact of different sources of debt on the firm's performance, Setting operating liability ratio, short-term loan ratio and long-term loan ratio as the explanatory variables, by the explained variable not only affected by the explanatory variables, and many other factors can also bring the influence of different level to the explained variable. To minimize the influence of other factors on the explained variable, and ensure the accuracy of the regression analysis results, the size of the enterprise is set as the control variable. In order to maintain the stability of data and refer to previous studies, the control variable in this paper is set as the natural logarithm of the total assets of the enterprise. The specific variables are shown in Table 1:

Table 1 Basic situation table of variables

Variable types	The variable name	Variable symbol	Variable description and calculation formula
Explained variable	the return on equity	Y	retained profits/ Average balance of owners' equity ×100％
Explanatory variable	operating liability ratio	OFL	（Notes payable+ Accounts payable + advance received）/ Total liability ×100％
Explanatory variable	short-term loan ratio	SDFL	short-term loan / Total liability ×100％
Explanatory variable	long-term loan ratio	LDFL	long-term loan / Total liability ×100％
Control variable	the company size	SZ	ln（Total Company Assets）

5.2 Model construction

In order to specifically study the influence of different debt sources of listed companies in the real estate development industry on the business performance of enterprises, the types of debt sources in the real estate development industry, the company's business performance and related indicators are described. According to the proposed research hypothesis, the model (1) can be established for the relationship between the operating liability ratio, short-term loan ratio, long-term loan ratio and the return on equity:

$$Y=\beta_0+\beta_1 OFL_{it}+\beta_2 SDFL_{it}+\beta_3 LDFL_{it}+\beta_4 SZ_{it}+\varepsilon_{it} \tag{1}$$

Among them, Y is the return on equity of listed companies of real estate development industry, β_0 is constant, β_1、β_2、β_3 and β_4 are the undetermined coefficient of regression, the OFL is the operating liability ratio of real estate development industry listed companies, the SDFL is the short-term loan ratio of real estate development industry listed companies, the LDFL is the long-term loan ratio of real estate development industry listed companies, the SZ is the size of real estate development industry listed companies, ε_i is the random interference residual term, and i is the enterprise, t is the year.

6 REGRESSION ANALYSIS

In this paper, statistical software Stata16.0 and office software WPS2016 are used to carry out multiple regression analysis on indicators such as operating liability ratio, short-term loan ratio, long-term loan ratio, enterprise size and business performance collected and manually sorted, and the regression results are obtained, as shown in Table2:

Table 2 Regression results of the relationship between debt source ratio and enterprise performance

Y	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
OFL	0.060	0.030	2.00	0.046	0.001	0.118
SDFL	-0.088	0.046	-1.89	0.060	-0.179	0.004
LDFL	-0.080	0.037	-2.15	0.032	-0.152	-0.007
SZ	0.019	0.003	6.30	0.000	0.013	0.025
_cons	-0.364	0.070	-5.20	0.000	-0.501	-0.226

From table 2 the regression results showed that in the real estate development industry operating liability ratio (OFL) coefficient is 0.060, that operating liabilities of the real estate development industry is used the more fully, the return on equity the better. Operating liability ratio has a positive impact on corporate performance, and it is significant at 5% level, consistent with the prediction results. The coefficient of short-term loan ratio (SDFL) is -0.088, which indicates that the more short-term financing in the real estate development industry, the worse the return on equity of the enterprise will be. The short-term loan ratio in the real estate development industry has a negative impact on its operating performance, which is significant

at the level of 10%, consistent with the proposed research hypothesis. The coefficient of long-term loan ratio (LDFL) is -0.080, which indicates that the more long-term financial liabilities, real estate development industry enterprise's return on equity is smaller.The long-term loan ratio of the real estate development industry reverse influence on the enterprise operating results, and it is significant at the level of 5%, and contrary to the proposed research hypothesis.It can be attributed to the rapid growth of the housing prices in recent years,the state has issued a series of policies to strengthen the management and supervision of bank loans to real estate development enterprises, raise the loan threshold, and increase the loan restrictions in the real estate development industry, which to some extent curbs the development of the real estate development industry.

7 CONCLUSION

Using the statistical software STATA16.0 and office software WPS2016, the regression analysis is carried out on the annual reports of A-share listed companies in the real estate development industry from 2015 to 2019, and the positive influence relationship between the operating liability ratio and the return on equity of enterprises in the real estate development industry, the negative impact relationship between short-term loan ratio and return on equity of real estate development industry, the negative impact relationship between long-term loan ratio and return on equity of real estate development industry are obtained. In order to better develop the real estate development industry under the new situation, the following suggestions are put forward:

(1) Strengthen the credit rating management of the real estate development industry and pay attention to the brand effect of enterprises. The enterprise shall improve its own internal management mechanism, abide by the laws and regulations promulgated by the state, be subject to state management and accept the supervision of relevant departments. At the same time ,improve the quality of accounting information that is inside and outside, strictly abide by the commitment that is about contractors and customers, pay workers wages on time, enhance the enterprise image of real estate development industry, improve the commercial credit, use the form of advance payments, confess to raise to sale houses, make full use of operating liabilities, increase enterprise daily operation of the capital, so as to improve the return on equity of enterprise.

(2) Expand new financing methods and enrich financing structure. The capital demand of real estate development industry is large, and construction period of real estate development industry is long. In order to meet the shortfall of the capital demand of real estate development industry, at the same time,make enterprises free from the constraints and dependence on bank loans,the real estate development industry can solve gap problem through equity financing, introducing bank shareholders, using experience of bank financing, expanding financing channels, reducing the risk of the enterprise production and operation, Avoiding the blind expansion of real estate enterprises and attaching importance to long-term profits[10].

(3) Predict the trend of national macro policies and conform to the social trend. Because the real estate development industry is affected by the policy of issued by the state, only predict the national macroeconomic regulation and control policy development trend, unscramble the policy correctly and timely, and then creatively study and apply the national policy, adopt both

rental and sale at the same time, establish a sound long-term mechanism, to better adapt to the new environment, new markets but also better to control their own risk [11].

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