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CAPITAL STRUCTURE OF LISTED COMPANIES IN THE CONSTRUCTION MATERIAL INDUSTRY IN VIETNAM

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INTRODUCTION

1. Justification

The decision on capital structure is one of three strategic financial decisons of a company, ensuring financial resources to carry out long-term investment activities, bringing economic added value for business and owners, maintaining financial safety as well as ensurng the sustainable development of companies. Research on modern capital structure has been officially promoted after Modigliani & Miller (1958) made theorems about the impacts of capital structure on firm value. Over the six decades, capital structure has continued to be the topic of intense interest from many researchers, both in terms of the conceptual framework and empirical evidences. Previous studies have elciated theories related to capital structure in various contexts. The research also applies theoretical background to clarify the behavior of managers when making decisions on capital structure. Empirical studies show that capital structure varies by country, market, industry, institution, and stage of firm life cycle. These results not only confirm the specificity of capital structure, but also call for further studies on capital structure in different conditions, contexts, industries in order to provide a multi-faced view on capital structure of a company.

During the process of building and renovating the country, the construction material industry plays a pivotal role, determining the quality, cost and contruction time of constructions works. The industry also makes significant contribution to the economy with an average of 7% to 8% of GDP. It is a key industry in Vietnam’s economy.

The financial crisis in 2008 caused serious impacts on the business activities in the construction material industry. In the period from 2009 to 2015, a series of enterprises experienced a decline in profts and prolonged losses; reduced competition leading to close businesses, stop operating, and moderate production; carried out mergers and restructuring. The debt ratios of cement companies increased from 57.96% in 2009 to 70.4% in 2014; the percentage of permanent sources of capital decreased from 69.02% in 2009 to 57.84% in 2014, showing the financial imbalance of these companies. The main reason come from the lack of long-term financing strateges. Capital raising activities of the companies are still subjective, heavy on response and lack of sustainability. After a period of massive investment, the debt ratios of listed companes in the construction material industry is too high, financing model lacks of safety, heavy interest burden, and high likelihood of bankruptcy.

On August 18th 2020, the Priminister issued Decision 1266/QD-TTg approving the development strategy of Vietnam's construction material inudstry for the period 2021-2030, with orentation to 2050, taking effect from January 1st 2021. After the issuance of Decision 1266/QD-TTg, provinces have in turn issued decisions on planning for development of construction materials. In the context of a sharp increase in government investment over the period 2021-2025, the demand for construction materials to implement public investment projects is huge. This requires companies in the construction material industry to have appropriate and effective financing strategy and policies to ensure sustaibable business operations. Therefore, applying theories to identify and evaluate; from there, giving some solutions to improve the capital structure of companies in the construction material industry is an urgent requirement in terms of theory as well as practice. Stemming from this requirement, the author has chosen the topic "***Capital structure of listed companies in the construction material industry in Vietnam***" as the research topic of the dotoral thesis.

2. Research Objectives

The overall research objective of the thesis is to clarify the capital structure of listed companies in the construction material industry in Vietnam; consequently, make assessments on capital structure and propose solutions to improve capital structure for listed companies in the construction material industry in Vietnam.

3. Research subject and research scope

The thesis examines the capital structure of listed companies in the construction material industry in Vietnam. The sample includes 30 listed companies on HNX and HOSE over the period from 2009 to 2020.

4. Methodology

The thesis comnines qualitative method and quantitative method to implement research tasks. The details of methodologies are described as follows:

+ ***Clarifying theoretical issues about sources of capital and capital structure of a company*****:** Analytical method, comparision and synthesis method. Based on previous studies on sources of capital and capital structure, systematizing the theoretical background of sources of capital and capital structure, the factors affecting capital structure, the impact of capital structure on firm performance, capital structure planning.

+ ***Clarifying the experience of capital structure planning of listed companies in the construction material industry over the world and drawing lessons for Vietnam***: case study method. The thesis selects two typical global corporations in the construction material industry, specifies the characteristics of the capital structure and capital structure plannng of these

companies. From there, generalize and draw practical lessons for construction material enterprises in Vietnam.

+ ***Specifying the current situation of capital structure of listed companies in the construction industry, the factors affecting capital structure, the impacts of the capital structure on the performance of listed companies in the construction material industry:*** descriptive statistics, trend analysis to clarify the characteristics of capital structure, WACC, impacts of the capital structure on financial risk and rate of returns; multiple regression (POOL, OLS, REM, FEM, GMM) to clarify the factors affecting the capital structure, the impacts of capital structure on operational efficiency of listed companies in the construction material industry.

5. Scientific and practical contribution of the thesis

Theoretical contribution: The thesis provides an empirical evidence on the capital structure of listed companies in the construction material industry. Through clarifying the factors affecting the capital structure of listed companies in the construction material industry and the impacts of the capital structure on WACC, risk and returns, the thesis tests the hypotheses of capital structure in a particular industry (the construction material industry) in the Vietnamese market. The thesis also considers the capital structure from the perspective of planning and making decisions on financial management of companies.

Practical contribution: Findings of the thesis could be used as references for the financial managers in the construction material industry when planning target capital structure in order to maximize firm value and shareholders' wealth. The thesis is also a useful reference for policy makers, investors, and financial intermediaries as making decsions related to companies in the construction material industry, in accordance with the socio-economc context and development strategy of the construction material industry towards 2030.

6. Literature review

6.1. Regarding the optimal capital structure

Up to the present, the system of theories on capital structure has been relatively fully developed and continuously improved. However, there is no concencus on the existence or non-existence of an optimal capital structure among the theories. According to M&M (1958), under the particular assumptions of perfect capital market and no taxes, firm value is independent of capital structure. The pecking order theory and the market timming theory have similar view of M&M when denying the existence of the optimal capital structure. Graham & Harvey (2001) indicated that the capital structure is a result of the financing decision, managers depend on the market timing to make decision for mazimizing firm value. Some recent empirical studies

supporting the opinion of no optimal capital structure include: Lin (2007), Zeitun et al. (2007), Nieh et al. (2008), Talberg et al. (2008), Cheng et al. (2010), Onaolapo et al. (2010), Ruan et al. (2011); Khan (2012), Ahmad et al. (2012), Tongkong (2012), Tsuji (2013), Admad et al. (2013), Hasan et al. (2014). In contrast, the trade-off theory assumes the existence of the optimal capital structure. Kraus & Litzenberger (1973), Myers (1977) argued that firms would establish a target debt ratio and gradually moved towards that ratio. The optimal debt ratio is the point at which the marginal benefit equals the marginal cost of using debts. Typical studies of this school of thought include: Jensen & Meckling (1976), Kim (1978), Grossman & Hart (1982), Jensen (1986), Diamond (1989), Harris and Raviv (1990).

In Vietnam, a number of studies have shown the existence of an optimal capital structure of companies in different industries and business sectors such as Do Van Thang & Trinh Quang Thieu (2010), Nguyen Thanh Cuong & Nguyen Thi Canh (2012), Tran Hung Son (2013), Vo Xuan Vinh & Nguyen Thanh Phu (2014), Nguyen Thanh Cuong (2015), Nguyen Thu Ha (2019).

6.2. Factors affecting capital structure of a company

Most of the previous studies focused on applying the capital structure theories of capital structure to quantify the impacts of external and internal factors on the debt ratios of companies. The critical driving forces of the capital structure are: asset structure, size, profitability, growth rate, corporate tax rate, age, ownership, firm life cycle. In Vietnam, research on factors affecting capital structure has provided diverse empirical evidences. Some typical studies include: Tran Dinh Khoi Nguyen & Ramachandran (2006), Truong Dong Loc and Vo Kieu Trang (2008), Doan Ngoc Phi Anh (2010), Le Thi Minh Nguyen (2016), Vo Xuan Vinh (2016, 2017), Thu Minh Thi Vu et el. (2016), An Thai (2013), Thi Phuong Vy Le & Kathy Tannous (2017).

6.3. Impacts of the capital structure on the performance of a company

Based on the theoretical background, reseachers have constructed hypotheses on the relation between the capital structure and firm performance. These studies can be classified into 4 clusters: (1) the capital structure has no impact on firm performance; (2) capital structure has linear positive effect on firm performance; (3) capital structure has linear negative effect on firm performance; (4) there is a non-linear relationship between capital structure and firm performance, and there exists an optimal capital structure for each company.

Empirical evidences in Vietnam are found in the study of Le Thi Phuong Vy et al. (2013) on 203 listed companies over the period 2008-2011, Vo Minh Long (2017) on listed companies on HOSE, Nguyen Hưu Huan et

al. (2014) on 517 non-financial enterprises in the period 2010-2012, Cuong et al. (2012), Vo Xuan Vinh et al. (2014).

6.4. Summary of previous studies on capital structure

After reviewing previous studies on capital structure, some conclusions can be drawn as follows: (i) theories of capital structure are not identical but are not mutually exclusive. The inconsistency in the contents related to the capital structure is due to the research method; (ii) empirical studies to test the theories does not produce only one result because: (1) theories predict qualtitatively rather than quantitatively, (2) difficulty in finding proxy variables for factors affecting capital structure; (iii) previous studies found 8 basic firm-specific factors (business size, asset structure, profitability, growth potential, liquidity, business risk, corporate income tax, and non-debt tax shield), institution, laws and financial markets primarily effect the selection of capital structure. The impacts of these above factors on the capital structure varies by countries, industries and business sector; (iv) empirical evidences on the impact of the capital structure on firm value and performance is inconsistent due to research context, sample size, and research method. Some studies indicated the existence of the optimal capital structure, others showed the thresholds at which debt ratios affect firm value; however, there are also many studies that do not show a statistically significant influence of capital structure on firm value.

6.5. Research gap

Recently, there have been more and more studies on capital structure as well as capital structure of listed companies in the construction material industry. However, there are still research gaps calling for further studies and clarification.

Regarding research content: The construction material industry includes many sub-sectors such as cement, steel, tiles, construction stones,…Currently, the research on capital structure of the construction material industry mainly focuses on a particular sub-sector, no inclusive and comprehensive study for the entire construction material industry. On the other hand, the studies focused on clarifying the factors affecting the capital structure, and the effect of capital structure on firm value and performance. A number of studies focused on clarifying the factors affecting the managers' behavior when making decisions on capital structure through comparing the empirical results with direct managers' interview; through specifying the capital structure and adjusting behavior of managers over different stages in firm life cycle. However, such studies do not many, especially in Vietnam.

Regarding research scope: Previous studies on capital structure of listed companies in the construction material industry in Vietnam were carried out over a period of 5 to 7 years, when the industry was in a certain

stage of the business cycle. This does not allow to trace the adjusting behavior of managers over different stages of firm life cycle. Therefore, the thesis examines the capital structure of listed companies in the construction material industry in the period from 2009 to 2020. The production and business operations of companies in the construction material industry experienced different stages during this period. Expanding the research scope will produce more comprehensive results on the capital structure of listed companies in the construction material industry.

Thus, the thesis "***Capital struture of listed companies in the construction material industry in Vietnam***" is an independent study, and is completely different from any previous studies regarding the subject, scope, and content of the study.

7. Achievement and new contributions of the thesis

***About approach*:** the thesis considers the capital structure concerning the development strategy and firm life cycle. Therefore, to make and complete the financing decision, financial managers have to consider the current capital structure of the company as well as the adjustment of this capital structure in the future in relation to the strategic business objectives of each stage over the firm life cycle.

About content: The thesis provides comprehensive results on the capital structure as well as the behavior of financial managers when making decisions about capital structure in the listed companies in the construction material industry.

About context: The thesis examines the capital structure of listed companies in the construction material industry in the context that these companies have just experienced the difficulties, require restructuring in terms of both production, finance and structure. The companies need to plan a financial strategy, including financing strategy, to meet the strategic objectives of the construction material industry towards 2030, with a vision to 2045.

8. Thesis structure

Besides the Introduction and Conclusion, References, List of published papers and research, the thesis consist of three chapters:

Chapter 1: Theoretical background of capital structure of a company

Chapter 2: The situation of capital structure of listed companies in the construction material industry in Vietnam

Chương 3: Solutions to improve capital structure of listed companies in the construction material industry in Vietnam

CHAPTER 1: THEORETICAL BACKGROUND OF CAPITAL STRUCTURE OF A COMPANY

1.1. Sources of capital and classification of sources of capital

1.1.1. Sources of capital

1.1.2. Classification of sources of capital

1.2. Capital structure of a company

1.2.1.Definition of capital structure of a company

1.2.2.Indicators reflecting capital structure of a company

1.2.3.Theories of capital structure

1.2.4.Factors affecting capital structure of a company

1.2.5.Impacts of capital structure on firm performance

1.3. Planning target capital structure of a company

1.3.1.Definition of target capital structure of a company

1.3.2.The importance of planning target capital structure

1.3.3.Principles of planning target capital structure

1.3.4. Procedures and Approaches to planning target capital structure

1.4. Experiences in planning capital structure of global corporations in the construction material industry and lessons for Vietnamese listed construction material companies

1.4.1. Capital structure of some construction material corporations over the world

1.4.2. Summary of financial managers' experience in capital structure and planning capital structure

1.4.3. Lessons for listed companies in the construction material industry in Vietnam

Firstly, the adjustment of capital structure of the global corporations in the construction material industry is quite clear from 2016 to the present, associated with the macro-economic context, industrial context, and profitability of companies.

Secondly, in the context of Covid-19 pandemic crisis and Vietnamese economy continuing to receive a positive assessment of its growth rate, bank loans are an appropriate choice.

Thirdly, a conservative financing model and prioritzing the use of long-tern source of capital, especially the self-financing capacity using internal sources, are used by global corporations in the construction material industry to ensure the financial safety, liquidity, operations continuity, and financial flexibility.

Fourthly, maintaining a stable dividend policy in order to send positive signals to existing shareholders as well as the entire market is a wise choice in the current crisis context.

CHAPTER 2: THE CURRENT SITUATION OF CAPITAL STRUCTURE OF LISTED COMPANIES IN THE CONSTRUCTION MATERIAL INDUSTRY IN VIETNAM

2.1. Overview of listed companies in the construction material industry in Vietnam

2.1.1. Establishment and Development of companies in the construction material industry in Vietnam

2.1.2. Business characteristics of listed companies in the construction material industry in Vietnam

2.1.3. Overview of the sample

The sample of the thesis includes 30 listed companies. The research sample meet some criteria: (1) relevant to the research topic of the thesis; (2) representativeness of Vietnam's construction material industry when the sample includes 27 large-scale companies in cement, steel, and tile sector; (3) consistency. Moreover, these companies have sources of information, financial data audited annually, ensuring the transparency and accuracy of data. The sample is classified by (i) capital size, (ii) ownership structure, (iii) sector.

2.2. The current situation of capital structure of listed companies in the construction material industry

2.2.1. The current situation of capital structure of listed companies in the construction industry

- In terms of ownership

During the period 2009-2020, along with the growth in sources of capital, liabilities and shareholders' equity of listed companies in the construction material industry also increased significantly. At the end of 2009, the average liabilities of these companes reached 34,747 billion VND, accounting for 66.83% of total sources of capital. Liabilities at the end of 2020 increased to 115,703 billion VND, however, the debt proportion went down to 54.95%. That means the increase in the shareholders' equity. The average equity has increased gradually, from 17,245 billion VND at the end of 2009 to 94,865 billion VND at the end of 2020, bringing the equity ratio to 45% by the end of 2020.

The average debt ratio of listed companies in the construction material industry during the period 2009-2020 fluctuated from 0.55 to 0.67. The average debt ratio increased gradually in the period from 2009 to 2012, reached a peak in 2013, then steadily decreased until the end of 2017. In the period 2017-2020, the average debt ratio was in the upward trend again because many companes have demands for long-term borrowings to expand businesses or upgrade technology. Debt ratios of these companies differ by size, ownership structure and sub-sector.

By size: large companies have a higher debt ratio than small ones during the entire study period. Large companies have taken advantages of size and

market position for fund raising. The trend of debt ratio fluctuation of the two groups over the whole period is quite similar, increasing sharply in the period 2009-2013 then decreasing gradually from 2014.

By ownership structure: With advantages in accessing credit, credit guarantees from the government, the state-owned companies use more debts than the private companies. However, since 2012, when the divestment of state-owned capital has been accelerated, together with elimilating some favors in credit accessing, leads the debt ratio of the state-owned companies decrease gradually from 76.45% at the end of 2009 to 47.22% at the end of 2020. In contrast, the debt ratio of the private companies has gone up gradually since 2017.

By sector: During the period from 2009 to 2013, the cement companies have the highest debt ratio among three sectors, maintainng at 80%. However, the debt ratio of these companies then went down gradually to less than 50% at the end of 2020. The similar trend could be seen for tile companies; however, at the significant lower level compared to the cement companies. The steel companies show less dependence on debts over the period 2009-2015; however, since 2016, these companies's debt ratio has been upward.

-In terms of maturity

Generally, during the period 2009-2020, the listed companies in the construction material industry show heavy dependence on current liabilities, with the proportion from 55% to 84% in total liabilities. This tendency was remained quite stable from 2014 when current liabilities accounted for 77% to 84%. Small companies have higher degree of dependence on current liabilities than the large ones. The percentage of current liabilities used by the small companies increased gradually from 66.93% at the end of 2009 to 90.87% at the end of 2020 since most of the small companies did not expand fixed asset capacity, these companies mostly used current liabilities to finance daily operating activities. The proportion of current liabilities in the large companies went down from 84.16% (2016) to 57.87% (2020). In general, most of the listed companies in the construction material industry used bank loans with the ratio from 65% to 85%.

By ownership structure, state-owned companies showed a continous increase in the use of current liabilities, from 30% (2009) to 90% (2020). Private companies used more current liabilities than the state-owned ones during the period 2009-2016. However, from 2017 to 2020, the private companies tended to reduce the dependence on current liabilities in comparison to the state-owned companies.

By sector, three sectors all tended to increase the use of current liabilities during the period 2009-2020; however, the use of current liabilities was different each from others. The cement companies showed the increasing

dependence on current liabilities when the proportion of current liabilities increased gradually, from 27.68% in 2009 to 98.16% in 2020. Tile-stone companies, due to the specific business characteristics, maintained large and stable short-term sources of capital compared to companies in other sectors. Despite of a light downward adjustment in the period 2010-2012, current liabilities still accounted for 90.33% in total liabilities. For steel companies, to ease payment pressure, over the period 2010-2012, the percentage of current liabilities decreased. At the end of 2012, the proportion of current liabilities of these companies was 76.52%. In the course from 2013 to 2017, the steel companies increased the use of current liabilities; however, since 2017, due to the increasing needs for long-term investment, the steel companies used less current liabilities and more long-term debts. At the end of 2020, the proportion of current liabilities was 75.58%, much lower than the other two groups of companies.

Net working capital (NWC) of the listed companies in the construction material industry decreased sharply over the period from 2010 to 2015; NWC of these companies was negative for many consecutive years. Financial safety of the companies was seriously affected by the business situation. Some companies such as Bim Son Cement, But Son Cement, Ha Tien Cement, Viglacera Tien Son had negative NWC during the entire period. NWC of the companes has been improved since 2016. At the end of 2017, NWC of these companies reached 16,131 billion VND. However, during the period from 2018 to 2020, a number of large companies sharply increased the demand for long-term investment in fixed assets, causing the NWC of the whole industry to decrease, but still ensuring the principle of financial safety.

- In terms of scope

Retained Earnings and other shareholders' funds, after a decline during the period from 2009 to 2012, increased again from 2013 to 2020. In 2013, retained earnings reached 3.589 billion VND, up to 143% compared to that of 2012. This strong recovery helped the proportion of retained earnings in total equity increase from 9.2% to 12.1%. By 2020, retained earnings was 29,047 billion VND, corresponding to the proportion of 20.5% in total equity. This showed that the business activities of listed companies in the construction material industry were kept stable. However, there were 3 companies (including VIS, DXV, HLY) making losses recently, leading to the decrease in shareholders' equity.

Shareholders' Capital continuously increased from 11.085 billion VND in 2009 to 56.275 billion VND in 2020. In particular, the growth rate of equity increased rapidly over the period 2016-2020, at the annual rate of 22.68%. With such growth in size, equity always accounted for over 50%.

24/30 companies have adjusted to increase shareholders' capital. Typically, in 2020, the shareholders' contributed capital of HPG increased by

1.687%, NKG increased by 1.213%, VCS increased by 1.067% compared to the figures in 2019. Of which, 73.77% of the contributed capital increased due to the new common share issuance for dividend payment; 25.71% due to newly issued shares and 0.53% from debt conversion. The total amount of ordinary common shares issued by the companies reached 12,190 billion VND over the entire period. Typically, ESOP issuance of NKG in 2016; right issuance of VIT in 2017, or HPG in 2015 chose the right time to issue shares publicly and received a huge amount of share premium.

2.2.2. Assessing impacts of capital structure on firm performance of listed companies in the construction material industry

- Impact of the capital structure on WACC

The cost of debts of high levered companies and low levered companies tended to decrease over the period from 2010 to 2016. From 2017, the cost of debts for both groups increased back. The movement of cost of debt in the two groups was quite similar, especially in the period from 2012 to 2017. During the period 2018-2020, the difference in the cost of debts of the two groups became clearer. The high levered companes reduced their cost of debts from 4.18% in 2010 to 3.77% in 2016, then increased to 8.74% in 2020. For low levered companies, the cost of debts went down from 9.16% in 2010 to 4.87% in 2016, then moved to 5.11% in 2020.

The cost of debts of both groups in the cement sector tended to decrease over the period from 2010 to 2020. For low-debt companies, the cost of debt felt from 7,41% in 2010 to 3.02% in 2020 except for 2015, when the cost of debts of DXV suddenly increased to 65%, causing the average cost of debts of low-debt companies to reach 14.62%. For high-debt companies, the cost of debt, after an increase from 2.76% in 2010 to 7.89% in 2011, declined to 5.87% in 2020. The cost of debts of the cement companies also varied by the debt ratio, in which high levered companies paid higher cost of debts. However, the difference was not too large, just from 1% to 3%.

The cost of debts of tile – stone companies declined during the period 2010-2017, icreased gradually over the course from 2017 to 2019, then went down in 2020. The movement was quite similar for both low and high levered group. Particularly in 2011, the cost of debt of MCC in the low-debt group skyrocketed to 140%, causing the average cost of debt for this group to increase to 32.26%. Apart from the special case of MCC in 2011, the difference in the cost of capital between the two groups was quite obvious. The higher the debt ratio, the more cost of debts. The dispersion of the cost of debts between two groups ranged from 1% to 4%.

- Impacts of the capital structure on financial risk

+ Impact of the capital structure on liquidity

+ Impact of the capital structure on solvency

+ Capital structure and Degree of Financial Leverage

- Impact of the capital structure on Profitability

For steel companies, low-debt ratio companies have a higher average BEP than high-debt ratio companies; at the same time, maintaining higher BEP than the cost of debts. This means that the group of low-debt ratio used financial leverage effectively, creating conditions for increasing ROE. Although the ROE multiplier over the years was not large (DFL ranges from 1.08 to 1.61), low-debt ratio companies still had relatively high ROE, ranging from 11.88% to 37.85%. In contrast, high levered companies showed less efficiency in using debts, BEP of high gearing companies was usually lower than that of low gearing companies. Some years like 2012, 2013, 2018, 2019, BEP of high gearing companies was lower than rd, leading to the significant decrease in ROE. Specifically, ROE of these companies in 2012 was 4.56%, down 8.6% compared to 2011; in 2018, ROE was -1.39%, down 7.72% compared to that in 2017.

For cement companies, the difference in ROE between high gearing and low gearing group was split into two periods. During the period from 2009 to 2014, the high gearing companies had lower BEP than the low gearing companies do. In some years such as 2012 and 2013, BEP of high-debt companies was lower than rd. Therefore, the use of debts at high degree caused ROE of high gearing companies to fall, and lower than ROE of the low-debt ratio group. In contrast, the low-debt ratio companies, despite of not high DFL, the high efficiency of business, BEP > rd brought higher ROE.

Turning to the period from 2015 to 2020, high-debt ratio group had higher BEP than low-debt ratio group does. At the same time, when comparing with rd, BEP of high-debt ratio companies was usually higher than; while BEP of low-debt ratio group was less than rd. Hence, high-debt ratio companies during that period used financial leverage more efficiently than low-debt ratio companies. It was worth noting that the period 2015-2020 is also the period that high gearing group reduced the debt ratio gradually.

For tile-stone companies, those with low-debt ratio are using financial leverage effectively, increasing ROE. Although there were difficult times, the group of low-debt companies had BEP higher than rd during the period 2009-2020. Thereby making the ROE of this group always positive. At the same time, although DFL only fluctuated in the rage of 1.02 to 1.67, with a high BEP (ranging between 9.32% - 32.94%), ROE of low-debt ratio companies is quite high. In difficult year like 2012, ROE was still maintained at 12.03%, and in the recovery phase, ROE grew very strongly (in 2017, ROE reached 51.96% or in 2019, ROE reached 42.97%). The use of financial leverage in the high-debt ratio group was inefficient. The average BEP of this group was quite low (ranging from 5.26% - 13.17%). The difference between BEP and rd was not too much;

there were times when the mean BEP of the group was less than rd, reducing ROE.

2.2.3. Empirical study on the capital structure of listed companies in the construction material industry

- Factors affecting the capital structure

To specify the factors affecting the capital structure of listed companies, the thesis constructed hypotheses and empirical models based on theories and previous empirical findings. The conceptual framework for empirical models was based on the theoretical background of capital structure in Chapter 1 and literature review in Introduction.

In this thesis, with the specific characteristics of the research sample – listed companies in the construction material industry over the period 2010-2020, the author gave the following hypotheses to clarify the determinants of the capital structure:

H1 *– Tangible assets makes significant impact on the capital structure of listed companies in the construction material industry.*

H2 *– Business size makes significant impact on the capital structure of listed companies in the construction material industry.*

H3 *– Growth opportunity makes significant impact on the capital structure of listed companies in the construction material industry.*

H4 *– Ownership structure makes significant impact on the capital structure of listed companies in the construction material industry.*

H5 *– Internal sources of finance makes significant impact on the capital structure of listed companies in the construction material industry.*

H6 *– Business risk makes significant impact on the capital structure of listed companies in the construction material industry.*

H7 *– Firm life cycle makes significant impact on the capital structure of listed companies in the construction material industry.*

H8 *– Sector characteristics makes significant impact on the capital structure of listed companies in the construction material industry.*

Empirical models:

$$Hd_{i,t} = \beta_{01} + B * X + \varepsilon 1_{i,t} (1)$$

$$Lev_{i,t} = \beta_{02} + B * X + \varepsilon 1_{i,t} (2)$$

$$SDebt_{i,t} = \beta_{03} + B * X + \varepsilon 2_{i,t} (3)$$

$$LDebt_{i,t} = \beta_{04} + B * X + \varepsilon 3_{i,t} (4)$$

Where: B is the vector of coefficients; X is the vector of proxy variables; ε is the error term.

The estimate on the whole sample showed evidence that the hypothesis H1 to H8 was accepted statistically. Firm size made positive impact on the overall debt ratio, debt ratio, short-term debt ratio at the p-value <1%; negative impact on the long-term debt rato at p-value <5%. Thus, large-scale companies tend to use a lot of debt. Moreover, large-scale companies use more short-term debts than long-term debts. Fixed assets statistically show a positive impact on debt ratio at p-value <1%. Companies with higher tangible ratio use more debts. Companies with stronger market position use less debt and short-term debts, but used more long-term debts than companies with lower market positions.

Internal sources of finance showed the negative effect on the debt ratio, significant at p-value <1%. This result provides a statistically significant evidence supporting the pecking order theory. This result also confirmed that the companies in the construction material industry passed the stage of value growth; to expand the scale, the companies tend to use long-term debts.

Regarding the impact of ownership structure, state ownership shows a negative effect on the overall debt ratio, debt ratio, and short-term debt ratio, significant at p-value <1%. Managers' ownership does not affect the debt ratio. The higher the proportion of state ownership, the less dependence on debts. This means the private companies use more debts when investment needs arise. The presence of state ownership allows the companies to have certain advantages in terms of equity size, reducing dependence on debts.

The capital structure of listed companies in the construction material industry has also changed markedly over the firm life cycle. At the stage of growth and development, the companies tend to use a lot of debts to finance investment needs. However, the companies tend to release debts gradually when entering the pre-decline stage. This result also shows the tendency of managers to follow the pecking order theory when making the financing decisions.

- The target capital structure and adjustment behavior of managers

Empirical models:

Dynamic models:

$$Hd_{i,t} = \beta_0 * \gamma + \rho * Hd_{i,t-1} + \delta X(t) + \eta_i + \lambda_t + \upsilon_{it} (5)$$

Where: $\alpha = \gamma * \beta_0;\ \rho = (1-\gamma);\ \delta_k = \gamma * \beta_k;$ và $\lambda_t v_{it} = \gamma e_{it}$

$$Hd_{i,t} = \beta_0 * \gamma + (1-\gamma) * Hd_{i,t-1} + \gamma * BX(t-1) + \mu_{i,t} (6)$$

Based on the estimates, (1- beta coeficient of Lag Hd) indcates the average rate of capital structure adjustment for the industry.

The static model, OLS estimate:

$$Hd - diff_{it} = \beta_0 + BX(t-1) + \varepsilon_{i,t} (7)$$

a. The result of the static (Model 7)

The estimate on the whole sample shows that only dependent variable Lev_diff produced the model with statistically significant at p-value <5% and Adjusted R-squared = 0.0303. The estimate at the sector level does not show the model fit of all dependent variables in the steel and cement companies, but signicant at p-value <1% in the tile-stone companies. Variables Tang, Inter_Cap have an impact on the debt ratio adjustment speed at 5% and 1% significance level; Sale_growth has a significant effect on the debt ratio at p-value <10%. Companies with a large proportion of fixed assets have a slower adjusting towards the target debt ratio. Companies with high revenue growth rate have slower debt ratio adjustment. Companies with less internal source have a slower adjustment of debt ratio. For companies moving from the development stage to the maturity stage, the two variables that have a strong impact on the adjustment speed are industry context and Inter_Cap. The closer to the maturity stage, the slower the adjustment speed to the target debt ratio of companies because they have accumulated a certain amount of internal sources.

b. The result of the static model in case of short-term debt

With the dependent variable SDebt, the static adjustment model at all stages of the firm life cycle has p-value <1%. However, only the cement sector showed that the model had a goodness of fit with p-value <1% and Adjusted R-squared= 0.203.

c. The result of static model in case of long-term debt

With the dependent variable LDebt, the static model at the stages of firm life cycle is significant at the p-value <1%. Regression estimates for cement sector and tile-stone sector are significant at the p-value <5%. Contrary to short-term debts, the rate of adjustment of long-term debts moves in the same direction with the firm size and in the opposite direction with the volume of tangible assets. At the development stage, large-scale companies show a faster adjustment towards the target long-term debt ratio. Companies with a large proportion of fixed assets; large internal sources; large state ownership has a slower adjustment of long-term debt. Companies in maturity stage, the speed of adjusting long-term debt depends on growth opportunities and the size of internal capital. Companies in the maturity stage with more growth opportunities show the faster the adjustment of long-term debt to the target ratio. At the same time, the higher the self-financing capacity, the faster the adjustment speed.

Considering the adjustment speed of long-term debt ratio by sector shows that cement companies with large scale, low proportion of fixed assets tend to adjust the long-term debt ratio faster. Companies with strong market position and large internal sources show the slower the adjustment of long-term debt ratio. On the contrary, tile-stone companies with large internal

sources quickly adjust long-term debt. The rate of adjustment of long-term debt moves inversely with the growth rate of revenue. Companies with higher revenue growth rate tend to be slow to adjust long-term debt.

d. The result of dynamic model - Model (5) – GMM regression

The GMM estimation shows that the overall debt ratio adjustment speed of construction materials companies is 32%; the loan ratio adjustment speed is 40%; short-term debt ratio is 45% and long-term debt ratio is 22%. This result also reflects the dependence of the construction materials industry on short-term debts Static model (FEM) shows the adjustment speed of 53%; 59%; 53%; 41% respectively. The factors that have a statistically significant impact on the speed of capital structure adjustment of construction materials companies include firm size, tangible asset percentage, market position, revenue growth rate, non-debt tax shield, and internal sources. Larger companes have faster adjustment of short-term debt,s but slower adjustment of long-term debts. The larger the proportion of fixed assets, the faster adjustment speed of long-term debt. Companies with strong market positions tend to quickly adjust loans. In contrast, the tax shield from depreciation and internal sources of capital slows down the rate of debt adjustment. The speed of capital structure adjustment also depends on the firm life cycle. Companies in the development or maturity stage show a faster adjustment of short-term debt. Companies in the pre-recession stage have faster adjustment of long-term debt.

- The impacts of the capital structure on the profitability

To specify the impact of the capital structure on profitability of the companies, the following empirical models are constructed with dependent variable ROE and Tobin's Q:

$$ROE_{it} = \beta_{08} + B_1 X + \varepsilon_{it1} \quad (8)$$

$$Tobin'sQ_{it} = \beta_{09} + B_2 X + \varepsilon_{it2} \quad (9)$$

Where X is the vector of proxy variables, including variables reflecting the capital structure; variable Turnover measures the circulating speed of total assets, determining by the ratio bewteen Revenue and total assets; variable NWC reflects the financing model of the companies, calculating by the difference between long-term sources of finance and non-current assets; variable Gross_P_M measures the gross margin of the companies; variable CFO indicates the cash flow from operating activities of the companies.

a. The impact of the overall debt ratio on ROE and Tobin's Q

The estimate shows no nonlinear relationship between Hd and ROE. At the same time, Hd has no statistically significant effect on Tobin's Q. Overall debt ratio has a negative effect on ROE at the p-value <1%, but this effect does not change by industrial stage. For each sector, Hd shows a negative

effect on ROE at the p-value <1% in case of steel and tile-stone companies, no statistically significant effect was found in the cement sector. Considering the impact of Hd on ROE in each state of firm life cycle shows the opposite effect statistically significant at the stage L1 and L3.

b. The impact of Lev on ROE and Tobin's Q

The estimate shows that there is no nonlinear relationship between Lev and ROE. At the same time, Lev has no statistically significant effect on Tobin's Q. Debt ratio has a negative effect on ROE at the p-value <1%, but this effect does not change over the industrial period. The effect of Lev on ROE for each stage of the life cycle shows that stage L1 does not have a nonlinear relationship, only a linear relationship (p-value<10%) with a beta of -0.583523. Stage L2 showed no effect of Lev on ROE; the L3 stage shows that there exists a nonlinear relationship with the beta coefficient of Lev^2 of 1.151945 at the p-value <5%.

c. The impact of Short-term Debt (SDebt) on ROE and Tobin's Q

The short-term debt ratio shows a statistically significant effect on ROE and Tobin's Q. At the same time, there is a statistically significant nonlinear relationship between SDebt and ROE. When considering the impact by sector, there exists a nonlinear relationship of SDebt in the group of steel companies; SDebt has no impact on ROE of cement companies; there exists an inverse linear relationship between SDebt and ROE of tile-stone companies. The nonlinear relationship between Sdebt and ROE was found in the stage L1 and the stage L2 at p-value <1%.

d. The impact of Long-term Debt (LDebt) on ROE and Tobin's Q

The long-term debt ratio shows a statistically significant impact on ROE; at the same time, there exists a nonlinear relationship between long-term debt ratio and ROE in the whole sample as well as all sectors. The impact of long-term debt ratio on ROE varies with industry period. At the development stage, the long-term debt ratio lowers ROE. Considering the stages of firm life cycle, only the L1 stage shows a statistically significant impact of the long-term debt ratio on ROE. The impact of long-term debt ratio on ROE varies with industrial period.

2.2.4. Decisions on capital structure of financial managers in the listed companies in the construction material industry

Method of raising capital of financial managers: Only Bim Son Cement Joint Stock Company chooses option b, maintaining the target capital structure. Hoa Phat Joint Stock Company selected option a, following the order of capital raising with priority given to the most advantageous source of capital. Unlisted construction materials companies have 03 enterprises choose a and 01 enterprise choose c. Option a is chosen by most of the companies, followed by option c. This result shows that in practice, financial managers tend to follow the pecking

order theory when planning capital structure. The reason for choosing option b of Bim Son Cement Joint Stock Company is the company's operations have entered a maturity stage, the financial planning process has been built and implemented for many years. That company does not have innovation investment needs, so it only maintain the target debt ratio set out in the financial plan.

Factors affecting the decision of financial managers on fund raising: The two factors with the highest scores are the project's future cash flow (4.8/5) and the project's risk (4.6/5). Next is the goal of maintaining the current ownership structure and factors of the macroeconomic environment such as interest rates and inflation. Maintaining the current value of the stock and the tax rate were the two factors that received the lowest average rating. The above results show that the capital raising decision has a close relationship with the investment decision. Managers are very concerned with the cash flow and risks of the project when choosing the method of raising capital because the project's cash flow ensures the ability to repay the principal and interest to the creditors, increasing firm value, and ensure benefits for the owners. Project risk is related to the certainty of receiving future cash flows, which not only ensures the liquidity of a company but also determines the required rate of return of creditors and owners.

Principles to be followed when planning capital structure of financial managers: In general, construction material companies adhere to the principle of "*ensure smooth operation*" of business; principles of "*maintaining current control of shareholders*", and "*maintaining financial flexibility*" when making capital structure decisions. These three principles receive the highest ratings. Hoa Phat JSC rates all these principles at 5 = important; Bim Son Cement Joint Stock Company has a divergence between principles, focusing on continuous operations and maintaining control of existing shareholders, and underestimates the importance of considering financing policies of existing rivalry companies. This result shows that construction materials enterprises in general and construction material listed companies in particular tend to ensure the continuity of operations when raising capital, focusing on financial flexibility and benefits of existing shareholders. The funding policies of rival companies, the reaction of the stock market, and the stable dividend policy are less commonly followed principles when making decisions about capital structure.

Evaluation of the target debt ratio and the expectation of loan interest rates of financial managers: tile-stone companies choose lower than the target ratio, steel companies choose higher than the target rato. Hoa Phat JSC has a current debt ratio of 0.61, which management believes is higher than the target level. Bim Son Cement Joint Stock Company has a continuous decrease in debt ratio in the period of 2018-2020, currently has a debt ratio of 0.47, which management believes is lower than the target debt ratio. It is worth noting that while other

companies only have credit relations with about 3 to 7 banks, Hoa Phat JSC has credit relations with 28 banks. Except for Bim Son Cement Joint Stock Company, other companies continuously re-evaluate loan interest rates with commercial banks. This is because cement companies mainly borrow long-term loans, the proportion of permanent capital is large, so they do not adjust interest rates of regular credit contracts. In contrast, steel enterprises mainly use short-term debts, so they adjust the cost of debt continuously. Due to the priority of using debt and having certain advantages when accessing loans, when asked about interest rates for long-term loans in the 2021-2025 period, Hoa Phat Joint Stock Company said that the interest rate should range from 4% to 6% per year while most of the other enterprises choose the average rate from 9% to 10% per year.

2.3. General assessment of the capital structure of the listed companies in the construction material industry over the period 2009-2020

2.3.1. Achievements

First, the scale of sources of capital of listed companes in the construction material industry increased in the period 2009-2020. The sources of capital of these companies increased by an average of 13.56% annually.

Second, most of the capital sources have been used flexibly by the companies. Funding channels are diversified from traditional capital raising channels such as bank loans, stock issuance to bond issuance (DTL in 2010, HPG in 2009).

Third, the financial dependence of the listed companies in the construction materials industry in Vietnam has been enhanced due to improved business results and debt restructuring. The average percentage of equity increased from 33% (2009) to 45% (2020).

Fourth, the listed companies in the construction materials industry in Vietnam all strive to increase their internal sources of capital through choosing an appropriate dividend policy. Dividends are maintained at a relatively high level by a combination of cash dividend payment and stock dividend payment in order to accumulate cash flow for investment needs as well as uncertainties in the future.

Fifth, the capital structure of listed companies in the construction materials industry in Vietnam changed according to product characteristics, firm life cycle, and industry business cycle. The debt ratio of these companies in general decreased gradually when the industry enters the pre-recession saturation cycle. At the same time, companies in each sector, each stage of the life cycle has a different target capital structure and a different rate of capital structure adjustment.

Sixth, the empirical models show three outstanding characteristics of managers when planning capital structure for companies in the construction

materials industry in Vietnam, including: (i) prioritizing flexibility and accessibility to capital; (ii) determine the target capital structure and adjust the capital structure towards the target capital structure (iii) Target capital structure is built based on strategic goals, investment needs, and firm specific characteristics.

2.3.2. Limitations and Causes

2.3.2.1. Limitations

First, the current capital structure of most listed companies in the construction materials industry in Vietnam has high potential for bankruptcy and is not really effective, especially in the group of cement companies. In addition, the financing model of many companies violates the principle of financial balance, the permanent capital is thin, decreased during the study period due to the lack of long-term sources and the scattered investment in fixed assets before.

Second, the debt ratio of the listed companies in the construction materials industry in Vietnam decreased, but the level of liabilities and especially the bank borrowings is still high. To serve production and business activities, these companies still mainly use debts. In addition, the results of empirical research also show that the debt ratio has a negative relationship with ROE, which can lead to a decrease in the business performance of the listed companies in the construction material industry.

Third, the listed companies in the construction materials industry depend heavily on short-term capital. The proportion of short-term debt of these companies accounts for over 76% of the total average liabilities. The lack of long-term funding is an obstacle when businesses want to raise capital for long-term strategic goals.

Fourth, the listed companies in the construction materials industry have low internal source of capital, self-financing capacity gradually decreased over the years and especially in the period 2009-2014. Dependence on external capital reduces the initiative as well as the ability to respond to the change of the business environment.

Fifth, except for a few enterprises that maintain their position in the stock market, the high debt ratio and low capital efficiency lead to stocks of these companies receiving low valuation of investors. Many companies in the cement and tile – stone sector have stock market prices lower than their par value. At the same time, the estimation of the cost of capital shows that many companies have negative beta coefficients. That means the cost of raising new common equity capital of these companies is high and the increase of common equity to meet the long-term investment of these companies will face many difficulties.

2.3.2.2. Causes of limitations

- Internal causes

First, the quality of corporate governance of listed companes in the construction materials industry has not met modern management standards, lacks a long-term strategy, and risk management has not been focused. The substandard corporate governance also makes the information asymmetry in the financial market more serious and investors lack confidence in businesses.

Second, listed companies in the construction materials industry still depend on the banking system for debt financing. Currently, the banking system is the main source of loans for these companies, whether in the form of loan contracts or bond issuance. This dependence brings great risks to the industry if the banking system encounters difficulties and lending interest rates fluctuate. Besides, most of the companies in the construction materials industry are small and medium-sized, accessing bank credit also face many difficulties and have to rely heavily on informal credit sources with high interest rates.

Third, due to weak ability to access and raise long-term capital. Except for a few enterprises with development potential who have pursued long-term development strategies, the rest is implementing strategies to stabilize business scale, the investment needs are not great. . Therefore, it is not easy to get long-term loans from commercial banks. At the same time, most of the listed companies in the construction materials industry also face difficulties in raising equity capital in the stock market because the stock is still less attractive.

Fourth, the business results and efficiency of asset utilization of these companies in the period 2009-2020 are still low, so the use of financial leverage is not effective, which has a significant impact on ability to increase internal source of capital. This result comes from many reasons, including: The volatility of the economy, the market, the technology used and the source of input materials.

Fifth, many conpanies in the construction materials industry are slow to restructure their business as a basis for changing the capital structure of the companies. For many years, these companies still have to face the situation of inefficient production and business performance.

- External causes

First, the construction materials industry is an industry with high business risks. Listed companies in the construction materials industry need to invest a large amount of capital in fixed assets, making fixed costs often high. In the case of difficulties in consumption, it may lead to the possibility of not being able to cover fixed costs. In addition, variable costs for: coal, electricity, gasoline... often fluctuate, significantly affecting business results

of the companies. Besides, the output market of listed companies in the construction materials industry depends mainly on the development of the construction industry in particular and the development of the macro-economy in general. At the same time, domestic construction material companies are also under considerable competitive pressure from China and Thailand - countries that have advantages from technology, quality as well as production cost. The above factors lead to fluctuations in business results of listed companies in the construction materials industry.

Second, stemming from the history of formation and development of the listed companies in the construction materials industry in Vietnam. With the characteristics of primary heavy industry, many companies in the construction materials industry have state ownership. Therefore, a part of construction material companies have had advantages in terms of access to bank loans. Hence, the sources of capital of the listed companies in the construction materials industry depends on liabilities, especially short-term debts.

Third, the characteristics of Vietnamese stock market make equity raising difficult. The Vietnamese stock market is at the infant stage, has not developed stably, is unsustainable and has many limitations, which are factors that strongly affect the ability to raise capital and adjust capital structure of companies. The stock trading market is still volatile and has limited liquidity, especially when the market shows signs of decline. Besides, the tools to mobilize capital on the stock market are quite few, especially derivatives. The utility services for investors in the market are still poor (no short selling, margin lending, selling before the transaction completion date), the transparency of the market has not met the needs of investors.

CHAPTER 3: SOLUTIONS TO IMPROVING CAPITAL STRUCTURE OF LISTED COMPANIES IN THE CONSTRUCTION MATERIAL INDUSTRY IN VIETNAM

3.1. Socio-economic context and strategic development orientation of the construction material industry for the period from 2021 to 2030

3.2. Perspective on improving the capital structure for listed companies in the construction material industry

3.3. Solutions to improving the capital structure of the listed companies in the construction material industry

3.3.1. Adjusting the ownership – based capital structure

Large and leading companies in sectors may consider raising more equity from issuing common shares for existing shareholders, paying stock dividends or distributing bonus shares. Currently, the stocks of these companies are still highly valued by the market, so increasing equity is usually a viable solution. In addition, these businesses also need to review the types of fixed assets and have

a plan to dispose outdated assets and old technologies to have cash flow to pay down loans, take advantage of low interest rates on the current market to reduce interest expense as well as average cost of capital.

For small companies that no longer have growth opportunities or face many difficulties in raising capital for technological innovation, it is necessary to determine an appropriate position in the industry value chain to have an appropriate business strategy. In the next 5 years, these companies need to carefully lower the target debt ratio, reduce the proportion of long-term debt and then short-term debt. In order to reduce interest expenses, businesses can restructure their debts to take advantage of the current preferential lending rates of banks. Enterprises in the construction material industry, especially small enterprises, are heavily dependent on short-term capital sources to meet the needs for working capital requirement. In the current context, to increase net working capital, these companies should combine increasing equity with selling obsolete fixed assets with low efficiency. Some small companies with stocks in good price range may consider issuing common shares to existing shareholders or paying stock dividends.

Based on the results of the empirical models, it can be determined that the target short-term debt ratio of companies is at 39.62%. For steel companies, the proportion of short-term debt in total debt is at 76.36% during the whole period. This level of debt is reducing the ROE of steel companies. Therefore, steel companies need to adjust the proportion of short-term debt not to exceed 60% and set a target short-term debt level of 45%. However, steel companies are in the development stage, most of the companies have a large proportion of fixed assets and high revenue growth, the adjustment of the short-term debt needs to be cautious so as not to cause a shortage of permanent sources of capital, business interruption. For companies with strong market position and large internal sources, debt term restructuring can be implemented to balance the financing model and prepare resources for future in-depth investment. In addition, if the dependence on short-term debt is reduced, businesses can improve their position and increase their value in the eyes of investors, creating an important premise to raise equity capital when the Covid-19 pandemic was brought under control, the real estate market and the construction market entered the post-pandemic recovery and growth phase.

3.3.2. Adjusting the capital structure concerning the scope

3.3.3. Adjusting the capital structure concerning the maturity

3.3.4. Adjusting the capital structure relevant to the firm life cycle

3.3.5. Planning target capital structure

3.3.6. Annual assessment of the capital structure

3.3.7. Solutions to enhancing the efficiency of using the financial leverage

3.3.8. Other related solutions

3.4. Conditions for implementing solutions

CONCLUSION

The thesis studies the capital structure of listed companies in the construction materials industry in Vietnam in order to clarify theoretical issues within a particular industry as well as provide more empirical evidence on capital structure in Vietnam. The main results of the thesis include:

(i) synthesized and systematized the theories about the capital structure of a company, the association of the selection of capital structure with the implementation of strategic objectives of a company;

(ii) selected and clarified lessons learned on planning and selecting capital structure of two leading construction materials corporations in the world, namely Nippon Steel Corporation of Japan and SIAM Cement Corporation of Thailand;

(iii) clarified the current situation of the capital structure of listed companies in the construction material industry in Vietnam in the period of 2009-2020. The current capital structure of most of the listed companies in the construction materials industry has high potential bankruptcy risk and is not really effective, especially in the group of cement companies. A clear divergence could be seen in the groups of high debt ratios and low debt ratios. Companies that use a lot of debt have low return on assets; thereby reducing the owner's returns. On the contrary, companies with high asset profitability are maintaining a low level of debt, so they are not taking full advantage of the financial leverage in amplifying the shareholders' return. In addition, the financing model of many companies violates the principle of financial balance, the permanent sources of capital are often thin, decreased during the research period due to the lack of internal sources and the scattered investment in fixed assets before;

(iv) The thesis proposes to reduce the overall debt ratio in general and the debt ratio in particular of the whole construction materials industry, rebalance the loan term in the direction of reducing dependence on short-term debt, enhancing self-financing capacity through improving business performance. For cement companies, the proportion of liabilities should be maintained in the range of 40% to 60%, the target debt ratio at 45.8%. For tile – stone companies, it is necessary to avoid debt ratio between 36% and 51% because these debt raios lower ROE. Steel companies need to adjust the proportion of short-term debt not to exceed 60% and set a target short-term debt level of 45%. However, steel companies are in the development stage, most of the companies have a large percentage of tangible assets and high revenue growth, the adjustment of short-term debt needs to be cautious so as not to cause a shortage of permanent sources of capital, causing business interruption.

LIST OF PUBLISHED SCIENTIFIC RESEARCH RELATED TO THE THESIS TOPIC

Scientific papers:

1. Pham Minh Duc (2019), "*A study on the impacts of capital stucture on firm performance of listed companies in the construction material industry in Vietnam*", Journal of research on Accounting and Finance, Issue 4 (2019), pp. 37-40.
2. Pham Minh Duc (2021), "Capital structure and Firm life cycle–*Empirical evidence from listed companies in the construction material industry in Vietnam*", Journal of research on Accounting and Finance, Issue 11(220)/2021, pp. 80-83.
3. Pham Minh Duc (2021), "*The financing policy of listed companies in the construction material industry in Vietnam*", Journal of Finance, Issue 11/2021(764), pp. 118-122.

Scientific research:

1. Capital structure of Hoa Sen Group, Scientific research at the faculty level, Academy of Finance, 2021.
2. Financing policy of listed companies in the construction material industry, Scientific research at the academy level. Academy of Finance, 2021.