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A Study of the Capital Structure Characteristics Across Diverse Industries

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Abstract: The matter of how a company's capital is structured is frequently discussed in literature related to this topic since 1950s. Nevertheless, theories on optimal capital structure are categorized into different approaches, with their features often controversial and conflicting. The aim of this article is to provide a comprehensive review of the characteristics as well as determinants of the capital structure in capital-intensive, labor-intensive, and tech & healthcare industries in different countries, based on two main theories in capital structure-pecking order theory and static trade-off theory. The paper also highlights the important relationship between financial leverage and the company's performance and therefore tries to find the optimal capital structure. The study is composed of two main sections. The first part is to organize the previous study and various definitions of capital structure and some relevant theories. The second part shows how features of the leverage ratio vary across industries and how companies create value out of it. This paper proposes, after examining previous literature, that the factors influencing the optimal capital structure vary among companies depending on their characteristics. Companies in various sectors have their preferences to make the most use of debt and equity. It is hard to generalize a specific optimal ratio that suits every corporation.

Keywords: Capital Structure, Financial Performance, Diverse Industries.

1. Introduction

The majority of companies gather capital from two sources, which are internal financing and external one. As firms grow and they tend to need more funds to expand, that means the internal funds are insufficient to support the growth. Businesses must use external investment including debt and equity. The decision between debt and equity, known as the capital structure choice, and its impact on value generation, has been a prominent subject in finance ever since Modigliani and Miller introduced the concept of irrelevance [1]. Over the years, various theories such as the Pecking Order Theory and Trade-off Theory have emerged to elucidate a firm's capital structure. Even in today's highly dynamic and competitive market, decisions regarding capital structure remain critical for every company. Naturally, identifying optimal capital structure stands as a crucial responsibility for financial managers. Indeed, the quest for the most advantageous financial leverage has been central to capital structure theory. According to Myers' research, The Pecking Order Theory posits that companies will opt for borrowing rather than issuing equity when internal cash flow falls short of covering capital expenditures [2]. This means the company should always rely on debt to fill the gap. On the contrary,

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The Trade-off Theory appeals to reasonable debt levels by suggesting that companies will borrow until the point where the marginal tax benefits from debt are balanced by the financial distress costs. These two series both make sense but cannot be applicable to all scenarios. Meanwhile, based on the study, it suggests that even if there were a specific debt target to aim for, institutional and economic factors would present significant barriers to achieving the optimal ratio [3]. Likewise, the structural differences in various industries also matter. The study proves that discrepancies across segments exists and these rest with the company's asset structure, profitability, size, age etc. [4].

Although there are much research on the capital structure determinants on a particular firm or industry and on how they would impact firm's overall performances, there is a lack of comparative study that focus on summarizing the characteristic and determinants of financial leverage from all industry and then distinguish one another.

This paper will divide the economy into three segments, which are capital-intensive, labor-intensive and tech & healthcare sectors respectively, and review the findings targeting at multiple businesses, countries and regions, to get draw a comprehensive conclusion of capital structure in a particular industry.

2. Capital-Intensive Industries

The capital-intensive sector contains companies that need a large amount of capital to produce goods or services. It often includes automobile manufacturing, oil production and refining, steel production, telecommunications, and those who rely heavily on the funds to run their business. Therefore, the source and the amount of the fund play a crucial role in such an entity because the choice would finally impact the tax and net income. Constructing a reasonable capital structure could facilitate production and improve competitive advantages. In this part, the paper will analyze Japanese manufacturing companies, the Indian automobile industry, Indian property and real estate companies, and the U.S. hospitality industry respectively, to derive a comprehensive leverage pattern on such a sector.

Japan, as one of the most developed countries, has always been on the top list of research compared to other countries. Meanwhile, the importance of the Japanese manufacturing industry to the domestic and international economies is considerable. Thus, this study chooses Japanese manufacturing firms as an object. According to the Cortez & Susanto's research, it picks a sample of 21 Japanese manufacturing companies that are at the top list of the Tokyo Stock Exchange [5]. Meanwhile, the study hypothesizes five factors that may positively or negatively affect the enterprise's capital structure, which are asset tangibility, profitability, non-debt tax shield, company size, and growth rate. Besides, the research applies the quantitative approach by using the correlation coefficient model and panel data regression and tests the relationship between potential variables and the capital structure from the period 20000 to 2010. Moreover, in order to detect the effect of the effect of the 2008 economic recession, the regression is designed across two-time patterns, which are before the economic recession; namely between 2000 and 2007, and after the economic recession. The result shows that the amount of tangible assets is positively correlated with the leverage, which means a company is more likely to obtain debt when they have higher tangible assets. Whereas, the profitability and non-debt tax shield are negatively related to the leverage, representing that a highly profitable company with high depreciation expenses has less incentive to borrow from debt. Other variables indicate insignificant results. The experiment is in favor of both the pecking order and trade-off theory.

India, as one of the biggest emerging economies, plays a more and more pivotal role in the world's economy. The most momentous industry that drives the domestic economy is the automobile industry, with the highest contribution of 35% in GDP [6]. Thus, the paper puts emphasis on it and solves how the capital structure affects this industry.

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Based on the study by Tripathi, he selected a sample of 44 automobile companies listed on the Bombay Stock Exchange from 2001 to 2014, after excluding firms with missing values [7]. The research aims to explore the relationship between capital structure and ownership structure and finds a positive correlation between promoter shareholding (founders or controlling shareholders) and debt-equity ratio by controlling variables including asset turnover ratio, company size, and selling expense as a percentage of sales revenue using the panel regression model. The finding indicates that underscores the practice of using debt to reduce agency expenses within automobile companies. The study also reveals that asset turnover ratio and company size have a significantly adverse relationship with financial leverage, contending that adequately using the asset could increase profitability by reducing the need for debt. Meanwhile, such a result corresponds to the pecking order theory, showing companies' preference for debt due to the tax shield benefit and increase in profitability by showing positive expectation on the future cash flow.

Indonesia is one of the most populated countries, ranked fourth after the United States. Apparently, there is a huge demand for housing and the property sector is very competitive in this developing economy.

The research opted for property and real estate companies listed on the Indonesia Stock Exchange from 2013 to 2018 as the experiment sample [8]. The author wants to test the capital structure determinants in terms of the company's performance, risk, and size by postulating different performance matrices to measure it. Through coefficient regression test on the profitability ratios, the profitability and non-debt tax shield are significant to capital structure instead of growth rate and liquidity. Regarding the risk ratio, the collateral value of the asset has a positive relationship with capital structure. Besides, the size of a firm doesn't impact the leverage. The property company is reluctant to issue bonds when the company is in expansion. Meanwhile, the study also shows that a company with enormous fixed asset and non-debt tax shield depends more on debt financing, which is aligned with the pecking order theory.

Lastly, the paper focuses on the United States' hospitality industry. It is one of the most profitable industries that holds an extensive amount of land and equipment. It includes a series of spots including hotels, amusement parks etc.

Referring to the García-Gómez's research, the writer concluded that there is a negative relationship between leverage and a company's performance, typically for ROA and Tobin's Q, by conducting a Generalized Method of Moments analysis [9]. This study utilizes a sample of 313 hospitality companies based in the United States spanning eighteen years from 2001 to 2018. By controlling other factors that may influence capital structure like growth and sales, it's observed a noteworthy inverted U-shaped correlation between leverage and firm performance. For Return on Assets (ROA), the critical point is 0.150, while for Tobin's Q, it is 0.163, which indicates that leverage levels below 15% have a positive impact on ROA, whereas levels above 15% lower ROA (the same logic applies to Tobin's Q). The result coincides with the pecking order theory and implies that hospitality companies with high leverage ratios must find an alternative tactic to obtain external funds so that it would not harm the company's performance.

3. Labor-Intensive Industries

The labor-intensive industry is featured in a huge spending in labor rather than the capital. Companies in this sector usually own little fix-asset like equipment, but hold a huge amount of intangible asset that cannot be present on the balance sheet, like human capital because most jobs in this field are done by hand and cannot replaced by machines. Typical examples are agriculture, construction and some mining companies. Unlike asset, companies don't really possess labors. Workers can choose to quit a job if they want, but simultaneously they undergo unemployment risk. The labor market is dynamic, therefore factors that influence capital structure in such sectors are not only firm specific

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and macroeconomic, but more than that. In this part, the paper will talk about both in a boarder perspective, namely the whole economy and labor-intensive firms cases in Visegrad countries.

Generally speaking, Matsa did research on the relationship between workforce and capital structure among U.S firms and the result from regression model shows that lay-off rate, worker's bargaining power (indicated by worker union coverage), labor market regulation and retirement risk are significant to capital structure [10]. Lay-offs are directly connected to unemployment cost because firms have to cut jobs so that they can meet the budget during an economic downturn. Meanwhile, workers remained in position could sense the risk of unemployment and would ask for a higher wage to compensate the risk. The companies are forced to subtract leverage for lower cost needed to compensate for bankruptcy and unemployment risk. Besides, worker union coverage is positively related to leverage since firms with a strong union have higher bargaining power and therefore could improve the supply of debt and have proxy to make major decisions in a company. The labor market regulation is much more concise. With employment protection act, minimum wages and downward wage rigidity, firms are less likely to contract debts when the protection level increases. Furthermore, Pension plan is prevalent in most developed countries. As one of the financial strategies for companies, companies should pre-reserve the pension for the beneficiaries, which could be seen as a debt borrowed from the retiree. Thus, the firms must lower their debt ratio to reduce the risk of failure to pay back.

Visegard countries includes the Czech Republic, Hungary, Poland and Slovakia and occupy about 10% of EU's territory and devote to 6% of GDP [11]. Meanwhile, agriculture in this four country is a core industry in these country and therefore, analyzing the capital structure in this country could contribute to the growth of the whole Europe.

Based on the study of Fenyves et al., the authors employ panel regression model utilizing panel data from 2015 to 2017 to testify the influence of company cap, fixed asset ratio, ROA, and sales growth on the leverage ratio [12]. The findings display that company size and profitability are positively correlated with leverage ratio, indicating that larger profitable companies have easier access to external financing source, which follows pecking order theory. On the contrary, the companies' growth rate have a positive relationship with capital structure. This proves that fast-growing companies rely much on bond issuing as a source of fund.

4. Technology & Healthcare Industries

The technology and healthcare industry is a relatively emerging and burgeoning sector. It usually involves pharmaceutical, biotech, and technology companies. Unlike capital-intensive firms, tech companies do not need a huge amount of funds to finance fixed assets. Likewise, labor-intensive businesses usually require too little capital to operate, compared to tech companies. The tech industry often has a high expenditure on Research and Development account, which directly affects a company's efficiency and performance [13]. Therefore, this paper will clarify the capital structure features of such a sector and how exactly it changes enterprise performance. This part contains public Vietnamese pharmaceutical, Polish technology, and United States tech companies.

Vietnam is a rapidly growing developing country. The World Bank recorded a rise of 150.1% of GDP, from 77.41 in 2007 to 193.6 billion USD in 2015 [14]. Moreover, the Vietnamese government has drawn a greater concentration on domestic pharmaceutical companies, which makes it particular and representative.

The scholars tried to discover the relationship between capital structure and ROE (a typical performance indicator) from 30 pharmaceutical companies listed on the Vietnam Stock Market between 2015 and 2019 [15]. Hypotheses are made to test the influence of capital structure indicators, including leverage, long-term assets ratio, debt-to-asset ratio, and self-financing ratio, employing an Ordinary Least Square Regression model and the outcomes display that all ratios are correlated with

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enterprise performance. This means by appropriate asset apportion and bond issue, pharmaceutical enterprises can achieve an optimal ROE that boosts the whole businesses.

Poland has been listed as one of the most advanced countries since 2018, but the country still possesses some features that only appear in emerging economy, and it has one of the lowest R&D spending among EU countries. Thus, Poland is a unique case and worth talking about.

According to 31 Polish tech companies listed on the Warsaw Stock Exchange, the researchers found the potential factors that alter the firms' leverage ratio via regression analysis [16]. Empirical findings verified that internal and external investments, liquidity, and company age are significant to indebtedness in tech firms when profitability and growth opportunities are retained fixed. As internal investments increase, the leverage is prone to decrease in New Technology-Based Firms (NTBFs), whereas external investments in innovation have a positive impact on debt levels. These outcomes are likely due to greater information asymmetry and risk that may drive outsiders away from lending. The study also demonstrates an adverse correlation between a firm's liquidity and debt issuing, showing that a firm with excessive cash flow prefers to use its funds before debt financing. The age of the firm is proven to be a significant factor: NTBFs with a longer history have higher leverage. These two determinants are justified by the trade-off theory, in which companies are able to deduct bankruptcy risk. Apart from these, the result denies the effect of intangible assets and capitalization on the leverage.

The U.S. tech industry plays a dominant role in the world. There are a lot of world-famous companies like Apple, and Microsoft, and most people use their products enjoy their services. Also, according to Yahoo Finance, information technology companies monopolize the top 5 companies in market capitalization. Therefore, it's quite important to know how capital structure of this firm is characterized and affected.

The researchers constructed panel data and linear regression to analyze the determinants of capital structure on a sample of 51 tech companies listed on the New York Stock Exchange from 2005 to 2018 [17]. The variables for companies such as size, profitability, growth and inflation and macroeconomic factors like inflation and interest rate, are put into the experiment. The result manifests that debt ratio is adversely related to the size, liquidity, effective tax rate, financial return (ROE), inflation, GDP. The result from effective tax rate is debatable because theoretically, companies would prefer contracting debts when the tax rate is high so that they can benefit more from tax shield, however, the author reasoned that such outcome could due to a declining tax rate within firms holding long-term debt. The study also talks about the impact of corporate governance on the leverage, but this review paper would not consider that way due to difficulty to quantify the governance. The yield finally comes to pecking order theory on a whole, showing a favor to internal funds before external.

5. Conclusion

The paper aims to solve the problem of (i) What is the determinant of capital structure in different industries, (ii) How does capital structure differ across industries and (iii) Whether the result reflect pecking order theory or static trade-off theory. In order to solve these problems, the author gathers plenty of research on the internet and provide a comprehensive insight of the answer.

Not surprisingly, the factors that affect the indebtedness vary across industries and across regions. The differences not only lie in the type of determinants, but also in the relationship for the same factors. For capital-intensive industry, tangible asset, profitability, non-debt tax shield, promoter shareholding, asset turnover ratio, company size, firm size and collateral value of the asset can influence a company's capital structure, but they cannot be applied to all capital-intensive firms (At least no proof is made on such relationship). Moreover, the result can be opposite or inconsistent even in the same industry. For example, in Japanese manufacturing firms, non-debt tax shield is positively

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correlated with leverage. While the analysis on the property and real estate companies in Indonesia lead to a positive relationship between these two variables. In terms of labor-intensive industry, unlike asset, labors are more flexible and autonomous, and this means a much more diversified impacting factors. This paper separates the factor into two categories. One is on the basis of macroeconomy, which is made up of lay-off rate, worker's bargaining power, legal protection, and retirement issue, and another is based on corporate level indicated by the V-4 agricultural sector. This comprises company cap, fixed asset ratio, performance, and sales growth. For the tech & healthcare segment, the determinants of capital structure resemble to the combination of above two sectors, including ROE, liquidity, company age, fund source, company size, inflation, tax rate, GDP.

The outcomes for all cases partially explain the pecking order theory or the static trade-off theory, and might be a mix of them, however, they can neither be fully justified. Meanwhile, the finding also implies that the financial leverage determinant is firm-specific and country-specific. Therefore, it is not likely to generalize the factors and get an optical capital structure for the whole economy, even for the companies in the same industry and same country.

In-depth study of the specific firms needs to be done so that the outcome could help firms form more accurate strategies to pull through financial friction and develop competitive advantages.

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