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The Impact of Industrial Characteristics on the Capital Structure

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Abstract: This paper investigates the relationship between industrial characteristics and capital structure. The author selected three industries with totally different features as examples and discussed how their particular industrial functions can make a significant difference in leverage ratio. These industrial characteristics are only related to the industry, such as business model and financial statements' structure, regardless of the firm's size, business performance, and profitability, which can be calculated and measured. Using high-tech-driven, asset-intensive, and labor-intensive industries as samples to analyze their influences on firms' leverage ratios. Their industry characteristics can explain the difference in leverage, as asset-intensive companies have the highest average level of debt while labor-intensive has the lowest one. However, the industries cannot account for all diversities in capital structure, and there are difficulties in discovering the perfect capital structure that can meet all requirements and has the lowest cost under current literature. It is necessary to ascertain all factors that will affect the capital structure and evaluate the extent of their influences in future research.

Keywords: Capital Structure, Technology Industry, Asset-Intensive Industry, Labor-Intensive Industry

1. Introduction

Capital structure is paramount for firms as it can make a huge difference in operational processes and even overall business strategy. A suitable capital structure strategy can significantly affect a firm's business performance [1]. Typically, there are two different methods for a firm to obtain financing: debt and equity. Each has its benefits and drawbacks. The advantage of debt is the high level of stability. Debt permanently has a fixed amount and repayment days. A detailed repayment plan can help a firm to manage it better. However, the fixed interest expense can negatively impact a firm's sales turnover regardless of its performance [2]. For equity financing, no repayment day and non-mandatory dividends give firms high flexibility and free-from-condition terms. The flip side is the risk of losing ownership of the firm.

The past empirical results concluded that optimal capital structure can create significant value for a firm. However, the financing decision-making process to achieve the optimal mix of debt and equity is complex, representing a crucial issue financing managers face in each firm. It is impossible to set a unified leverage ratio for each firm as several factors, such as size, profit margin, geographical location, etc., can affect it. Setting a standard process to calculate each firm's best leverage ratio is

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problematic. Another normal factor is the industries, as companies in the same industry are expected to have similar capital structures. The leverage ratio of companies from the same industry will fall within a reasonable range. The industry classification influences the capital structure, and a strong relationship will exist between the industry and leverage ratio. According to Degryse, the connection between industry characteristics and debt levels can be partly explained by the trade-off theory [3].

Recently, a new industry has been becoming mainstream: the high-tech-driven industry. Unlike traditional asset-intensive industries, firms in such industries do not hold high levels of non-current assets. However, it is less flexible than a labor-intensive industry, as high-tech firms must invest a substantial amount in research and development. Therefore, this research needs to be undertaken to analyze how industry characteristics affect a firm's capital structure. This paper mainly selects three typical industries in the business world: asset-intensive, labor-intensive, and high-tech-driven. Asset-intensive industries have the highest leverage ratio of 70%-80%, while labor-intensive and high-tech-driven industries have lower figures of 20%-30% and 50%-60%, respectively. This paper explains the rationality and reasonability of different leverage ratios based on industry characteristics and financial report features.

2. High-Tech Industry

High-tech firms rely heavily on cutting-edge technology to develop, produce, and deliver goods or services to their customers. As advanced technology and patent innovations help firms in this industry gain a competitive advantage, they typically heavily invest in research and development. High-tech industry spans various sectors. Microsoft, for example, an information technology company, and AbbVie, a healthcare company, are both related to the high-tech industry. These high-tech companies are often featured by rapid advancement, continued technology obsolescence, and constant research and development. Companies in this industry are often financed by venture capital, one type of equity financing. The low priority of debt financing can only partially be attributed to financial constraints caused by bonds and information asymmetries; the characteristics of the technology industry will also impact the ultimate capital structure of the company [4]. In this paper, four aspects will be further explained below.

2.1. Uncertainties

Companies in this sector typically pay more attention to flexibility in their capital structure to adapt to changing market conditions. Technology and patent will lose their value when the most state-of-the-art technology supersedes them. Minor innovations in key technology areas can bring a black swan effect to the whole industry, where core technology is the primary productivity. Disruptive technology will reshape the demand for technological products within the entire market. In addition, due to the fiercely competitive market environment, companies in this industry should constantly shift their business strategy to fit the current market condition. The profitability of these companies will experience significant fluctuations according to the dynamic market. However, debt financing's fixed repayment amounts and schedule impose high demands on the stability of the company's profitability. Equity financing allows these companies to obtain enough financial capital without bearing the pressure of the mandatory repayment obligation that comes with debt. Equity financing can provide enough capital to technology-driven companies without repayment contracts compared to debt financing. Firms can enjoy financing flexibility to immediately respond to the uncertain future market environment without the burden of a strict repayment plan. Financial risk can be reduced to an acceptable level without pressure on the company's cash flow and fund reserve. This advantage of equity financing gives the company a higher preference when choosing financing methods to meet the uncertain business environment.

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2.2. High-Growth Expectation

Technology-driven companies traditionally exhibit a preference for equity financing due to high growth expectations. These companies always enjoy rapid growth rate benefits from the ownership of cutting-edge technology, making equity financing, such as venture capital and angel investments, a more suitable option. A higher rate of development will simultaneously impact investor's confidence and the market valuation of the company. Technology companies usually have better prospects and higher profit margins, which attract most investors. These companies also have a higher market valuation due to the specific business model and higher profitability. It is easier for them to obtain equity investors than other traditional industries, such as manufacturing and service industries. For these technology companies, it is crucial to maintain the fast-growing rate and continuously meet the expectations of equity investors and the market. According to Spitsin's research, a low level of debt capital structure is most suitable for those companies in the fast-development stage [5]. Reducing the pressure from mandatory loans and increasing profit margins can help these companies lengthen the fast growth period and achieve continuously advanced innovations.

2.3. Intangible Assets

Assets' features, such as tangibility, size, and inimitability, can positively impact a firm's leverage [6]. The more tangible assets firms hold, the higher the level of debt in their capital structure. For a technology company, most assets are research and development patents, which are intangible assets. This results in higher business risk compared to asset-intensive companies, so it is necessary for these high-tech firms to maintain lower financial risk and decrease their leverage ratio. Debt financing normally brings more financial risk than equity financing as the firm has an unavoidable contract obligation to repay the principal and interest. Breach of the contract requirements may lead to discontinued operation and liquidation. Another issue related to intangible assets is high valuation risk and poor collateralizability, which may discourage debt financing [7]. Debt investors prefer firms that mainly invest in tangible assets, which can be used to repay bonds, if necessary when the firm goes bankrupt. However, R&D and patent innovations are identifiable and separable intangible assets that can help firms gain sustainable competitive advantage, according to the VRIO model. Unlike human assets, these techniques can generate significant cash inflows and potentially become collateral, which, to a certain degree, attracts debt investors.

2.4. R&D Funding

As technology-driven companies always heavily invest in research and development, the required financial capital budget is normally bigger than companies in other industries. It is impossible for high-tech-driven firms to use equity financing methods only to meet the capital requirement, especially when the need for research is sudden. The advantage of debt financing is that it can provide sufficient funds to meet the company's needs instantly. In addition, the payback pattern of investment in research and development is similar to the repayment schedule. The bond repayment plan only requires the payment of the interest in the initial stage, with the repayment of the principal beginning at a later stage. The burden on repayment gradually increases. The investment in research and development cannot generate substantial revenue in the start-up stage when the contract obligation only includes interest payment. After the investment reaches growth and the mature period when significant return can be created, the bond's principal is required to be repaid. The patterns in return on research and development investment and cash flow of bond repayments are similar, and the matching cash flow curve partly mitigates the financial risks of debt financing. Therefore, technology-driven companies can effectively leverage debts for financing when they have sufficient confidence in their investments.

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In conclusion, the high-tech industry's characteristics, such as high-growth prospects and uncertainty, promote equity financing. Valuable technology intangible assets help these companies obtain debt financing, especially in emergency funding requirements and release the pressure on collecting equity funding. It is reasonable for high-tech firms to keep a balance on debt and equity financing and set the leverage ratio at approximately 50%.

3. Asset-Intensive Industry

Asset-intensive Industries have the highest leverage ratio, 70%-80%, compared to other industries. Asset-intensive industry is a traditional industry that can generally be traced back to the Industrial Revolution. In the 18th and 19th centuries, machines began to replace the role of labor. Widely using machines and heavy assets is the feature of this industry. Although the light industry, with technology as its core resource, is becoming the pop star of the world, asset-intensive industry, with machinery as its primary productivity, remains the most significant contributor to the GDP of various countries. In the 2000s, real estate became the mainstream of the heavy-assets industry. It is necessary for these companies to obtain substantial amounts of capital funds in their financial statements as the level of non-current assets is far higher than the business average. Using financial instruments to leverage more funds while holding a small amount of capital is a common practice within this industry. The leverage ratio forms a vital part of a firm's strategy decision that can directly affect long-term operation efficiency and profitability, which is measured by ROA or ROE [8].

3.1. Fixed Assets

To a certain degree, a firm's long-term asset can make a difference in the management decision of capital structure [9]. Non-current assets reflect the level of financial risk and business volatility that a firm can undertake. In the real estate industry, for example, each single business project requires a tremendous amount of capital injection, which leads to even one little unexpected change that can cause unacceptable business loss. Fixed and stable funding is crucial for these companies, while flexibility is not the priority. Due to the influence of uncontrollable factors such as market expectation and investor psychology, equity financing cannot become a stable source of corporate funds. Another aspect related to a high level of fixed assets is that these asset bases can be used to secure loans, making it easier for asset-intensive companies to attract debt and obtain capital from them. This industry feature has led to debt financing becoming the primary approach for companies to raise capital.

3.2. Predictability

Asset-intensive companies normally have longer working capital cycle days and payback periods than other industries. Moreover, the speed of adjustment towards the perfect capital structure reflects the firm's financial efficiency, which is higher during an excellent economic period than during a foul [10]. This index for heavy asset companies is lower than others as these companies do not have better growth opportunities. It is hard for asset-intensive companies to change their project budget, so accurate long-term planning is paramount for these companies. It is essential for capital-intensive firms to make accurate predictions about future cash flow conditions that place high demands on the predictability of future cash flows. Debt financing has a more robust, stable function than equity with fixed interest expense and repayment days. A flexible dividend policy poses a challenge to a firm's management in prospect planning, although it can reduce financial risk. The bond repayment schedule can help the company calculate the NPV of the investment project more accurately and improve the quality of the company's investment decision.

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3.3. Tax Shield Benefits

The average annual revenue of a capital-intensive company is higher than that of other industries. At the same time, it has a lower net profit margin due to the depreciation expense relating to non-current assets. Reducing tax expenses can significantly increase these companies' profitability, especially in asset-intensive companies. A critical advantage of debt financing is that bond interest expense is tax deductible and generates the value of tax shields. It can not only reduce tax expenses but also generate a tax shield, which is able to reduce the rate of cost of debt and enhance a firm's market value. The firm value increases with higher levels of debt, for it provides the firm with an intangible asset, a tax shield. However, equity dividends are not deductible according to the laws, so they fail to bring equal benefits as debt financing. In calculating net profit for the year, the dividend is the after-tax expense, so it is unable to decrease the tax payable. It is better for asset-intensive companies using debt financing fund projects.

3.4. Ownership Dilution

The heavy asset industry normally represents the core industry power of a country, so it is vital to ensure the stable ownership of these companies. The state needs to ensure that these heavy industrial enterprises, which contribute most of the country's gross domestic product, are always under government supervision and management. Although equity financing will not generate bankruptcy costs that will cause a negative impact on business operations and firm value, this type of financing brings with it a more serious potential problem: loss of control. The most common way of equity financing is issuing ordinary shares. However, it will dilute current shareholders' ownership and change the proportion of shareholders since public investors have the opportunity to become new shareholders. A considerable number of share issues will increase the risk that these companies will be controlled by private investors and become tools for their personal greedy objectives, which will have a damaging influence on the macroeconomic market and affect the national economy. Debt financing can avoid the issue of ownership dilution and keep the original share proportion among shareholders. Hence, it is more suitable and widespread for companies in asset-intensive industries to use debt financing when obtaining capital.

3.5. Leverage Expansion

In capital-intensive industries, those firms in business expansion typically need a majority of funding support, which is impossible to obtain from a single financing method. Leveraging is a practical financial instrument, using debt financing as an amplifier of capital. It enables companies to increase their capital base immediately and make the most use of future growth opportunities. For example, in the real estate industry, capital raised from debt financing is expected to be invested in the acquisition of land, which in turn helps companies guarantee more loans. By doing this, these companies can use financial leverage to obtain capital from the market continuously. Nevertheless, equity financing cannot achieve the same results as it is highly related to a firm's performance and market value. Since the interest of shareholders is ranked behind creditors in the liquidation process, it is difficult for enterprises to obtain a large number of funds from the equity market through the lever. This explains why asset-intensive companies have a higher level of debt amount.

Overall, a higher ratio of non-current assets helps these companies obtain debt financing more easily. Slowly, the speed of capital adjustment and risk of dilution make these firms considered stable when deciding on capital structure. Highly reliant on debt financing is a common phenomenon since it can satisfy most of the requirements of these companies.

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4. Labor-Intensive Industry

Labor-intensive industries commonly refer to accounting firms such as PwC and consulting firms that hardly have fixed assets on their balance sheet. Food processing and restaurants can also be included in these industries. The main asset of these companies, human resources, is not reflected in the financial statements. However, the labor market can also have an impact on a firm's capital leverage decisions, according to Luis Vega-Gutierre [11]. Compared to the two industries mentioned above, these companies have fewer capital demands, which leads to low entry barriers and makes it easy for new companies to enter these industries. According to Porter's Five Forces model, low barriers to entry will result in intense competition within the industry and increased business risks. In addition, consumers are exposed to this industry with the highest frequency, which means labor-intensive industries have the shortest distance to the market. This will make market demand and preferences change rapidly. It is crucial for these companies to know how to use optimal capital structure to solve these dilemmas mentioned below.

4.1. Dynamic Business Environment

As mentioned before, market conditions can change rapidly in labor-intensive industries as they have the most contact space with the client. A flexible capital strategy should be selected to respond instantly to fluctuations in the whole market. Due to the dynamic business environment, it is necessary for firms to consider preference for flexibility when choosing methods of raising finance. A strong negative relationship between debt burden and organizational business performance among labor-intensive companies can be observed [12]. A fixed repayment schedule will limit the firm's financial strategy and lock working capital. It will slow down the company's response to the expected demand of the macro market. In this volatile market environment, projects are unable to maintain a high level of profitability over their entire life cycle. According to the BCG matrix, the key to maintaining competitive advantage is to divide 'problem child' and 'dog' projects with a lower market growth rate and market share advantage. Debt capital is tied to projects, making them difficult to transfer or outsource. Bond principal acts as a fixed cost to firms. Yet, Equity financing can avoid this issue, for it only has a non-mandatory obligation to pay dividends. This explains why labor firms have the lowest leverage ratio.

4.2. Cost Structure

The cost structure in labor-intensive industries is highly variable, as most labor cost is related to working hours and the number of employees. A high level of variable cost significantly reduces the operation leverage level, which leads to a low contribution. In order to match this variable cost structure, the capital structure needs to quickly adjust toward the optimal distribution. Excess financial capital will be wasted and increase the company's expenses. The amount of capital acquired through equity financing can usually be determined by the company's management itself. However, bonds are typically traded in a floor trading market, and their prices and repayment dates are often not customizable to a company's requirements. Loan interest is calculated based on the principal price instead of the used amount of capital. Although the spare capital fails to generate revenue, there is still an obligation for the company to pay for it. The net benefit of debt will be weakened by interest expense from the unused part of the fund. Capital restructuring cost, which is unobservable, can also make a difference in capital structure strategy [13]. Due to the fixed nature of bonds, the cost of restructuring debt is much higher than that of equity. Equity financing's elasticity is amplified under this particularly variable cost structure. Using equity to obtain funds will not make the company bear unnecessary expenses.

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4.3. Low Risk

The principal capital in labor-intensive industries are human resources and knowledge resources. These types of capital do not last as long as tangible fixed assets. These resources may be superseded by new technology or knowledge and quickly lose their value. The inherent limitation of firms in these industries is a relatively higher business risk. Almost all firms hold a risk-reverse appetite to reduce the overall risk to an acceptable level. Financial risk puts pressure on these firms' cash flows and constrains their future investment decision-making. It is crucial for these companies to choose less risky capital funds such as share capital and retained earnings supporting their working capital and cash operating cycle. Long-term debt and bank overdrafts with higher financial risk to the company are not the most suitable approaches. However, they can be a source of instant finance under emergency conditions. In order to achieve a low level of financial risk, equity financing should be preferred over debt financing.

4.4. Payback Period

Labor-intensive companies typically require less capital investment in substantial assets, which will occupy money for an extended period compared to labor-related resources. In addition to this, labor-intensive firms have a relatively short cash operating cycle, which is usually less than 24 hours, as they merely use credit sales, which means more working capital is required to support business operations. For example, restaurants and retailers even have negative cash operating cycles as the bargaining power to suppliers and customers they keep. A short payback period also means it is not necessary to acquire a stable long-term financing resource. According to this, the equity approach is more suitable for this type of company because equity does not limit the time of financing. The company can allocate funds from equity as it pleases without worrying about increasing financing costs. On the contrary, short-term bonds will worsen the company's financial risk, while long-term ones will also bring unnecessary interest costs, causing a damaging influence on business performance.

In conclusion, the volatile environment of the industry and the focus on short-term returns put emphasis on the liquidity of the capital structure. To balance the entire risk level, these kinds of industries have a lower risk appetite due to the fluctuating market demand and short iteration cycles for core resources, which are primarily non-assets related. A low level of gear ratio will allow companies to take advantage of quickly adjusting speed and low reconstructing costs.

5. Conclusion

This article contributes to finding how industrial classification can affect the structure of capital by discussing three typical industries and their characteristics. Previous research discovers that industrial-specific features can make a significant impact on a firm’s capital structure and leverage. The author extends this research by listing different industries’ main characteristics, which include business models, financial report structure, market valuation, etc. These features all have a strong relationship with the nature of the industry itself and can seldom be changed by external factors.

The results are consistent with the hypothesis of previous work; these industries' particular functions can actually influence firms' attitudes toward different approaches to obtaining finance—companies in dynamic industries where there are full-on investment opportunities, and fierce competition prefer flexible equity financing. In contrast, manufacturing companies in asset-intensive industries mainly rely on non-current assets and pay attention to long-term planning and predictive prospect cashflow budgeting. Debt financing with a stable repayment schedule perfectly satisfies their requirements.

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However, most of the previous research focuses on how companies' size and business performance can affect capital structure, which accounting figures can easily measure. It is important to note that unobservable factors can cause an even more significant impact on capital decision-making. Not only industrial characteristics, which are the simplest ones, but the growth of assets and government policy should also be considered when determining the level of borrowings. Nevertheless, the main difficulty faced by researchers is that the extent to which these unobservable factors affect the capital structure is challenging to measure accurately and standardized. In addition, it is impossible for one capital structure to be the most optimal capital structure for the entire life of the company. The capital structure is also subject to some cyclical influences. Further research is expected to achieve a unified system to integrate all influential factors that benefit companies' financial management departments in choosing the most suitable financing instruments when raising capital under different conditions and enhancing their business performance.

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