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Research on Capital Structure and Investment Value of the Communication Industry

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Abstract: Whether the capital structure of the communication industry has changed in the context of the epidemic, and if so, how to determine the investment value of companies in the communication industry. Select a communication industry company to sort out financial statements, calculate the risk-free break rate, expected cost of equity capital, WACC, and other values before the outbreak of the epidemic and compare and analyze these values after the outbreak of the epidemic. This paper mainly studies the capital structure and investment value of the communication industry and the development environment of the communication industry. It also explains how the capital structure and investment value of the communications industry differ in the event of a pandemic. Finally, the numerical values of Apple Inc. during the epidemic were compared with those of Apple Inc. before the epidemic. The pandemic has boosted revenues in the communications industry to some extent, but the business risk rate in the communications industry has also increased significantly. Because most people started to work from home during the pandemic, the revenue of the communications industry increased, but the pandemic itself is uncertain, so the business risk rate of the communications industry increased.

Keywords: communication industry, during the epidemic, investment value study

1. Introduction

1.1. Research Importance

In 2021, a new virus, called the new coronavirus, began to spread around the world, and many people died of this virus infection. In order to reduce the infection of the virus, many countries have implemented quarantine policies, allowing people to isolate themselves at home and reduce going out and working at home. This situation has led to the bankruptcy of small and even medium-sized private enterprises in many countries, and some grassroots working people have no income, leading to fiscal deficit warnings. It is undeniable that although large companies do not have a crisis of bankruptcy, they will be more or less affected by the epidemic. In this case, many investors want to invest in other enterprises during or even after the epidemic to achieve the effect of increasing returns, so investors need to find someone to analyze various values of enterprises or find literature to reduce investment risks. The research of this paper can help investors who want to invest in the communication industry to understand the market situation and evaluate the business risk and value of the communication industry according to the comparison of relevant values, to increase or decrease

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the value of the investment projects evaluated and selected. Moreover, it can also help investors of small private enterprises to understand the relevant situation of the communication industry. Make a group of managers in a large or small business company aware of the parts of the company that need to be improved.

1.2. Related Research

Farber et al. mainly wrote the general formula for the present value and cost of capital (WACC) of adjusted debt income. Start with the company's market value balance sheet and provide a way to calculate it. And from that, derive the relevant changes, and get different values and different formulas. Finally, it concludes the basic concept of cost of capital (WACC) in a company [1]. Magni focuses on how to gather and streamline large amounts of data when faced with financial statements. And analyze the value of NPV and other data from the condensed data or what information can be obtained from the data. The difference between the investors and the financiers of the project, the difference analysis of the project and the value analysis of the economic subject facing the market project [2]. Mian mainly introduces the company's use of cash flow (DCF), project estimation, and capital budget to forecast estimated projects. The pitfalls and misuse of the weighted average cost formula in cash flow are explained. The correct use of the relevant formula of a weighted average cost is calculated, and the different forms of cash flow and weighted average cost are determined to apply [3].

Kale et al. studied the link between corporate leverage and corporate suppliers. Combine industry level and research intensity to study the formula calculation, and extend the definition and formula of supplier or customer industry concentration degree. Using vertical integration variables and sample numbers to analyze some definitions, and finally to conclude the correlation needs to be positive or negative correlation [4]. Hogan et al. studied the capital structure of software companies and other small business financing. The paper puts forward whether the capital structure of non-profit enterprises is derived from financing constraints, and finally draws the conclusion that internal funds occupy the dominant component of the company, but equity is not the main source. It also leads to equity as a major source of funding for technology-based companies [5]. Gardner et al. looked at how the tradeoff theory of capital structure should be applied to firms. When tax incentives fail to control the rising cost of debt and equity, the risk of corporate bankruptcy will gradually increase. When leverage reaches one of these points, it reduces the overall value of the company, but the company will use low-cost debt to reduce the risk of bankruptcy [6].

Pierleoni et al. have studied that Internet-related devices are a very important thing in this day and age and that devices are an important conduit between the real world and the virtual world. After describing the typical architecture of IoT applications, performance comparisons and analysis are reflected. Thus, it provides and analyzes the performance of different Internet platforms, and finally explores new platforms and proposes solutions [7]. Efremov et al. studied and analyzed the classification, activity planning, and geographical distribution of companies. The impact of science and technology on the international status of traditional transnational corporations, and whether the nature of companies selling goods and services overseas and the nature of production have changed differently. The reasons for the fundamental changes in international operations and whether traditional multinational companies should introduce new technologies are discussed and analyzed [8]. Weinstein examines the reasons why different business models can provide the basis for market differentiation or industry disruption, and how to stand out from the business models of different companies, large and small. It also introduces the different service attitudes of traditional and non-traditional companies to make a comparison, and how to sort out the corresponding business model from the fast-paced life of the environment in the modern economy [9]. Fauzi et al. focused on the analysis of the reasons why the capital structure of information companies has an important

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impact on business performance. Other factors that affect firm performance are the reasons for firm size and growth, and the difference between long-term and short-term debt which has a positive or negative impact on developed and developing countries [10].

1.3. Objective

This paper mainly studies the capital structure and investment value of the communication industry. The second chapter mainly writes the development environment of the communication industry and the extension of the industry over time, which makes the communication industry more and more diversified. During the previous epidemic period, the communication industry was affected by the epidemic, which led to studies on the increase and decrease of values in different aspects of the communication industry. The third chapter mainly gives an example and compares the value of a communication company before and after the development of the epidemic, and analyzes the benefits and disadvantages of the company before and after the development of the epidemic.

2. Method Introduction and Development Environment

The industry related to communication has been a type of industry since a long time ago. In ancient China, people left their hometowns to seek official careers, but there was no convenient way to travel in ancient China. Therefore, the communication industry has become the top priority. The communication industry can allow the wanderers who miss home to send letters home to express their feelings of missing home. Over time, however, technology has improved and the communications industry has become more complex. Nowadays, with the development of science and technology, people's way of life and communication are more convenient. However, with the change in the environment in the future, the communication service industry will become more convenient than now, so the communication industry has a great prospect for development. The communication industry has extended out a lot of related industry chains, such as chip research, computer software services and design, research and development, collection and communication. The communication industry so many related industrial chains, and the related industrial capital structure is the same. To study the capital structure of an industry, we should analyze the capital structure of a company from the aspects of capital value such as stock, debt income and taxes. One can start with the present value of adjusted debt income and the cost of capital (WACC), or with the company's market-value balance sheet and provide a method of calculation. And then finally we derive the variation, we get the different values, we get the different formulas and then we summarize the basic concept of the cost of capital of the business and we get part of the content of the capital structure [1]. After obtaining the relevant content, calculate the other parts of the content and compare it with other companies to find out whether the capital structure is the same in the communication industry.

As the global economy slows down due to the impact of the novel coronavirus, will the economy of the communications industry be affected. The novel coronavirus has swept the world and most people have stopped going out for fear that the novel disease will kill them. Countries are also urging people to spend less time outdoors and work from home to protect themselves from the virus. It can be seen that people spend more time at home, which leads to people using mobile phones, computers and other electronic products at home greatly increased. With the increase of people using mobile phones, computers and other electronic products at home, people need to use software and websites to watch videos, news and live broadcasts to increase entertainment, thus making the number of people using software and websites surge. From this perspective, the economic impact of the novel coronavirus on the communications industry is not very big it is not. The novel coronavirus has caused people to work from home, reducing the amount of processing and shipping that large companies have to do for products, and reducing the amount of research that the communications

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industry has to do for emerging technologies like software and chips. The novel coronavirus has caused large companies and schools to reduce the cultivation of talent, leading to a shortage of high-tech talent for some time after the recovery of the novel coronavirus. Therefore, the impact of the epidemic on the communication industry is relatively large, which reduces the capital cost of enterprises in a short time, reduces the international trade and investment of large companies, and increases the bankruptcy risk assessment of each company.

$$Cost\ of\ Debt = (Risk\text{-}Free\ Rate\ of\ Return + Credit\ Spread) \times (1 - Tax\ Rate) \quad (1)$$

$$Cost\ of\ Equity = Risk\text{-}Free\ Rate\ of\ Return + Beta \times (Market\ Rate\ of\ Return - Risk\text{-}Free\ Rate\ of\ Return) \quad (2)$$

$$WACC=(E/V*rE)+D/V(1-T)rD \quad (3)$$

3. Analysis and Comparison (Comparison Table Analysis of Apple Inc. before and after the Epidemic)

3.1. Financial Ratio Calculation

It needs to calculate the Expected cost of equity capital, and the expected cost of debt capita land WACC.

The cost of debt is the associated interest rate that a company pays on debt, such as bonds and loans. The cost of debt can be expressed as the cost of debt before tax, the cost of debt that a company thinks about before tax or after tax. The main difference between the pre-tax cost of debt and the after-tax cost of debt is that the interest paid is offset or reduced by the tax rate.

The cost of equity is the cost value that a company needs to determine whether the cost of an investment meets the requirement of return on capital. Companies often use the cost of equity as the base threshold for the required rate of return capital. A company's cost of equity represents the compensation demanded by the market for owning assets and taking risks.

WACC is when a company uses both debt and equity costs to fund the company's operations. This funding is the capital structure the company needs, and it is weighted in the WACC because debt and cost of equity have different rates of return or different costs of capital structures. Therefore, on this basis, the weighted average cost of capital is related to the capital structure of the company, and finally, the equity and debt are compared with their respective proportions in the capital structure. Debt generally includes the size of the company's interest rates and payments on loans, while the cost of equity may include interest paid to investors on shares. So the WACC will end up in an average because some aspects of the formula are not stable or accurate. The financial statements of Apple in 2021 and 2020 are shown in Table 1.

Table 1: Apple 2021 and 2020 financial statements.

unit B	2021	2020
the market value of equity	$2,901	$2,230
The market value of debt	$109.10	$98.67
The marginal corporate tax rate	21%	21%
Equity beta	1.3	1.3
risk-free rate	1.52%	0.93%
market risk premium	7%	7%
The expected cost of equity capital	6.73%	6.26%
The expected cost of debt capital	26.80%	27%
WACC	26.02%	26.07%

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3.2. Financial Analysis

This part analyzes the comparative analysis of financial statements in 2021 and 2020. The market value of Apple's equity in 2021 is $2901 billion, the market value of its debt is $109.1 billion, the risk-free discount rate is 1.52%, the market risk premium is 6.73%, the expected cost of debt capital is 26.8%, and the weighted average cost of capital is 26.02%.

The market value of equity in 2020 is $223 billion, the market value of debt is $98.67 billion, the risk-free discount rate is 0.93%, the market risk premium is 6.26%, the expected cost of debt capital is 27%, and the weighted average cost of funds is 26.07%.

The market value of equity, the market value of debt, the risk-free discount rate and the market risk premium in the year of the onset of the novel coronavirus in 2021 are all higher than the values in the year before the onset of the novel coronavirus in 2020. However, both the expected cost of debt capital and the weighted average cost of capital in the year 2021 when the novel coronavirus begins are lower than they were in the year before the onset of the novel coronavirus in 2020.

3.3. Impact of Covid-19

This part analyzes the impact of the epidemic on Apple. It can be seen that the market value of Apple Inc. was greatly increased during the epidemic, but the market risk premium and business risk of Apple Inc. were also greatly increased due to the uncertainty of the epidemic and the instability of customers' sales of Apple Inc.'s products. Therefore, the market value of equity, the market value of debt, the risk-free discount rate and the market risk premium in 2021 are all higher than those in 2020. The expected cost of debt capital shows that the effective interest rate Apple will pay on its debt during the pandemic is lower than the effective interest rate it will pay on its debt in 2021. The amount of money Apple's WACC will have to fund its operations in 2021 will be reduced as people need to travel less during the pandemic. As a result, the 2020 WACC interest rate is greater than the 2021 WACC interest rate.

4. Conclusion

4.1. Research Content

This paper studies the capital structure and investment value of the communication industry, and when the development environment of the communication industry and the development of the industry extended over time, the communication industry became more and more diversified, resulting in different kinds of industrial chains. The pandemic has had an impact on the communications industry during the pandemic, as most people are working from home and the use of related products such as electronics has increased. To prove the impact, a company was taken as an example above. The financial statements of the company before and during the epidemic were compared, and the formulas of debt cost, equity cost and weighted average cost were listed, and then the values of debt cost, equity cost and weighted average cost were calculated. After comparing all the figures, the conclusion is that the epidemic has increased the revenue cost of the communication industry, but increased the business risk rate.

4.2. Main Findings

The pandemic has affected the revenue of the communications industry, which has increased the revenue of most communications industries. When judging the risk rate of the epidemic affecting the communication industry, it is necessary to combine the business models of different companies to judge. For the communication industry related to scientific research, the epidemic has reduced

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scientific research, slowed down the product replacement speed, and increased the risk rate of the company. Therefore, the corresponding reasons are different for different industry categories.

4.3. Enlightenment and Suggestion

In the future, with the advancement of The Times, the communication industry will also account for a huge proportion of the future market, so it is feasible for investors to invest in the communication industry for a long time, but the communication industry will not make particularly great progress in a short time. The development of communication-related enterprises can focus on the research and sale of new products and software updates, which can better attract customers' attention.

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