



A Comparative Study of Chinese and American Capital Market Environment

--Based on the Empirical Data of 4 Listed Companies

Zehao Wang

Business and Economic Faculty, Monash University, Melbourne, 3145, Australia

Corresponding author. Email: zehaowang86@gmail.com

Abstract. The MM principle, the trade-off theory, and the pecking order theory are methods enterprises would apply when determining the optimal capital structure. Chinese and American companies' capital environment is different, leading to diverse capital structures. This paper uses four companies that operate in the traditional and emerging industries to explore the similarities and differences between Chinese and American companies' capital structures. Find the characteristics of their capital structure by comparing debt, firm value, equity and calculating debt/value ratio and debt/equity ratio.

Keywords: Optimal Capital Structure, Capital market, MM principle, Trade-off Theory, Pecking order Theory

1 Introduction

The reason for studying the capital structure is that companies could better raise funds, determine the combination of equity and debt. The choice of capital structure would affect firm value, so it is necessary to find the optimal capital structure. The current capital structure has a series of theories such as Modigliani and Miller principle, trade-off theory, agency cost theory and pecking order theory. Also, the research direction includes the company choice of target debt level. Research on financing strategies confirms the importance of taxation, information differences, and agency costs.

2 Relevant capital structure theory

2.1 Modigliani and Miller principle

There are three ways for companies to raise capital. They could borrow money by issuing bonds or obtaining debts; they could reinvest their profits in their business, or they could issue new shares to investors. Based on this situation, if companies borrow debts to raise funds, they will add leverage to the firm. To study the relationship between leverage and firm value, Modigliani and Miller proposed the first principle in

1958. They assumed that the capital market is perfect, so the choice between debt and equity financing has no significant effects on the value of the firm, which means that the leverage firm value is equal to the unleveraged firm value. [1]

However, the perfect market is hard to achieve, so Modigliani and Miller proposed the second and third principles to complete their theory. They subsequently considered the tax rate influence when determining the capital structure. Since the debt could bring the tax shield for companies that increase firm value, which imply that there are advantages for firms to be levered and they could deduct interest payments.[2] Therefore, leverage lowers tax payments, and companies could benefit by increasing debt. As a result, the optimal corporate capital structure should be entirely composed of debt under the assumption of the second Modigliani and Miller principle because firms could obtain the most tax shield benefits.[3] In the following 30 years, many theories developed based on the second Modigliani and Miller principles.

2.2 Trade-off theory

The trade-off theory is developed based on the second MM principle, and it considers some other elements that affect the corporate capital structure. According to MM principle two, the optimal capital structure for companies should entirely consist of debts. However, it is riskiest if the capital structure consists entirely of debt because the company needs to pay enormous interest. When the cash flow is not enough to repay the interest, the company may suffer financial distress and eventually cause bankruptcy.[4] When a company faces bankruptcy, it will incur indirect and direct bankruptcy costs. Debt holders also have the right to acquire company assets. In the process of bankruptcy, a lot of costs will be incurred, thereby reducing the firm value. Therefore, the trade-off theory proves that a moderate debt ratio is reasonable. It says the company will borrow to the extent that the marginal value of the tax umbrella of additional debt is exactly offset by the increase in the present value of possible financial costs.[1]

2.3 Pecking order & agency cost theory

When a company needs to raise funds, the need to consider which approach is appropriate and has the lowest cost. These costs would affect the optimal capital structure and firm value. The pecking order theory explains the sequence of three financing methods in which most company obtains funds, and the three methods are issuing shares, using retained earnings, and borrowing debts. In the pecking order theory, firms will first use internal financing to obtain capital because the costs and risks of external financing are higher due to the information asymmetry between managers and security holders. Also, the internal financing strategy would reduce agency problems. After internal financing, the company would use debt financing and equity financing.[5]

The agency cost theory shows the conflicts between managers and creditors, and on the other, the conflicts between managers, creditors, and shareholders. They have different interest relationships with firms, and they would demonstrate opposite opinions when making financial decisions to avoid damage to their interests, thereby affecting the optimal capital structure.[6]

2.4 Advantages of Optimal capital structure

There are some reasons that firms need to determine the optimal capital structure. The optimal capital structure could resolve the interest conflicts between shareholders and creditors so that firms could invest in value-added projects.[5]

Additionally, an optimal capital structure could reduce the probability of bankruptcy. The Modigliani and Miller theory illustrates the benefits of debt to companies, which encouraged some firms to increase their debt levels. However, the company may not be aware of the adverse effects caused by large amounts of debt. If the debt is traded in a separate market, and traders are more risk-averse than investors' trading opportunities in the company, then an increase in the debt level can reduce the firm total value.[7] Therefore, firms need to determine the optimal capital structure so they can confirm the appropriate debt ratio and maximise leverage.

2.5 Strategies for determining capital structure

Firms may select various strategies when determining the optimal capital structure due to market, political and legal factors. Determining the capital structure based on the macroeconomic environment is one of the strategies. When other conditions are the same, time changes in macroeconomic conditions would cause firms to change their capital structures at different periods. Under the same macroeconomic environment, the type of firm is also one of the references for choosing a capital structure. Large companies and those with more tangible assets tend to have a higher leverage ratio. But companies with unique assets tend to have a lower leverage ratio. Consistent with the trade-off theory,[5] companies with larger depreciation tax shields may have a lower leverage ratio. Determining the capital structure based on the macroeconomic environment and industry would benefit companies. Firms could increase debt during economic prosperity to obtain more tax benefits and remove part of their leverage to avoid risks during economic recessions.[8] However, implementing the same strategy in all firms to determine the capital structure may restrict the company from accessing debt and affect operations if they are in different industries.

Through managers' attitude towards risk is another strategy to determine the optimal capital structure. Senior managers may have different objectives for the firm, and the debt capacity should satisfy and support these objectives when determining capital structure strategies.[9] This strategy could adjust the optimal capital structure according to objects that explore a suitable leverage ratio to develop firms. However, this strategy also has some disadvantages. The manager's risk attitude would influence the choice of capital structure, so the capital structure may be satisfactory to the management but not to other stakeholders. In addition, some firms would determine the capital structure based on profitability. Although the higher leverage could benefit firms, the financial leverage is inversely proportional to profitability for many firms, which means that many highly profitable firms do not have a leverage ratio.[9] As the long-term economic trends are positive, higher operating leverage would create higher profitability. However, since companies cannot use their income to repay debts during economic downturns, a higher leverage ratio reduces the ability to repay debts and increases the

possibility of future defaults. Therefore, firms will choose lower financial leverage in advance.[10]

3 American capital market

As one of the most thriving capital markets globally, the U.S. capital market has some features. There are many opportunities in the U.S. capital market. Most U.S. companies could go public and raise capital after receiving the support of investment banks. Also, the U.S. capital market has no currency controls so that dollars can flow in and out freely. Nevertheless, many U.S. policies encourage companies to invest overseas and attract foreign companies to conduct investment activities such as listing in the U.S. market. The U.S. capital market is divided into three broad categories: bonds, stocks and loans, and mortgage markets. The bond can be subdivided into national, local, and corporate bond markets. Many funds, financial institutions, and investors provide capital to the U.S. capital market and promote financial development.

3.1 American traditional company

Coca-Cola Debt and firm Value.

Coca-Cola is an American beverage company and a typical traditional industry. American industrialist Asa Candler purchased the Coca-Cola side and brand in 1889 and founded The Coca-Cola Company in Atlanta. Since 1986, Coca-Cola has sold sparkling beverages in the United States and elsewhere. Of the 69 billion beverages sold every day, 1.9 billion are Coca-Cola beverages, taking a significant market share. To study Coca-Cola's capital structure characteristics, this paper will count Coca-Cola's various ratios and the proportion of debt and equity over the past ten years.

By observing the ten-year 10-K report of Coca-Cola that obtain the changing trend of its debt/value ratio. Coca-Cola's debt level and firm value have been rising year by year since 2011. In 2014, Coca-Cola's firm value peaked at 92,023 million dollars. After that, the firm value of Coca-Cola showed a downward trend. In 2018, the Coca-Cola Company was affected by business restructuring and exchange rates, and its firm value fell to a low point. In 2019, Coca-Cola's firm value rebounded again, and it also rose slightly in 2020. In addition, The Coca-Cola Company has been increasing its long-term debt level every year since 2011. However, in 2018, Coca-Cola's long-term debt levels fell for the first time. The downward trend is consistent with Coca-Cola's decline in firm value in 2018 and may also be why Coca-Cola's reduction in debt levels. After 2018, The Coca-Cola Company has again raised its debt level and reached a new high in 2020, which is 40125 million dollars.

After obtaining the long-term debt level and firm value of Coca-Cola in the past ten years, it calculates the debt/value ratio. In 2011, the debt/value ratio of Coca-Cola Company was 17.08%, and it has increased year by year after that. In 2017, the debt/value ratio peaked at 35.48%. In 2018, the debt/value ratio decreased to 30.48% as Coca-Cola reduced a large amount of debt. In 2019, Coca-Cola's debt/value ratio rose slightly and reached a ten-year high of 45.96% in 2020.

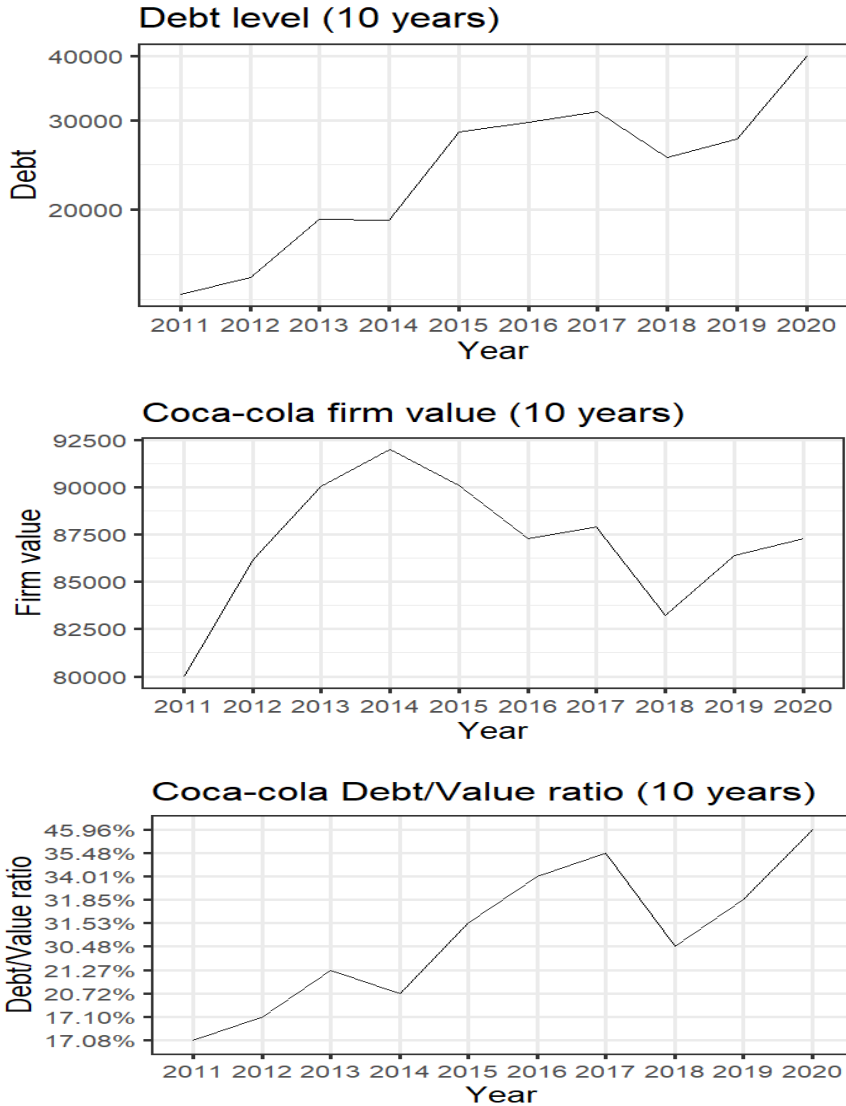


Fig. 1. Coca-Cola debt, value, and debt/value ratio (figure credit: original)

Coca-Cola Equity.

The total equity of The Coca-Cola Company in 2011 was 31,921 million dollars and then showed a slight increase, reaching 33,440 million dollars in 2013. However, the total equity of The Coca-Cola Company showed a consistent downward trend after 2013 and reached 18,997 million dollars in 2017. The lowest point in a decade was 18,997 million dollars. In 2018, The Coca-Cola Company maintained the same amount of equity and then showed an upward trend in 2019 and 2020. In addition, Coca-Cola

has increased its debt/equity ratio year by year to gain more leverage. In 2017, Coca-Cola's debt/equity ratio reached 164.14%. There was a slight decline between 2018 and 2019, but it rose to 188.52% in 2020.

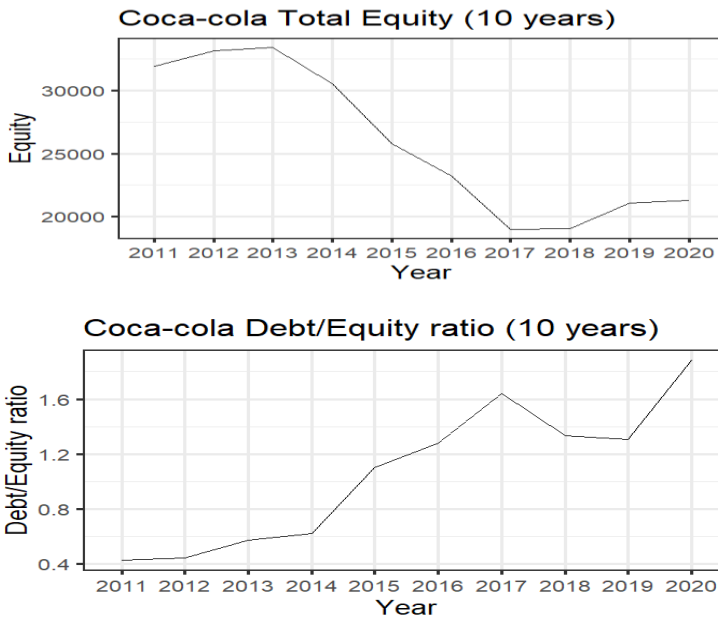


Fig. 2. Coca-Cola equity and debt/equity ratio (figure credit: original)

3.2 American emerging company

Amazon Debt and Firm Value.

Amazon started as an online book marketplace. After many years, Amazon has expanded into many categories of products. Amazon has attracted many users through continuous technological innovation and is the largest retail company outside China today. To study Amazon's capital structure, it obtains the long-term debt, firm value, and equity from the 2011 to 2020 annual report.

For debt level, Amazon has been increasing its debt levels every year since 2011. The most significant increases were concentrated between 2016 and 2016 when Amazon increased its debt level from 7,694 million dollars to 24,743 million dollars. In 2020 it reached its highest point in the decade at 31,816 million dollars. For firm value, Amazon showed a rapid upward trend from 2011 to 2020 and reached 321,195 million dollars in 2020. The debt/value ratio is calculated after obtaining the debt level and firm value. Amazon's debt/value ratio has been in a state of floating on the line, rising from 7.95% to 15.16% from 2013 to 2014. However, after 2014, the debt/value ratio showed a downward trend and decr9.23% in 2016. In 2017, Amazon's debt/value ratio rose again and reached a new peak of 18.84%. After 2017, the debt/value ratio declined and dropped to 9.91% in 2020. In terms of equity, Amazon's equity has increased year over year from 2011 to 2020, far exceeding its debt level.

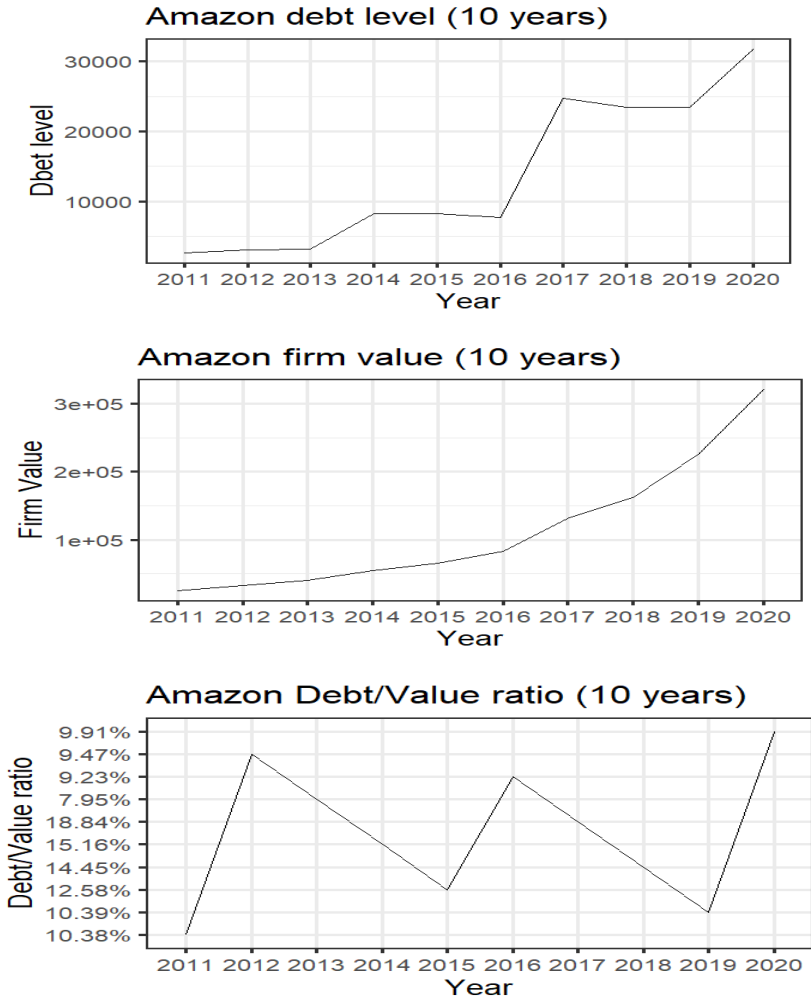


Fig. 3. Amazon debt, value, and debt/value ratio (figure credit: original)

Amazon Equity.

As for Amazon's equity and debt/equity ratio. The equity has been on the rise since 2011, and Amazon's equity reached 93404 million dollars in 2020. Additionally, the debt/equity ratio curve shows a floating trend. When comparing the debt/equity ratio and the debt/value ratio, it can be found that the fluctuations of the two curves are very similar, with two peaks in 2014 and 201 and three lows in 2013, 2016, and 2020.

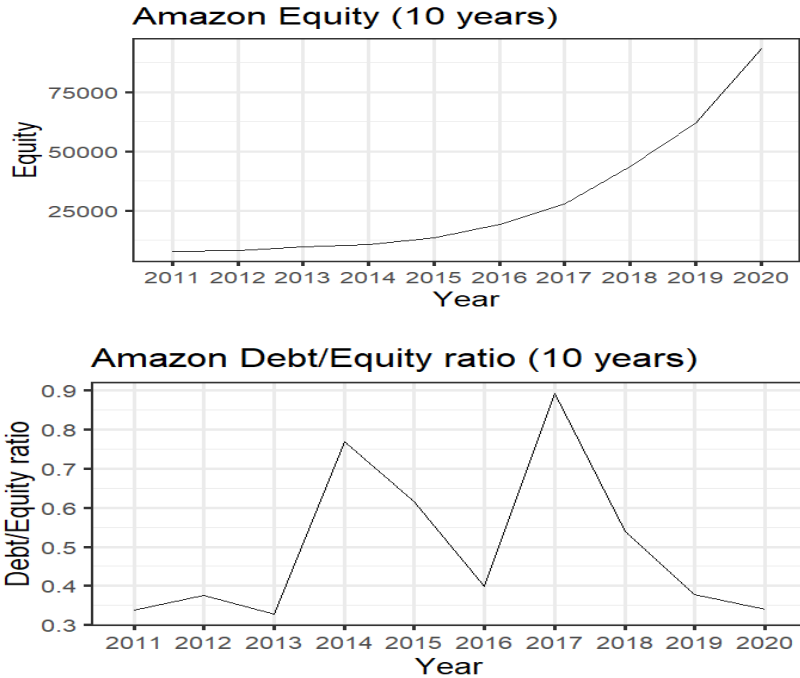


Fig. 4. Amazon equity and debt/equity ratio (figure credit: original)

3.3 Capital structure between American traditional and emerging industries

The Coca-Cola Company had many long debt levels in 2011. The Coca-Cola Company had 13,656 million dollars in long-term debt in 2011. However, in 2011 Amazon as a start-up had only 2,625 million dollars in long-term debt. Although Amazon has increased its debt level in subsequent years, it is lower than Coca-Cola's debt level in 2020. This may be because Coca-Cola is a traditional business. A traditional business has lower potential development opportunities and more tangible assets also been in business for a long time. This kind of company will have more long-term debt. [11]

Additionally, traditional companies are less willing to invest money in research, and the income is unstable.[2] However, Coca-Cola's equity is far more extensive than Amazon's in previous years. However, with the rapid development of Amazon, its equity number eventually surpassed that of Coca-Cola, which is the characteristic of emerging companies with great potential, rapid development, and small dividends. Comparing the debt/equity ratio of Amazon and Coca-Cola shows that in the traditional companies' capital structure, the scale of debt is more prominent than equity, and they can better use leverage to obtain tax benefits. However, for emerging companies such as Amazon, their equity scale will rise and eventually far exceed the debt level for emerging industries.

4 China capital market

China established the Shanghai Huashang Securities Exchange in 1921, which was the largest in East Asia in terms of scale and facilities. However, China capital market was affected by war and the economy, resulting in a lag in development. After that, due to the implementation of the planned economy, the development of the capital market was suspended. After the reform and opening in 1978, China turned to a market economy, and the capital market developed rapidly. In the next three decades, China's capital market has developed rapidly.[12][13] According to market capitalization, China is already the second-largest capital market globally. Although China's capital market is not well known to the world for some policy reasons, as China gradually integrates into the world economic system, China's capital market has also attracted many investors.

4.1 Chinese emerging company

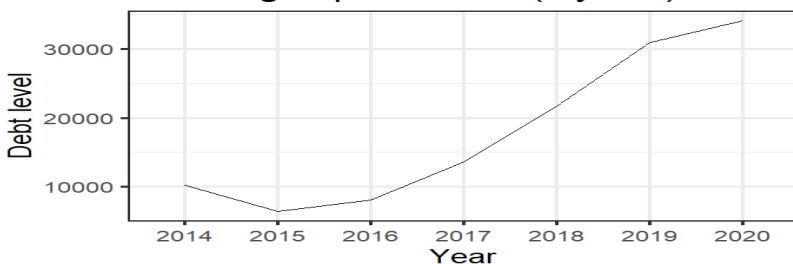
Alibaba group Debt and Firm value.

Alibaba Group Holding Co., Ltd. was established in Zhejiang, China. This is an emerging business operating in e-commerce, retail, internet, and technology. Alibaba debuted on the New York Stock Exchange in 2014 and raised 25 billion dollars. Alibaba also became the largest IPO in history, with a market value of 231 billion dollars. In 2018, Alibaba's market value exceeded \$500 billion, becoming the second Asian company to reach such a scale.

Since Alibaba Group was only listed in 2014, only 7 years of data were selected, from 2014 to 2020. The chart shows that Alibaba's debt levels have generally been on an upward trend over the seven years. In the second year of listing, Alibaba's debt level fell to the lowest point and increased yearly. In 2020 Alibaba's debt level reached its highest point, which is 34159 million dollars. For Alibaba's firm value. From the chart, Alibaba has a downward trend in the first two years after listing. In 2015 Alibaba's firm value dropped to its lowest point, which is 22925 million dollars. After that, Alibaba's firm value continued to rise and reached 65377 million dollars in 2020.

The next debt/value ratio curve is made based on Alibaba's seven-year debt level and firm value. Alibaba's debt/value ratio has fallen two years after listing. After 2015, Alibaba's debt/value ratio rose rapidly. It peaked in 2019, which is 76.83%. However, in 2020, Alibaba's debt/value ratio dropped sharply again, which is 52.25%.

Alibaba group debt level (7 years)



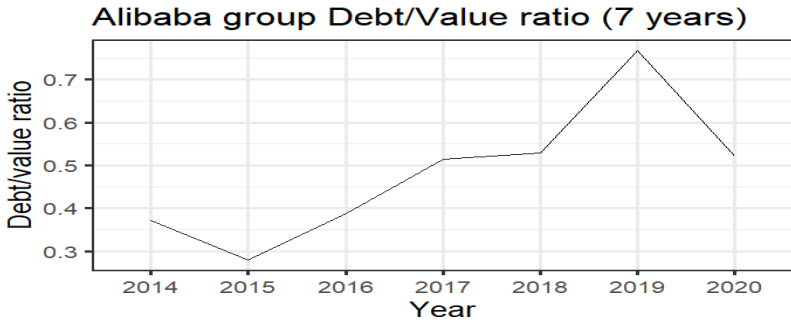


Fig. 5. Alibaba debt and debt/value ratio (figure credit: original)

Alibaba Group equity.

Equity is also an essential part of the capital structure. Alibaba prefers to use equity financing over debt. As seen in Alibaba's equity curve for the millennium, since its listing in 2014, the Alibaba group has been increasing the amount of equity year by year. In 2020 the equities reached its highest point since listing which is 122945 million dollars. It can also be seen in the Alibaba group's debt/equity ratio curve that the debt level to the company is lower than the equity amount. The debt/equity ratio saw a sharp drop in 2014 and 2015, and in 2016 reached its lowest point in nearly seven years which is 20.85%. There was a slight increase in the following three years, and it reached 34.12% in 2019. However, in 2020, Alibaba's debt/equity ratio is reduced to 27.78%.

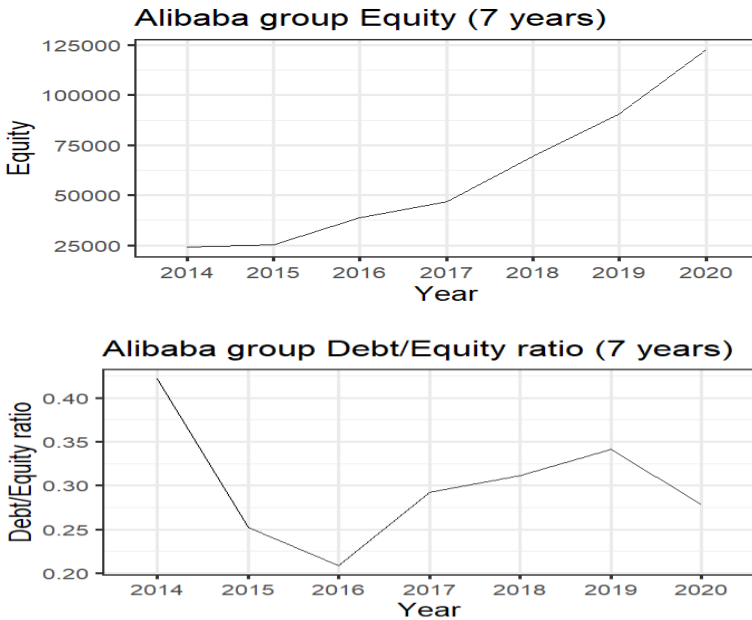


Fig. 6. Alibaba equity and debt/equity ratio (figure credit: original)

4.2 Chinese traditional company

Nan Fang Black Sesame Group Debt and firm value.

Nan Fang Black Sesame Group was established in 1993. Nan Fang Sesame group mainly produces and sells black sesame food and beverages and is engaged in logistics, bulk commodities and agricultural products trade, warehousing, loading and unloading, and services. The company is a leading enterprise in the black sesame paste industry, with a product share of more than 40% in the domestic market, surpassing other production, sales, and brand influence.

Nan Fang Sesame was listed in 1997. This paper selects data from 2012 to 2020 to make graphs to study its capital structure. As for the debt level of Nan Fang company, it can be seen from the figure that it has been in a state of fluctuation. In 2019, the debt level of Nan Fang Corporation dropped sharply to 30.58 million dollars. However, Nan Fang has significantly increased its debt level in 2020 to 89.48 million dollars, which is a new high in recent years. For the firm value, the value of Nan Fang's company has continued to rise since 2012, reaching a high of 249.94 million dollars in 2015. However, the firm value of Nan Fang Company has continued to decline since then, falling to 188.01 million dollars in 2017. In the next two years, Nan Fang's firm value quickly rose to 389.93 million dollars, but in 2020 there was a slight decline again.

This paper also made a debt/value ratio chart. From this graph to better study the capital structure of Nan Fang Company, the debt/value ratio of Nan Fang Company between 2002 and 2020 is floating. In 2003, the debt/value ratio peaked but continued to decline. In 2019, the debt/ratio declined sharply, dropping to a nine-year low of 7.97%. However, in 2020, debt/value rebounded rapidly and peaked at 26.46%.

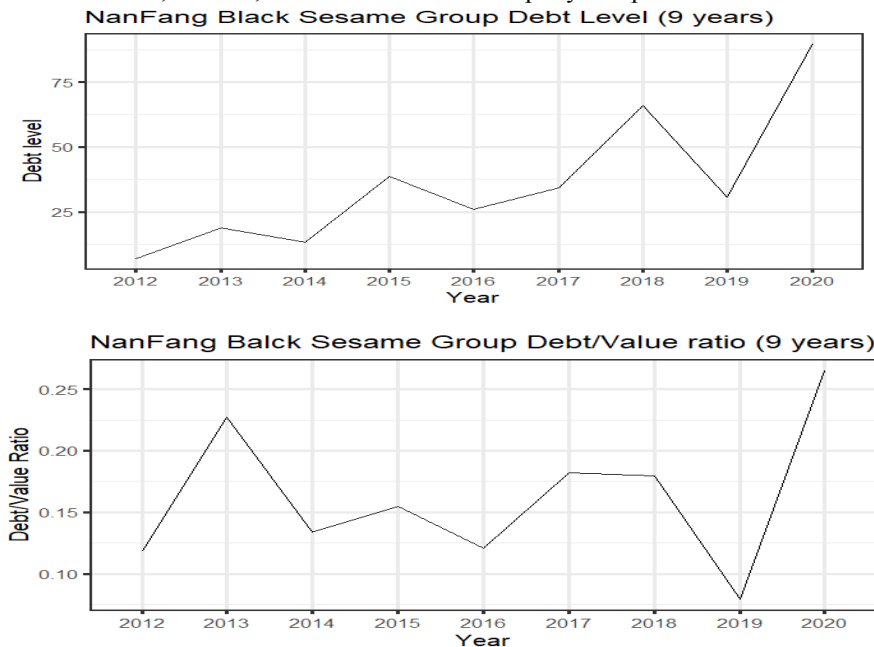


Fig. 7. Nan Fang debt and debt/value ratio (figure credit: original)

Nan Fang Black Sesame Group equity.

By observing the equity change trend, it can be found that the number of equities has been increasing year by year since 2002, and there has never been a decline. In 2020, Nan Fang's equity reached a nine-year high, which is 115.68 million dollars. In 2020, Nan Fang's equity reached a nine-year high of 115.68 million dollars. The debt/equity ratio shows a very volatile trend, with a wide range. The debt/equity ratio shows a very volatile trend, with a wide range. Nan Fang company's debt/equity ratio has fallen to lows many times and then rose to the highest point. In 2020, the debt/equity ratio of Nan Fang company had reached the highest point again, reaching 77.34%.

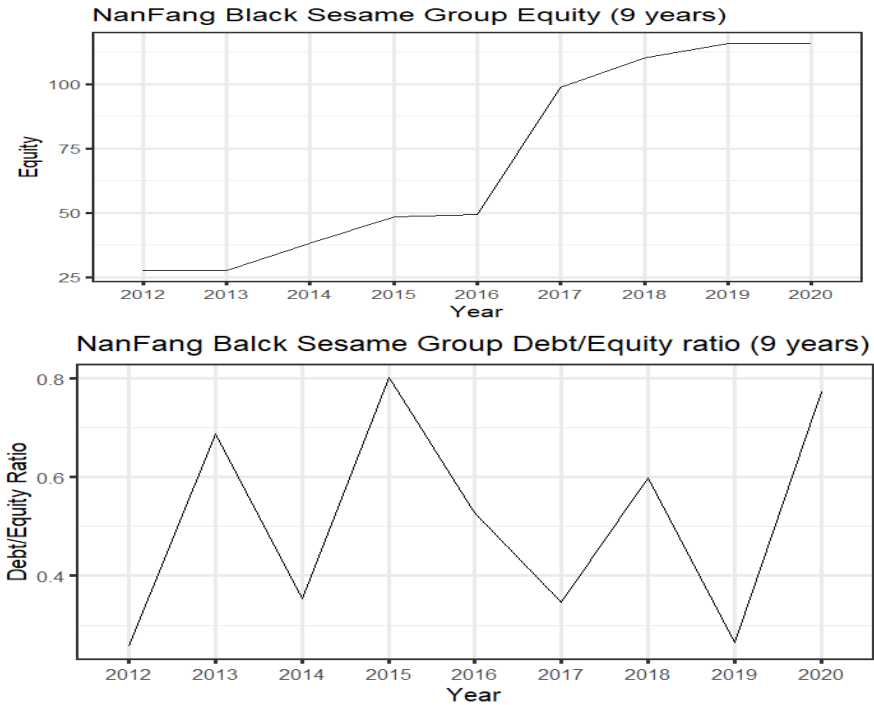


Fig. 8. Nan Fang equity and debt/equity ratio (figure credit: original)

4.3 Capital structure between Chinese traditional and emerging industries

Some features can be found by comparing the capital structures of Alibaba and Nan Fang. The first is why Alibaba chose to list in the U.S. rather than in China. There are two main reasons. The registration place of Alibaba Group is overseas, so it does not meet the listing requirements of A-shares. In addition, Alibaba Group hopes to obtain funds more efficiently, and the review period for A shares is long. Many development opportunities may be lost once a company misses the best time to market. To shorten the review time, we finally chose to list overseas. While the two companies chose different listing locations, there are some commonalities. Alibaba is an emerging industry

company, while Nan Fang Company is a traditional food company. Both companies prefer to use equity financing when choosing a capital structure. In addition, by comparing the debt/value and debt/equity ratios of the two companies, it can be found that the fluctuation range of Nan Fang is much higher than that of Alibaba.

5 Comparison between China and American capital market

5.1 Culture and Investors

There are some similarities and differences between Chinese and U.S. capital markets and structure. China's capital market has not attracted foreign investors for a long time in the past, but with economic development and access to the global financial market, more and more foreign investors choose to invest in China's capital market. At this stage, the most common investment in China's capital market is venture capital. Although venture capital is precarious, it also comes with extremely high returns.

China's capital market has many opportunities and prospects, and the investment enthusiasm of foreign investors will not fade in the next few years. However, there is a massive difference between the Chinese and American capital markets, making it difficult to enter the Chinese capital market. In Western countries, investors focus on maximizing profits and publicly disclosing information. The Chinese capital market emphasizes the harmony within the organization called the network of relationships. They may give up the disclosure of information for the sake of internal harmony. In addition, individual investors in China's capital market account for a relatively large proportion. The U.S. capital workplace mainly comprises investment institutions, which tend to invest long-term.

5.2 Regulations and laws

There are also some differences in supervision and regulations in the capital markets of China and the United States. China's capital market is primarily affected by policies, and some new policies will hinder the financing and listing of enterprises. For the U.S. capital market, the influence of the market dominates, and companies are less affected by policies. There are also differences in the requirements for listing in the capital markets of China and the United States. In China's capital market, the listing of companies is subject to strict supervision, and the review time is extended. The company can go public after obtaining the approved from regulators.

The U.S. capital market has a lower threshold for listing. Enterprises only need to satisfy the standards, transparent disclosure information then they can be go public, and the time required is concise. Also, Banks are an essential part of the capital market, and banks can provide funding sources such as short-term debt and mortgage loans.[10] Banks often hold shares in local companies in China's capital markets and even serve as board members. However, corporate stakes in Bank of America are rare, and U.S. financial regulators oppose the practice.

6 Conclusion

In conclusion, both China and American emerging companies have a higher proportion of equity in their capital structure. Compared with debt financing, equity financing allows companies to invest retained earnings in the development without paying dividends upfront. However, the interest payment is an obligation for companies that they have to comply with. Due to the strict lending process, Chinese companies in traditional industries also use more equity in their capital structure, but most American traditional companies use debt financing more frequently.

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