

Analysis of the Impact of MM theory on the Capital Structure of Chinese Listed Companies

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Abstract

Configuring a firm's capital structure plays a crucial role in achieving the firm's financial management objectives. This paper elaborates the Miller-Modigliani (MM) theoretical model and analyses the academic achievements and limitations of the MM theory. Then, based on the analysis of the current situation of capital structure of Chinese listed companies, it discusses the impact of the theory on the optimisation of capital structure of Chinese listed companies. Finally, combining these theories, suggestions for solving the problems of capital structure of Chinese listed companies are summarised.

Keywords: Mm Theory, Capital Structure

Introduction

Modern financial management theories generally agree that maximising corporate value is the ultimate goal of corporate financial management. In determining the capital structure of a firm, there are usually three main ways in which a firm can finance itself: by using its own internal funds, by issuing bonds or by issuing shares. The core issue in the study of corporate capital structure theory is how to make the best decision given an investment opportunity. Therefore, in corporate financing decisions, firms should determine the most appropriate capital structure and maintain this optimal structure when raising additional financing. Capital structure usually refers to the structure and proportionality of a firm's long-term debt capital to its equity capital. Different combinations of capital structure lead to different costs of capital, conflicts of interest and financial risks, thus affecting shareholder wealth.

The modern capital structure theory is marked by the Miller-Modigliani (MM) theorem, which replaces the earlier capital structure theories and establishes the status of the mainstream capital structure theory. The MM theorem argues that the capital structure does not affect the value of the firm, even if the firm has a high proportion of debt, its value will not be affected by this. However, there are factors such as tax and bankruptcy cost in reality, which makes MM theorem have some limitations in practical application. Therefore, the modern capital structure theory takes more comprehensive consideration of factors such as the business environment, tax policy and market situation of the enterprise in order to determine the optimal capital structure so as to maximise the value of the enterprise.

Overview of MM theory

As we all know, MM theory was first proposed by the famous American financial management scientists Miller (Merton Miller) and Modigliani (France Modigliani), the two scholars through a lot of research, published in 1958 in the annual meeting of the American Society for Econometrics, the cost of capital, corporate finance and investment theory, which is the beginning of the modern capital structure theory. This is the beginning of modern capital structure theory. In 1961, Merton Miller and France Modigliani published a paper entitled "Dividend Policy, Growth and Share Valuation", which further developed this theory and won the Nobel Prize in Economics in 1990. The basic assumptions of MM theory are: (1) the firm has only long-term bonds and common stocks, and both bonds and stocks are traded in the full capital market with no transaction costs; (2) the individual investor's borrowing rate is the same as the firm's borrowing rate and there is no debt risk; (3) the same risk category assumption, i.e., firms with similar operating conditions have the same operating risk; (4) each investor has the same expectation of the firm's average future operating profit; and (5) all the cash flow is a perpetual annuity, which includes the firm's interest, pre-tax profit, and so on, i.e., the firm's growth rate is zero.

Three Stages in the Development of Mm theory

MM theory abstracts many factors from reality and quantitatively reveals the relationship between capital structure, cost of capital and firm value. The development of the theory has gone through three stages:

STAGE 1: MM theory without corporate tax. In this stage, the MM theory states that under certain conditions, the value of a firm is independent of its capital structure. The essence of the MM theorem is that under the complete market assumption, the market value of a firm is independent of its capital structure, i.e., the value of a firm with debt, V_L , is equal to the value of a firm without debt, V_U . Therefore, under the premise of maximising the firm's value as the business objective, the firm's financing decisions are meaningless, and the firm's value can only be increased in the firm by improving its asset allocation. Obviously, these hypothetical conditions are unrealistic in the actual market, and therefore the initial MM theory cannot be valid under actual market conditions.

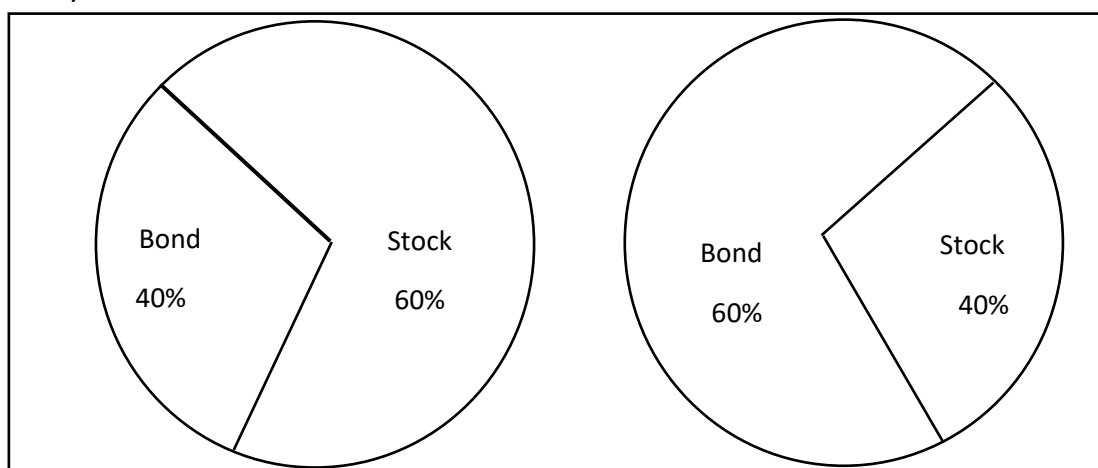


Figure: Two pie chart models of capital structure

STAGE 2: Modified MM theory. In this stage, MM theory takes into account the payment of income taxes by firms. Modigliani and Miller revised the MM theorem in 1963 with an article entitled "Corporate income tax and the cost of capital: a correction". The main point was to

relax the no-tax assumption and to take into account the effect of the corporate income tax. Adjusting the capital structure of a firm can achieve tax benefits and increase the value of the firm, as interest costs are deductible before tax, reducing the firm's income tax burden. But firms cannot go into debt indefinitely, because as a firm's debt increases, its risk of default increases, and the risk-free assumption of corporate indebtedness cannot hold. At the same time, although the cost of equity capital rises with the debt ratio, it rises at a slower rate than the increase in the debt ratio. Therefore, the modified MM theory suggests that the higher a firm's debt, the lower its WACC, after accounting for income taxes, the higher its firm value.

STAGE3: Further Modified MM Theory. With the continued relaxation of the assumptions underlying the MM theory, Miller developed a model in 1977 that included both corporate and personal income taxes to explore the impact of indebtedness on firm value. He concluded that personal income taxes would offset the tax saving benefit of interest to some extent, but that the interest tax saving benefit of indebtedness would not disappear completely under normal tax rates. Miller came to two conclusions: first, there is an equilibrium value for the bond market as a whole that determines the proportion of corporate debt assets for society as a whole. This equilibrium value is determined by the different tax brackets of the corporate income tax and the individual income tax, and it increases with the corporate income tax rate (which receives a relatively large bond tax exemption) and decreases with the individual income tax rate. Second, the so-called optimal financial structure is not realisable for individual firms. This is because the financial capital composition of the same firm implies different market values for different individual investors. The quantitative MM that Miller introduces into the analysis of personal income tax in demand, which is then reached after market equilibrium, is much richer than the original MM theorem, both in terms of its implications and its proof.

Extensions of MM theory

While the modified MM theory considers the benefits of tax savings from liabilities, it does not take into account the risks and additional costs resulting from liabilities. As MM theory has been studied in depth, a number of theoretical assumptions have gradually been developed, including equilibrium theory and incentive theory.

Equilibrium theory suggests that a firm's optimal capital structure should strike some equilibrium between maximising the value of its debt and the cost of financial crises resulting from increased debt. The theory relaxes the assumption of no bankruptcy costs and risks in MM theory. It argues that when the level of debt is low, the value of the firm will increase as the level of debt rises due to the presence of tax shield benefits. However, when a certain level of indebtedness is reached, the tax shielding benefit of indebtedness starts to be offset by the cost of financial crisis. The firm's value is maximised when the marginal tax shield benefit of debt equals the marginal cost of financial crisis, which is its optimal capital structure. Further increases in indebtedness will result in the cost of the financial crisis exceeding the benefit of the tax shield, thus reducing enterprise value.

Incentive theory suggests that capital structure affects the future cash flows and market value of the firm by influencing the behavioural choices of the operators. Of the two types of financing, debt and equity, debt financing has a stronger incentive effect. This is because debt itself is similar to a collateral mechanism, and business operators must make good investment decisions to avoid the risk of financial crisis or even bankruptcy if they are unable to repay their debts. Incentive theory therefore encourages debt financing of firms, thus motivating operators to work hard to avoid bankruptcy.

Scholarly Achievements and Limitations of Mm theory

Since the development of MM theory for half a century, it has made great academic achievements in exploring the optimal capital structure, reducing the cost of capital, and increasing the net social benefits, etc.: (1) Pioneer in the study of capital structure theory: MM theory provides a reference system and theoretical starting point for the study of capital structure theory. The subsequent financing preference theory, trade-off theory, agency theory, etc. are all centred on the core idea of MM theory. (2) Systematisation of capital structure theory: traditional capital structure theories are fragmented and individual, without forming a system; MM theory systematises capital structure theory and constructs a basic framework for theory development. (3) Adopting modern analysis methods: traditional capital structure theory often adopts general description, while MM theory adopts modern analysis methods, such as partial equilibrium, mathematical analysis, etc., which makes the study of capital structure more scientific.

However, MM theory also has some limitations: (1) Theoretical assumptions are too idealistic: there is a large gap between the assumptions of MM theory and reality, such as the difference between individual and corporate borrowing costs, the existence of transaction costs, etc. These assumptions can not be realised in practice, which leads to a disconnect between the theory and its practical application. (2) Large differences between conclusions and reality: there are large differences between the conclusions of MM theory and the actual market performance, such as the MM corporate tax model and Miller model that the more indebtedness of enterprises the better, but in practice very few enterprises adopt extreme indebtedness strategy, which indicates that there are defects in these models. (3) Lack of empirical support: MM theory lacks the support of empirical tests, and changes in capital structure in the actual market often do not fully comply with the predictions of MM theory, which is a serious defect of the theory. (4) Static analysis perspective: MM theory mainly analyses from a static perspective, without considering the impact of changes in the external economic environment and the firm's own operating conditions on capital structure. In fact, the factors affecting capital structure change dynamically.

Therefore, although MM theory provides an important theoretical basis for capital structure research, its application in practice needs to be flexibly adjusted and improved in light of the real situation.

Current Capital Structure of Listed Companies in China

The capital structure of a listed company is the result of a game between the various interests of the company (shareholders, operators and creditors). If the equity capital is over-expanded, it will "dilute" the shareholders' equity and lead to a decline in the market price of the stock. However, increasing debt will increase the cost of financial crisis and agency cost of the company, which will directly affect the interests of operators. It can be seen that there are different preferences between operators and shareholders regarding the capital structure of the company. What kind of capital structure a listed company ultimately chooses depends on the combination of the different preferences of operators and investors, as well as the governance structure and the efficiency of the company's property rights.

The corporate governance structure addresses the relationship between shareholders and operators. The efficiency of property rights, on the other hand, reflects how the company, through institutional arrangements, incentivises and restrains operators to achieve the reduction of agency costs. In China, in addition to the problems of underdeveloped capital markets and lack of efficiency, there is also the problem of equity structure. The majority

shareholders of the vast majority of listed companies are the original higher authorities of the listed company, whose shares (state-owned shares) cannot be listed and circulated, but have absolute controlling and decision-making power. These shareholdings are characterised by the fact that they are not owned by individuals, but it is difficult for the state to evaluate, reward and punish those operators with principal-agent responsibilities, so that the majority shareholders do not have corresponding incentives and constraints, and there is even a phenomenon of ownership deficiency. Most retail investors, for various reasons, do not have the motivation and ability to monitor the company, and although the situation is gradually improving, there is not much obvious improvement. The phenomenon of insider control leads to the behaviour of the company reflecting more of the will of the operators, who will inevitably choose equity financing from their own interests.

As a matter of fact, operators choose the equity method of financing partly because of the lack of corresponding monitoring and disciplinary mechanisms and partly because of the lesser pressure to pay dividends. The Chinese stock market has not developed for a long time, especially in the first few years, and the number of dividend-paying companies is not large. If we look at the effectiveness of the market, there is a big gap between China's capital market and those of other countries, as evidenced by the fact that changes in capital structure do not have much impact on corporate value. In addition, higher lending rates are one of the reasons why Chinese listed companies are deterred from borrowing money from banks. At the same time, since China's corporate bond market is still in the early stages of incomplete development, the bond market has a single variety of bonds, which fails to stimulate investors' enthusiasm, and the problem of bond repayment affects investors' confidence. Finally, Chinese investors in the stock market can not make the correct investment judgement through the information of the enterprise issued shares, in the case of serious asymmetry of information, enterprise operators have a natural tendency to cheat, this contradiction can only be solved by relying on strict institutional constraints.

Based on the above analysis, we believe that the adoption of equity financing by Chinese listed companies is a more rational means of financing under the current circumstances, even though in a sense it infringes on the interests of ordinary retail investors (there have been instances where state-owned shares have given up their allotment rights and have implemented reallocation programmes).

The Impact of Mm theory on the Capital Structure of Chinese Listed Companies

Based on the capital structure status of enterprises in western developed countries, we know that under effective market conditions, debt financing methods are more favourable to enterprise development than equity financing methods. This is also evidenced by the fact that developed countries usually adopt a financing sequence, i.e., internal financing, bond financing and equity financing.

The study of capital structure of enterprises has been one of the hot topics since the date of the emergence of MM theory, and several theoretical hypotheses have been developed. However, there are two prerequisites for MM theory: a mature capital market and an effective market supervision and governance mechanism, the former of which allows enterprises to choose financing methods relatively freely, while the latter makes it necessary for enterprises to choose financing methods cautiously. In China, however, even listed companies are not free to choose their financing methods, and the cost and uncertainty of the financing system are high. Except for a small number of listed companies with good efficiency and strong internal financing ability, the vast majority of listed companies are

relatively inefficient and lack the ability to raise funds internally. Moreover, compared with the stock market, China's bond market is even more immature, and enterprises have almost no opportunity to raise funds by issuing bonds. Therefore, regarding the research problem of capital structure of Chinese listed companies, it is more important to pay full attention to the differences between China and western countries in the relevant institutional construction, and only by solving the institutional problems first can we find a suitable theory of capital structure for Chinese listed companies.

As a matter of fact, from the point of view of business operations, there is no uniformity in the capital structure of different enterprises, especially those in different industries. But all operators must realise that both debt and equity financing have costs. Although the current status quo in China is that the cost of equity financing is lower than the cost of debt financing, this is contrary to the modern capital structure theory, and also contradicts the international financing trend. MM theory gives some kind of guiding opinions, and in the process of specific practice, our listed companies should take into account the changes in the operating environment and the actual situation of the enterprise, and continue to optimize the allocation of the capital structure, so as to make it reach the ideal equilibrium state. state. Although absolute equilibrium does not exist, the pursuit of equilibrium is an unchanging theme in economics research.

Concluding Remarks

By deeply analysing the Miller-Modigliani (MM) theoretical model, this study clarifies its achievements and limitations in the academic field, and provides a more comprehensive perception of the development of capital structure theory. Meanwhile, based on the analysis of the current situation of capital structure of Chinese listed companies, the specific impact of MM theory on its optimisation is explored, which provides an important theoretical basis and practical guidance for the adjustment of capital structure of Chinese listed companies. In addition, combining the relevant theories to put forward suggestions to solve the capital structure problems of Chinese listed companies, which can help to promote the improvement and development of the financial management of Chinese listed companies, enhance their operational efficiency and market competitiveness, and then contribute to the healthy and stable development of China's capital market.

Although there is a big gap between China's real conditions and the assumptions of the MM theorem, we can still apply the MM theorem to analyse the economic situation and study the corresponding countermeasures. In actual economic regulation and control, the government can use levers such as tax rates, interest rates, economic regulations, industrial policies, etc., to guide capital investment towards development that is conducive to the optimisation of industrial structure.

Through tax rate adjustments, Governments can incentivize or restrict the financial behaviour of enterprises. For example, by adjusting the corporate income tax rate, Governments can influence the propensity of firms to choose debt or equity financing. A lower corporate income tax rate may encourage firms to borrow more, while a higher tax rate may push firms to rely more on equity financing. In addition, adjustments to the tax rate on capital gains may also affect investors' preference for equity financing.

Interest rate policy is also an important factor influencing capital structure. By adjusting the level of interest rates, central banks can influence the cost of financing for firms and thus their propensity to choose debt or equity financing. At the same time, lower interest rates may

induce firms to borrow more, while higher interest rates may push firms to rely more on equity financing.

In addition, the Government can direct capital to specific industrial sectors by formulating and amending economic regulations and industrial policies. By providing tax concessions, subsidies or other incentives, the Government can attract more capital to flow into strategic industries, thereby optimising the industrial structure and promoting sustained economic development.

Therefore, despite the gap between China's real conditions and the assumptions of the MM theorem, the government can still use a variety of levers to guide the investment of capital and promote the optimisation of economic structure and the stability of economic development.

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