



# A Critical Review of the Effects of Stock Returns and Market Timing on Capital Structure

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**Abstract.** Capital structure is regarded as the combination of debt and equity firms use to finance operations and investments. The choice of capital structure significantly impacts a company's cost of capital, profitability, and risk profile. Among a series of factors that affect capital structure, this paper focuses on stock returns and market timing. In this review, an array of papers is analyzed to summarize current research claims regarding the influence of stock returns and market timing on capital structure. This paper also touches on other theories like the trade-off theory, the pecking order theory, and the signaling theory.

**Keywords:** Capital Structure · Stock returns · Market Timing

## 1 Introduction

Capital structure is the ratio of debt and equity capital firms choose for financing decisions. The capital structure has a profound influence on financial stability, profitability, market position, and corporate value. Therefore, studying capital structure decisions is important in the theory and practice of enterprise financial management. Stock return and equity market timing are the two main factors affecting capital structure decisions. The level of stock return will affect the cost of debt and the feasibility of stock financing, while the equity market timing determines the timing and price of equity financing. Therefore, the correct positioning of capital structure can improve the efficiency of capital use, optimize the returns of shareholders, reduce the financial risks of enterprises, and improve the market value of enterprises. Determining the impact of stock return and equity market timing on capital structure can guide companies' financing decisions.

The research on the impact of stock return and market timing on capital structure has the following significance: 1. Provide guidance for enterprises' financing decisions: By studying the impact of stock return and market timing, guidance and suggestions can be provided for enterprises' financing decisions to avoid risks and losses caused by improper financing structure selection. 2. Promote the development of financial management theories: Studying capital structure involves theories and methods related to enterprise financing, which can promote the development of financial management theories and explore more effective means of financial management. 3. Improve enterprise

competitiveness: by studying the impact of stock return and equity market timing on capital structure, enterprises can choose financing structure more scientifically and improve their financial status and competitiveness. 4. It has reference value for stock investors: stock return is one of the important indicators concerned by stock investors. It is of important reference value for stock investors to comprehend how the capital structure is affected by stock returns.

We follow some main objectives when studying the effect of stock return and market timing on capital structure. First, explore the relationship between the two factors and capital structure, to analyze their respective impacts on firm decisions. Secondly, understand the types of capital structure chosen by enterprises and their changes under the circumstances of stock return and equity market timing changes. Thirdly, provide guidance and suggestions for enterprises' financing decisions, so that enterprises can choose capital structure more scientifically and reasonably to optimize their financial situation.

This paper reveals the influence of stock return and equity market timing on capital structure and provides the scientific basis for enterprises' financing decisions after modifying the following questions: 1. How will stock returns affect the capital structure? What are the effects of high and low returns? 2. What impact will the change of equity market timing have on the capital structure? How to choose the time to carry out equity financing? 3. What is the combined effect of the two factors? Where do they fit into capital structure decisions? 4. How can enterprises choose the right capital structure when stock returns and equity market timing change?

To complete the survey, the following measures are considered for reference: We are going to aim at a certain number of representative enterprises and choose a certain period like the past 10 or 20 years. Selecting some data among these famous firms and using statistical methods and econometrics theories and methods to analyze data, such as regression analysis, panel data analysis, time series analysis, etc. Gathering an assortment of papers which was written by professionals around the world in the past 30 years and reducing the number of papers properly.

In the rest of the paper: part two reviews prior literature on market timing and stock return theories, part Three summarizes the results of empirical tests of the theories, part four analyzes and discusses the results, and finally, part five concludes.

## **2 Literature Review**

This literature review on the stock return and market timing theories is organized in a fashion that centers around the theories proposed by Baker and Wulger and Welch. We examine the original theories first and then discuss subsequent research responding to the theories.

### **2.1 Market Timing Theory**

Baker and Wulger investigate the importance of previous market value estimations on the present and conclude that past Market-to-Book ratios have the most explanatory power compared to other variables and the effect remains for ten years. The authors

use COMPUSTAT data with known IPO dates to test their theory. They find an obvious negative correlation between historical MB values and with current debt ratio. They also find once-lagged MB values to be more significant than asset tangibility, profitability, and size. To ensure a causal relationship, the authors develop the external finance weighted average (EFWA) MB ratio that weighs past market-to-book estimations according to the scale of the financing event. They find the EFWA to persistently explain debt ratio over 10 years while once lagged MB values diminish in explanatory power. Baker and Wulger also believe that managers are aware of market timing practices and that they perform them successfully on average. They provide a static theory as well as a dynamic theory where the irrationality of the managers is considered; in general, they theorize that the stock changes incentivize managerial equity issuance activity which is later not reverted and thus leaves permanent impacts on capital structure.

Subsequent researchers have made various adjustments to the original model developed by Baker and Wulger and proposed methods to improve the predictability and profitability of market timing [1]. Hull, Qiao, and Bakosova proposed a one-month market timing model including 15 variables that use weighted least squares with stepwise variable selection to predict investable positions in the subsequent month. They find that the strategy derived from their model results in 16.6% annual returns exceeding the 10% average of the S&P 500 over the 2003 to 2017 period [2]. Bolton, Chen, and Wang propose a corporate financial strategy that incorporates market timing practices. They suggest that firms will perform market timing to build cash reserves to prepare for future financing opportunities, even if there is no present need for cash [3]. Pesaran and Timmermann suggest that market timing should call for different prediction models because the models are not predicting the stock returns but rather the changes in the expected stock returns. The paper also includes a two-stage approach model that eliminates the effects of breaks and reconsiders the time-invariant relationship between variables and stock returns. The authors find that this model is noticeably more precise when forecasting market timing opportunities [4]. Research by Abhyankar and Davies takes a functional approach and investigates the changes in the short-run predictive ability of stock over time and the relationship between stock volatility and the profitability of market timing [5]. Their most important finding is that market timing is usually most profitable in periods of intermediate volatility; they suggest that this will enhance the profitability of market timing for the “naïve” investors.

## 2.2 Stock Returns Theory

In *Capital Structure and Stock Returns*, Welch theorizes stock returns changes best explain changes in the capital structure after managerial activity, overweighing financial distress costs, profitability, asset tangibility, market timing, and other proxies [6]. As an essential part of this theory, Welch develops the implied debt ratio (IDR), which substitutes the book equity value in the denominator of the average debt ratio (ADR) for a market equity value that alters from time  $x$  to  $x + t$ . Welch uses COMPUSTAT data from 1962–2000 to test for the significance of stock-return-induced capital structure changes in a cross-sectional method. The tests show stock return-induced changes account for 40% of capital structure changes over five years and slightly more over a single year; the IDR also has more explanatory power of the ending ADR than starting ADR and all

other proxies except for debt issuance. He finds that although managerial activities could counteract debt-ratio changes caused by stock fluctuations, the changes are persistent because of the nonaction of managers due to uncertain reasons [6]. He states that these changes are Different from Baker and Wolger's investigation on active issuance of equity after changes and investigations solely focusing on nonaction, Welch's theory focuses on nonaction and the resulting changes.

Numerous previous and contemporary studies investigate the predictability of stock returns through different variables; these studies allow for a better understanding of the mechanical changes in capital structure. These investigations can aid the formation of a more holistic market timing strategy that can predict stock value changes and devise a timing plan to produce profit for investors. Fama and French provide insight into the risk factors that affect stock returns. The paper identifies five common risk factors, including a market factor, the size of the firm, book-to-market equity, and the risks associated with bonds [7]. Hvidkjaer investigates small-scaled trades and finds that stocks of sell-initiated trades on average outperform the stock with buy-initiated trades from the period after a month to three years after portfolio formation. He also finds that the favorability of the stock by retail investors is negatively correlated to its profitability in a few subsequent years because they tend to be overvalued and underperform [8]. French, Schwert, and Stambaugh investigate the relationship between volatility in the market and the performance of stock returns. They find indirect evidence to support a positive correlation between expected risk premiums and volatility [9].

### 3 Empirical Research

#### 3.1 Market Timing Theory

To build on the hypothesis developed by Baker and Wolger, subsequent researchers have studied empirical data in different approaches and reached very different conclusions. Some researchers claim to have disproved the market timing theory, some find the hypothesis accurate, and some question the persistence of the effects.

Mahajan and Tartaroglu observe a negative relationship between debt ratios and previous valuations but conclude that the leverage levels are not dependent on market timing attempts. They study international evidence from G-7 nations and find that market timing only imposes insignificant and rapidly reversed impacts on leverage. They offer the dynamic trade-off theory as an alternative to account for the inverse correlation of leverage ratios and previous market-to-book ratios [10].

Huang and Ritter examine US data and concludes historical patterns of external financing choices are consistent with the idea of market timing. It is recognized in the paper that the theory is based on the premise that the expense of external financing is not necessarily larger than internal financing, and thus firms will issue equity if the marginal gain is greater than the cost [11]. The paper also disproves alternative theories of pecking order and trade-offs. Different from what the pecking order theory hypothesizes, researchers find that equity issuance is not rare across their data. In contrast to the trade-off theory, the effects of timing the market diminish slowly as firms readjust capital structures after the change. Tests show that equity issues substantially affect capital structure for over ten years; firms adjust very slowly toward target leverages.

Some papers recognize the effect of market timing on capital structure but question the decade-long persistence found in Baker and Wulger [1]. Russel and Hung studied Chinese firms from 1992 to 2007 and finds that the effects are evident in the first few years but disappear after  $IPO + 3$ . However, Russel and Hung do recognize that the dynamics of the Chinese market could be influenced by government regulations on the timing of security issuance and market timing cannot be effectively performed; thus, influencing its impacts on capital structure [12]. Nevertheless, Chinese data is not unaccompanied. Vallandro, Zani, and Silva find similar results in Brazilian data in the decade before 2007. The paper recognizes that equity market timing exists in the region but finds that there are no permanent effects on capital structure. According to the paper, managers actively reduce the leverage levels of their companies at appropriate times in the market in an attempt to take advantage [13]. However, regression tests indicate no long-run persistence of market timing effects for over 2 years. The paper also suggests that determinants like tangibility, liquidity, macroeconomic variable, and interest rates better explains the debt-to-equity ratio of public companies [13].

Based on the literature examined it can be concluded that the short-run effect of opportunistic behavior of managers trying to time the market is observed but quickly diminishes in 2 to 3 years. However, more extensive and comprehensive empirical researches need to be conducted on worldwide and modern data to provide more insight into the short-run effects of market timing practices and their long-run persistence. Researchers also need to factor in local characteristics that might inhibit effects or persistence. The debate surrounding marketing timing theory remains unsettled, but the persistence of its effects is largely disproved.

### 3.2 Stock Returns Theory

According to Modigliani-Miller's (MM) capital structure theory, in a perfect capital market, a company's debt ratio does not affect its value [14]. However, in the real world, capital structure decisions impact a company's financing costs and financial distress risks. The trade-off theory and the pecking order theory provide different explanations for the relationship between stock returns and capital structure. Firms with high volatility actively reduce leverage, matching the former theory; companies also reduce investment (strengthen maturity) and increase cash holding (improve liquidity). Chen, Wang, and Zhou also suggest that firms choose internal funds or equity before debt which supports the pecking order theory [15]. Kayhan and Titman hold that stock returns have more permanent effects on debt ratios compared to external financing and the stock return effect does not subsume other determinants through investigating leverage deficit [16]. A study by Ovtchinnikov suggests that firms with better-performing stock prices more commonly bear additional debt because they believe that the benefits of leverage outweigh the risks [17].

The relationship between stock returns and capital structure is complex, and the results of empirical research are not always conclusive. However, research shows that companies with higher stock returns may have greater flexibility in capital structure selection. Therefore, changes in stock returns may affect the company's financing decisions and ultimately affect its profitability and risk status. Our researches suggest that stock returns have an impact on capital structure decisions. The research results mainly

support the trade-off theory and the pecking order theory. But the exact nature of this relationship also depends on other factors, such as market conditions and sample characteristics. Financial managers and investors should consider this relationship when making financing and investment decisions. To better understand the nuances of the relationship, further research would be needed.

## **4 Analysis and Discussion**

### **4.1 Overview of the Findings from the Literature Review**

In the literature review, Baker and Wulger and Welch show that market timing actions and changes in stock returns have lasting impacts on the capital structure of a firm [1]. The authors conclude that the timing behavior of the market does affect the capital structure of the firm. Models developed by subsequent researchers help elaborate the theories and provide more approaches to predict stock return-induced mechanical capital structure changes as well as market timing opportunities. To further explore the connection between the two theories and capital structure changes, the various relationships and capital structure changes should be examined.

### **4.2 Stock Returns and Capital Structure**

The capital structure of a corporation outlines how it finances its operations using both equity and debt. Debt is funds borrowed by the company and must be repaid along with interest, whereas equity is ownership in the business. The capital structure of a corporation is important because it affects the cost of capital, which affects the company's profitability and stock returns. According to the Modigliani-Miller theorem, a company's capital structure has no impact on its value or stock returns in a perfect environment without taxes, transaction fees, or other market inefficiencies [14]. The capital structure of a company, however, can affect its value and stock returns since taxes, bankruptcy costs, and other market frictions exist in the real world. Different empirical studies explore the connection between capital structure and stock price changes.

The stock return theory is a financial theory that contends that the level of risk taken affects the return on investment. According to the theory, potential returns increase with risk. The theory is predicated on the idea that rational investors will only put their money into assets that have a higher expected return for a particular amount of risk. This theory enables investors to choose their investments with knowledge. Investors can choose better investments if they comprehend the connection between risk and return. It does have some restrictions, though. It makes the supposition that investors are logical and always choose logical courses of action. In actuality, investors frequently make irrational decisions because of emotions and other influences. Additionally, it ignores other variables like market movements and economic conditions that may have an impact on stock returns. Furthermore, this theory assumes that every investor has the same information and bases their decisions on it. In practice, some investors might have more information available to them than others, which could create an unfair playing field.

In the paper, Welch suggests that stock returns are the primary factor determining market debt ratios and that firms choose not to adjust towards target leverage after equity price shocks. These shocks consequently have a long-lasting impact on the debt ratio of corporations. The study makes use of information from the annual Compustat and Center for Research in Security Prices (CRSP) files covering publicly traded U.S. companies from 1962 to 2000. For any firm year with a starting equity market value greater or equal to a tenth of the S&P 500 level, the paper forecasts debt ratios. In 2000, there were 2,679 sample firms, up from 412 in 1964. The cross-sectional regression time series known as Fama-MacBeth is used to calculate the stated coefficients and standard errors. The article breaks down changes in capital structures into effects caused by the issuance of retirement activity and effects caused by stock returns. The study concludes that, over the comparatively long run, stock return impacts outweigh previously established proxies in explaining debt-equity ratios [6]. The premise of the study is that firms do not alter their debt ratios when there are changes in stock prices. Instead, they continue to use their current financial structure despite fluctuations in stock price. The paper makes the case that over time, this inertia can significantly affect the capital structure of corporations.

There is also empirical research that disagrees with Welch. The study argues that the relationship is not as straightforward as previously thought and that many factors can influence this relationship [18]. Myers argues that firms face a tradeoff between the benefits of debt tax shields and the costs of bankruptcy and that this tradeoff can have a significant impact on corporate capital structure over time [19].

The ideal capital structure for a company should balance the advantages of debt (such as tax savings and cheaper capital expenses) and the disadvantages of debt (such as financial distress costs). The logic is that the cost of issuing debt is usually less expensive than the trade-off of issuing equity because interest payments can deduct taxes. Debt financing may provide an interest tax shelter, but it also increases the likelihood of expensive bankruptcy. The benefits of debt must therefore be weighed against the risks of financial distress and bankruptcy by firms. To maximize the value of the company, the ideal capital structure finds a balance between these costs and benefits. The appropriate capital structure may depend on several factors, including profitability, growth potential, and asset risk. In empirical studies that agree with the trade-off theory, the correlation between capital structure and market valuation performance is contradictory. They have shown that more leveraged firms experience worse stock returns due to the increased risk of debt and the cost of bankruptcy. According to other studies, corporations with greater leverage tend to have higher stock returns due to tax breaks and lower capital expenses associated with debt. Due to its oversimplified assumptions that businesses have complete information and can readily change their capital structure, the trade-off theory has come under fire. Additionally, the theory ignores the influence of outside variables like market circumstances, which can alter the cost of debt and equity financing as well as the availability of money. Trade-off theory is nonetheless a helpful framework for comprehending how organizations weigh the advantages and disadvantages of capital structure decisions despite these criticisms.

According to the pecking order theory developed by Myers and Majluf, businesses preferably fund their activities with internal money, with the next best alternative being debt, and the last resort being equity [19]. The idea suggests that because of asymmetrical

information between businesses and investors, organizations possess more information about their future cash flows, and agency costs and information asymmetry make external financing more expensive than internal financing. The firm's return on equity decreases as leverage increases. Firms that issue more bonds may signal to investors that they have negative information about their prospects, which leads to lower stock returns. Empirical studies support this theory, suggesting the leverage ratio of a firm is negatively correlated to lower stock returns due to the signaling effect of issuing bonds. However, other studies have found different results, suggesting that the pecking order theory may not fully explain the connection between capital structure and stock returns [20]. But empirical evidence of observed financial activities backs up the theory. Based on research, businesses do finance their operations and investments in the order that the theory suggests, using internal funds before debt and finally equity. This is compatible with the idea that information asymmetry makes it more expensive to get financing outside than internally. The pecking order theory does not clearly explain why businesses favor debt over equity, which is one of its shortcomings. The theory suggests that firms prefer debt because it is less costly than equity. After all, interest payments are tax deductible. However, this does not explain why firms do not simply use debt to finance all their investments. Another weakness is that it does not take into account other factors that may influence a firm's financing decisions, such as market timing considerations and macroeconomic factors. For example, a firm may issue shares when the stock market is favorable, even though it has internal funds available. Overall, although the pecking order theory provides a useful framework for understanding corporate financing decisions, it has some limitations and cannot fully explain all aspects of capital structure.

Another theory, the signaling theory suggests that a company's capital structure might educate investors about its prospects for the future. For instance, businesses may convey to investors that they have good news about their prospects by issuing more shares, which will increase stock returns. Similarly, businesses may convey to investors that they have unfavorable information about their prospects by issuing additional debt, which could result in worse stock returns. The signaling impact of capital structure on stock returns has been a subject with conflicting empirical research findings. According to several studies, the negative signaling effect of debt issuance results in worse stock returns for corporations with increasing levels of leverage. Other studies suggest that the signaling effect of capital structure is not significant and that other factors such as profitability and growth opportunities explain stock returns better.

Overall, the relationship between stock returns and capital structure is complex and depends on many factors such as the company's profitability, growth opportunities, and the riskiness of its assets. Empirical studies have found mixed results regarding the relationship between capital structure and stock returns. While the Modigliani-Miller theorem suggests that capital structure does not affect stock returns, empirical evidence suggests that there may be some relationship between the two [14]. Therefore, firms need to consider their issuance decisions and their impact on stock returns.

### **4.3 Market Timing and Capital Structure**

The relationship between market timing and capital structure refers to the idea that firms may alter their capital structure decisions based on their perceptions of market



conditions. Market timing is the practice of making financing decisions based on short-term market trends rather than long-term financial considerations. The capital structure of a company can have a significant impact on its equity market timing decisions. The theory outlines that firms tend to issue equity when their stock prices are high and issue debt when interest rates are low. This is because in these conditions, the cost of issuing is comparatively low, and the firm can raise capital at a lower and more profitable cost. Conversely, if the stock price is low, or interest rates are high, the firm may delay issuing equity or debt until market conditions are more favorable. The market timing theory has been criticized for being too focused on short-term market trends and ignoring long-term financial considerations. It assumes that firms have perfect knowledge of market conditions, which is often not the case. Additionally, market timing may lead to suboptimal capital structure decisions, as firms may issue equity or debt at the wrong time, leading to higher costs of capital in the long run. However, empirical studies have found support for the theory. The study by Baker and Wurgler observed firms issue more equity when their stock prices are overvalued, and less equity when their stock prices are undervalued [1]. Meanwhile, firms tend to issue more debt when interest rates are lower and less debt when interest rates are high. It suggests that when firms are overvalued, they are more likely to issue equity. On the other hand, firms tend to repurchase equity when they are undervalued. This market timing activity has lasting effects on capital structure, meaning that current capital structure is strongly determined by historical market valuations. The paper proposes that capital structure slowly changes along with the total outcome of past attempts at market timing. And the paper by DeAngelo and Masulis found that firms that issue equity when their stock prices are high have lower long-term stock returns than firms that issue equity when their stock prices are low which is coherent with the theory that believes firms issue equity when their stocks are overvalued [21].

In conclusion, while the market timing theory may have some validity, firms need to consider both short-term market trends and long-term financial considerations when making capital structure decisions. By taking a balanced approach, firms can make financing decisions that support their long-term growth and financial stability.

## 5 Conclusion

Research as of today validates neither market timing nor stock return theories. A review of empirical papers shows that research supporting and disproving both theories are present. Additionally, some papers question the persistence of the impacts or the significance of the changes. To further test these theories, more holistic, comprehensive research is required. Particularly, researchers have to take into account numerous time-wise factors and geo-political factors that might influence the performance of the theories. In a rapidly changing world, results of empirical tests done three years apart could have hugely differing results. Research must be continuously updated and reviewed to maintain the applicability of the derived conclusions.

The significance of stock return changes and market timing on capital structure is present, and the impact of the factors should be considered when investors are estimating debt ratios. It is shown in the paper that these variables can largely alter the debt ratio in

the short run but are less impactful in the long run. Investors should consider the fact that recent fluctuations in stock prices along with market timing attempts could be important incidences that cause changes in the debt ratio, the magnitude of which depends on the specific composition of the said ratio. Although the persistence of the two theories is questioned, the short-run influence remains largely undisputed. Ignoring the presence of these variables could result in extremely inaccurate estimations and wrongly interpreted data. Therefore, investors should be aware of the effects of stock returns and market timing approaches when analyzing and using the debt ratio of a firm.

In part, I, the importance of this paper was established. The research complies with the stated goals. First, this paper discusses potential flaws in the market timing and stock return theories and presents empirical tests for various perspectives. Firms should not follow market timing and stock return theories entirely without carefully determining the compatibility of these strategies with the characteristics of the firm and the market. Second, this paper promotes the development of financial management theories by recognizing areas that lack more research. For example, more holistic empirical research needs to be conducted on both theories with international data. Thirdly, this paper improves enterprise competitiveness by offering many strategical perspectives in the literature review regarding potentially profitable stock return prediction methods and market timing strategies. These perspectives are not supported by the authors of this paper but are debatable strategies to be adopted. Lastly, non-enterprise investors can also idealize their investment strategies after gaining a deeper understanding of how the observed capital structure is subject to changes in stock returns and managerial activity.

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