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External financing: Market timing or managerial optimism

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EXTERNAL FINANCING: MARKET TIMING OR MANAGERIAL OPTIMISM

by

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ABSTRACT

Management of capital structure is an important part of maximizing the firm value. Financial research has proposed many theories that explain aspects of firm behavior when a firm makes financial decisions that change the firm's capital structure. However, none of the theories fully explain why firms with similar fundamental characteristics make different financing choices.

This study focuses on what motivates managers when they are making external financing decisions. It investigated whether the motivation for the decisions about capital structure are driven by market timing or managerial overoptimism. This is done by focusing on equity and debt issues and whether these issues bring the firms closer to or farther away from their optimal capital structure.

This study finds that the excess leverage proxy is negatively and significantly related to the one, two, and three year post-financing buy-and-hold abnormal returns even when firm characteristics are controlled. These results are also found when non-issuing matched firms, small firms, and large firms are analyzed. These results are consistent with the Managerial Overoptimism Theory.

The results of this study also show that in the first post-financing year firms that issue equity when they are predicted to issue debt significantly out-perform

firms that issue equity when they are predicted to issue equity. In addition, firms that issue debt when they are predicted to issue equity perform significantly worse than firms that issue debt and are predicted to issue debt. This holds when firms are matched by size, prior return, and book-to-market and when they are matched by industry, market value of equity, and book-to-market. These results support the Managerial Overoptimism Theory.

In addition, this study shows that the difference in return for firms that are predicted to increase leverage is significantly different than the firms that are predicted to decrease leverage even when controlling for market, size, book-to-market, and momentum factors. The difference in performance is statistically significant at the 1% level for at least three years after external financing is issued.

This study examines press releases mentioning manager optimism or caution (Malmendier and Tate 2008, 24) as a proxy for managerial overoptimism. The results show that the excess leverage proxy and the press proxy for managerial overoptimism are related with a positive correlation. These findings suggest a relationship between the excess leverage proxy and the press proxy for overoptimism and support the validity of the excess leverage proxy as a measure of managerial overoptimism.

This study evaluates what influences manager when they are making decisions about issuing external financing. This question is analyzed using many different evaluation criteria. Overall, the results are opposite to the predictions of the Market Timing Theory and consistent with the Managerial Overoptimism Theory. This suggests that manager's optimism influences their decisions related to external financing.

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CHAPTER 1

INTRODUCTION

A prevailing question in corporate financial research is: When and why do firms issue equity and debt? None of the existing capital structure theories completely explain firm behavior when a firm makes financial decisions that change the firm's capital structure. This study examines what motivates managers to issue external equity and debt. Several methodologies are used to empirically test the Market Timing Theory and the Managerial Overoptimism Theory to see if either of these theories can explain firm behavior.

1.1 Importance of Examining Capital Structure

In order to maximize the market value of a firm, the capital structure must be managed through correct investments and financial decisions. Capital structure is made up of long-term debt, preference share capital, and share-holders funds the firm uses to finance its operations. The capital structure of a firm is determined by the manager's financing decisions. There are two components to the financing decision. The first part is to decide how much financing a firm needs to raise. This amount is based on the firm's investment decisions. The second part is to decide what mixture of debt and

equity is best for the firm. The mix of debt and equity will affect the risk and the value of the firm (Ross, Westerfield, and Bradford 2008, 552; Khatik and Singh 2006, 173).

The capital structure that is most beneficial to the stockholder is the one that achieves the highest firm value. The initial capital structure of a firm at the time of the IPO and each subsequent capital structure decision are significant managerial decisions. There are many costs and benefits that managers consider as they decide how much external financing they need and what form to issue. It is essential that the current and future needs for capital be correctly estimated. If funds are inadequate or mismanaged, the firm will suffer. An incorrect decision can lead to financial distress or even bankruptcy (Ross, Westerfield, and Bradford 2008, 553; Eriotis, Vasiliou, and Ventoura-Neokosmidi 2007, 321).

1.2 Motivations of the Study

There have been many theories proposed that describe the decisions that managers make that affect the firm's capital structure. The two theories that have been around the longest, have been studied the most, and have the most advocates are the Tradeoff Theory and the Pecking Order Theory. The Tradeoff Theory focuses on an optimal balance between tax shields, financial distress, and agency costs. The Pecking Order Theory explains capital structure in terms of management choice of financing in response to asymmetric information and transaction costs. These theories explain a large part of the observed variation in capital structure but they do not explain all firm behavior.

Studies suggest that firms have a target capital structure as proposed by the Tradeoff Theory (e.g. Hovakimian, Opler, and Titman 2001, 1; Titman and Tsyplakov 2006, 1; Leary and Roberts 2005, 2575). However Hovakimian, Opler, and Titman (2001) and Leary and Roberts (2005) also show that firms prefer internal funds to external financing. Baker and Wurgler (2002) and Welch (2004) show evidence that firms do not immediately react to changes in market value of equity and adjust their capital structure. Leary and Roberts (2005), Kayhan and Titman (2007), Titman and Tsyplakov (2006), and Fama and French (2002) all showed that firms are very slow to rebalance their capital structure to its target debt level. These studies gave evidence that firms take between two and ten years to make the adjustment. In addition, Hovakimian (2004) and Lemmon, Roberts, and Zender (2008) both found evidence that firm's capital structure is persistent over long periods of time at a level that is not the optimal capital structure. Finally, Fama and French (2002) found more profitable firms have less book and market leverage when the tradeoff model predicts that more profitable firms have more book leverage.

There have also been many studies that suggest that a firm's capital structure is a product of its history based on a hierarchy of financing decisions as predicted by the Pecking Order Theory of capital structure (e.g. Cai and Ghosh 2003, 20; Lemmon and Zender 2008, 1; Frank and Goyal 2003, 217). However, Fama and French (2002) and Frank and Goyal (2003) found that small, young, high-growth firms did not follow the pecking order hierarchy but instead use equity because of the restricted amount of debt available to them. In addition, Fama and French (2005) found that most firms issue or

retire equity each year and that most of this activity is not done by firms under duress. Byoun (2008) showed evidence that firms with high adjustment costs or financial constraints are more likely to finance internally first than firms with low adjustment costs or fewer financial constraints. In addition, Byoun found that firms that were above their target use all of their financial surpluses to pay off debt and firms that were below their target were found to retire both debt and equity with their financial surpluses.

The evidence found against the Tradeoff Theory and the Pecking Order Theory has led to many other capital structure theories being proposed. The Market Timing Theory and Managerial Overoptimism Theory are two of these theories. The Market Timing Theory proposes that managers time their equity issues to take advantage of periods of high stock prices and investor overoptimism. This theory predicts worse performance following equity financing because the manager has timed the equity offering to when the stock was overpriced. The Managerial Overoptimism Theory puts forth the idea that managers that are overoptimisitic about their firm's ability to generate positive net present value projects and believe that their equity is undervalued, prefer to issue debt rather than equity. This theory predicts worse performance following debt financing. Overoptimistic managers avoid issuing equity because they perceive their firms to be undervalued. Therefore firms with optimistic managers are usually already over levered and issuing debt will move them farther away from their optimal capital structure.

The Market Timing Theory proposes that managers time equity issues so that shares are issued at high prices and repurchased at low prices. This practice benefits existing shareholders at the expense of new shareholders. Several studies have documented that firms experience significant stock price increases in the months leading up to a SEO. These studies also documented low stock returns in the three to five years following an IPO or a SEO (e.g., Ritter 1991, 3; Loughran and Ritter 1995, 23; Spiess and Affleck-Graves 1995, 243).

Similar behavior was also documented in a survey of CFOs done by Graham and Harvey (2001). In this survey, CFOs reported that they issue equity following stock price increases because they believe that the terms of the equity are more favorable in this situation. Two-thirds of the CFOs reported that when they decide to issue common stock, the level of overvaluation or undervaluation of the firm's stock by the market is important or very important. In general, the CFOs reported that stock prices are more important than 9 out of 10 factors considered in the decision to issue equity. Brav, Graham, Harvey, and Michaely (2004) also surveyed CFOs and found that CFOs reported that they repurchase their stock when it is at a good value relative to its true value.

However, Graham's (1999; 2000) surveys showed that on average only 3% of CFOs believed that their firm was overvalued. In addition, on average about 70% of the CFOs believed that their firm was undervalued. These surveys were taken during a time period of massive overvaluation of equity (Jenson 2005, 5). If CFOs did not believe their firm was overvalued when the market as a whole was overvalued, then managers taking advantage of new shareholders and planning to issue overpriced stock is not a common

cause of underperformance following equity issue. A more likely explanation is that there are times when managers and investors are overly optimistic about the value of new stock issues.

Managerial overoptimism can lead to poor stock performance following equity financing. Optimistic managers are shown to consistently estimate the probability of good outcomes higher than the market. This leads to optimistic managers believing that the capital market is undervaluing their firm's stock. Because of this, these managers prefer debt when external financing is necessary. Since overoptimistic managers tend to believe they have many good projects available for investing, even though they prefer debt they may turn to equity financing if pre-issue leverage is excessively high and debt financing becomes too costly or even unavailable.

Many of the factors that lead to managerial overoptimism also lead to investor overoptimism. Some examples of this include good past firm performance and the level of firm growth. In addition, the investors may overvalue firms if they are unaware that the firm's overoptimistic managers are taking on projects that do not truly have a positive net present value. Loughran and Ritter (1997) and Hertzel, Lemmon, Linck, and Rees (2002) found that firms issuing equity had above average expenditures both before and after an equity issue which gives evidence that both the managers and investors are overly optimistic about the success of new investments. All of these factors together can lead to both the managers and the investors being overly optimistic about the firm at the same time which leads to lower stock performance after an equity issue.

1.3 Purpose and Objectives of the Study

This study focuses on what motivates managers when they are making external equity and debt decisions. It investigates whether the motivation for the decisions about capital structure are driven by market timing or managerial overoptimism. This is done by focusing on equity and debt issues and whether these issues bring the firms closer to or farther away from their optimal capital structure. A firm that issues external financing that moves it closer to its optimal capital structure could be timing the market, favoring or avoiding debt, or optimizing their capital structure. A firm that issues external financing that moves it away from its optimal capital structure is timing the market, favoring debt, or avoiding debt. This study focuses on the firms that issue external financing that moves the firm farther away from its optimal capital structure to see if the results support the Market Timing Theory or the Managerial Overoptimism Theory.

To achieve the purposes of this study, the following is analyzed:

1. One and three year post-financing buy-and-hold adjusted returns using two different methods to match the sample to non-finance issuing firms.
2. One and three year post-financing buy-and-hold adjusted returns with the analysis period broken into five, seven year periods.
3. One, two, and three year post-financing stock performance based on the four-factor model using the three Fama and French factors (1993) and a momentum factor (Carhart, 1997).

4. One, two, and three year post-financing stock performance related to excess leverage, controlling for two different sets of firm characteristics.
5. Post-financing stock performance related to excess leverage for both small and large firms (controlling for firm characteristics).
6. The correlation between the excess leverage proxy and the press proxy for manager overoptimism.

1.4 Contributions of the Study

This study builds on Gombola and Marciukaityte (2007) who examined whether managerial overoptimism affects the choice between debt and equity financing. These authors restricted their study to examining whether financing choice can help explain poor post-financing stock performance in high growth firms since these firms are the most likely to be affected by managerial overoptimism. Gombola and Marciukaityte find that their debt financing sample significantly underperforms their equity financing sample. Their findings are consistent with the hypothesis that managerial overoptimism affects the choice between debt and equity financing and explains some of the poor post-financing performance.

This study broadens the scope beyond Gombola and Marciukaityte's (2007) work to provide more insight and explanation for what influences manager when they are making decisions about issuing external financing. One way this is done is by the inclusion of all firms that issued external financing (subject to sample criteria) in the 1970 to 2004 time period. Testing a wide range of firms broadens the implications of the conclusions. Also, the longer time period further ensures that the results are

persistent across time. Second, rather than comparing debt and equity issues, this study looks at whether firms move closer or farther away from their optimal capital structure when they issue external financing. This allows for the separation of firms that are optimizing their capital structure from those that are timing the market for greater insight into the manager's behavior and the resulting stock performance. Third, this study uses Malmendier and Tate's (2008) methodology of examining press releases mentioning manager confidence or caution to measure manager overoptimism. This gives an extra measure of managerial overoptimism to demonstrate the robustness of the results.

In order to determine whether firms are moving closer to or farther away from their optimal capital structure when they issue external financing, this study uses the model presented in Baker and Wurgler (2002). This model estimates the predicted change in book leverage which is a continuous measure that shows whether a firm is predicted to issue debt or equity before the external financing event. Following Di, Goodwin, and Marcuikaityte (2009), the absolute value but opposite sign of this measure is used to give an estimate of excess leverage which is defined as the difference between the firm's leverage and its optimal leverage. This study finds that the excess leverage before external financing is negatively related to the post-financing stock performance. This result is consistent with the Managerial Overoptimism Theory and remains significant for both small and large firms.

The results of this study show that a firm that is predicted to issue debt to move toward their optimal capital structure but instead issues equity has better stock

performance than a firm that is predicted to issue equity and does issue equity. In addition, the results show that a firm that is predicted to issue equity but instead issues debt performs worse than a firm that is predicted to issue debt and does issue debt. These results also support the Managerial Overoptimism Theory. The difference in returns between firms that are predicted to issue equity and firms that are predicted to issue debt cannot be explained by the four factor model including three Fama and French (1993) factors and a momentum factor (Carhart 1997, 57).

This study examines press releases mentioning manager optimism or caution (Malmendier and Tate 2008, 24) as a proxy for overoptimism. The results show that the excess leverage proxy (Di, Goodwin, and Marcuikaityte 2009, 26) and the press proxy for managerial overoptimism are related with a positive correlation. These findings suggest a relationship between the excess leverage proxy and the press proxy for overoptimism and support the validity of the excess leverage proxy as a measure of managerial overoptimism.

This study evaluates what influences managers when they are making decisions about issuing external financing. This question is analyzed using many different evaluation criteria. Overall, the results are opposite to the predictions of the Market Timing Theory and consistent with the Managerial Overoptimism Theory.

1.5 Plan of Study

The remainder of the study is organized as follows. Chapter 2 reviews prior studies of capital structure. It includes theoretical background on capital structure theories such as the Tradeoff Theory, Pecking Order Theory, Market Timing Theory, and

Managerial Overoptimism Theory. This chapter also includes relevant empirical evidence from earlier studies. Chapter 3 describes the hypotheses and sample as well as detailing the methodology for testing the Market Timing Theory and the Managerial Overoptimism Theory. Chapter 4 presents the results and the analysis of the results. Finally, Chapter 5 summarizes the findings of this study and discusses its implications.

CHAPTER 2

LITERATURE REVIEW

The firm's mix of different forms of long-term financing is known as its capital structure. The goal of a capital structure policy is to find the combination of securities that will maximize firm value. None of the existing capital structure theories completely explain firm behavior when a firm makes financial decisions that change the firm's capital structure.

2.1 Capital Structure Theories

Capital structure theories focus on two areas. One area stresses that there is an optimal capital structure for each company and the company should always be making changes to try to achieve this optimal value. The other area does not center on a target capital structure. Instead this area explains capital structure through a variety of market and manager influences that are based on asymmetric information. Each of the capital structure theories that have been proposed combine these two areas in different ways to explain what a firm takes into consideration when making capital structure decisions.

2.1.1 Optimal Capital Structure Target

The first area of capital structure theory focuses on an optimal capital structure target. Modigliani and Miller (1958) did the first work that proposed that capital

structure has an optimal target. The research in this area has focused on finding the optimal capital structure for a firm to minimize their cost of capital or to maximize the firm value by using a mixture of debt and equity financing. The optimal capital structure is determined by various tradeoffs between the costs and benefits of debt versus equity.

Modigliani and Miller (1958) explored how capital structure affects the cost of capital. Their work showed that in perfect capital markets with no taxes, capital structure does not affect cost of capital or company value. In this scenario, capital structure essentially does not matter and capital goes to the most efficient users. Modigliani and Miller (1963) added corporate taxes to the analysis. This addition changed their conclusion about capital structure. The interest tax shield causes the value of the firm to increase with the increase of interest on the debt being carried. Therefore, the firm value is maximized when the firm is financed entirely with debt. Miller (1977) incorporated personal taxes in to the analysis. This addition showed that the optimum capital structure could be either at 0% debt or 100% debt thereby shifting the conclusion back to capital structure being irrelevant. DeAngelo and Masulis (1980) incorporated the addition of tax shields other than interest payments on debt. This study found optimal levels of capital structure that are a mix of debt and equity. Schneller (1980) also found optimal levels of capital structure as a mix of debt and equity when personal and capital gains taxes were considered with respect to default conditions.

2.1.1.1 Tradeoff Theory

Modigliani and Miller's (1958) seminal work together with many others led to the formulation of the static Tradeoff Theory. The Tradeoff Theory suggests that firms seek more debt as long as the benefits of debt are greater than the costs of debt. Agency conflicts between stock holders and bond holders and potential bankruptcy costs are the costs of debt and the reduction of free cash flow agency problems and the tax deductibility of interest are the benefits. Firms identify optimal leverage by weighing the costs and benefits of an additional dollar of debt (Fama and French 2002, 1).

2.1.1.2 Agency costs

Agency costs are the incentive problems that results from the separation of ownership and control. Jensen and Meckling (1976) was the first to address agency costs. They defined agency costs as the sum of the cost for the shareholders of the firm to monitor the managers, the cost for the managers to show their good intentions to the shareholders, and residual loss. The two agency relationships that are most relevant to capital structure are the relationship between the stockholders and the managers and the relationship between the stockholders and the bondholders.

Jensen and Meckling (1976) analyzed the impact of conflict between stockholders and managers by comparing the behavior of a manager who owns 100% of a firm's equity with that of a manager who sells a portion of the equity to outsiders. The authors found that agency costs are the lowest when a firm is owned entirely by its managers and employees. Agency costs go up with each issue of outside equity. There

are also agency costs associated with the possibility of financial distress when debt is issued, but these costs are lower than those associated with outside equity. This study found evidence that the probability distribution of the firm's cash flows is not independent of its ownership structure. The authors argue that an optimal amount of leverage is associated with a minimum amount of agency cost.

Jensen (1986) proposed the free cash flow theory as a way to reduce agency costs. The author focused on the conflict of interest that develops between shareholders and managers over the choice of corporate strategy. Free cash flow is cash flow in excess of the amounts required to fund all projects that have a positive net present value. Managers have the incentive to use this excess cash flow to grow the firm beyond its optimal size. This study found that free cash flow must be paid out to shareholders if the firm is to be efficient and to maximize its share price. This payout reduces the amount of resources that the managers control. This reduction in control reduces the manager's power and makes them more subject to monitoring by the capital markets when additional investments are needed for new capital. The problem is how to compel the managers to pay out cash to stakeholders instead of investing in negative net present value projects.

2.1.2 Information Asymmetry

The second area of capital structure theory is based on information asymmetry. Information asymmetry occurs when one group has better information about a subject than other groups. Myers and Majluf (1984) recognized the information asymmetry between managers and potential shareholders and used it to develop a signaling model

that combines investment and financing decisions. Investors learn information about the value of the firm's assets from the managers through their financing choices. Since the managers are supposed to act in the best interest of existing shareholders, the issuing of equity signals the potential investor that the firm's opportunities are risky and the manager wants to share the risk with new investors. It also indicates to investors that the manager thinks that the firm's shares are overpriced. This study implies that issuing equity signals lack of internal funds and weakness which leads to the decline of share prices. Conversely, the issuing of debt signals that the manager has confidence in the future cash flows and their ability to make fixed payments.

2.1.2.1 Pecking Order Theory

Myers (1984) was the first to formally propose the Pecking Order Theory. This theory states that corporate financing choices are driven by the costs of adverse selection. The costs of adverse selection arise as a result of information asymmetry between managers and investors, costs of issuing equity, and transaction costs. These costs overwhelm the costs and benefits proposed by the tradeoff model. Pecking Order Theory is based on the view that information asymmetries between new investors and managers who maximize the wealth of existing shareholders make equity issues more costly than debt issues and therefore imply a financial hierarchy. The author argues that in order to reduce asymmetric information costs, firms will prefer to use their retained-earning to finance growth opportunities. If more financing is required, risk-free debt will be used first, then risky debt, and only under duress outside equity.

The Pecking Order Theory assumes perfect financial markets except for asymmetric information. This theory predicts that firms will avoid issuing equity so that they do not run into the dilemma of either passing up positive net present value projects or issuing stock at a price they think is too low. The hierarchy in this theory leads to a firm's capital structure depending on its history. This can be seen by looking at a very profitable firm and an unprofitable firm in a slow growth industry. The profitable firm does not have any incentive to issue debt and retire equity and will end up with a low debt ratio. On the other hand, the unprofitable firm will end up with a high debt ratio (Su 2004, 37).

2.1.2.2 Literature evaluating the Tradeoff Theory

Numerous studies have been done to evaluate the validity of and improve upon the Tradeoff Theory. Most research in this area focuses on establishing whether firms have a target capital structure. Hovakimian, Opler, and Titman (2001), Titman and Tsyplakov (2006), Kayhan and Titman (2007), and Leary and Roberts (2005) are a representation of the literature that finds that firms have a target capital structure and actively try to move towards it. Hovakimian, Opler, and Titman (2001) found that when a firm issues or retires a significant amount of new capital, they make choices that move them toward a target debt ratio. These choices offset any profit based changes to the capital structure. Leary and Roberts (2005) looked at how transaction costs factor into capital structure decisions. This study found that adjustment costs lead to firms taking between two and four years to adjust their capital structure after stock price changes and other events that move leverage away from the firm's target. Kayhan and Titman

(2007) also evaluated what elements keep firms from hitting their target. This study found that cash flows, investment needs, and stock price realizations lead to significant deviations from the target. The changes in leverage were shown to partially persist for at least ten years. Titman and Tsyplakov (2006) and Fama and French (2002) also found that firms move towards their optimal capital structure target very slowly after events that move the firm away from its target.

Hovakimian (2004) and Lemmon, Roberts, and Zender (2008) both found evidence that did not support the Tradeoff Theory. Instead these studies found that firm's capital structure is persistent over long periods of time at a level that is not optimal. Hovakimian (2004) found that it appears that company capital structure decisions can be predicted by the company's existing debt levels. Firms that issue or repurchase equity were found to have low debt ratios and firms with high debt ratios tended to issue and retire debt. Lemmon, Roberts, and Zender (2008) found that firms do not change their leverage very much and they tend to remain in the same area (either high or low) for over 20 years. This persistent finding was found to be present prior to the IPO. This suggests that variation in capital structures is primarily determined by factors that remain stable for long periods of time.

2.1.2.3 Literature evaluating the Pecking Order Theory

The Pecking Order Theory proposes that there is a hierarchy to management's financing choices. Cai and Ghosh (2003), Lemmon and Zender (2008), Leary and Roberts (2005), and Frank and Goyal (2003) are a representation of studies that find moderate to full support for the Pecking Order Theory. Leary and Roberts (2005) found that firms

utilize external capital markets only when they have large investment needs. Cai and Ghosh (2003) found evidence that the optimal level of capital structure is a range of zero to the industry mean and that firms preferred to use internal funds. Frank and Goyal (2003) found that larger, older firms tend to use debt financing when external financing is required. Evidence was found to support the Pecking Order Theory in the 1970s and 1980s because this type of firm made up a majority of the sample during this time period. In the 1990s support for the Pecking Order Theory declined because more small unprofitable firms were publically traded. Smaller, younger, high-growth firms were found to use equity because of the restricted amount of debt available to them. Equity was found to be more important in the 1990s even when the sample was restricted to the largest quartile of firms. Lemmon and Zender (2008) also found that small, high-growth firms do frequent equity issues to meet their capital needs. Their results showed that for all other types of firms, the Pecking Order Theory describes their financing behavior over a long period of time. These firms are looking internally first to obtain financing. If additional capital is required, the firms issue debt, with some firms raising their leverage ratio way past the optimal target even when transaction costs for equity are low.

Contrary to the previously discussed results, Fama and French (2005) found evidence that did not support the Pecking Order Theory. This study found that more than half of a firm's financial decisions violated the Pecking Order Theory. Equity issuers were not often under duress and repurchases were not limited to firms with low demand for outside financing. It was observed that most firms issue or retire equity

each year. Most of this activity is from firms making issues to employees, doing rights issues, or implementing direct purchase plans. These financial decisions have low transaction costs and low asymmetric information but they do change capital structure. When a firm does do a SEO it is usually large and not typically done by firms under duress. This study suggests that the Pecking Order Theory and the Tradeoff Theory should be considered together to try to explain firm capital structure decisions.

Byoun (2008) addressed Fama and French's suggestion by testing the Pecking Order Theory and the imbalance of cash flows which leads to financial surpluses and deficits. This study found that most adjustments of capital structure occur when firms are above their debt ratio target and have a financial surplus or when they are below their debt ratio target and have a financial deficit. It was found that firms that were above their target use all of their financial surpluses to pay off debt. Firms that were below their target were found to retire both debt and equity with their financial surpluses. Firms that have high adjustment costs or financial constraints were found to use internal funds more often than firms with low adjustment costs or few financial constraints. The author concludes that the evidence shows that firms are influenced by transaction costs and adverse selection costs associate with information asymmetry but not in the way dictated by the Pecking Order Theory.

Graham and Harvey (2001) evaluated capital structure decisions by interviewing CFOs. This study found that the CFO responses do not entirely support either the Tradeoff Theory or Pecking Order Theory but a mix of these theories. The survey found that 37% of the respondents have a flexible target debt ratio, 34% have a somewhat

tight target or range, and 10% have a strict target. The executives reported that tax effects are relatively important but they did not rate the costs of bankruptcy or agency costs as important to capital structure decisions. So this implies that the CFOs are concerned with the benefits but not the costs in the Tradeoff Theory. Executives also reported that they used internal resources first and then turned to external financing. In addition, CFOs reported that they did not issue equity if they felt that the market was undervaluing their firm. Both of these behaviors support the Pecking Order Theory.

The evidence shows that the Pecking Order Theory and the Tradeoff Theory, separately or together, cannot explain all firm capital structure decisions. This has led to other capital structure theories being proposed. The Market Timing Theory and the Managerial Overoptimism Theory are two of these theories. The Market Timing Theory proposes that managers time their equity issues to take advantage of periods of high stock prices and investor overoptimism. The Managerial Overoptimism Theory puts forth the idea that managers that are overoptimisitic about their firm's ability to generate positive net present value projects and believe that their equity is undervalued prefer to issue debt rather than equity.

2.1.2.4 Market Timing Theory

Several authors have completed empirical work that suggests that managers time their equity issues to take advantage of periods of high stock prices and investor overoptimism (e.g., Ritter 1991, 3; Loughran and Ritter 1995, 23; Spiess and Affleck-Graves 1995, 243). This behavior does not support the Tradeoff Theory. When stock

price goes up, the debt ratio of the firm goes down. Therefore, in this scenario the Tradeoff Theory would predict that a firm should issue debt.

Hovakimian, Opler, and Titman (2001) found that stock prices play an important role in determining a firm's financing choice. Firms that experience large stock price increases are more likely to issue equity and retire debt than firms that experience stock price declines. Korajczyk and Levy (2003) showed that this does not apply to all firms. These authors found that firms who are financially constrained will have to accept market prices when they are in need.

The "windows of opportunity" hypothesis (Ritter 1991, 3) proposes that the best time for a firm to make an equity offering is when a firm's equity is overpriced. Managers know more about their firm value than investors do so they can time equity offerings when the market is over optimistic about their firm's shares. This hypothesis suggests that investors are slow to react to the information contained in the announcement of the equity issue. Ritter (1991) found that firms doing an IPO underperform matching firms for three years after the first day of public trading. This underperformance is even stronger for firms going public in years with heavy IPO activity. The "windows of opportunity" hypothesis agrees with Jensen's (1986) agency hypothesis when it predicts worse post issue performance after equity issue. Free cash flow problems should be worse after equity issues than debt issues.

Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) gave evidence to show that if equity is over-priced and the market under reacts to equity issues, then management maximizes the wealth of existing shareholders by issuing equity. These

studies found that average annual return for firms issuing an IPO or SEO was significantly lower than investing an equal amount for the same period of time with a matched non-issuing firm. This underperformance was found even after controlling for industry, firm size, trading system, offer size, issuing firm's age and book-to-market ratio. These results are consistent with the conclusion that managers are issuing equity when a firm's stock is overvalued based on their knowledge of firm specific information.

Hertzel, Lemmon, Linck, and Rees (2002) found evidence that, similar to IPOs and SEOs, public firms that place equity privately have lower post-financing stock performance. However, contrary to the results for IPOs and SEOs, it was found that the firms issuing equity privately tend to do it following poor firm performance.

The evidence from these studies suggests that no matter what form of equity is issued (IPO, SEO, or private placement) investors are too optimistic about the future of the firms that are issuing equity. Loughran and Ritter (1997) and Hertzel, Lemmon, Linck, and Rees (2002) also investigated the capital expenditures of firms before and after they issued equity. They found that firms issuing equity had above average expenditures both before and after the equity issue which gives evidence that both the managers and investors are overly optimistic about the success of the new investments.

Although empirical evidence of underperformance following equity issuance is consistent with the "windows of opportunity" hypothesis, underperformance following debt issuance is not consistent with this hypothesis. Spiess and Affleck-Graves (1999) found stock underperformance of 14% over 5 years for straight debt issuers matched by size and book-to-market and convertible debt offerings were found to underperform by

37%. Datta, Iskandar-Datta, and Raman (2000) found post-issue underperformance for initial debt offerings. Managers do not have better knowledge of debt financing than the investor since the cost of debt financing depends primarily upon market interest rates and not specific firm performance. Therefore the "windows of opportunity" hypothesis cannot fully explain the post-financing underperformance of debt that has been shown empirically.

Baker and Wurgler (2002) were the first to study how capital structure is affected by firms timing their equity issues based on market levels. This study found that firms with low amounts of debt obtained external financing when their market-to-book ratio was high and firms with high amounts of debt obtained external financing when their market-to-book ratio was low. The timing of equity issues by firms was found to have a large and persistent effect on capital structure that lasts beyond 10 years. The conclusion drawn is that a firm's capital structure is a result of manager's cumulative attempts to time equity issues.

Other authors have studied how firm capital structure is affected by firm's efforts to time the market. Hovakimian (2006) argues that equity issues do not have any persistent effects on capital structure. The explanatory power of the weighted average market-to-book used in Baker and Wurgler (2002) occurs because it contains information about growth opportunities which is not captured by the current market-to-book ratio. Alternatively, Alti (2006) focuses on IPOs in hot and cold markets to see if firms are practicing market timing and how this affects capital structure. In this study, it was found that IPOs issued during a hot market were 3.7 percentage points more

underleveraged than those issued during a cold market. However, the results showed that one year after an IPO, less than one-half of the effect remains. Two years after the IPO, the effect is completely reversed.

Dittmar and Thakor (2007) proposed a different idea for what is occurring when stock prices are high. These authors suggested that when stock prices are high is the time when investors are most likely to agree with management decisions. Managers use equity to finance projects when they believe that investors' views about project payoffs are likely to be aligned with theirs which is when operating performance and stock prices are high. This study found that firms with high level of agreement between investors and managers issue equity regardless of their stock price.

2.1.2.5 Managerial Overoptimism Theory

Heaton (2002) formally proposed the Managerial Overoptimism Theory, which is a corollary to the asymmetric information theory. This theory suggests that managers that are overoptimisitic about their firm's ability to generate positive net present value projects and believe based on their inside knowledge of the company that their equity is undervalued, prefer to issue debt rather than equity. Managers are defined as optimistic when they systematically overestimate the probability of good firm performance and underestimate the probability of bad firm performance. For overoptimistic managers to believe that their firm is undervalued, they need to be more overoptimistic than the market about the value of their firm. Hackbarth (2004) presented a theoretical proof of how overoptimistic managers choose higher debt levels and issue debt more often.

Overconfidence is defined to be the belief that the precision of a person's information is greater than it actually is or that a person puts more weight on their information than is warranted. Overconfident people do not give proper recognition to what they do not know and rely too heavily on what they do know (Russo and Schoemaker 1992, 7). Optimism is defined as the belief that favorable future events are more likely than they actually are. Most theories of financial economics, including many capital structure theories, assume that managers are extremely good at processing information, are rational beyond the ability of most humans, and are motivated solely by self-interest. These assumptions are often inaccurate (Gervais, Heaton, Odean 2007, 1).

Executives appear to be particularly prone to displaying overconfidence. Russo and Schoemaker (1992) tested managers across many different industries and found that more than 99% of the managers were overconfident. This finding is attributed to three factors: the illusion of control, a high degree of commitment to good outcomes, and abstract reference points that make it hard to compare performance across individuals (Alicke, Klotz, Breitenbecher, Yurak 1995, 804). In addition, it has been found that CEOs that personally pick an investment project are likely to believe that they can control its outcome and therefore underestimate the probability of failure (March and Shapira 1987, 1404). Furthermore, most CEOs are highly committed to good company performance because their personal wealth fluctuates with the company's stock price (Malmendier and Tate 2005, 2661).

There are several reasons why managers are more likely to be overconfident when making capital structure decisions. First, capital budgeting decisions often require projecting cash flows for a wide range of uncertain outcomes. This makes the problems complex and difficult which are the types of problems that tend to make people overconfident. Second, capital budget decisions are not conducive to learning. Capital budgeting decisions are not frequently made, have a long delay before feedback is given, and the feedback is often noisy. In addition, it is easy for managers to assume that each situation is new and not apply information from past decisions. Third, it is easy for managers to overestimate how responsible they are for their own success. Successful managers are likely to be promoted or move to higher positions in other companies (Gervais, Heaton, Odean 2007, 1).

Overoptimistic managers are found to perceive that their firm's stock is undervalued by the market. This leads managers to possibly turn down positive net present value projects that must be financed externally. Optimistic managers overvalue their own corporate projects and may wish to invest in negative net present value projects even when they are loyal to shareholders (Heaton 2002, 33). Also, overoptimistic managers underestimate the uncertainty about a potential project, this leads to them making the decision to move forward with a project faster than an unbiased manager (Gervais, Heaton, Odean 2007, 1). These managers tend to overinvest if they have sufficient internal funds for investment and are not disciplined by the capital market or corporate governance mechanisms (Heaton 2002, 33).

Managerial overoptimism can be difficult to measure. Oliver (2005), Malmendier and Tate (2005), and Malmendier and Tate (2008) developed proxy measures to be used to identify optimistic managers. Oliver (2005) utilized the consumer sentiment index as a proxy of manager confidence. The author found that consumer sentiment index was significant in explaining firm financing decisions. As predicted by the Managerial Overoptimism Theory, it was found that when confidence is higher, firms have higher levels of debt. Malmendier and Tate (2005) measures managerial overconfidence by looking at how long CEOs hold options compared to thresholds for early exercise. Malmendier and Tate (2008) measure managerial overoptimism by using press coverage in leading business publications to see which CEOs outsiders perceive as optimistic or cautious. Malmendier, Tate, and Yates (2007) utilized both of these methodologies to measure manager optimism. The authors found that conditional on accessing public markets, CEOs who personally overinvest in their companies are significantly less likely to issue equity. These CEOs raise 33 cents more debt to cover an additional dollar of financing deficit than their peers. These results were confirmed with the press proxy methodology.

Gombola and Marciukaityte (2007) directly test whether managerial overoptimism affects the choice between debt and equity financing in high growth firms to see whether it can help explain poor post-financing stock performance. The results from this study show that the debt financing sample significantly underperforms the equity financing sample. The findings suggest that managerial overoptimism affects the

choice between debt and equity financing and explains poor post-financing performance in high growth firms.

Oliver (2005) also investigated what relationships there are between managerial overoptimism and external financing decisions but with a different sample of firms than Gombola and Marciukaityte (2007). Oliver utilized a sample of the largest 500 US firms that existed across the entire 25 year study period. None of the firms used would be expected to be high growth firms. With this data set, the author was able to explain 21% of the variation in company leverage using a managerial confidence proxy and market-to-book ratio.

2.2 Summary

Management of capital structure is an important part of maximizing the firm value. Financial research has proposed many theories that explain aspects of firm behavior when a firm makes financial decisions that change the firm's capital structure. However, none of the theories fully explain why firms with similar fundamental characteristics make different financing choices.

The Market Timing Theory suggests that firms issue stock when the market is overvaluing a firm and repurchase equity when the firm is undervalued. Empirical evidence shows that firms issue equity when stock price has gone up. In addition, evidence shows that firms underperform for three to five years following IPO, SEO, and private equity issues. The evidence on the persistence of the Market Timing Theory is mixed. Some studies show that market timing has a long term affect on capital

structure while others show that there is no affect or it is reversed in just a few years. In addition, this theory does not explain the underperformance of firms after debt issue.

The Managerial Overoptimism Theory suggests that overoptimistic managers prefer to issue debt rather than equity due to their belief that the firm stock price is too low based on their insider knowledge of the firm's ability to generate positive net present value projects. Empirical evidence shows that manager confidence is a significant predictor of leverage level and that overoptimistic managers rely on internal financing first and issue more debt than equity when external financing is necessary. In addition, evidence shows that high growth firms that issue debt underperform those that issue equity.

CHAPTER 3

RESEARCH METHODS

3.1 Hypotheses

This study focuses on what motivates managers when they are making external financing decisions. It is investigated whether the motivation for the decisions about capital structure are driven by market timing or managerial overoptimism. The debt and equity decisions of a firm are investigated based on if the decision brings the firm closer to or further away from their optimal capital structure. When a firm makes an external financing decision, there are four scenarios that can occur: a firm that is expected to issue debt does issue debt, a firm that is expected to issue debt issues equity, a firm that is expected to issue equity issues debt, and a firm that is expected to issue equity does issue equity. The predictions of the Market Timing Theory and the Managerial Overoptimism Theory are summarized in Table 3.1.

Myers and Majluf's (1984) signaling model provides background for the Market Timing Theory and the Managerial Overoptimism Theory. Managers know the true value of the firm's assets and growth opportunities better than anyone outside of the firm. The information asymmetries can cause good firms to be undervalued by capital markets because prices will reflect average quality. If the undervaluation is large enough, issuing equity to finance a new project might result in the new shareholders

capturing more than the net present value of the new project, leaving the old shareholders at a loss. Managers avoid issuing securities that they believe are underpriced and avoid sharing the value added from good investment opportunities with outside investors.

Table 3.1. Scenario predictions for the Market Timing Theory and the Managerial Overoptimism Theory

Scenario	Market Timing Prediction	Managerial Overoptimism Prediction
1. Firm issues equity when debt financing is predicted	• Managers are timing the market • Worse post-financing stock performance than scenario 2	• Managers are avoiding debt • Managers are less optimistic than in scenario 2 • Better post-financing stock performance
2. Firm issues equity when equity financing is predicted	• Optimizing capital structure	• Optimizing capital structure
3. Firm issues debt when equity financing is predicted	• Managers are timing the market • Better post-financing stock performance than scenario 4	• Managers are choosing debt despite excess leverage • Managers are overoptimistic • Worse post-financing stock performance than in scenario 4
4. Firm issues debt when debt financing is predicted	• Optimizing capital structure	• Optimizing capital structure

3.1.1 Market Timing Theory

Studies suggest that managers time equity issues to take advantage of high stock prices and investor overoptimism (e.g., Ritter 1991, 3; Loughran and Ritter 1995, 23; Spiess and Affleck-Graves 1995, 243). Ritter (1991) offered the "windows of opportunity" hypothesis that suggests the timing of equity issues when the shares are overpriced leads to poor post IPO stock price performance. Since managers know more

about their firm's value than investors do, they can time equity offerings when the market is overly optimistic about the firm. This hypothesis suggests that investors are slow to react to the information contained in the announcement of the equity issue.

Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) showed that the "windows of opportunity" hypothesis also applies to SEOs and Hertzel, Lemmon, Linck, and Rees (2002) found that it applies to private equity placement. These studies gave evidence to show that if equity is over-priced and the market under reacts to equity issues, then management maximizes the wealth of existing shareholders by issuing equity. These results are consistent with the conclusion that managers are issuing equity when a firm's stock is overvalued and issuing debt when a firm's stock is undervalued based on their knowledge of firm specific information.

Baker and Wurgler (2002) studied how capital structure is affected by firms timing their equity issues based on market levels. This study found evidence that firms are timing their equity issues and that it has a large and persistent effect on capital structure that lasts beyond 10 years. A strong negative correlation was found between leverage and a measure of historical market valuations. The conclusion drawn is that a firm's capital structure is the result of manager's cumulative attempts to time equity issues.

The "windows of opportunity" hypothesis predicts that managers will time the market by choosing between debt and equity financing based on investor optimism and the level of stock prices. A firm that issues external financing that moves it closer to its optimal capital structure could be timing the market, favoring or avoiding debt, or

optimizing their capital structure. A firm that issues external financing that moves it away from its optimal capital structure is timing the market, favoring debt, or avoiding debt. Market Timing Theory predicts that when a firm issues equity when it is expected to issue debt to move towards optimal capital structure, then the stock price is overvalued and there will be lower post-financing stock performance. This theory also predicts that when a firm issues debt when it is expected to issue equity to move towards optimal capital structure, then the stock price is undervalued and there will be higher post-financing stock performance.

3.1.2 Managerial Overoptimism Theory

The managerial overoptimism hypothesis was formalized by Heaton (2002). In this hypothesis, optimistic managers are shown to consistently estimate the probability of good outcomes higher than the capital market. This leads to optimistic managers always believing that the capital market is undervaluing their firm's stock. These managers prefer debt when external financing is necessary. The first choice of these managers is risk-free debt since it is not subject to the beliefs of the manager. Risky debt is the second choice because it is a weighted combination of equity and risk-free debt making it less undervalued than equity. These preferences lead to optimistic managers making capital structure decisions that closely follow the Pecking Order Theory. These managers fund positive net present value projects first with internal funds. Managers may not fund positive net present value projects if the project cannot be financed with internal cash flow. If it is decided to secure external financing, the managers utilize risk-free debt, then risky debt, and finally equity.

The Managerial Overoptimism Theory has very different predictions than the Market Timing Theory. Firms that are predicted to issue equity to move closer to optimal capital structure are more likely than other firms to have a history of primarily issuing debt. These firms are more likely to be managed by overoptimistic managers since these managers avoid issuing equity and rely primarily on debt to meet their external financing needs. The described characteristics of an overoptimistic manager lead to the prediction that these managers are more likely to issue debt when the firm is predicted to issue equity than managers that issue debt when the firm is predicted to issue debt. On the other hand, the managers that issue equity when the firm is predicted to issue debt are more pessimistic than the mangers that issue equity when their firm is predicted to issue equity. Therefore, the Managerial Overoptimism Theory predicts that firms that are predicted to issue equity will have higher managerial overoptimism and lower post-financing stock performance than firms that are predicted to issue debt.

3.2 Sample

The data for this project spans the fiscal years from 1970 to 2004. An external-financing sample is examined where equity and debt financing are obtained from Compustat balance sheet data. Examining this type of sample allows for the consideration of the sum of all financing activities during one year instead of just one financing event.

This sample was created by first identifying all firms that were in the Compustat and CRSP databases during the 1970-2004 time period. Firms are dropped from the

sample if data pertaining to total assets (item 6), the firm's permanent number, start of fiscal year, SIC code, or return are missing or the SIC code is less than zero. Firms are also dropped if the beginning of year book-to-market ratio, total long term debt (item 9), debt in current liabilities (item 34), current year total assets, beginning of year total assets, current year common equity (item 60), current year retained earnings (item 36), or the beginning of year capitalization are missing. Also, regulated utilities (SIC codes 4910-4949) and financial firms (SIC codes 6000-6999) are excluded. In addition, firms with beginning of year total assets lower than $10M and common equity lower than $10M, before the external finance issue, are excluded.

The sample includes firm years with debt or equity financing equal to or greater than 10% of a firm's total assets at the beginning of the year. One-year equity financing is defined as the change in common equity minus the change in retained earnings. One-year debt financing is defined as the change in total debt. Firms that obtained both debt and equity financing in the same year equal to or greater than 10% of their beginning of year total assets are excluded. Financing events for the same firm are required to be at least three years apart. When a firm has more than one event in any four-year period, only the earliest event is included. In addition, firm-years where the predicted change in leverage, as calculated by Baker and Wurgler's (2002) model, cannot be estimated are excluded.

Applying the described restrictions to the data produced a sample of 11,373 external financing issues. The data sample is described in Table 3.2. Panel A gives a calendar break down of the data with further detail showing the type of financing issued

and whether the firm is predicted to increase or decrease leverage. The data shows that external financing issues increase over time, hitting a peak in the 1995-1999 time period. This time period includes over 25% of the events. The break down shows that about two-thirds of the firms are predicted to increase leverage. It also shows that firms are not strictly making their financing decisions based on optimal capital structure. Panel B shows how the data is distributed across industries. About 40% of the firms are from business services, electronic and other electric equipment, chemicals and allied products, industrial machinery and equipment, and oil and gas extraction. Panel C, D, E, and F describe the mean and the median for several firm characteristics. Total assets, market value of equity, market-to-book of equity, and liabilities are estimated at the beginning of Year 0. External financing is the sum of equity and debt financing. Equity financing is the change in common equity minus the change in retained earnings in Year 0. Debt financing is the change in total debt in Year 0. External financing, equity financing, and debt financing are estimated during a fiscal year and normalized by beginning of year total assets.

Comparing the firms that are predicted to increase leverage to those that are predicted to decrease leverage, the data shows that firms that are predicted to decrease leverage tend to be larger, have higher market value of equity, have a higher market-to-book ratio, and have a higher amount of liabilities compared to their total assets. When firms that issued debt are compared to those that issued equity, the data shows that firms that issued debt are on average larger, have a higher market value of equity, and

have a higher amount of liabilities compared to their total assets. Those that issued equity have a higher market-to-book ratio.

Table 3.2. Calendar distribution of financing samples

Panel A: Calendar Distribution

	External-Financing Sample		Debt-Financing Sample		Equity-Financing Sample	
Years	Predicted to Increase Leverage, N %	Predicted to Decrease Leverage, N %	Predicted to Increase Leverage, N %	Predicted to Decrease Leverage, N %	Predicted to Increase Leverage, N %	Predicted to Decrease Leverage, N %
1970-1974	571 7.60%	295 7.63%	519 11.14%	257 9.60%	52 1.82%	38 3.20%
1975-1979	643 8.56%	378 9.78%	583 12.52%	341 12.74%	60 2.10%	37 3.11%
1980-1984	770 10.25%	452 11.70%	562 12.07%	330 12.33%	208 7.30%	122 10.27%
1985-1989	1,052 14.01%	549 14.21%	803 17.24%	446 16.67%	249 8.73%	103 8.67%
1990-1994	1,092 14.54%	570 14.75%	600 12.71%	336 12.56%	492 17.26%	234 19.70%
1995-1999	1,912 25.46%	966 25.00%	1,052 22.58%	649 24.25%	860 30.16%	317 26.68%
2000-2004	1,469 19.56%	654 16.93%	539 11.57%	317 11.85%	930 32.62%	337 28.37%
Total	7,509 100%	3,864 100%	4,658 100%	2,676 100%	2,851 100%	1,188 100%

Table 3.2 (continued)

Panel B: Industry Distribution

Industry	SIC Code	External-Financing Sample: Predicted to Increase Leverage, N %	External-Financing Sample: Predicted to Decrease Leverage, N %	Debt-Financing Sample: Predicted to Increase Leverage, N %	Debt-Financing Sample: Predicted to Decrease Leverage, N %	Equity-Financing Sample: Predicted to Increase Leverage, N %	Equity-Financing Sample: Predicted to Decrease Leverage, N %
Business services	73	763 10.16%	361 9.34%	221 4.74%	137 5.12%	542 19.01%	224 18.86%
Electronic and other electric equipment	36	840 11.19%	276 7.14%	431 9.25%	156 5.83%	409 14.35%	120 10.10%
Chemicals and allied products	28	634 8.44%	191 4.94%	267 5.73%	122 4.56%	367 12.87%	69 5.81%
Industrial machinery and equipment	35	663 8.83%	265 6.86%	416 8.93%	176 6.58%	247 8.66%	89 7.49%
Oil and gas extraction	13	355 4.73%	157 4.06%	248 5.32%	110 4.11%	107 3.75%	47 3.96%
Instruments and related products	38	488 6.50%	134 3.47%	241 5.17%	81 3.03%	247 8.66%	53 4.46%
Communications	48	176 2.34%	188 4.67%	120 2.58%	143 5.34%	56 1.96%	45 3.79%
Wholesale trade--durable goods	50	191 2.54%	174 4.50%	143 3.07%	133 4.97%	48 1.68%	41 3.45%
Health services	80	160 2.13%	84 2.17%	90 1.93%	60 2.24%	70 2.46%	24 2.02%
Food and kindred products	20	220 2.93%	114 2.95%	185 3.97%	90 3.36%	35 1.23%	24 2.02%
Other		3,019 64.8%	1,920 49.7%	2,296 49.3%	1,468 54.9%	723 25.4%	452 38.1%
Total		7,509 100%	3,864 100%	4,658 100%	2,676 100%	2,851 100%	1,188 100%

Panel C: Firm Characteristics, Means

	External Financing Sample: Predicted to Increase Leverage	External Financing Sample: Predicted to Decrease Leverage	Difference
Total assets, $M	594	1,439	-845*** (-3.87)
Market value of equity, $M	796	1,645	-849*** (-4.87)
Market-to-book of equity	2.17	2.61	-0.44*** (-5.41)
Liabilities / Total assets, %	35.02%	61.09%	-26.07%*** (-84.10)
External financing, %	37.17%	37.17%	0.00% (0.00)
Equity financing, %	21.19%	20.18%	1.01% (0.41)
Debt financing, %	15.98%	16.99%	-1.01%* (-1.74)

Table 3.2 (continued)

Panel D: Firm Characteristics, Means

	Debt Financing Sample			Equity Financing Sample		
	Predicted to Increase Leverage	*Predicted to* Decrease Leverage	Difference	*Predicted to* Increase Leverage	*Predicted to* Decrease Leverage	Difference
Total assets, $M	771	1,835	-1,064***	310	561	-251***
			(-3.38)			(-2.99)
Market value of equity, $M	852	1,827	-975***	706	1,241	-535**
			(-4.29)			(-2.21)
Market-to-book of equity	1.57	1.67	-0.10***	3.14	4.70	-1.56***
			(-3.31)			(-6.53)
Liabilities / Total assets, %	38.68%	63.62%	-24.94%***	29.12%	55.48%	-26.36%***
			(-77.94)			(-40.54)
External financing, %	26.73%	27.27%	-0.54%	53.98%	59.13%	-5.15%
			(-0.71)			(-0.68)
Equity financing, %	-0.16%	0.26%	-0.42%***	55.55%	64.38%	-8.83%
			(-2.80)			(1.17)
Debt financing, %	26.89%	27.01%	-0.12%	-1.57%	-5.25%	3.68%***
			(-0.16)			(10.82)

Panel E: Firm Characteristics, Medians

	External Financing Sample		
	Predicted to Increase Leverage	Predicted to Decrease Leverage	Difference
Total assets, $M	78	130	-52
			(-0.24)
Market value of equity, $M	113	121	-8
			(-0.05)
Market-to-book of equity	1.56	1.41	0.15**
			(1.85)
Liabilities / Total assets, %	35.12%	61.90%	-26.78%***
			(-86.39)
External financing, %	20.50%	19.12%	1.38%
			(0.56)
Equity financing, %	2.17%	1.32%	0.85%
			(0.35)
Debt financing, %	12.15%	13.42%	-1.27%**
			(-2.19)

Table 3.2 (continued)

Panel F: Firm Characteristics, Medians

	Debt Financing Sample			Equity Financing Sample		
	Predicted to Increase Leverage	Predicted to Decrease Leverage	Difference	Predicted to Increase Leverage	Predicted to Decrease Leverage	Difference
Total assets, $M	99	150	-51	60	95	-35
			(-0.16)			(-0.42)
Market value of equity, $M	94	99	-5	134	155	-21
			(-0.02)			(-0.09)
Market-to-book of equity	1.30	1.27	0.03	2.37	1.90	0.47**
			(1.00)			(1.97)
Liabilities / Total assets, %	39.23%	63.05%	-23.82%***	26.28%	57.99%	-31.71%***
			(-74.44)			(-48.78)
External financing, %	18.72%	18.92%	-0.20%	27.55%	20.06%	7.49%
			(-0.25)			(0.99)
Equity financing, %	0.20%	0.20%	0.00%	28.86%	23.05%	5.81%
			(0.00)			(0.77)
Debt financing, %	18.01%	18.04%	-0.03%	0.00%	-1.24%	1.24%***
			(-0.04)			(3.65)

1) This table presents the sample for the study. The sample consists of the external financing issues in the 1970-2004 time period. Firms are included only if they are present in both the Compustat and CRSP databases. Firms are dropped from the sample if data pertaining to total assets (item 6), the firm's permanent number, start of fiscal year, SIC code, or return are missing or the SIC code is less than zero. Firms are also dropped if the beginning of year Fama French book-to-market ratio, total long term debt (item 9), debt in current liabilities (item 34), current year total assets, beginning of year total assets, current year common equity (item 60), current year retained earnings (item 36), or the beginning of year capitalization are missing. Also, regulated utilities (SIC codes 4910-4949) and financial firms (SIC codes 6000-6999) are excluded. In addition, firms with beginning of year total assets lower than $10M and common equity lower than $10M before the external finance issue are excluded. The sample includes firm years with debt or equity financing equal to or greater than 10% of a firm's total assets at the beginning of the year. One-year equity financing is defined as the change in common equity minus the change in retained earnings. One-year debt financing is defined as the change in total debt. These firm years are defined as the event year (Year 0). Firms that obtained both debt and equity financing in the same year equal to or greater than 10% of their beginning of year total assets are excluded. Financing events for the same firm are required to be at least three years apart. When a firm has more than one event in any four-year period, only the earliest event is included. In addition, firm-years where the expected change in leverage, as calculated by Baker and Wurgler's (2002) model, cannot be estimated are excluded. Panel A details the calendar distribution of events. Panel B breaks down the sample to show the distribution of events across the two-digit Standard Industrial Classification (SIC) codes.

2) Panel C, D, E, and F describe the mean and median for select characteristics of sample firms. Total assets, market value of equity, market-to-book of equity, and liabilities are estimated at the beginning of Year 0. External financing is the sum of equity and debt financing. Equity financing is the change in common equity minus the change in retained earnings in Year 0. Debt financing is the change in total debt in Year 0. External, equity, and debt financing are estimated during a fiscal year and normalized by total assets at the beginning of that year.

3) ***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics).

3.3 Methodology

In this study several methodologies are used to investigate whether the motivation for external financing decisions are driven by market timing or managerial overoptimism. This is done through evaluation of post-financing buy-and-hold adjusted returns, calendar time abnormal returns, OLS regressions relating post-financing stock

performance to excess leverage, and estimates of managerial overoptimism through press coverage of firms.

3.3.1 Book Leverage versus Market Leverage

Book leverage rather than market leverage is used in this study to predict changes in capital structure. Graham and Harvey (2001) surveyed CFOs and found that the majority reported that they do not rebalance their equity when its value changes in the market. Welch (2004) looked at empirical evidence and also found that firms do not actively manage their capital structure based on changes in stock price. In addition, by focusing on book leverage, this study avoids the bias that could be caused by market leverage when a firm's stock is over or undervalued. A firm that is at its optimal capital structure when it is measured based on book leverage but has overpriced stock will be predicted to issue debt based on its market leverage. Using the market leverage will lead to results that show lower post-financing stock performance for firms that are predicted to issue debt since the stock will be overvalued on average. The prediction of lower post-financing stock performance for firms that are predicted to issue debt is made by the Market Timing Theory. Therefore, using market leverage would bias the results to show evidence for the Market Timing Theory.

3.3.2 Predicting Debt or Equity Issue

To estimate predicted leverage changes, this study uses the model presented in Baker and Wurgler (2002). An estimate of the predicted leverage change is found by modeling the annual changes in book leverage. This is a continuous measure that shows whether a firm is predicted to issue debt or equity before the external financing event.

The beginning of year market-to-book, asset tangibility, profitability, size, and book leverage are used to predict this change. The model is formulated in Equation 3.1.

$$\left(\frac{D}{A}\right)_y - \left(\frac{D}{A}\right)_{y-1} = \alpha + \beta_1\left(\frac{M}{B}\right)_{y-1} + \beta_2\left(\frac{PPE}{A}\right)_{y-1} + \beta_3\left(\frac{EBITDA}{A}\right)_{y-1} + \beta_4 \log(S)_{y-1} + \beta_5\left(\frac{D}{A}\right)_{y-1} \quad (3.1)$$

The dependent variable is the change in book debt in year y divided by total assets. Book debt is defined as total assets minus book equity. Book equity is defined as total assets minus total liabilities plus preferred stock, deferred taxes, and convertible debt. Redemption value of preferred stock is used when preferred stock is missing. Firm years with book leverage above one are dropped.

The independent variables in this model are market-to-book, asset tangibility, profitability, size, and previous year book leverage. Market-to-book (M/B) is defined as assets minus book equity plus market equity all divided by total assets. Asset tangibility (PPE/A) is defined as net plant, property, and equipment divided by total assets. Profitability (EBITDA/A) is defined as earnings before interest, taxes, and depreciation divided by total assets. Size (S) is defined as the log of net sales.

This methodology focuses on market-to-book as the main determinant of annual changes in leverage. Asset tangibility, profitability, and firm size are used as control variables based on findings by Rajan and Zingales (1995) who showed evidence that these variables are correlated with leverage.

Following Di, Goodwin, and Marciukaityte (2009), this study uses a proxy of excess leverage for managerial optimism. This proxy is calculated by taking the opposite sign of the

absolute value of the predicted change in leverage during Year 0. This is a measurement of the excess leverage at the end of Year -1.

3.3.3 Buy-and-Hold Abnormal Returns

Buy-and-hold abnormal return measures the average multi-year return for investing for a pre-specified holding period in firms that obtained external financing versus investing in otherwise similar firms that did not obtain external financing. Barber and Lyon's (1997) methodology is utilized to calculate buy-and-hold abnormal returns.

Barber and Lyon (1997) promote the use of an appropriately matched control firm for abnormal return analysis. This type of matching avoids some biases that can be encountered if reference portfolios are used. These biases include:

1. New Listing or survivorship bias – index includes new firms after the event date and the sample does not. Firms that go public are typically small, high growth firms that have been show to underperform the market.
2. Rebalancing bias – compound returns on the portfolio are calculated assuming periodic rebalancing and the sample compounds without rebalancing. This can lead to inflated long-horizon returns which could be due to bid/ask spread or non-synchronous trading.
3. Skewness bias – distribution of long-run abnormal returns are positively skewed.
4. Measurement bias – this is usually the result of using arithmetic averages instead of geometric averages in compounding.

Barber and Lyon (1997) and Lyon, Barber, and Tsai (1999) identify a method of measuring long-run abnormal return that yields well specified test statistics. This is

done by matching a single control firm for each sample firm based on (1) size, (2) size and book to market, (3) size, book-to-market, and prior return, (4) size and industry. This method of matching alleviates new listing bias because both the sample and the control firm must be listed in the event month. The rebalancing bias is addressed since both the financing firm and the control firm are compounded in an analogous fashion. The skewness bias is addressed since abnormal returns calculated using this method are reasonably symmetric. The disadvantage of this approach is that it assumes that the sample firms are growing at the same pace with the matching firms. Also, this approach cannot eliminate the measurement bias associated with cumulative abnormal return.

Li and Probhala (2006) point out that there is nothing inherently wrong with multi-dimensional matching methods. These methods involve the same economic assumptions as other matching methods based on propensity scores. The dimension-by-dimension matching actually impose less structure. There are two difficulties with multi-dimension matching methods. First, characteristics are not always exactly matched in corporate finance applications. At each level of matching the biases build up. Second, as the number of dimensions to be matched goes up, finding matches becomes difficult or even infeasible. These authors point out that when matching is not feasible, a convenient alternative is methods based on propensity scores. Propensity score matching handle the problems caused by multi-dimension matching by reducing the match to a single propensity score.

A variety of matching methods are being used in empirical studies that look at abnormal return. Li and Zhao (2005) argue that the multi-dimensional matching makes

it difficult to match simultaneously on multiple dimensions. To address this problem they implement the propensity score matching based on size, book-to-market ratio, and past returns because these are the factors that affect both a firm's decision to issue new equity and the estimated abnormal returns after SEOs. Lie (2005) on the other hand produces two sets of control firms through his matching method. The first set is matched based on two-digit SIC code that has book value of assets closest to the sample firm. The second set is based on two-digit SIC code and the firm that has similar pre-event performance characteristics and market-to-book ratios. Savor and Lu (2009) also utilize a multi-dimensional method by evaluating abnormal return by matching firms based on two-digit SIC code, 50-150% of market value of equity, and book-to-market ratio.

For this study, the firms are matched based on size, prior return, and book-to-market ratio. Three steps are used to create the matched sample. First, ten size (market value of equity) portfolios are formed each month from CRSP firms. Each portfolio has the same number of firms. Second, each size portfolio is divided into five prior-return portfolios. Each firm that obtains external financing is assigned to the corresponding size and prior-return portfolio. Third, within the assigned portfolio the firms that obtained external financing are matched to the firm with the closest book-to-market ratio.

The matched firms are required to meet the same industry, size, and data availability restrictions as the external financing firms to avoid biasing the estimates of abnormal return. In addition, the matched firms cannot obtain equity or debt financing

that is equal to or greater than 10% of their beginning of year assets in the three years before or after the financing year. The market value of equity and the book-to-market of equity are calculated at the beginning of Year 0 to follow Barber and Lyon's (1996) suggestion that matching for an abnormal stock performance analysis should be done before the event. The book-to-market of equity is estimated following Fama and French (1993). The prior returns are raw returns that are calculated during the six month period ending at the beginning of Year 0.

The buy-and-hold return (BHR) is calculated for each firm that issued external financing and its matching firm using Formula 3.2. Formula 3.3 is used to calculate the buy-and-hold abnormal return (BHAR).

$$BHR_{i,a,b} = \left[\prod_{n=a}^{b}(1 + R_{i,n})\right] - 1 \tag{3.2}$$

$$BHAR_{j,a,b} = BHR_{sample,a,b} - BHR_{match,a,b} \tag{3.3}$$

$BHR_{i,a,b}$ is the buy-and-hold return for firm i during the period from month a to b. $R_{i,n}$ is the monthly stock return for firm i in month n. The abnormal return is the difference in buy-and-hold returns of the sample firms that issue external financing and their match. When a sample or match firm does not have returns available for the whole buy-and-hold period, the buy-and-hold returns for the longest period available is used (e.g., Hertzel, Lemmon, Linck, and Rees 2002, 2595). This provides a measure of abnormal performance that is closer to investor experience than a measure excluding firms without returns for the whole buy-and-hold period.

In addition to the BHAR for the entire external financing sample, the BHAR is calculated for the sample of firm-years with predicted increase in leverage and for the

sample of firm-years with predicted decrease in leverage. Furthermore, the difference in BHAR between the sample restricted to firm-years with predicted increase in leverage and the sample restricted to firm-years with predicted decrease in leverage is calculated. T-tests are used to evaluate the statistical significance of means and differences in means.

3.3.3.1 Robustness of the BHAR calculation using alternate matching methodology

One influence on the capital structure for a firm is the type of industry in which the firm is operating. Firms tend to have similar capital structures to their peers in the same industry (Ross, Westerfield, and Bradford 2008, 577). In order to determine if matching external finance issuing firms to firms that do not issue external financing in a different industry is affecting the BHAR results, a different matching method is done which incorporates the firm's industry. To do this a method similar to the methodology utilized by Savor and Lu (2009) is used. The analysis is done by first matching the external financing firms with non-external financing firms within the same 2-digit SIC code. Then only the potential matches with a market value of equity that is within 70-130% of the sample firm is considered. Finally, the firm with the closest book-to-market ratio is chosen as the match.

3.3.3.2 Robustness of the BHAR calculation during specific time periods

In order to determine if time period affects the results of the BHAR analysis, five additional BHAR analyses are done. To do this the thirty-five year study period is broken

into five, seven year time periods. The BHAR is calculated for the 1970-1976, 1977-1983, 1984-1990, 1991-1997, and 1998-2004 time periods.

3.3.4 Calendar-Time Abnormal Returns

The method of buy-and-hold abnormal returns utilized in this study accurately represents investor experience but is sensitive to cross-sectional dependence. The calendar-time abnormal return procedure has more power to identify reliable evidence of abnormal return since it accounts for dependence of event-time abnormal returns. The drawback of this procedure is that it yields an abnormal return measure that does not precisely measure investor experience (Lyon, Barber, and Tsai 1999, 165; Mitchell and Stafford 2000, 287).

To take advantage of the strength of both tests, a calendar-time abnormal return analysis is utilized as a robustness check of the BHAR results. This is done by accessing if the four-factor model which consists of the three Fama and French (1993) factors and a momentum factor (Carhart 1997, 57) can explain the difference in returns. The model is formulated in Equation 3.4.

$$R_{dn} = \alpha_i + \beta_i(R_{mn} - R_{fn}) + s_i SMB_n + h_i HML_n + u_i UMD_n + \varepsilon_{in} \qquad (3.4)$$

In Equation 3.4, R_{dn} is the difference in the average returns for month n between the post-financing stock performance of the sample restricted to firm-years with predicted increase in leverage and the post-financing stock performance of the sample restricted to firm-years with predicted decrease in leverage. This difference is calculated by first identifying the external financing issues that belong to each sample. The samples are additionally restricted to those firms that have an absolute value of the

predicted change in leverage greater than two. Then for each issue in the sample restricted to firm-years with a predicted increase in leverage, the twelve months following the end of Year 0 are identified and the returns for those months are obtained. Next the average return for each calendar month is calculated. This procedure is repeated for the sample restricted to firm-years with predicted decrease in leverage. Then the difference between the average return for each month are found. This procedure is also used to estimate the difference in returns for two and three year post-financing periods.

In Equation 3.4, $(R_{mn} - R_{fn})$ is the excess return on the market, SMB_n is the difference in returns between a portfolio of small and large stocks, HML_n is the difference in returns between high and low book-to-market stocks, and UMD_n is the difference in returns between high and low prior return portfolios. The data for the excess return on the market and the SMB_n, HML_n, and UMD_n factors are obtained from Kenneth French's web site. This web site is found at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. Fama and French (1993) describe the estimation procedure for SMB_n and HML_n and Carhart (1997) describes the estimation procedure for UMD_n.

The regression yields parameter estimates of α_i, β_i, s_i, h_i, and u_i. The value of the intercept α represents the difference in monthly returns between the firms expected to increase leverage and those that are expected to decrease leverage not explained by the four factor model. This value is zero under the null hypothesis of no abnormal performance. A positive intercept indicates that after controlling for market, size, book-

to-market, and momentum factors, the firms that are predicted to increase leverage performed significantly different than the firms that are predicted to decrease leverage.

The implied difference in returns is also calculated for the one, two, and three year post financing periods. Equation 3.5 is used to calculate the implied abnormal return.

$$\left(1+\frac{\alpha}{100}\right)^{n}-1, \tag{3.5}$$

where α is the intercept and n is the number of months in the estimation period.

3.3.5 Evaluating Buy-and-Hold Returns Using an OLS Regression Model

The firm characteristics detailed in Table 3.2 suggests that firms that are predicted to increase leverage have quite different characteristics than firms that are predicted to decrease leverage. An OLS regression model is used to control the firm-specific characteristics to assure that the difference in post-event performance between firms that are predicted to increase and decrease leverage are not driven by the differences in firm characteristics. This OLS regression will examine the relation between post-financing stock performance and predicted change in leverage. The model is formulated in Equation 3.6.

$$BHAR_{j,a,b} = \alpha + \beta_1(EL)_y + \beta_2\left(EL\left(\frac{EQ}{EX}\right)\right)_y + \beta_3(DEQ)_y + \beta_4\left(\frac{EX}{A}\right)_y + \beta_5(\log(\tfrac{M}{B}))_{y-1} + \beta_6(\log(MVE))_{y-1} \tag{3.6}$$

The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample.

Buy-and-hold abnormal return ($BHAR_{j,a,b}$) is the difference between the BHRs for the external financing firm and the matched firm. The control variables include external financing level, logarithm of market-to-book ratio, and logarithm of market value of equity. Excess leverage (EL) at the beginning of Year 0 has the same absolute value but the opposite sign than the predicted change in leverage during Year 0. The variable excess leverage times the ratio of equity financing to external financing is a cross product to test for different affects by debt versus equity. External financing (EX) is the sum of equity and debt financing. Equity financing (EQ) is the change in common equity minus the change in retained earnings in Year 0. Debt financing is the change in total debt in Year 0. External financing, equity financing, and debt financing are estimated during a fiscal year and normalized by total assets at the beginning of that year. The dummy for equity financing (DEQ) is equal to 1 if in a year, a firm issues equity that is equal to or exceeds 10% of the firm's total assets and equal to 0 otherwise. The dummy for equity financing indicates the performance of equity versus debt. The market-to-book of equity (M/B) and the market value of equity (MVE) are estimated at the beginning of Year 0.

3.3.5.1 Further evaluation of BHAR using an OLS regression model

Frank and Goyal (2007a) examined the factors that are important to leverage decisions. These authors found six core factors that explain more than 27% of the variation in leverage. The factors include industry median leverage, market-to-book assets ratio, tangibility, profits, firm size, and expected inflation which were shown to have consistent sign and significance across many different tests. In order to further

examine the relationship between post-financing stock performance and predicted change in leverage these factors are used as control variables. The model is formulated in Equation 3.7.

$$BHAR_{j,a,b} = \alpha + \beta_1(EL)_y + \beta_2(EL(\frac{EQ}{EX}))_y + \beta_3(DEQ)_y + \beta_4(IL)_{y-1} + \beta_5(TG)_{y-1} + \beta_6\left(\frac{M}{B}\right)_{y-1} + \beta_7(PF)_{y-1} + \beta_8(\log(FS))_{y-1} + \beta_9(EI)_{y-1} \quad (3.7)$$

BHAR, EL, EX, EQ, and DEQ are defined as in Equation 3.6. The industrial median leverage (IL) is the median total debt to market value of assets determined by four digit SIC code and year. Market value of assets is the sum of price-close times shares outstanding, debt in current liabilities, long-term debt, and preferred-liquidation value minus deferred taxes and investment tax credit. Tangibility (TG) is the ratio of net property, plant, and equipment to total assets. The market-to-book assets ratio (M/B) is the ratio of the market value of assets to total assets. Profitability (PF) is the ratio of operating income before depreciation to total assets. Firm size (FS) is the logarithm of total assets. The expected inflation (EI) is the expected change in the consumer price index over the coming year. Data is obtained from the Livingston Survey at http://www.phil.frb.org/econ/liv/index.html. This is the only macroeconomic factor included and the least reliable factor based on it being calculated based on an annual observation when so much more data is available. All of the control variables are estimated at the beginning of Year 0.

3.3.5.2 Robustness of the OLS regression models using the matched firms

In order to determine if the OLS regression results are affected by the difference in firm characteristics between the external finance issuing firms in the sample and the size, prior return, and book-to-market matched non-external finance issuing firms, the OLS regression analyses are repeated using the non-external finance issuing matched firms. The only change is that the dummy variable for external financing is excluded since none of the matched firms issue external financing.

3.3.5.3 Size robustness of the OLS regression models

In order to determine if firm size affects the results of the OLS regression, two additional OLS regression analyses are done. One analysis is done for a sample of small firms and one analysis is done for a sample of large firms. Small and large firms are defined in relation to the mean of the market value of equity. Small firms are the smallest 25% of the firms and large firms are the largest 25% of the firms.

3.4 Alternative Measures of Managerial Overoptimism

Managerial overoptimism is difficult to measure. Many factors can affect leverage levels other than market timing and managerial overoptimism. Some of these factors include: firms having limited access to external financing, transaction costs, and macro economic factors such as interest rate. To check the validity of the results found when the excess leverage proxy is used, this study assesses how an alternate measure of managerial overoptimism relates to the excess leverage proxy.

3.4.1 Press Releases

Malmendier and Tate (2008) developed a methodology to measure managerial overoptimism. This methodology uses press coverage in leading business publications to see which CEOs outsiders perceive as confident or cautious. While this method is noisy and subjective, it adds value by measuring CEO beliefs as perceived by outsiders.

This study implements Malmendier and Tate's methodology by searching the LexisNexis Major U.S. and World Publications and News Wire Service databases. The search criteria includes the CEO's last name, the company name, and words that describe managerial optimism or caution. Words that are searched for in the optimistic category are "confident," "overconfidence," "overconfident," "confidence," "optimistic," "overoptimistic," "overoptimism," or "optimism." The cautious category includes articles that contain the words "reliable," "cautious," "conservative," "practical," "frugal," or "steady." Each article is reviewed to insure that these descriptive words are not contradicting each other and are being used in reference to the CEO and/or the company. The number of articles that fall into each category for Years -2, -1, 0, and 1 are recorded.

Since announcements of substantial financing may affect the press coverage of the CEOs, the financing year is excluded from this analysis to avoid endogeneity problems (Malmendier and Tate 2008, 24). In addition, managers of firms that are planning to obtain external financing, in spite of their true opinion, are very unlikely to express pessimistic opinions and are likely to express optimistic opinions. To avoid this bias, the pre-financing years are not included in this study. Therefore, this study will

focus on the characterization of managers by the press in the year after the external financing event.

The CEO information for this study is obtained from the ExecuComp database. The external financing sample is matched with the available firm information in the ExecuComp database. Firms that have different CEOs in Year -1 and Year 0 are excluded. The study is limited to firms that have at least $1,000M total assets at the beginning of Year 0 (427 firms) because small firms are rarely mentioned in the press. At least one article with an optimistic or cautious mention is found for 86 firms. Malmendier and Tate (2008) also found a relatively small number of firms mentioned in the press. A summary of the press release data can be found in Table 3.3.

In order to estimate the press proxy for managerial overoptimism, articles are collected for each external financing event. These articles are read and the number of optimistic CEO mentions and cautious CEO mentions are recorded. The difference between the number of optimistic mentions and cautious mentions for each year is used to determine if the CEO is classified as optimistic (>0), cautious (<0), or inconclusive (0). From this difference the indicator for the press proxy overoptimism variable is developed. This dummy variable is equal to 1 if the CEO is classified as optimistic and 0 otherwise. The press proxy for overoptimism is calculated by taking the ratio of the difference in the number of optimistic and cautious mentions in a year to the sum of the optimistic and cautious mentions in that same year.

Table 3.3. Press release data summary

	Total	Year 0		Year 1	
		Confident	Cautious	Confident	Cautious
Number of Articles	575	228	64	219	64
Number of Companies	427				

Year 0	Mean	Median	Minimum	Maximum	Standard Deviation
Indicator for Press Proxy	0.164	0	0	1	0.371
Press Proxy	0.119	1	-1	1	0.708
Confident Mentions	0.534	0	0	22	1.926
Cautious Mentions	0.150	0	0	10	0.732

Year 1	Mean	Median	Minimum	Maximum	Standard Deviation
Indicator for Press Proxy	0.157	0	0	1	0.364
Press Proxy	0.105	1	-1	1	0.720
Confident Mentions	0.513	0	0	18	1.936
Cautious Mentions	0.150	0	0	8	0.669

This table summarizes the data obtained by using Malmendier and Tate's (2008) methodology to measure managerial overoptimism through press releases. The first variable, Indicator for Press Proxy, is a measure of the confidence of the CEO in the year of and year after the external financing. This variable is a dummy variable that is equal to 1 when the number of articles that mention such words as "confident" and "optimistic" is greater than the number of articles that mention such words as "reliable" and "practical." The second variable, Press Proxy, is the difference between the number of articles that mention such words as "confident" and "optimistic" and the number of articles that mention such words as "reliable" and "practical" divided by the number of articles in both groups for a particular year.

CHAPTER 4

RESULTS

4.1 Buy-and-Hold Abnormal Return

In order to determine whether the capital structure position of the firm affects post-financing stock performance, the difference in buy-and-hold abnormal returns is tested for the sample of firms that are predicted to increase leverage and for the sample of firms that are predicted to decrease leverage. The Market Timing Theory predicts that when a firm issues equity when it is predicted to issue debt to move towards optimal capital structure, the stock price is overvalued and there will be lower post-financing stock performance. This theory also predicts that when a firm issues debt when it is predicted to issue equity to move towards optimal capital structure, the stock price is undervalued and there will be higher post-financing stock performance. Whereas, the Managerial Overoptimism Theory predicts that firms that are predicted to issue equity but instead issue debt will have worse post-financing stock performance than firms that issue equity. This theory also predicts that firms that are predicted to issue debt but instead issue equity will have better post-financing stock performance than firms that issue debt.

The results of this analysis, shown in Table 4.1, support the Managerial Overoptimism Theory. The buy-and-hold abnormal returns are estimated by taking the

difference of the buy-and-hold return for the external finance issuing sample and the buy-and-hold return for a matched firm that does not issue external financing. These firms are matched using a methodology suggested by Barber and Lyons (1997) which uses size, prior return, and book-to-market values. The results show that in the first post-financing year, firms expected to increase leverage that instead issue equity underperform matched firms by 4.69%. Firms that are expected to decrease leverage and issue equity underperform matched firms by 10.18%. Therefore, as predicted by the Managerial Overoptimism Theory, firms that issue equity when they are predicted to issue debt significantly out-perform firms that issue equity and are predicted to issue equity by 5.49%. On the other hand, in the first post-financing year, firms expected to decrease leverage that instead issue debt, underperform matched firms by 6.94%. Firms that are expected to increase leverage and issue debt underperform matched firms by 3.78%. Therefore, as predicted by the Managerial Overoptimism Theory, firms that issue debt when they are predicted to issue equity perform significantly worse than firms that issue debt and are predicted to issue debt by 3.16%. The results in the third post-financing year follow the same pattern and also support the Managerial Overoptimism Theory.

In addition, consistent with earlier post-financing performance studies (e.g. Loughran and Ritter 1995, 23; Spiess and Affleck-Graves 1995, 243; Spiess and Affleck-Graves 1999, 45), the results show that firms perform poorly for at least three years after obtaining substantial debt or equity financing. For all break downs of number of

years, type of financing, and predicted change in leverage, the buy-and-hold abnormal return samples underperform matched firms significant at the 1% level.

Table 4.1. Post-financing buy-and-hold adjusted returns

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-5.41%***	-4.12%***	-7.94%***	3.82%**
(*t*-statistic)	(-5.88)	(-3.53)	(-5.41)	(2.033)
No. of obs.	11,351	7,529	3,822	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-11.67%***	-10.66%***	-13.66%***	3.00%
(*t*-statistic)	(-6.74)	(-5.11)	(-4.42)	(0.802)
No. of obs.	11,351	7,529	3,822	

Table 4.1 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-6.29%***	-4.69%**	-10.18%***	5.49%*
(*t*-statistic)	(-3.31)	(-1.98)	(-3.32)	(1.403)
No. of obs.	4,038	2,858	1,180	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-18.08%***	-17.36%***	-19.81%***	2.45%
(*t*-statistic)	(-5.92)	(-4.86)	(-3.38)	(0.357)
No. of obs.	4,038	2,858	1,180	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-4.92%***	-3.78%***	-6.94%***	3.16%*
(*t*-statistic)	(-5.09)	(-3.13)	(-4.28)	(1.569)
No. of obs.	7,313	4,671	2,642	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-8.13%***	-6.56%**	-10.91%***	4.35%
(*t*-statistic)	(-3.89)	(-2.57)	(-3.01)	(0.980)
No. of obs.	7,313	4,671	2,642	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

4.1.1 Calendar-Time Abnormal Return

As a robustness check, the difference in post-event performances between the sample that was predicted to increase leverage and the sample that was predicted to

decrease leverage is tested using the four factor model which measures calendar time abnormal returns. The results (Table 4.2) show a significantly positive intercept which indicates that after controlling for market, size, book-to-market, and momentum factors, the firms that are predicted to increase leverage performed significantly different than the firms that are predicted to decrease leverage. The unexplained difference in performance is statistically significant at the 1% level for at least three post-financing years. Implied returns suggest that the sample expected to decrease leverage underperforms the sample expected to increase leverage by 8% in the first post financing year and by 20% during the three post financing years.

Table 4.2. Calendar-time abnormal returns

$R_{dn} = \alpha_i + \beta_i(R_{mn} - R_{fn}) + s_i SMB_n + h_i HML_n + u_i UMD_n + \varepsilon_{in}$

	α_i (t-statistic)	β_i (t-statistic)	s_i (t-statistic)	h_i (t-statistic)	u_i (t-statistic)
One-year returns	0.690***	-0.264***	0.172**	-0.268***	0.0074
	(3.02)	(-4.90)	(2.49)	(-3.32)	(0.15)
Implied one-year AR	8.60%				
Two-year returns	0.533***	-0.248***	0.099*	-0.233***	0.0377
	(2.79)	(-5.52)	(1.71)	(-3.46)	(0.88)
Implied two-year AR	13.61%				
Three-year returns	0.525***	-0.213***	0.0677	-0.240***	0.0413
	(3.28)	(-5.63)	(1.40)	(-4.41)	(1.13)
Implied three-year AR	20.74%				

This table tests whether the four-factor model can explain the difference in the post-financing stock performance between the sample restricted to firm-years with predicted increase in leverage (negative excess leverage), and the sample restricted to firm-years with predicted decrease in leverage (positive excess leverage). R_{dn} is the difference in the average returns for month n between the post-financing stock performance of the sample restricted to firm-years with predicted increase in leverage and the post-financing stock performance of the sample restricted to firm-years with predicted decrease in leverage. This difference is calculated by first identifying the external financing issues that belong to each sample. The samples are additionally restricted to those firms that have an absolute value of the predicted change in leverage greater than two. Then for each issue in the sample restricted to firm-years with a predicted increase in leverage, the twelve months following the end of Year 0 are identified and the returns for those months are obtained. Next the average return for each calendar month is calculated. This procedure is repeated for the sample restricted to firm-years with predicted decrease in leverage. Then the difference between the average return for each month are found. This procedure is also used to estimate the difference in returns for two and three-year post-financing periods. ($R_{mn} - R_{fn}$) is the excess return on the market, SMB_n is the difference in returns between a portfolio of small and large stocks, HML_n is the difference in returns between high and low book-to-market stocks, and UMD_n is the difference in returns between high and low prior return portfolios. The difference in monthly returns between the samples not explained by the four factor model is determined by the intercept term α. The implied difference in returns is estimated for the one- to three-year periods $((1 + \alpha/100)^n - 1$, where n is the number of months in the estimation period).

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the t statistics; two-tail tests).

4.1.2 BHAR Analysis Using An Alternate Matching Methodology

In order to determine if matching external finance issuing firms to non-external finance issuing firms in a different industry is affecting the BHAR results, a different matching methodology is utilized which incorporates matching by industry. A BHAR

analysis is done matching the external financing firms with non-external financing firms based on industry, market value of equity, and book-to-market ratio.

The results of this analysis are shown in Table 4.3. Similar to when firms are matched by size, prior return, and book-to-market, the results support the Managerial Overoptimism Theory. The results show that in the first post-financing year, firms expected to increase leverage that instead issue equity underperform matched firms by 5.63%. Firms that are expected to decrease leverage and issue equity underperform matched firms by 6.86%. Therefore, as predicted by the Managerial Overoptimism Theory, firms that issue equity when they are predicted to issue debt out-perform firms that issue equity and are predicted to issue equity by 1.23%. On the other hand, in the first post-financing year, firms expected to decrease leverage that instead issue debt, underperform matched firms by 9.07%. Firms that are expected to increase leverage and issue debt underperform matched firms by 3.51%. Therefore, as predicted by the Managerial Overoptimism Theory, firms that issue debt when they are predicted to issue equity perform significantly worse than firms that issue debt and are predicted to issue debt by 5.56%. The results in the third post-financing year follow the same pattern and also support the Managerial Overoptimism Theory.

Table 4.3. Matching robustness for post-financing BHAR

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-5.65%***	-4.36%***	-8.35%***	3.99%**
(*t*-statistic)	(-5.88)	(-5.07)	(-5.93)	(2.12)
No. of obs.	9,812	6,649	3,163	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-8.91%***	-6.93%***	-13.07%***	6.14%**
(*t*-statistic)	(-5.19)	(-3.30)	(-4.39)	(1.69)
No. of obs.	9,812	6,649	3,163	

Table 4.3 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-5.97%***	-5.63%**	-6.86%**	1.23%
(*t*-statistic)	(-5.41)	(-2.45)	(-2.53)	(0.346)
No. of obs.	3,699	2,664	1,035	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-12.48%***	-11.51%***	-14.99%***	3.48%
(*t*-statistic)	(-4.17)	(-3.13)	(-3.02)	(0.562)
No. of obs.	3,699	2,664	1,035	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-5.45%***	-3.51%**	-9.07%***	5.56%***
(*t*-statistic)	(-5.07)	(-2.51)	(-5.58)	(2.587)
No. of obs.	6,113	3,985	2,128	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-6.75%***	-3.87%	-12.14%***	8.27%**
(*t*-statistic)	(-3.25)	(-1.55)	(-3.27)	(1.852)
No. of obs.	6,113	3,985	2,128	

This table presents post-financing buy-and-hold industry, market value of equity, and book-to-market adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

4.1.3 BHAR Analysis Using Specific Time Periods

In order to determine if the BHAR results are consistent across the thirty-five year study period, the study period is broken into five, seven year time periods. The BHAR results can be seen in tables 4.4, 4.5, 4.6, 4.7, and 4.8. The results from these analyses are mixed. The one year post-financing results for firms that issued debt support the Managerial Overoptimism Theory during the entire thirty-five year study period. In addition, the three year post-financing results for firms that issued debt support the Managerial Overoptimism Theory in the 1970-1990 time period. However, the first year post-financing results for equity issuing firms only support the Managerial Overoptimism Theory in the 1970-1976 and 1998-2004 time periods. Further investigation into the gap in support for the Managerial Overoptimism Theory for equity issuing firms in the 1977-1997 time period is needed.

Table 4.4. Post-financing BHAR (1970-1976)

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-5.43%***	-2.49%	-11.21%***	8.72%**
(*t*-statistic)	(-3.03)	(-1.15)	(-3.55)	(2.278)
No. of obs.	1,084	718	366	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-10.30%**	-4.89%	-20.91%**	16.02%**
(*t*-statistic)	(-2.49)	(-1.05)	(-2.56)	(1.706)
No. of obs.	1,084	718	366	

Table 4.4 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-6.29%***	4.06%	-19.14%**	23.20%
(*t*-statistic)	(-3.31)	(0.82)	(-2.04)	(0.763)
No. of obs.	116	73	43	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-18.08%***	6.00%	-32.87%**	38.87%**
(*t*-statistic)	(-5.92)	(0.58)	(-2.07)	(2.187)
No. of obs.	116	73	43	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-4.92%***	-3.23%	-10.16%***	6.93%
(*t*-statistic)	(-5.09)	(-1.38)	(-3.02)	(0.568)
No. of obs.	968	645	323	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-8.13%***	-6.12%	-19.32%**	13.20%
(*t*-statistic)	(-3.89)	(-1.22)	(-2.14)	(1.279)
No. of obs.	968	645	323	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

Table 4.5. Post-financing BHAR (1977-1983)

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-6.23%***	-5.48%***	-7.46%**	1.98%
(*t*-statistic)	(-3.77)	(-2.82)	(-2.51)	(0.558)
No. of obs.	1,631	1,013	618	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-5.73%	-5.01%	-6.92%	1.91%
(*t*-statistic)	(-1.43)	(-0.99)	(-1.04)	(0.229)
No. of obs.	1,631	1,013	618	

Table 4.5 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-4.31%	-5.15%	-3.04%	-2.11%
(*t*-statistic)	(-1.35)	(-1.27)	(-0.59)	(-0.321)
No. of obs.	324	195	129	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-19.82%***	-31.46%***	-2.23%	-29.23%**
(*t*-statistic)	(-2.63)	(-3.57)	(-0.17)	(-1.831)
No. of obs.	324	195	129	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-6.70%***	-5.55%**	-8.63%**	3.16%
(*t*-statistic)	(-3.53)	(-2.52)	(-2.47)	(0.743)
No. of obs.	1,307	818	489	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-2.24%	-1.30%	-8.15%	6.85%
(*t*-statistic)	(-0.48)	(-0.22)	(-1.07)	(0.712)
No. of obs.	1,307	818	489	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

Table 4.6. Post-financing BHAR (1984-1990)

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-1.29%	-0.90%	-2.07%	1.17%
(*t*-statistic)	(-0.85)	(-0.50)	(-0.75)	(0.355)
No. of obs.	2,165	1,448	717	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-4.13%	-1.93%	-8.55%	6.62%
(*t*-statistic)	(-1.27)	(-0.55)	(-1.26)	(0.868)
No. of obs.	2,165	1,448	717	

Table 4.6 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-0.19%	-0.48%	1.79%	-2.27%
(*t*-statistic)	(-0.07)	(-0.14)	(-0.30)	(-0.071)
No. of obs.	478	336	142	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	3.45%	-2.32%	17.11%	-19.43%
(*t*-statistic)	(0.53)	(-0.30)	(-1.47)	(-1.224)
No. of obs.	478	336	142	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-1.70%	-1.02%	-3.02%	2.00%
(*t*-statistic)	(-0.97)	(-0.48)	(-0.97)	(0.528)
No. of obs.	1,678	1,112	575	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-6.27%*	-1.82%	-14.89%*	13.07%*
(*t*-statistic)	(-1.68)	(-0.46)	(-1.88)	(1.408)
No. of obs.	1,678	1,112	575	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

Table 4.7. Post-financing BHAR (1991-1997)

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-6.31%***	-6.49%***	-5.93%**	-0.56%
(*t*-statistic)	(-4.16)	(-3.50)	(-2.25)	(-0.171)
No. of obs.	3,078	2,072	1,006	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-16.30%***	-17.48%***	-13.89%*	-3.59%
(*t*-statistic)	(-3.69)	(-3.23)	(-1.82)	(-0.383)
No. of obs.	3,078	2,072	1,006	

Table 4.7 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-12.01%***	-13.47%***	-8.37%*	-5.10%
(*t*-statistic)	(-5.16)	(-5.09)	(-1.77)	(0.940)
No. of obs.	1,386	988	398	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-24.14%***	-23.77%***	-25.05%*	1.28%
(*t*-statistic)	(-3.51)	(-2.97)	(-1.86)	(0.082)
No. of obs.	1,386	988	398	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-1.64%	-0.12%	-4.34%	4.22%
(*t*-statistic)	(-0.83)	(-0.05)	(-1.41)	(1.083)
No. of obs.	1,692	1,084	608	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-9.88%*	-11.74%	-6.58%***	-5.16%
(*t*-statistic)	(-1.72)	(-1.60)	(-0.72)	(0.441)
No. of obs.	1,692	1,084	608	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

Table 4.8. Post-financing BHAR (1998-2004)

	External Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
Panel A: One-Year Buy-and-Hold Adjusted Returns				
Mean	-6.82%***	-3.93%	-12.73%***	8.80%**
(*t*-statistic)	(-2.86)	(-1.27)	(-3.58)	(1.869)
No. of obs.	3,393	2,278	1,115	
Panel B: Three-Year Buy-and-Hold Adjusted Returns				
Mean	-15.58%***	-14.35***	-18.08%***	3.73%
(*t*-statistic)	(-5.62)	(-4.32)	(-3.61)	(0.621)
No. of obs.	3,393	2,278	1,115	

Table 4.8 (Continued)

	Equity Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-4.00%	0.62%	-16.50%***	15.88%**
(*t*-statistic)	(-1.03)	(0.13)	(-2.69)	(2.042)
No. of obs.	1,734	1,266	468	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-19.49***	-15.52%***	-30.20%***	14.68%**
(*t*-statistic)	(-5.07)	(-3.50)	(-3.94)	(1.657)
No. of obs.	1,734	1,266	468	
	Debt Financing Sample	Firm-Years with Predicted Increase in Leverage	Firm-Years with Predicted Decrease in Leverage	Difference
	Panel A: One-Year Buy-and-Hold Adjusted Returns			
Mean	-9.77%***	-9.62%***	-10.01%**	0.39%
(*t*-statistic)	(-3.60)	(-2.72)	(-2.36)	(0.070)
No. of obs.	1,659	1,012	647	
	Panel B: Three-Year Buy-and-Hold Adjusted Returns			
Mean	-11.49%***	-12.88%**	-9.31%	-3.57%
(*t*-statistic)	(-2.88)	(-2.57)	(-1.41)	(-0.431)
No. of obs.	1,659	1,012	647	

This table presents post-financing buy-and-hold size-, prior return-, and book-to-market-adjusted returns for the external, equity, and debt financing sample. All of these samples are broken down to the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. This table also presents the difference in adjusted returns between the sample restricted to firm-years with predicted increase in leverage, and the sample restricted to firm-years with predicted decrease in leverage. Predicted change in leverage during a year is estimated using the Baker and Wurgler (2002) model. The *t*-test is used to evaluate the statistical significance of means and differences in means.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on t-statistics; one-tail tests for the difference, two-tail tests for other tests).

4.3 Evaluating Buy-and-Hold Abnormal Returns Using an OLS Regression Model

Firms that have excessively high leverage are more likely to be managed by optimistic managers. Di, Goodwin, and Marciukaityte (2009) utilize an excess leverage

proxy to identify which firms are more likely to have optimistic managers. This is done by calculating the excessive leverage of the firm before the external financing issue. In order to calculate the excess leverage proxy, the model presented by Baker and Wurgler (2002) is used to estimate predicted leverage changes. This estimate is found by modeling the annual changes in book leverage and is a continuous measure that shows whether a firm is predicted to issue debt or equity before the external financing event. The excess leverage proxy at the end of Year -1 is the absolute value but the opposite sign of the predicted change in leverage during Year 0.

The findings in Table 3.2 suggest that firms that are predicted to increase leverage have quite different characteristics than firms that are predicted to decrease leverage. To assure that the difference in post-event performance between firms that are predicted to increase leverage and firms that are predicted to decrease leverage are not driven by the differences in firm characteristics, the firm-specific characteristics are controlled in an OLS regression model. This is done with two different sets of control variables to ensure that the results are robust.

The results from the first OLS regression analysis are shown in Table 4.9. The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. The control variables include external financing level, logarithm of market-to-book ratio, and logarithm of market value of equity. The variable excess leverage times the ratio of equity financing to external financing is a cross product to test for different affects by

debt versus equity. The dummy for equity financing indicates the performance of equity versus debt.

The results from the second OLS regression analysis are shown in Table 4.10. As in the first OLS regression, the dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. The control variables, as suggested by Frank and Goyal (2007a), include industry median leverage, market-to-book assets ratio, tangibility, profits, firm size, and expected inflation. All of the control variables are estimated at the beginning of Year 0.

Consistent with the buy-and-hold abnormal return analysis, both OLS regression analyses support the Managerial Overoptimism Theory. The results show that the estimated coefficients for the excess leverage proxy variable are negative and significant at the 10% or higher level for all three holding periods examined. This suggests that controlling for firm characteristics does not change the finding that there is a negative relationship between post-financing buy-and-hold abnormal returns and excess leverage before financing. This suggests that matching by size, prior return, and book-to-market is sufficient to control for firm characteristics.

Table 4.9. Post-financing stock performance

Variables	One-year	Two-years	Three-years
Intercept	-0.0604***	-0.0858***	-0.1154***
	(9.88)	(9.92)	(12.24)
Excess Leverage	-0.0051**	-0.0047*	-0.0054*
	(5.36)	(2.29)	(2.07)
Excess Leverage × (Equity Financing/External Financing)	0.0001	0.0006***	0.0005**
	(0.42)	(6.96)	(4.59)
Dummy for Equity Financing Sample	-0.0215	-0.0218	-0.0317
	(2.47)	(1.26)	(1.83)
External Financing	-0.0201**	-0.0339***	-0.0427***
	(5.78)	(8.15)	(8.84)
Log(Market-to-Book)	-0.0629***	-0.0906***	-0.0893***
	(31.96)	(33.01)	(21.87)
Log(Market Value of Equity)	0.0067*	0.0091*	0.0010
	(3.04)	(2.79)	(2.28)

This table presents OLS regressions examining the relation between post-financing stock performance and predicted change in leverage. The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. Buy-and-hold abnormal return is the difference between the BHRs for the external financing firm and the matched firm. The control variables include external financing level, logarithm of market-to-book ratio, and logarithm of market value of equity. Excess leverage at the beginning of Year 0 has the same absolute value but the opposite sign than the predicted change in leverage during Year 0. The variable excess leverage times the ratio of equity financing to external financing is a cross product to test for different affects by debt versus equity. External financing is the sum of equity and debt financing. Equity financing is the change in common equity minus the change in retained earnings in Year 0. Debt financing is the change in total debt in Year 0. External financing, equity financing, and debt financing are estimated during a fiscal year and normalized by total assets at the beginning of that year. The dummy for equity financing is equal to 1 if in a year, a firm issues equity that is equal to or exceeds 10% of the firm's total assets and equal to 0 otherwise. The dummy for equity financing indicates the performance of equity versus debt. The market-to-book of equity and the market value of equity are estimated at the beginning of Year 0. Chi-square statistics are reported in parentheses.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the chi-square statistics; one-tail test for excess leverage, two-tail tests for other variables).

Table 4.10. Post-financing stock performance using Frank and Goyal (2007) control variables

Variables	One-year	Two-years	Three-years
Intercept	-0.1224***	-0.1385***	-0.1429***
	(20.02)	(12.72)	(9.18)
Excess Leverage	-0.0087***	-0.0081**	-0.0068*
	(11.22)	(4.82)	(2.28)
Excess Leverage × (Equity Financing /External Financing)	0.0001	0.0006***	0.0005**
	(0.39)	(6.91)	(4.21)
Dummy for Equity Financing Sample	-0.0061	-0.0125	-0.0346
	(0.68)	(0.41)	(2.10)
Industry Median Leverage	0.0770*	0.0582	-0.0505
	(3.27)	(0.93)	(0.47)
Tangibility	0.0005*	0.0009**	0.0013**
	(3.20)	(4.97)	(6.58)
Market-to-Book Asset Ratio	-0.0122***	-0.0164***	-0.0172**
	(32.98)	(29.39)	(21.89)
Profitability	0.0018***	0.0022	0.0017**
	(21.12)	(15.46)	(6.36)
Firm Size	0.0030	0.0021	0.0034
	(0.58)	(0.14)	(0.25)
Expected Inflation	0.0001	-0.0014	-0.0020
	(0.01)	(1.09)	(1.36)

This table presents OLS regressions examining the relation between post-financing stock performance and predicted change in leverage. The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. Buy-and-hold abnormal return is the difference between the BHRs for the external financing firm and the matched firm. Excess leverage at the beginning of Year 0 has the same absolute value but the opposite sign than the predicted change in leverage during Year 0. The control variables, as suggested by Frank and Goyal (2007a), include industry median leverage, market-to-book assets ratio, tangibility, profits, firm size, and expected inflation. The industrial median leverage is the median total debt to market value of assets determined by four digit SIC code and year. Market value of assets is the sum of price-close times shares outstanding, debt in current liabilities, long-term debt, and preferred-liquidation value minus deferred taxes and investment tax credit. Tangibility is the ratio of net property, plant, and equipment to total assets. The market-to-book assets ratio is the ratio of the market value of assets to total assets. Profitability is the ratio of operating income before depreciation to total assets. Firm size is the logarithm of total assets. The expected inflation is the expected change in the consumer price index over the coming year. All of the control variables are estimated at the beginning of Year 0. Chi-square statistics are reported in parentheses.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the chi-square statistics; one-tail test for excess leverage, two-tail tests for other variables).

4.3.1 Matching Robustness

To ensure that the difference in the firm characteristics between the external financing issuing firm and the size, prior return, and book-to-market matched non-external finance issuing firm are not driving the results, the OLS regression analyses are repeated using the non-issuing matched firms. The only change is that the dummy variable for external financing is excluded since none of the matched firms issue external financing. Tables 4.11 and 4.12 show the results of this robustness check. Both of these analyses show a negative relationship between post-financing buy-and-hold abnormal returns and excess leverage at the 10% or higher level for the one and two year post-financing periods. The similarity in results between the OLS regression using the firms issuing external financing and the OLS regression results using the non-issuing matched firms suggests that the differences in firm characteristics are not driving the results and that matching by size, prior return, and book-to-market is sufficient.

Table 4.11. Post-financing stock performance using non-external finance issuing matched firms

Variables	One-year	Two-years	Three-years
Intercept	-0.0546***	-0.0895***	-0.1178***
	(8.73)	(11.67)	(13.75)
Excess Leverage	-0.0043**	-0.0045*	-0.0047
	(3.91)	(2.10)	(1.60)
Excess Leverage × (Equity Financing /External Financing)	-0.0000	-0.0001***	-0.0001*
	(1.51)	(9.93)	(3.59)
External Financing	-0.2129***	-0.0268***	-0.3154***
	(26.19)	(20.64)	(19.48)
Log(Market-to-Book)	0.0072	-0.0190	-0.0167
	(0.38)	(1.31)	(0.69)
Log(Market Value of Equity)	-0.0029	-0.0008	-0.0014
	(0.59)	(-1.02)	(0.05)

This table presents OLS regressions examining the relation between post-financing stock performance and predicted change in leverage. The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. Buy-and-hold abnormal return is the difference between the BHRs for the external financing firm and the matched firm. The control variables include external financing level, logarithm of market-to-book ratio, and logarithm of market value of equity. Excess leverage at the beginning of Year 0 has the same absolute value but the opposite sign than the predicted change in leverage during Year 0. The variable excess leverage times the ratio of equity financing to external financing is a cross product to test for different affects by debt versus equity. External financing is the sum of equity and debt financing. Equity financing is the change in common equity minus the change in retained earnings in Year 0. Debt financing is the change in total debt in Year 0. External financing, equity financing, and debt financing are estimated during a fiscal year and normalized by total assets at the beginning of that year. The market-to-book of equity and the market value of equity are estimated at the beginning of Year 0. Chi-square statistics are reported in parentheses.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the chi-square statistics; one-tail test for excess leverage, two-tail tests for other variables).

Table 4.12. Post-financing stock performance using non-external finance issuing matched firms and Frank and Goyal (2007) control variables

Variables	One-year	Two-years	Three-years
Intercept	-0.1264	-0.1153***	-0.1212***
	(24.15)	(11.27)	(8.48)
Excess Leverage	-0.0087***	-0.0044*	-0.0042
	(11.11)	(2.06)	(1.29)
Excess Leverage ×			
(Equity Financing /External Financing)	0.0001	-0.0001***	-0.0001*
	(0.40)	(10.14)	(3.77)
Industry Median Leverage	0.0806*	0.0924	0.0944
	(3.72)	(2.70)	(1.92)
Tangibility	0.0005*	0.0010**	0.0006
	(3.32)	(5.30)	(1.26)
Market-to-Book Asset Ratio	-0.0124***	0.0057	0.0041
	(35.17)	(1.75)	(0.60)
Profitability	0.0019***	-0.0051***	-0.0061***
	(22.03)	(59.82)	(59.32)
Firm Size	0.0032	-0.0003	-0.0010
	(0.64)	(0.00)	(0.03)
Expected Inflation	0.0001	0.0025*	0.0020
	(0.02)	(3.22)	(1.50)

This table presents OLS regressions examining the relation between post-financing stock performance and predicted change in leverage. The dependent variables are one to three year post-financing buy-and-hold abnormal returns using the size, prior return, and book-to-market matched sample. Buy-and-hold abnormal return is the difference between the BHRs for the external financing firm and the matched firm. Excess leverage at the beginning of Year 0 has the same absolute value but the opposite sign than the predicted change in leverage during Year 0. The control variables, as suggested by Frank and Goyal (2007a), include industry median leverage, market-to-book assets ratio, tangibility, profits, firm size, and expected inflation. The industrial median leverage is the median total debt to market value of assets determined by four digit SIC code and year. Market value of assets is the sum of price-close times shares outstanding, debt in current liabilities, long-term debt, and preferred-liquidation value minus deferred taxes and investment tax credit. Tangibility is the ratio of net property, plant, and equipment to total assets. The market-to-book assets ratio is the ratio of the market value of assets to total assets. Profitability is the ratio of operating income before depreciation to total assets. Firm size is the logarithm of total assets. The expected inflation is the expected change in the consumer price index over the coming year. All of the control variables are estimated at the beginning of Year 0. Chi-square statistics are reported in parentheses.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the chi-square statistics; one-tail test for excess leverage, two-tail tests for other variables)

4.3.2 Size Robustness

To ensure that a subsection of the sample is not driving the results, small and large firms in the sample are analyzed for relationships between post-financing stock performance and excess leverage for one year post-financing buy-and-hold abnormal returns (Table 4.13). Small and large firms are defined in relation to the mean of the market value of equity. Small firms are the smallest 25% of the firms and the large firms are the largest 25% of the firms. This analysis is done using both sets of firm-specific characteristics introduced in section 4.3. Similar to when the full sample is used, the results show that the estimated coefficients for the excess leverage variable are negative and significant at the 5% or higher level. This implies that the analysis applies to all sizes of firms.

Table 4.13. Post-financing stock returns for small and large firms

	One-Year Post-Financing BHARs		One-Year Post-Financing BHARs	
Variables	Small Firms	Large Firms	Small Firms	Large Firms
Intercept	-0.0609**	-0.1176	-0.1249	-0.2756**
	(4.25)	(0.76)	(9.70)	(4.51)
Excess Leverage	-0.0050**	-0.0125***	-0.0103***	-0.0164***
	(3.58)	(5.45)	(11.04)	(5.53)
Excess Leverage × (Equity Financing/External Financing)	0.0002	-0.0002	0.0002	-0.0002
	(0.92)	(0.03)	(0.93)	(0.02)
Dummy for Equity Financing Sample	-0.0234	0.0257	-0.0066	0.0266
	(2.18)	(0.43)	(0.17)	(0.44)
External Financing	-0.0228*	-0.0111		
	(3.59)	(1.04)		
Log(Market-to-Book)	-0.0477***	-0.0689***		
	(10.94)	(7.91)		
Log(Market Value of Equity)	0.0061	0.0125		
	(0.73)	(0.63)		
Industry Median Leverage			0.0651	0.0201
			(1.71)	(0.03)
Tangibility			0.0006	-0.0001
			(2.75)	(0.02)
Market-to-Book Asset Ratio			-0.0138***	-0.0030
			(8.34)	(0.60)
Profitability			0.0013***	0.0068***
			(7.49)	(29.14)
Firm Size			0.0043	0.0160
			(0.35)	(1.23)
Expected Inflation			0.0009	-0.0041
			(0.61)	(1.81)

This table details OLS regressions examining the relation between post-financing stock performance and predicted change in leverage. Buy-and-hold returns are adjusted using the size, prior return, and book-to-market matched sample. Small and large firms are defined in relation to the mean of the market value of equity. Small firms are the smallest 25% of the firms and the large firms are the largest 25% of the firms. Chi-square statistics are reported in parentheses.

***, **, and * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively (based on the chi-square statistics; one-tail test for excess leverage, two-tail tests for other variables).

4.4 Alternative Measures of Managerial Overoptimism

Since managerial overoptimism is difficult to measure and many other factors can affect leverage levels, an alternate measure of managerial overoptimism is accessed. The alternate measure is a press proxy for overoptimism. The methodology to estimate this variable was developed by Malmendier and Tate (2008). This measure uses press coverage in leading business publications to see which CEOs outsiders perceive as confident or cautious. The press proxy for overoptimism is used to check the validity of the results found with the excess leverage proxy by seeing how the two variables relate.

The excess leverage proxy is compared to the press proxy for managerial overoptimism in Table 4.14. The correlation is calculated between each of the proxies as well as indicator variables for each of the proxies. The indicator for excess leverage proxy is equal to 1 when excess leverage is greater than 0, and is equal to 0 otherwise. The press proxy for overoptimism is a measure of the confidence of the CEO in the year after the external financing. This variable is defined as the difference between the number of articles that mention such words as "confident" and "optimistic" and the number of articles that mention such words as "reliable" and "cautious" divided by the number of articles in both groups for a particular year. The indicator for the press proxy for overoptimism is a dummy variable that is equal to 1 when the number of articles that mention such words as "confident" and "optimistic" is greater than the number of articles that mention such words as "reliable" and "cautious" and 0 otherwise.

Table 4.14 shows that the indicator variable for press proxy is positively correlated with both the excess leverage proxy and the indicator variable for excess leverage proxy. The statistically strongest correlation is between the indicator for the press proxy and the indicator for the excess leverage proxy (*p*-value = 0.0092). These findings suggest a relationship between the excess leverage proxy and the press proxy for overoptimism and support the validity of the excess leverage proxy as a measure of managerial overoptimism.

Table 4.14. Correlations between leverage and press proxies for managerial optimism

		Excess Leverage Proxy	Indicator for the Excess Leverage Proxy
Press Proxy for Overoptimism	Correlation	0.01265	0.00357
	P-value	0.4568	0.4870
	No. of obs.	86	86
Indicator for the Press Proxy for Overoptimism	Correlation	0.07235	0.11414
	P-value	0.0775*	0.0092***
	No. of obs.	427	427

This table reports the correlation coefficients between the excess leverage proxy and the press proxy for managerial optimism. The excess leverage proxy (Di, Goodwin, and Marciukaityte 2009, 26) at the beginning of Year 0 has the same absolute value but the opposite sign of the predicted change in leverage during Year 0. Predicted change in leverage is estimated using Baker and Wurgler (2002) model. The indicator for excess leverage proxy is equal to 1 when excess leverage is greater than 0, otherwise the indicator for the excess leverage proxy is equal to 0. The press proxy for overoptimism is a measure of the confidence of the CEO in the year after the external financing. This variable is defined as the difference between the number of articles that mention such words as "confident" and "optimistic" and the number of articles that mention such words as "reliable" and "practical" divided by the number of articles in both groups for a particular year. The indicator for the press proxy for overoptimism is a dummy variable that is equal to 1 when the number of articles that mention such words as "confident" and "optimistic" is greater than the number of articles that mention such words as "reliable" and "practical" and 0 otherwise.

***, **, and * Indicates statistical significance at the 1, 5, and 10% levels (based on the t statistics; one-tail tests).

4.5 Summary

This chapter presents the results of the empirical analyses to determine what motivates managers when they are making external equity and debt decisions. The goal is to investigate whether the motivation for the decisions about capital structure are driven by market timing or managerial overoptimism. The debt and equity decisions of a firm are investigated based on if the decision brings the firm closer to or further away from their optimal capital structure. The main findings of this study are as follows:

1. In the first post-financing year firms that issue equity when they are predicted to issue debt significantly out-perform firms that issue equity when they are predicted to issue equity. In addition, firms that issue debt when they are predicted to issue equity perform significantly worse than firms that issue debt and are predicted to issue debt. These findings hold when firms are matched based on size, prior return, and book-to-market as well as industry, market value of equity, and book-to-market. The one-year post financing results hold for firms issuing debt across the entire study period but only hold for firms that issue equity in the 1970-1976 and 1998-2004 time periods.

2. The difference in return for firms that are predicted to increase leverage is significantly different than the firms that are predicted to decrease leverage even when controlling for market, size, book-to-market, and momentum factors. The difference in performance is statistically significant at the 1% level for at least three post-financing years.

3. The excess leverage proxy is negatively and significantly related to the one, two, and three year post-financing buy-and-hold abnormal returns even when firm

characteristics are controlled. This also holds when non-issuing matched firms, small firms, and large firms are analyzed. This suggests that matching by size, prior return, and book-to-market is sufficient to control for firm characteristics.

4. The excess leverage proxy is significantly correlated with the press proxy. These findings suggest a relationship between the excess leverage proxy and the press proxy for overoptimism and support the validity of the excess leverage proxy as a measure of managerial overoptimism.

Overall, the results are opposite to the predictions of market timing and consistent with the Managerial Overoptimism Theory. This suggests that managers are influenced by optimism when they are making debt and equity financing decisions.

CHAPTER 5

CONCLUSIONS

5.1 Summary of Prior Research

Management of capital structure is an important part of maximizing the firm value. Financial research has proposed many theories that explain aspects of firm behavior when a firm makes financial decisions that change the firm's capital structure. However, none of the theories fully explain why firms with similar fundamental characteristics make different financing choices.

The Tradeoff Theory and the Pecking Order Theory have been around the longest, have been studied the most, and have the most advocates. These two theories have been studied separately and together but still fail to explain all firm behavior. The evidence found against the Tradeoff Theory and the Pecking Order Theory has led to several other capital structure theories being proposed, including the Market Timing Theory and Managerial Overoptimism Theory.

The Market Timing Theory suggests that firms issue stock when the market is overvaluing a firm and repurchase equity when the firm is undervalued. Empirical evidence shows that firms issue equity when stock price has gone up. In addition, evidence shows that firms underperform for three to five years following IPO, SEO, and private equity issues. The evidence on the persistence of the Market Timing Theory is

mixed. Some studies show that market timing has a long term affect on capital structure while others show that there is no affect or it is reversed in just a few years. In addition, this theory does not explain the underperformance of firms after debt issue.

The Managerial Overoptimism Theory suggests that overoptimistic managers prefer to issue debt rather than equity due to their belief that the firm's stock price is too low based on their insider knowledge of the firm's ability to generate positive net present value projects. Empirical evidence shows that manager confidence is a significant predictor of leverage level and that overoptimistic managers rely on internal financing first and issue more debt than equity when external financing is necessary. In addition, evidence shows that high growth firms that issue debt underperform those that issue equity.

5.2 Summary of Current Findings and Conclusions

This study focuses on what motivates managers when they are making external financing decisions. It investigated whether the motivation for the decisions about capital structure are driven by market timing or managerial overoptimism. When firms are making external financing decisions there are four scenarios that could occur: a firm that is expected to issue debt does issue debt, a firm that is expected to issue debt issues equity, a firm that is expected to issue equity issues debt, and a firm that is expected to issue equity does issue equity.

In order to determine whether firms are moving closer to or farther away from their optimal capital structure when they issue external financing, this study uses the model presented in Baker and Wurgler (2002). This model estimates the predicted

change in book leverage which is a continuous measure that shows whether a firm is predicted to issue debt or equity before the external financing event. As suggested by Di, Goodwin, and Marciukaityte (2009), the absolute value but opposite sign of this measure is used as an excess leverage proxy. This study finds that the excess leverage proxy is negatively and significantly related to the one, two, and three year post-financing buy-and-hold abnormal returns even when firm characteristics are controlled. This also holds when non-issuing matched firms, small firms, and large firms are analyzed. This suggests that the firm matching methodology, which used size, prior return, and book-to-market to match, is sufficient to control for firm characteristics. This result is consistent with the Managerial Overoptimism Theory.

The results of this study show that in the first post-financing year firms that issue equity when they are predicted to issue debt significantly out-perform firms that issue equity when they are predicted to issue equity. In addition, firms that issue debt when they are predicted to issue equity perform significantly worse than firms that issue debt and are predicted to issue debt. These results support the Managerial Overoptimism Theory. These results hold when firms are matched based on size, prior return, and book-to-market as well as when they are matched based on industry, market value of equity, and book-to-market. The one-year post financing results also hold for firms issuing debt across the entire study period but only hold for firms that issue equity in the 1970-1976 and 1998-2004 time periods. This discrepancy in results can be addressed in future analysis.

This study also shows that the difference in return for firms that are predicted to increase leverage is significantly different than the firms that are predicted to decrease leverage even when controlling for market, size, book-to-market, and momentum factors. The difference in performance is statistically significant at the 1% level for at least three years after external financing is issued.

This study examines press releases mentioning manager optimism or caution (Malmendier and Tate 2008, 24) as a proxy for managerial overoptimism. The results show that the excess leverage proxy and the press proxy for managerial overoptimism are related with a positive correlation. These findings suggest a relationship between the excess leverage proxy and the press proxy for overoptimism and support the validity of the excess leverage proxy as a measure of managerial overoptimism.

This study evaluates what influences manager when they are making decisions about issuing external financing. This question is analyzed using many different evaluation criteria. Overall, the results are opposite to the predictions of the Market Timing Theory and consistent with the Managerial Overoptimism Theory. This suggests that manager's optimism influences their decisions related to external financing.

If firms are going to influence managers to improve their decisions, there has to be an understanding of what drives manager decisions which are not in the best interest of shareholders. When managerial overoptimism instead of agency problems are the source of suboptimal manager decisions, then designing better compensation contracts that bring the manager and shareholder goals in enhanced alignment will not help. This is because overoptimistic managers believe that they are acting in the best interest of

the shareholder. Russo and Schoemaker (1992) show that two elements essential to addressing overconfidence is feedback and accountability. Therefore, more active feedback from the board of directors and more accountability on the use of internal funds are ways to manage the decisions of overoptimistic managers.

5.3 Future Research

Additional work in bringing more insight into manager overoptimism and investor overoptimism would be beneficial to enhance this study. A survey of investors similar to Tourani-Rad and Kirkby (2005) would allow for the controlling of some of the variation caused by investor overoptimism. Incorporating manager's background information into the analysis of the relationship between post-financing stock performance and excess leverage would bring more insight into influence of the manager's background on capital structure decisions. Malmendier and Tate (2005) and Frank and Goyal (2007b) CEO characteristics could be used to complete this analysis. An alternate measure of the excess leverage, such as the leverage factor developed by George and Hwang (2007), could further show the robustness of the excess leverage proxy as a predictor of managerial overoptimism. George and Hwang's (2007) leverage factor is the difference between returns to low and high leverage firms. In addition, an alternate measure of managerial overoptimism, such as the managerial optimism proxy developed by Barros and Silveira (2007), could also show the robustness of the results of this study. Barros and Silveira (2007) developed a series of proxies of managerial overoptimism that are based on the manager's status as an entrepreneur.

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