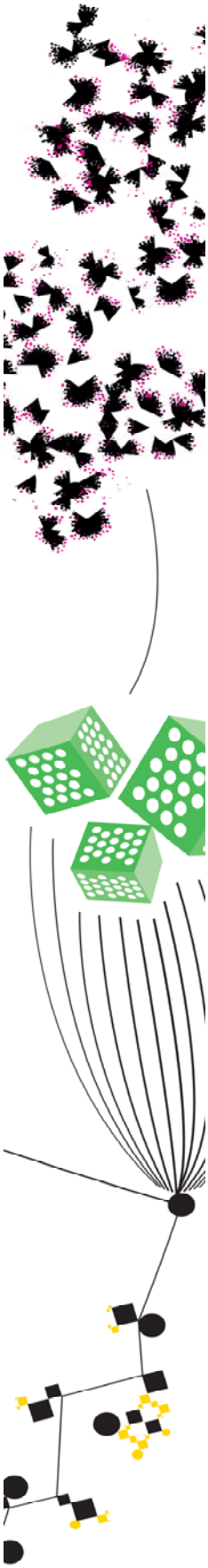

Master Thesis Business Administration

Track: Financial Management

MARKET TIMING, TAXES AND CAPITAL STRUCTURE: EVIDENCE FROM VIETNAM

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ABSTRACT

This study examines the impact of market timing and tax reform on capital structure of Vietnamese firms by using a sample of 297 non-financial initial public offerings over the period from 2006 to 2010. Models of leverage and change in leverage are applied within which hot market dummy variable is used to capture market timing and effective tax rate is used to capture corporate income tax rate change, controlling for the influence of firm-level factors and industry fixed effects. There is no evidence that market timing affects firms' capital structure. The results also indicate that tax changes do not have a strong and statistically significant effect on debt levels.

Table of Contents

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1. INTRODUCTION

1.1. Background

Even though capital structure policy is not a new area of study, it remains one of the most interesting and puzzling research topics. Capital structure refers to the way a firm finance its investment through the combination of debt and equity. As debt and equity are different in nature and decisions regarding capital structure are of critical importance to firms, it is the job of managers to make the best mix of securities to maximize firm value. Despite an enormous body of theoretical and empirical literature on capital structure decisions, no consensus has been reached.

The Miller and Modigliani theorem is regarded as the start of modern theory of capital structure. Since Miller and Modigliani (1958) work under certain key assumptions which are unrealistic, other theories of capital structure have been contributed to relax such assumptions and describe the consequences. The two traditional capital structure theories are the trade-off theory and the pecking order theory. The seminal work of Baker and Wurgler (2002) introduces a new capital structure theory namely the market timing theory. Baker and Wurgler (2002) argue that capital structure is the cumulative outcome of past attempts to time the equity market. Firms will choose to issue equity when their stock is overvalued, and to repurchase it in case of undervaluation. According to the theory, market timing of equity issues has a very large and persistent impact on capital structure.

Subsequent to Baker and Wurgler (2002), studies on the impact of market timing on capital structure have gained momentum. A number of papers confirm the influence of market timing on leverage decisions (e.g. Jenter, 2005; Elliott et al., 2007, Huang and Ritter, 2009). Furthermore, empirical support for the market timing theory comes not only equity market but also debt market (Bancel and Mittoo, 2004; Henderson et al., 2006). However, several studies challenge the persistent impact of the market timing theory on debt-equity choice (Alti, 2006; Flanner and Rangan, 2006; Kayhan and Titman, 2007). In addition, some authors question the interpretation of the historical market-to-book ratio that the measure captures other determinants of capital structure choices such as asymmetric information, growth opportunities, and debt overhang problems (Hovakimian, 2006; Elliott et al., 2007; Kayhan and Titman, 2007). To overcome the drawback of this ratio, several papers develop other measures of market timing activities such as insider trading (Jenter, 2005) or splitting the ratio into different parts, i.e. yearly timing and long-term timing (Kayhan and Titman, 2007) or decomposing the ratio into two separate components, namely the growth and mispricing

components (Elliott et al., 2008; Hertzel and Li, 2010). The existing studies on the market timing theory have mainly focused on the US; therefore, some papers test the theory using data from other developed economies and find mixed results. The empirical evidence supporting the impact of market timing on capital structure is documented in the Dutch, French and European context (de Bie and de Haan, 2007; Gaud et al., 2007; Bougatef and Chichti, 2010). On the contrary, Bruinshoofd and de Haan (2012) describe that it is not the market timing theory but the pecking order theory better explains capital structure decisions of UK and European firms. In spite of a negative relationship between market timing measure and debt ratio for firms in G7 countries, Mahajan and Tartaroglu (2008) claim that this negative relationship is not attributed to equity market timing. Compared with the empirical literature of the market timing theory in developed countries, studies using data from emerging markets are limited. Several papers suggest that the market timing theory is a driving force of security issuance decisions (Henderson et al., 2006; Cohen et al., 2007; Ni et al., 2010; Bo et al., 2011). Nevertheless, the persistent impact is denied in case of Tunisia (Nguyen and Boubaker, 2009). In addition, Mendes et al., (2005) and Umutlu and Karan (2008) find that the market timing theory is inapplicable to securities issuance decisions of firms in Brazil and several developing countries.

Vietnam provides an interesting context to test the market timing theory. As Vietnamese capital market is in the early stage of development, the market is far from being perfect. There have been concerns about issues of high information asymmetry since transparency and disclosure of the listed companies are very low (Leung, 2009). Thus, there is a high possibility that the stock prices are misvalued. This study focuses on initial public offerings (IPO), a type of public offering in which firms' shares are sold to the general public on a securities exchange for the first time, to investigate the validity of the market timing theory. IPO is regarded as one of the milestones in corporate life cycle when information asymmetry is high, and timing effect is, therefore, apparent. During its early development stage, the Vietnamese stock market witnesses both ups and downs. There was a boom in the stock market in 2006 and 2007. As a result, firms find better to go to the stock market to raise funds. The number of listed firms increases from 41 in 2005 to 193 and 250 in 2006 and 2007 respectively. Affected by the global economic crisis, Vietnamese stock market took a deep plunge in 2008. Despite the fact that capital markets experienced a significant outflow of investment, there is an upward trend in IPOs resulting in an increasing number of listed firms from 338 in 2008 to 457 in 2009 and 642 in 2010.

Empirical studies have investigated a variety of independent variables as determinants of leverage choice, in most of which the tax factor is ignored or treated as one factor in a general model of firm financing. Consistent with the predictions of the trade-off theory, a positive relationship between firm leverage and marginal tax rate is documented (e.g. Gropp, 2002; Buettner et al., 2009; Frank and Goyal, 2009). Although studies reach agreement on the impact of tax on capital structure (Graham, 2008), controversy remains in regard to the extent to which the tax incentives matter (Hanlon and Heitzman, 2010). To test for the impact of taxes on firms' capital structure, sufficient variation in tax incentives either over time or across firms is necessary. Most papers investigate the tax effects based on variations in corporate tax rates across firms (e.g. Rajan and Zingales, 1995; Graham, 1999; Gropp, 2002; Buettner et al., 2009). Another direction to test for tax effects is based on financial policies over time as tax rates vary (Givoly et al., 1992; Gordon and Lee, 2001; Graham, 2008). Since tax rates have not varied often, several authors take advantage of tax reform to assess the interaction between taxes and capital structure decisions in a controlled environment (Gordon and MacKie-Mason, 1990; Bontempi et al., 2005; Green and Murinde, 2008; Dwenger and Steiner, 2009). Studies show that following changes in tax rates that make debt more attractive, firms incrementally increase the portion of capital structure comprised by debt (Gordon and MacKie-Mason, 1990; Givoly et al., 1992; Gordon and Lee, 2001; Wu and Yue, 2009). Researchers suggest opposite findings regarding the estimated tax effect. On the one hand, substantially small impact is documented in Gordon and MacKie-Mason (1990) and Cheng and Green (2008). On the other hand, Gordon and Lee (2001) and Dwenger and Steiner (2009) suggest that the estimated tax effects are rather large. Moreover, Gordon and Lee (2001) find that taxes primarily affect use of short-term debt only, which is inconsistent with the Cheng and Green (2008) which suggest no strong evidence of differences between the determinants of long-term and short-term financing choices.

In Vietnam, debt market was established long before the existence of equity market, and the financial sector is characterized as the bank-based system. Debt financing has, therefore, become a common financing vehicle (Rigg and Schou-Zibell, 2009; Nguyen et al., 2012). The capital structure of Vietnamese enterprises are still dominated by the use of short-term financing (Nguyen et al., 2012). The tax reform introduced in 2009 was designed to reduce the tax advantage of debt over equity and stimulate firm activities. The standard corporate income tax rate has been reduced from 28% to 25%. According to the predictions of capital structure theories, since the advantage of tax benefit of debt reduces, firms may use less debt. However, provided the financing practice of Vietnamese firms, together with the difficulties

in raising capital from the stock market during crisis, it is interesting to investigate the impact of tax on leverage choices of Vietnamese listed firms by concentrating on the influence of an exogenous change of the tax rate.

1.2. Objective

The puzzling issue of capital structure along with the lack of empirical literature from emerging markets in general and from Vietnam in particular motivates the conduct of this study on the financing practices of Vietnamese listed firms. The primary objective of this research is to evaluate the impact of the market timing theory and the tax reform on capital structure decisions of listed firms during the period 2006-2011. Specifically, this study addresses the two following research questions:

(1) Do market timing hypotheses help explain capital structure choices of Vietnamese listed firms?

(2) Do changes in corporate tax rate affect corporate capital structure choices of Vietnamese listed firms?

1.3. Contribution

Research on capital structure using Vietnamese data is limited (Nguyen and Ramachandran, 2006; Biger et al., 2008; Nguyen et al., 2012). Such studies try to find out the determination of capital structure of Vietnamese listed firms by focusing on firm-specific factors and institutional-level variables. To the best of my knowledge, this study is the first to explore the impact of the market timing theory and tax reforms on capital structure in the Vietnamese setting. The analysis of financing decisions of Vietnamese firms adds to the existing literature in a number of ways. Firstly, it contributes to the scarce empirical literature of capital structure in Vietnam. The study helps gain practical insights into the financing behaviors of Vietnamese listed firms. In fact, Rajan and Zingales (1995) stress the importance of testing the robustness of previous findings in the particular environment. Secondly, concentrating on an emerging market, the study provides an interesting test of the predictions of the trade-off theory and the robustness of the market-timing theory. Previous empirical work suggests that theories of capital structure developed to explain financing behaviors in developed countries are not always applicable to the developing economy context due to institutional differences. Thus, the results may have important implications for the capital structure in other developing markets. Compared with other developing countries, Vietnam provides an interesting case since as a socialist-oriented market economy, the stock market is still under a

strictly control of the government. Insights into the functioning of a rapid developing stock market in such a country give new perspectives on the application of the capital structure theories.

1.4. Structure

The thesis is structured as follows. Chapter 1 provides readers with an introduction to the thesis including background, objective, contribution and structure of the study. Chapter 2 summarizes the most prominent theories of capital structure and reviews both theoretical framework and empirical evidence of the market timing theory and tax effects on capital structure. Chapter 3 presents the background of Vietnam including the economic development, stock market, bond market, banking sector and the main content of tax reform in 2009. Chapter 4 develops hypotheses regarding the influence of market timing and tax reform effect on capital structure of Vietnamese listed firms. Chapter 5 discusses kinds of methodology, description of variables and data to conduct the analysis. Chapter 6 summarizes the results of the analysis including descriptive and econometric findings. The last chapter consists of discussion of the findings, implications, limitations of the study and suggestions for further research.

CHAPTER 2. LITERATURE REVIEW

This chapter provides a review of the literature related to the capital structure of firms to lay the foundation for the analysis. Firstly, the most prominent theories of capital structure are summarized. Secondly, both theoretical and empirical research on the market timing theory of capital structure is presented. Finally, the influence of taxes specifically tax reforms on leverage is discussed.

2.1. Capital structure theories

2.1.1. The Miller and Modigliani theory

Regarded as the start of modern theory of capital structure, Modigliani and Miller (1958) argue that the valuation of a company will be independent from its financial structure under certain key assumptions. The authors state that the firm's value depends upon the profitability of its assets rather than on the way in which such assets are financed through debt and/or equity. Capital market is assumed to be perfect in Modigliani and Miller (1958), where there are no transaction costs, no information asymmetry, no distortionary taxation, no bankruptcy costs, investors can borrow at the same rate as corporations, and managers act on the exclusive behalf of shareholders. Under such conditions, internal and external financing are regarded as perfect substitutes. Nevertheless, the assumptions of a perfect capital market are unrealistic. Once these fundamental assumptions are relaxed; capital structure may become relevant. The following theories of capital structure have been contributed to relax the ideal assumptions and describe the consequences.

2.1.2. The trade-off theory

Under capital market imperfections, the choice of capital structure has an impact on firm value (Kraus and Litzenberg, 1973). On the one hand, debt financing increases firm's value by the present value of the debt tax shields; on the other hand, it decreases firm's value by the expected costs of financial distress. The trade-off theory postulates that the optimal level of debt balances the corporate tax advantages of debt financing with the costs of financial distress (Modigliani and Miller, 1963) that arise from bankruptcy risks (Kraus and Litzenberger, 1973), agency costs (e.g. Jensen and Meckling, 1976; Myers, 1977; Stulz, 1990; Hart and Moore, 1995), and costs of signaling (Ross, 1977). Myers (1984) argues that firms following the theory try to have their target debt-to-equity ratio and to achieve this ratio for having an optimal capital structure. This is the so-called static trade-off theory. However, the costs of adjusting capital structure constrain the adjustment speed towards the target debt

ratio. As a result, the differences of actual debt ratios are observable although their target debt ratios are the same. Fischer et al. (1989) and Leland (1994) develop the dynamic trade-off model in the presence of recapitalization costs. Firms allow their actual leverage ratio to deviate from the target ratio by different amounts. As a result, firms do not adjust the ratio towards the target if the adjustment costs exceed the value lost due to suboptimal capital structure.

Empirical literature have focused on investigating determinants of capital structure which are identified by theories as potentially important to make inference about the predominance of capital structure theories. Most studies that support the trade-off theory document that capital structure is influenced by firm factors such as size, growth opportunities, asset tangibility and tax rate in a manner consistent with the predictions of the trade-off hypothesis (e.g. Titman and Wessels, 1988; Rajan and Zingales, 1995; Deesomsak et al. 2004; Frank and Goyal, 2009). However, the negative correlation between debt and profitability found in some studies does not support the theory (Rajan and Zingales, 1995; Fama and French, 2002; Frank and Gyoal, 2009; Nguyen et al., 2012).

The trade-off theory is also confirmed by papers that show firms have an optimal leverage ratio, but may temporarily deviate from such target and seek to adjust their capital structure towards it (Marsh, 1982; Jalilvand and Harris, 1984; Hovakimian et al., 2001; Hovakimian et al., 2004; Hennessy and Whited, 2005; Leary and Roberts, 2005; Kayhan and Titman, 2007; Antoniou et al., 2008; Huang and Ritter, 2009). Hennessy and Whited (2005) emphasize the importance of understanding capital structure decisions in dynamic settings. On the one hand, some studies document that firms adjustment relatively quick towards their target ratio (Jalilvand and Harris, 1984; Flannery and Rangan, 2006); on the other hand, several papers state that the speed of adjustment is slow (Fama and French, 2002; Huang and Ritter, 2009).

2.1.3. The pecking order theory

The best-known alternative to the trade-off model is the pecking order theory. First suggested by Myers (1984) and Myers and Majluf (1984), the pecking order theory works on the assumption of asymmetric information, which indicates that managers know more about their companies than outside investors. Companies try to issue equity when shares are overpriced. Investors understand it; thus, the stock price usually declines following the announcement of new share issue. Meanwhile, internal funds incur no flotation costs and no disclosure requirements. According to the pecking order theory, corporate financing choices are driven by the costs of adverse selection that arises from asymmetric information. Retained earnings

have no adverse selection costs while debt is subject to minor costs and equity is associated with serious adverse selection problems. Consequently, firms prefer to use internally generated funds, i.e. retained earnings to finance. In case more funds are required, firms will use debt financing, and their last option is equity financing. Given the assumption of asymmetric information, the pecking order theory states that firms do not have target or optimal leverage. Observed debt ratios are merely the historical accumulated result of external financing requirements.

The empirical literature has found mixed evidence of the pecking order theory. Shyam-Sunder and Myers (1999) were among the first to test the pecking order hypothesis. The authors examine the relation between firms' net debt issues and financing deficit and find that firms mainly use debt policies to offset their financing deficit, which is consistent with the prediction of the pecking order theory. Booth et al. (2001) in their study on 10 developing countries document that the more profitable the firm, the lower the debt ratio which is consistent with the pecking order hypothesis. Beattie et al. (2006) find the applicability of the pecking order theory when testing the capital structure of UK firms. Survey research by Brounen et al. (2006) emphasizes the presence of the pecking order theory for various European countries. However, it is not motivated by information asymmetry. There are several studies find counter-evidence for the pecking order theory (Fama and French, 2002, 2005; Frank and Goyal, 2003). Frank and Goyal (2003) document that net equity issues track the financing deficit more closely than net debt issues, which is contrary to predictions of the pecking order theory. Fama and French (2005) point out that capital structure decisions of firms often violate the basic predictions of the pecking order hypothesis. Gaud et al. (2007) investigate capital structure decisions in European countries and argue that neither the pecking order hypothesis nor the simple trade-off theory can fully explain their results. Seifert and Gonenc (2008) find little support for the pecking order theory when testing a sample of firms in the UK, the US.

Most studies insist that neither the pecking order nor trade-off theory alone can fully explain the capital structure policies; in fact, the two theories are complementary (de Haan and Hinloopen, 2003; Fama and French, 2005; Gaud et al., 2005; Bharath et al., 2009; Leary and Roberts, 2010; de Jong et al, 2011; Tucker and Stoja, 2011). Rajan and Zingales (1995) show that determinants of leverage are consistent with the predictions of both the trade-off and the pecking order theory. The same results are found in other subsequent papers (e.g. Deesomsak et al., 2004; Antoniou et al., 2008; Frank and Goyal, 2009). Hovakimian et al. (2001), Hovakimian et al. (2004), Leary and Roberts (2005) and Kayhan and Titman (2007) find that

firms have target debt ratios but still follow the pecking order theory when firms adjust towards the target leverage ratio. De Jong et al. (2011) find that the pecking order theory is a better descriptor of firms' issue decisions than the static tradeoff theory; in contrast, when focusing on repurchase decisions the authors find that the static tradeoff theory is a stronger predictor of firms' capital structure decisions.

In addition, Booth et al. (2001) and Fama and French (2002) argue that it is difficult to distinguish between trade-off theory and pecking order theory in case the variables used in one model are also relevant in the other model. When shared predictions are confirmed such as firms with more volatile earnings carry lest debt, there is no evidence that the results are due to trade-off forces, pecking-order forces or other factors overlooked by both.

Furthermore, some studies suggest that firms follow a modified pecking order – retained earnings, equity, bank and possibly market debt – specially in emerging countries such as China and Central and Eastern European countries (Chen, 2004; Delcoure, 2007). The different institutional settings including banking system, legal system, shareholders and bondholders right protections, corporate governance drive firms to issue equity for long-term financing. Lemmon and Zender (2010) provide further evidence of a modified version of the pecking order theory by incorporating the concept of debt capacity. The preference of small and high-growth firms for equity finance is explained by their growth opportunities and restrictive debt capacity constraints.

2.1.4. The signaling theory

Based on the asymmetry information assumption between managers and investors, Ross (1977) originates the signaling theory. Assuming that the insiders know the true distribution of firms' returns while investors do not, the theory states that market infers from an increase in debt that a firm is better off, leading to an increase in share price. The market infers conversely from a decrease in debt, implying a share price fall. Therefore, managers can signal information to the market when they change corporate leverage. Consequently, more profitable companies and those with the better perspectives for growth use more debt financing than less profitable companies and those with poorer perspectives for growth.

There are a number of studies examining the relevance of the signaling theory. In agreement with the hypothesis of the signaling theory, Giner and Reverte (2001) find evidence supporting that debt is a positive signal for firms with good prospects. Eldomiaty et al. (2007) examine the determinants of signaling effects related to corporate financing decisions and find that industry average debt ratio has a positive signaling effect for medium systematic

risk firms. In addition, signaling is the most commonly cited explanation for stock repurchases in the empirical literature (Fried, 2000; Rau and Vermaelen, 2002; Baker et al., 2003; Hackethal and Zdantchouk, 2006; Louis and White, 2007). Fried (2000) argues that cash is distributed to public shareholders through three mechanisms that are dividends, open market repurchases, and repurchase tender offers. Nevertheless, the reason firms would distribute cash through repurchase tender offer rather than open market repurchases or dividend is that managers intentionally signal stock undervaluation. Furthermore, in the study of Australian environment, Mitchell and Dharmawan (2007) find that incentives for on-market buy-back are related to not only signaling of undervaluation but also signaling of reducing agency cost and/or information asymmetry. In line with the signaling hypothesis, Peyer and Vermaelen (2009) find that there is evidence of positive long-term abnormal returns subsequent to repurchase announcement; the finding is consistent with the survey results of Brav et al. (2005).

2.1.5. The agency cost theory

The agency cost theory, proposed by Jensen and Meckling (1976) and Jensen (1986), explains the capital structure decisions based on an agency problem between the principal (shareholders) and the agent (managers) of the firm. Jensen (1986) suggests that agency costs increase with free cash flow, shareholders would prefer that the free cash flow is either invested in positive net-present-value investments or paid out as dividends. On the contrary, managers have an incentive to invest these free cash flows in investments with expected returns lower than the cost of capital when such investments increases the managers' wealth. The theory implies that debt can reduce the possibilities of wasting resources by managers since debt decreases free cash flows. Besides, given the constant investment of managers in the firm, high debt increases the fraction of ownership by managers; therefore, the agency cost is reduced.

When a firm employs debt financing, conflicts of interest also arise between shareholders and bondholders. Therefore, firm's debt financing has two effects. It decreases the agency costs between shareholders and managers, but increases the agency costs between shareholders and bondholders. Shareholders expropriate value from bondholders by selecting risky investments. On the other hand, if debt is risky, debtholders will require a higher return for their financing. Therefore, the gain from the project will accrue to debtholders rather than shareholders.

Since both equity and debt incur agency costs, the agency cost theory states that an optimal capital structure is determined by minimizing the costs arising from conflicts between the involved parties.

Inspired by the seminal work of Jensen and Meckling (1976) and Jensen (1986), various papers have focused on the impact of agency costs on corporate financing decisions. The study of Kim and Sorensen (1986) is among the first papers empirically testing the existence of agency costs and its relationship with firm's capital structure. The authors find a positive significant relationship between insider ownership and leverage ratio. In line with Kim and Sorensen (1986), several papers confirm the applicability of the agency cost theory. De Jong and Ven (2001) confirm the signaling model as Dutch mangers avoid the disciplining role of debt allowing them to invest; however, their overinvestment behavior is recognized. Harvey et al. (2004) focus on a sample of firms with potentially extreme agency problems. The findings reveal that debt creates shareholder value for firms because it reduces the agency costs associated with overinvestment. Hjelmstad et al. (2006) test the agency cost theory in the context of open market share repurchase. The findings suggest that the positive market reaction associated with open market share repurchases in the UK is best explained by the agency cost theory. More recently, Margaritis and Psillaki (2007, 2010) show that higher agency costs are associated with higher leverage ratio. Delcoure (2007) shows that the agency cost theory together with other theories of capital structure explain the capital structure puzzle. Recent studies indicate that agency issues may be relevant in both the pecking order theory and the trade-off theory (Flannery & Rangan, 2006; Leary & Roberts, 2010).

Adding to the debate, Mao (2003), Brounen et al. (2006), De Jong and Van Dijk (2007) give no support for the agency cost theory. Mao (2003) presents a unified analysis that accounts for both risk-shifting and under-investment debt agency problems. Contrary to conventional views, the total agency cost of debt does not uniformly increase with leverage. Similarly, Brounen et al. (2006) do not find substantial evidence that agency problem are important in capital structure choice. De Jong and Van Dijk (2007) find that despite the existence of agency problems, there is no direct relationship between leverage and agency problems.

The effect of ownership structure and managerial traits in reducing agency costs is also emphasized in empirical literature. Anderson et al. (2003) find that founding family firms have incentive structures that lead to fewer agency conflicts between shareholders and debtholders. As a result, a lower cost of debt financing is achieved. Bondholders consider

founding family ownership as an organization that better protects their interest. Parrino et al. (2005) find that risk-averse managers are biased against risky projects in spite of the fact that they could reap benefit from higher project risk. Hackbarth (2008) develops the model to test the interaction between agency problems and managerial traits. The author finds that optimistic or overconfident managers choose higher debt levels than a rational manager. Biased managers' decisions can increase firm value by reducing shareholders and bondholders conflicts.

2.2. Market timing and capital structure

2.2.1. Theoretical framework

The seminal work of Baker and Wurgler (2002) sheds a new light on the capital structure issue. The authors suggest that it is hard to explain the choice of financing within the traditional theories. Instead, based on the empirical findings of the windows-of-opportunities hypothesis, they propose the market timing theory, which states that capital structure evolves as the cumulative outcome of past attempts to time the equity market. Firms will choose to issue equity when their stocks have high market values relative to their book and past market value. This lowers the firm's cost of equity and benefits current shareholders at the expense of new shareholders. On the other hand, firms will conduct share repurchase in case their stocks are undervalued. When both debt and equity markets are unusually favorable, managers will raise funds even though firm has no need for financing currently. Conversely, in case both markets are unfavorable, firms will defer issuances. This theory also states that market timing of equity issues have a very large and persistent impacts on leverage ratio. In particular, temporarily fluctuations in market values cause permanent changes in firms' capital structure.

There are two versions of the market timing theory. The first one comes from a dynamic model of Myers and Majluf (1984), which assumes that managers and investors are rational and adverse selection varies across firms or over time. Firms are supposed to issue equity immediately after positive information is released which reduces the asymmetric between the managers and shareholders. The decrease in information asymmetry is related to the increase in stock price and leads to more equity financing. Thus, firms create their own timing opportunities.

The second version of the market timing theory assumes that managers and investors are irrational which results in mispricing perception. According to Baker and Wurgler (2002), managers issue equity when the cost of equity is irrationally low and repurchase equity when

the costs of is believed irrationally high. The second version does not require that the market is inefficient. In fact, the market can still be efficient while managers believe they can time the market.

Both versions of market timing hypothesis have the same predictions about the relationship between firm value and financing decisions. Equity-issuing firms are those with high market value relative to book values and those that earn positive abnormal returns prior to raising capital. Baker and Wurgler (2002) state that market-to-book ratio can be a proxy to explain market timing effects in both versions of the market timing theory. Since market-to-book ratio could represent both adverse selection and perceived mispricing, Baker and Wurgler (2002) could not differentiate which version dominates.

To sum up, according to market timing theory, capital structure decisions are taken based on capital market conditions. Stock prices and interest rate levels are driving forces for equity and debt issuance decisions respectively. The optimal leverage ratio does not exist according to the market timing hypothesis. .

2.2.2. Empirical evidence

2.2.2.1. Early empirical evidence of market timing

Although the market timing theory is the most recent capital structure theory, the idea is long rooted in the literature. A starting point is Taggart (1977); the paper suggests evidence that movements in the market values of long-term debt and equity are important determinants of US firms' security issuance decisions. A number of other early papers document the support of market timing hypothesis (Marsh, 1982; Lucas and McDonald, 1990; Ritter, 1991; and Loughran et al. 1994, among others).

Marsh (1982) examines security issues of UK companies and finds that firms are strongly affected by market conditions and the history of security prices when making their choices of financing instruments. Lucas and McDonald (1990) present a model which predicts that equity issues on average are preceded by an abnormal positive return on the stock or an abnormal rise in the market.

Several studies show that firms that issuing stocks whether IPOs or SEOs experience poor subsequent performance (Ritter, 1991; Loughran et al., 1994; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995). This finding indicates that firms take advantage of windows of opportunities - the moments when stocks are overvalued.

Other papers document the relationship between market-to-book ratio and capital structure decisions. Rajan and Zingales (1995) study the determinants of capital structure in G7 countries and find that market-to-book ratio is correlated to leverage. The authors document this as an evidence of market timing despite the unclearly theoretical underpinnings of these correlations. In a similar vein, Pagano et al. (1998) find that among determinants of going public decisions in a sample of Italian firms for the period 1982-1992 industry's market-to-book is the most important one.

Evidence on market timing is further supported by findings of the survey conducted by Graham and Harvey (2001). The study reveals that market timing is a primary concern of CFOs in their financing decisions. Firms issue short-term debt in an effort to time market interest rates, and managers are reluctant to issue equity when a firm is considered undervalued.

Hovakimian et al. (2001) test both equity and debt issuance decisions in the light of prevailing theories of capital structure – the trade-off theory and the pecking order theory. Nevertheless, the study documents that stock prices play an important role in determining firms' financing choice. Firms that experience large stock price increases are more likely to issue equity and retire debt than are firms that experience stock price declines. Manages are reluctant to issue equity when firms' shares are undervalued.

2.2.2.2. Current empirical evidence of market timing

Following the seminal work of Baker and Wurgler (2002), empirical researches on market-timing-driven financial decisions have gained momentum. A majority of papers could be viewed as reactions to the conclusions of Baker and Wurgler (2002) that capital structure is the cumulative outcome of attempts to time the equity market and the effects of historical market values on capital structure are long lasting. Table 1 gives an overview of selected studies on the impact of the market timing theory on capital structure choices.

There are a number of studies confirming the existence of the market timing theory and its persistent impact on firms' capital structure choices. In their survey of European firms, Bancel and Mittoo (2004) find that managers are actively involved in selecting the timing of equity issues, and issuing stock after a rise in the firm's share price is an important factor. Studying managerial timing attempts, Jenter (2005) provides evidence of market timing both at the corporate and management level. Firms with low market-to-book ratio are regarded as value firms; firms with high market-to-book ratio are regarded as growth firms. Managers in low market-to-book firms purchase equity on their own, and repurchase for their firms. Elliott

et al. (2007 and 2008) use the residual income model to measure the effect of the misvaluation of equity and the impact of market timing on corporate financing decisions. The results are consistent with Baker and Wurgler (2002) as firms are more likely to issue equity to fund their deficit when equity is overvalued. Huang and Ritter (2009) find that firms fund a larger proportion of their financing deficit with net external equity when the cost of equity capital is lower. Further support for the market timing theory is documented as the historical values of the cost of equity capital have persistence influence on firms' capital structures, even after controlling for firm features that have been recognized as the most significant determinants of capital structure. The relevance of the market timing theory is verified in different institutional settings. De Bie and de Haan (2007), Bougatef and Chichti (2010) and Gaud et al. (2007) find a negative relationship between market timing measure and leverage for the Netherlands, France and 13 European countries respectively. Several studies document that security issuance decisions in developing countries are motivated by the market timing theory (Henderson et al., 2006; Cohen et al., 2007; Ni et al., 2010; Bo et al., 2011). Kim and Weisbach (2008) document that timing the market is the motivations for SEOs across 38 different countries.

Evidence of the market timing theory comes from not only equity but also debt markets. Bancel and Mittoo (2004) and Baker et al. (2003) find evidence of forward-looking market timing. When anticipating the future interest rate reduces, managers tend to make short-term debt issuance decisions; whereas when anticipating the increase in future interest rate, they tend to make long-term debt issuance decisions. Barry et al. (2008) find evidence of backward-looking market timing that companies issue more debt relative to investment spending and equity when interest rates is low compared with historical values. Henderson et al. (2006) examine both equity and debt market timing internationally. The results indicate that timing is particularly important in security issuance decisions. Firms issue more long-term debt when interest rates are lower, and prior to increases in interest rates. Doukas et al. (2011) reveal that perceived capital market conditions as favorable leads firms to issue more debt in hot- than in cold-debt market periods. Furthermore, there is a long lasting hot-debt market impact on the capital structure of debt issuers.

Two broad criticisms have been have been leveled at Baker and Wurgler (2002). The first one is that despite widespread agreement on the temporary effect of market timing on capital structure, the persistent impact of this phenomenon remains unconvincing (Leary and Roberts, 2005; Alti, 2006; Flanner and Rangan, 2006; de Bie and de Haan, 2007; Kayhan and Titman, 2007; Nguyen and Boubaker, 2009). Alti (2006) focuses on a single financing event,

the initial public offering, in an attempt to capture market timing and its impact on capital structure. The author defines market timers as the firms that go public in the 'hot issue market' (i.e., high market valuations and high IPO volume in terms of number of issuers). Alti (2006) finds that hot-market issuers have lower leverage ratios than cold-market firms do. These results lead the author to conclude that market timing is an important determinant of financing activity in the short run, but its long-run effects are limited. In line with Alti (2006), Flanner and Rangan (2006) confirm the existence market timing for security issuance, but disagree with Baker and Wurgler (2002) on the persistence of the impact on capital structure. Share prices fluctuations are found to have short-term impact on debt ratios, but efforts to reach the target leverage ratio offset these transitory effects within a few years. Similarly, Kayhan and Titman (2007) document the negative effect of historical market-to-book ratios on US corporate leverage, but do not confirm its long-term persistency. The findings indicate although firm's history strongly affects their capital structure, financing choices tend to move towards target debt ratios over time which is consistent with the trade-off theory. The results are in agreement with Leary and Roberts (2005), who argue that firms actively rebalance their leverage so that the impact of market timing vanishes within three to five years following equity issuances. Hovakimian (2006) also questions Baker and Wurgler's (2002) conclusion that capital structure is the cumulative outcome of past attempts at equity market timing. The author finds no evidence of significant equity market timing for debt issues and debt reductions. Although equity transactions may be conducted to time equity market conditions, they do not have significant long lasting effects on capital structure. The study also finds evidence that the effect of past market-to-book ratio on leverage is not due to equity market timing but reflects growth opportunities.

The second controversy surrounding the market timing theory is the relevance of the use of historical market-to-book ratio to appropriately proxy for a firm's market timing attempts. Indeed, this issue is raised by Baker and Wurgler (2002). The authors claim that while they believe their results are consistent with equity mispricing in the presence of irrational investors and/or managers, there are alternative interpretations. The use of market-to-book to test market timing is fraught with difficulties. These difficulties stem from the multiple interpretations of what the ratio captures: asymmetric information, growth options, and debt overhang problems (Elliott et al, 2007). Hovakimian (2006) and Kayhan and Titman (2007) show that the driving force behind the findings of Baker and Wurgler (2002) is not past equity market timing, but the growth opportunities.

Several papers use different measures of market timing compared with Baker and Wurgler (2002) to examine the market timing theory. Jenter (2005) argues that managers in low market-to-book ratio firms purchase equity on their own and repurchase equity for the firms. Market timing becomes evident in managers' own portfolios, as well as in the firm's financing decisions. Therefore, insider trading, or more particularly insider selling, is used as another measure to test for the impact of equity market timing on capital structure. Kayhan and Titman (2007) split external finance weighted historical market-to-book ratio into two parts: yearly timing and long-term timing. Yearly timing is used to measure market timing. High market-to-book ratio may be the impact of growth opportunities rather than the result of market timing. Firms with higher growth opportunities, which typically have higher average market-to-book ratios, may prefer to lower their leverage to maintain their financial flexibility. Elliott et al. (2008) test the market timing theory of capital structure using an earnings-based valuation model. Such framework avoids the multiple interpretations of book-to-market ratio. The authors decompose book-to-market into two components: mispricing (value-to-price) and growth options (book-to-value) to differentiate the impact of mispricing from growth options in the security issuance decision. Similarly, Hertzel and Li (2010) decompose the market-to-book ratio into two separate components, namely the growth and mispricing components. Their findings show that firms with higher element of mispricing decrease long-term debt and have a lower level of post-issue earnings. These results are consistent with the timing aspect of issuance activities.

Table 1. A summary of selected studies on the market timing effect on capital structure

Study	Main purpose	Sample	Methodology	Main findings
Bruinshoofd and de Haan (2012)	Providing comparative international evidence on the effect of market timing on corporate capital structure	US, UK and continental European firms during 1991-2001	Regression analysis, generalized least squares estimation	Historical market-to-book ratios and corporate leverage are negatively correlated in case of US firms, but that fact does not extend to UK and continental European firms.
Bo et al. (2011)	Examining the relevance of standard theories explaining the motivation of SEOs	SEOs in China between 1994 and 2008	Employing panel data fixed effect model	Chinese SEOs are mostly motivated by timing the market.
Doukas et al. (2011)	Examining the motives of debt issuance during hot-debt market periods and its impact on capital structure	All bond issues from 1970 to 2006 in the US markets	Regression analysis	Market timing and information asymmetry are important frictions that lead certain firms to issue more debt in hot- than cold-debt market periods.
Bougatef and Chichti (2010)	Investigating the relevance of market timing consideration on the debt-equity choice	Tunisian and French listed firms between 2000 and 2008	Panel data regression with pooled OLS and fixed effects estimators	Firms tend to issue equity when their market valuations are higher than their book values and after market performance improvement. The impact of equity market timing on capital structure persists beyond eight years.
Hertzel and Li (2010)	Examining the extent to which market timing motivates equity issuance decisions	US firms conducting SEOs over the period 1970-2004	Market-to-book decomposition methodology	Both market timing and capital budgeting needs influence the SEO decisions.
Ni et al. (2010)	Modeling the duration between firms' IPOs and their subsequent SEOs	Chinese listed firm between 2001 and 2006	Using duration analysis with nonparametric and parametric estimation	Market timing is an important consideration when Chinese firms undertake equity financing.
Huang and Ritter (2009)	Investigating time-series pattern of external financing decisions	U.S firms from 1963 to 2001	OLS regression, pooled nested logit regression	The historical values of the cost of equity capital have long-lasting effects on firms' capital structures through their influence on firms' historical financing decisions.
Nguyen and Boubaker (2009)	Examining the effect of the market timing theory on capital structure choices	25 Tunisian listed firms between 1998 and 2006	Regression analysis with GLS estimates, fixed-and random-effects estimates	The leverage ratios of firms are short-term driven by their current market value. In the long run, the market timing effects are not present.

Table 1. A summary of selected studies on the market timing effect on capital structure (cont.)

Study	Main purpose	Sample	Methodology	Main findings
Elliott et al. (2008)	Testing the market timing theory of capital structure using an earnings-based valuation model	9172 security issuances of US firms between 1980 and 1999	Earnings-based valuation model	Equity market mispricing plays a significant role in the security choice decision.
Kim and Weisbach (2008)	Examining the motivations for public equity offers	17,226 IPOs and 13,142 SEOs from 38 countries between 1990 and 2003	Regression analysis	Equity offers are used both to finance investment and to exploit a firm's valuation when it is highly valued by the market.
Mahajan and Tartaroglu (2008)	Investigating the equity market timing hypothesis of capital structure	Firms from G-7 countries over the period 1993-2005	Fama-MacBeth regressions	The negative relationship between historical market-to-book ratio and leverage is found; however, this negative relationship is not the outcome of equity market timing attempts.
Tian et al. (2008)	Investigating the market timing hypothesis of capital structure	Listed firms in Shenzhen over the 2002-2005 period	Following the methodology in Kayhan and Titman (2007)	Market timing does not have persistent impact on capital structure.
Umutlu and Karan (2008)	Testing the market timing theory	IPOs activities during 1998-2004 of firms in 12 emerging countries in Asia and Eastern Europe	Cross-sectional regression analysis using hot and cold dummy variable	The market timing theory is applicable to examined countries, except China and Indonesia.
De Bie and de Haan (2007)	Examining market timing and its effect on capital structure	Dutch listed firms from 1983 to 1997	Following the methodologies in Baker and Wurgler (2002) and Kayhan and Titman (2007)	There is evidence of market timing; however, the effect of market timing on capital structure is not persistent.
Cohen et al. (2007)	Analyzing the financing decisions of raising equity	Firms listed on the Athens Stock Exchange issuing equity in 1999	Accrual model, cross-sectional regression	Managers opportunistically time their equity issuance decisions to take advantage of the temporary overvaluation of the stocks.

Table 1. A summary of selected studies on the market timing effect on capital structure (cont.)

Study	Main purpose	Sample	Methodology	Main findings
Elliott et al. (2007)	Testing the impact of market timing on the firm's method of funding the financial deficit	US firms between 1971-2006	Earnings-based fundamental valuation model	Market timing explains a significant portion of the variation in the type of security used to fund the financing deficit.
Gaud et al. (2007)	Testing the driving factors of capital structure policies	5000 listed firms in 13 European countries	Logit estimator; Tobit regression	Both market timing and corporate governance influence capital structure choices.
Kayhan and Titman (2007)	Examining how cash flows, investment expenditures, and stock price histories affect debt ratios	US listed firms between 1960 and 2003	Partial adjustment models, two-stage estimation	Firms' histories strongly influence their capital structure; however, their capital structure tends to move towards target debt ratios over time.
Alti (2006)	Examining the capital structure implications of market timing	IPOs between 1971 and 1999 in US	Cross-sectional regression with hot market dummy, industry fixed effects	Hot-market IPO firms issue substantially more equity, and lower their leverage ratios by more than cold markets. The impact of market timing on leverage completely disappears by the end of the second year following the IPO.
Henderson et al. (2006)	Examining the extent to which firms from different countries rely on alternative sources of capital and the factors that affects their choices	International security issues during 1990-2001 period	Fama-Macbeth regression, pooled regression, region-specific fixed effects	International debt issuances are more common than equity issuance. Market timing consideration appears to be important in security issuance in most countries.
Hovakimian (2006)	Revaluating Baker and Wurgler's (2002) conclusions about firm behavior and capital structure policy	US firms between 1983 and 2002	OLS regression, probit regression	The importance of historical average market-to-book ratio in leverage regressions is not due to past equity market timing.
Mendes et al. (2005)	Testing the market timing theory	Brazilian listed firms from 1997 to 2002	Cross-sectional regression	The market timing theory has not been proven in the Brazilian market.
Bancel and Mittoo (2004)	Examining European managers' views on capital structure	Managers of 16 European countries	Survey method	Managers value hedging consideration and use "windows of opportunity" when raising capital.

2.3. Taxes and capital structure

2.3.1. Theoretical framework

The tax theories are mostly framed within the trade-off theory of capital structure. According to the trade-off theory, firms have to consider both the benefits and costs of debt financing when making financing choices. The most prominent advantage of debt is that it allows firms to explore the tax deductibility of debt interest payments to reduce tax paid. Another benefit of using debt is that debt helps mitigate the agency costs arising from conflicts between shareholders and managers. On the other hand, using debt has disadvantage of incurring financial distress and bankruptcy costs. Even though, debt reduces the agency costs between shareholders and managers, it brings about the shareholder and bondholder conflicts. Overall, firms should balance the benefits and costs of debt financing to reach an optimal leverage. Although the pecking order theory does not directly focus on tax effects on firms' capital structure. It is obvious that the tax reinforce firms' preference for new debt issue to equity.

Modigliani and Miller (1963) are the first to rigorously demonstrate the role of the tax benefit of debt. Following their first paper about corporate capital structure in a perfect market in 1958, Modigliani and Miller (1963) modify their model to accommodate corporate tax. Since interest payment is a deductible expense when calculating corporate tax, leverage tends to reduce the cost of capital to a firm and thus increase its market value. By including corporate taxes, Modigliani and Miller (1963) show that the value of the firm increases by an amount equivalent to the debt tax shield, i.e., present value of the future tax shield benefits. With perpetual debt for example, the value of a firm with debt financing is as follows.

$$V_{\text{with debt}} = V_{\text{no debt}} + \tau_c D$$

where r_C is the corporate income tax rate, and D is the amount of debt the firm holds. The term $r_C D$ represents the tax advantage of debt. Hence, according to Modigliani and Miller (1963), the more debt financing a firm uses, the higher the market value of the firm is. In this model, the maximum market value of a levered firm is reached when firm uses one hundred percent debt financing. However, the results are obtained under strict assumptions.

Miller (1977) incorporates the role of personal taxes into the capital structure issue. The author shows that the incentive to finance completely through debt disappears under a variety of tax regimes because the gains from interest deductibility at the corporate level are exactly offset by the added burden of interest under the personal tax. In this case, the value of firm using perpetual debt is:

$$V_{with\ debt} = V_{no\ debt} + \left[1 - \frac{(1-\tau_C)(1-\tau_{PE})}{(1-\tau_{PB})}\right] D$$

Where r_C is the corporate income tax rate, r_{PE} denotes personal tax rates on equity income and r_{PB} denotes personal tax rates on bond income dividends, and D is the market value of the levered firm's debt.

DeAngelo and Masulis (1980) postulate that there is a substitution effect between tax and non-debt tax shield. In addition to tax shields of debt, firms have other tax shields, such as depreciation deductions, investment trade credits, loss carry-forward. The authors argue that the as the non-debt tax shield increases, the marginal corporate savings from an additional unit of debt declines.

2.3.2. Empirical evidence

2.3.2.1. Empirical evidence of the tax effect on capital structure

Despite the straightforward predictions of the trade-off theory that leverage is positive related to leverage because of tax advantage of debt, empirical tests have produced mixed findings. Some early papers such as Marsh (1982), Bradley et al. (1984), Titman and Wessels (1988), Fischer et al. (1989) do not find any significant effect of corporate income tax on firms' financing decisions. MacKie-Mason (1990) explains the reason why studies fail to find tax effects on financing decisions is that leverage ratio is the cumulative results of years of decisions and most tax shields have a minor impact on the marginal tax rate. Therefore, MacKie-Mason (1990) tests the incremental financing decisions and finds evidence that changes in the marginal tax rate affect financing choices, regardless of the likelihood of tax exhaustion.

Subsequent to MacKie-Mason (1990), there are a number of studies on firms' capital structure decisions, in which tax is just one element in a general model of company leverage. Graham (2008) reviews studies of the impact of tax on capital structure and concludes that, in general, taxes do affect corporate financial decisions. Empirical evidence typically shows that firms with higher marginal tax rates have higher debt tax shield, hence use more debt financing (e.g. Graham, 1996; Gropp, 2002; Faulkender and Petersen, 2006; Buettner et al., 2009; Frank and Goyal, 2009). However, agreement is not universal, especially with regard to the extent to which the tax incentives matter (Hanlon and Heitzman, 2010). The survey of Graham and Harvey (2001) shows that tax advantage of debt is of significant concerns by CFOs in large US firms.

Empirical literature dealing with tax effects on capital structure shows that both corporate tax and personal tax influence capital structure (Givoly et al., 1992; Graham, 1999; Alworth and Arachi, 2001; Ince and Owers, 2012). Graham (1999) extensively examines the role of personal taxes. The author finds that the cross-sectional differences between corporate and personal income taxes affect the debt level whereas the times-series variation in personal tax rates does not influence capital structure decisions. Ince and Owers (2012) show that the interaction between dividend policy and financial leverage decisions is significantly influenced by different tax rates on corporate income, personal interest, dividends and capital gains.

The empirical evidence of the substitution hypothesis between non-debt tax shield and tax shield is mixed. In line with DeAngelo and Masulis (1980), a number of studies document the results confirming the substitution and that non-debt tax shields have negatively impact on leverage (MacKie-Mason, 1990; Givoly et al., 1992; Shenoy and Koch, 1996; Graham and Tucker, 2006, Overesch and Voeller, 2008). MacKie-Mason (1990) estimates non-debt tax shields by tax-loss carry-forwards and investment tax credits and finds that firms with a higher chance of losing the impact of their non-debt tax shields are less likely to issue debt at a margin, a result is namely "tax exhaustion hypothesis". In a similar vein, Trezevant (1992) tests both the substitution and the tax exhaustion hypothesis. The author finds that firms with a higher probability of losing tax advantage of debt because of the newly introduced non-debt tax shields are more likely to decrease the their leverage ratio. Graham (1996) in his test of the relationship between non-debt tax shields consisting of depreciation and investment trade credit finds the negative effects by combining non-debt tax shields and probability of bankruptcy. Similarly, Shyam-Sunder and Myers (1999) suggest a positive relationship between tax-loss carry-forwards and leverage. Graham et al. (2004) use a new proxy for non-debt tax shield, the exercise of executive/employee stock options. The findings confirm that option deductions substitutes for interest deductions, explaining partly why firms use less debt.

In contrast, some researchers find a positive relationship between non-debt tax shield and leverage (Titman and Wessels, 1988; Ozkan, 2001). An explanation can be non-debt tax shield is positively related with profitability. If profitable firms invest heavily, and use debt financing to fund their project, this may be a positive relationship between debt and non-debt tax shield. As a result, the tax substitution between interest and non-debt tax shield is overwhelmed.

2.3.2.2. Empirical evidence of the tax reform effect on capital structure

While the impact of taxes on financing decisions is well established in the literature on corporation taxes (see Auerbach, 2002; Graham, 2008, for a survey), in regards of the effect of tax reform on capital structure, a limited number of studies are encountered in the literature review due to rare circumstances in which tax rate has been changed exogenously. Research on the impact of tax regime changes on capital structure started with studies on the Tax Reform Act of 1986 in United States (Gordon and MacKie-Mason, 1990; Givoly et al., 1992). Subsequent empirical evidence comes from both developed and developing countries and different kinds of firms such as Italian manufacturing firms (Bontempi et al., 2005), Indian unlisted firms (Green and Murinde, 2008), Croatian private SMEs (Klapper and Tzioumis, 2008), German firms (Dwenger and Steiner, 2009).

Empirical studies on the impact of tax reform on capital structure generally support the predictions of theories about the effect of tax. Tax policy has an important and generally plausible impact on leverage decisions. In particular, following changes in tax rates that make debt more attractive, firms incrementally increase the portion of capital structure comprised by debt; lower tax rates result in increased equity levels and decreased long-term debt levels (Gordon and MacKie-Mason, 1990; Givoly et al., 1992; Gordon and Lee, 2001; Green and Murinde, 2008; Wu and Yue, 2009). Tax system influences corporate leverage both through the relative cost of debt capital and through cash flow (Bontempi et al., 2005). However, there is controversy regarding the impact of taxes on the use of short-term debt and long-term debt. Gordon and Lee (2001) show that taxes primarily affect use of short-term debt. Conversely, Cheng and Green (2008) find no strong evidence of substantial differences between the determinants of long-term and short-term financing choices.

The empirical evidence on the impact of tax changes on corporate financing decisions is far from conclusive concerning the magnitude of the effect. Gordon and Lee (2001) and Dwenger and Steiner (2009) document that estimated tax effects are rather large. For instance, reducing the corporate tax rate by 10%, holding personal tax rates fixed, is forecasted to reduce the fraction of US firms' assets financed by debt by around 3.5% (Gordon and Lee, 2001). Dwenger and Steiner (2009) find that an increase of the tax rate by 10% would increase financial leverage of German firms by about 5%. On the contrary, Gordon and MacKie-Mason (1990), Cheng and Green (2008) and Wu and Yue (2009) document that the adjustment of leverage though significant is relatively small in magnitude.

In addition to the confirmation of the tax change effect, studies further investigate the influence of other factors on the adjustment of the leverage. Givoly et al. (1992) and Cheng and Green (2008) suggest that non-debt tax shields are a substitute for debt in firm activities. Firms generally prefer non-debt tax shields over debt because unlike debt, non-debt tax shields do not increase the probability of bankruptcy. Besides, Gordon and MacKie-Mason (1990) show that firms with large investment trade credits increase their debt-equity ratios more in response to the Tax Reform Act of 1986 than firms with small investment trade credits. Another firm characteristic that has influence on the adjustment of leverage ratio is profitability. Klapper and Tzioumis (2008) find that more profitable firms are more likely to reduce their leverage ratios following the substantial reduction in corporate tax rate in Croatia. Furthermore, Wu and Yue (2009) show that profitable firms are more levered because they benefit from corporate debt tax shields. Firms of different size respond differently to the change in corporate tax rate. Gordon and Lee (2001) find evidence that the size of company has a significant effect on its response to tax changes, especially for the largest and smallest firms. The impact of tax on financing activities of smaller U.S. firms is greater than that of larger ones. Dwenger and Steiner (2009) emphasize that the leverage ratio is less responsive for small firms which may have fewer opportunities to use debt as a tax shield due to capital market restrictions and firms which benefits from non-debt tax shields. In case of emerging market such as China, Wu and Yue (2009) document that the adjustment of leverage is mostly affected by the accessibility to bank loan, firms with better access to bank loans adjust more quickly.

Table 2 presents an overview of selected papers on the impact of tax effect in general and tax reform in particular on the capital structure choices of firms.

Table 2. A summary of selected studies on the tax effect on capital structure

Study	Main purpose	Sample	Methodology	Main findings
Hanlon and Heitzman (2010)	Reviewing tax research	Theoretical and empirical literature	Summarizing the research areas and offering suggestions for further research	Capital structure decisions appear to respond to corporate tax incentives, but agreement is not universal, especially with regard to the extent to which the tax incentives matter.
Buettner et al. (2009)	Analyzing the impact of taxation on the capital structure of multinationals	German multinationals for the period 1996-2003	Company and time fixed effects	Tax is found to encourage using debt finance. The effects are significant regarding both internal and external debts.
Dwenger and Steiner (2009)	Estimating the influence of effective profit taxation on the financial leverage	German firms during 1998-2001	Using OLS and IV regression on pseudo panel	Tax rate has a statistically significant and relatively large positive impact on corporate leverage of firms. The leverage ratio is less responsive for small firms and firms which benefits from non-debt tax shields.
Wu and Yue (2009)	Testing how a change of the tax rate affects firms' capital structure	Chinese listed firms between 1999-2003	First difference regression	Firms that had received local government tax rebate increased their leverage after the tax rebate termination compared with firms that had no change of tax rates.
Cheng and Green (2008)	Investing the influence of tax policy on firms' capital structure decisions	129 listed firms from 11 European countries during the period 1993-2005	Generalized methods of moments	Tax policy has a significant but small impact on firms' leverage ratios. Non-debt tax shields are a substitute for debt in firm activities.
Graham (2008)	Reviewing tax research	More than 200 published papers	Reviewing	Tax research generally supports the hypothesis that high-tax rate firms pursue policies that provide tax benefit.
Green and Murinde (2008)	Testing the impact of tax reform policies on the capital structure decisions	97 Indian unlisted firms during the period 1989-1999	Generalized methods of moments	Tax policy has an important and plausible impact on leverage decisions. The 1990s tax reform has a substantial effect in reducing outstanding firm debt.
Huizinga et al. (2008)	Presenting a model of multinational firm's optimal debt policy	EU multinationals from 1994 to 2003	OLS regression	Significant effects of marginal and tax differences are documented.

Table 2. A summary of selected studies on the tax effect on capital structure (cont.)

Study	Main purpose	Sample	Methodology	Main findings
Klapper and Tzioumis (2008)	Examining the effects of taxation on financial policy using the corporate tax reform in 2001 as a natural experiment	Croatian private SMEs from 1998 to 2003	Using panel data regression with firm fixed-effects	Lower tax rates result in increased equity levels and decreased long-term debt levels. Smaller and more profitable firms are more likely to reduce their leverage ratios following the reduction of corporate tax rate.
Graham and Tucker (2006)	Investigating the impact and magnitude of tax shelter activity on corporate debt policy	44 tax shelter cases between 1975 and 2000 in the US	OLS regression	The average annual deduction produced by the shelters is very large. Firms use less debt when they engage in tax sheltering.
Bontempi et al. (2005)	Examining the impact of two different corporate tax reforms on capital structure	24,796 Italian manufacturing firms between 1982 and 1999	A micro-simulation of corporate-tax model, an empirical model of firms' financial choices	The tax system influences corporate leverage both through the relative cost of debt capital and through cash flow. The first reform, which operated mainly by reducing the relative cost of equity capital, is more effective in reducing corporate leverage.
Gropp (2002)	Investigating the relationship between taxation and capital structure choice	German firms between 1985 and 1990	OLS estimate and FIML estimate	Local taxes significantly influence the capital structure choice of firms after controlling for a number of other factors.
Alworth and Arachi (2001)	Examining the relationship between taxes and debt	1054 Italian firms for the years 1982-1994	Cross-sectional regression, firm-fixed effects	There is strong evidence for the impact of both personal and corporate taxes on leverage choices.
Jog and Tang (2001)	Testing the relationship between corporate income tax change and debt level change of domestic and foreign controlled firms	Canadian firms between 1984 and 1994	Regression on panel data	Canadian firms without foreign affiliates are more responsive to the corporate income tax change.
Gordon and Lee (2001)	Investigating the influence of changes in corporate tax rates on debt policy of firms of different sizes	Corporate income tax balance sheets data of US firms data from 1950 to 1995	Using a difference-in-difference and time-series estimates	Taxes have a strong and statistically significant effect on debt levels. The estimated effect of taxes would be strongly biased downwards without controlling for firm size.
Graham (2000)	Calculating the value of tax benefits of debt financing	87,643 US firm-year observations	Regression with corporate marginal tax rate	There is a significant impact of taxes on the debt level. Firms can increase tax benefits by issuing debt until the marginal tax benefit begins to decline.

Table 2. A summary of selected studies on the tax effect on capital structure (cont.)

Study	Main purpose	Sample	Methodology	Main findings
Graham (1999)	Investigating the degree to which personal taxes affect corporate financing decisions	US firms from 1980 to 1994	Regressions by firm groups and years	The positive effect of corporate taxes and the negative effect of personal taxes on debt usage are identified.
Graham et al. (1998)	Testing the relation between debt policy, leasing policy and taxes	US firms 1981-1992	Pooled times-series cross-sectional censored regressions	Significant tax effect is documented. Corporate marginal tax rates is positively related to debt usage, but negatively related to the use of operating leases.
Givoly et al. (1992)	Testing the effect of the Tax Reform Act of 86 on capital structure	US firms data from 1983 to 1986	Change regression	Both corporate and personal tax rates influence leverage decisions. There exists a substitution effect between debt and non-debt tax shields.
Gordon and MacKie-Mason (1990)	Examining the effect of the Tax Reform Act of 1986 on financial decisions	996 US firms from 1985 to 1988	Using different models to forecast firms' decisions after the tax reforms and then comparing the expected results and actual observations	The change in debt/value ratios is substantially smaller than expected.

CHAPTER 3. INSTITUTIONAL SETTING IN VIETNAM

In this section, a brief discussion of the Vietnamese setting is provided. The chapter starts with a description of the whole economy. Then, it presents the development of the stock market, bond market and banking sector. Finally, the tax reform in 2009 is described.

3.1. Overview

The extensive economic reform starting in 1986 has made numerous important changes to Vietnam's economy. Vietnam is a rapidly expanding emerging market with annual growth rate of GDP of about 7% from 2005-2011 (see Table 3 for detailed information). Since Vietnam officially joined the World Trade Organization (WTO) in 2007, it has been inevitable that the financial market, economics and trade activities have become more open. There was a substantial surge in capital inflows in late 2006 and 2007 in response to the optimism engendered by the Vietnam's entry to WTO. Nevertheless, the economy suffered from a turbulent year in 2008. One weakness of Vietnam's economy is its persistent macroeconomic instability (World Bank, 2012). Table 3 below highlights key information of Vietnam's economy during the period from 2005 to 2011.

Table 3. Basic economic indicators of Vietnam (2005-2011)

	2005	2006	2007	2008	2009	2010	2011
Nominal GDP (USD billion)	52.9	60.9	71.0	91.1	97.2	106.4	124.0
GDP per capita (USD)	642	731	843	1,070	1,129	1,224	1,411
Annual growth rate of GDP (%)	8.4	8.2	8.5	6.2	5.3	6.8	5.9
Annual growth rate of GDP per capita (%)	7.2	7.0	7.3	5.2	4.2	5.7	4.8
Annual inflation (%)	8.3	7.4	8.3	23.1	7.0	8.9	18.7
Exchange rate (VND/USD)	15,858.9	15,994.3	16,126.0	16,303.7	17,065.0	18,612.0	20,509.8

(Source: World Bank Statistics)

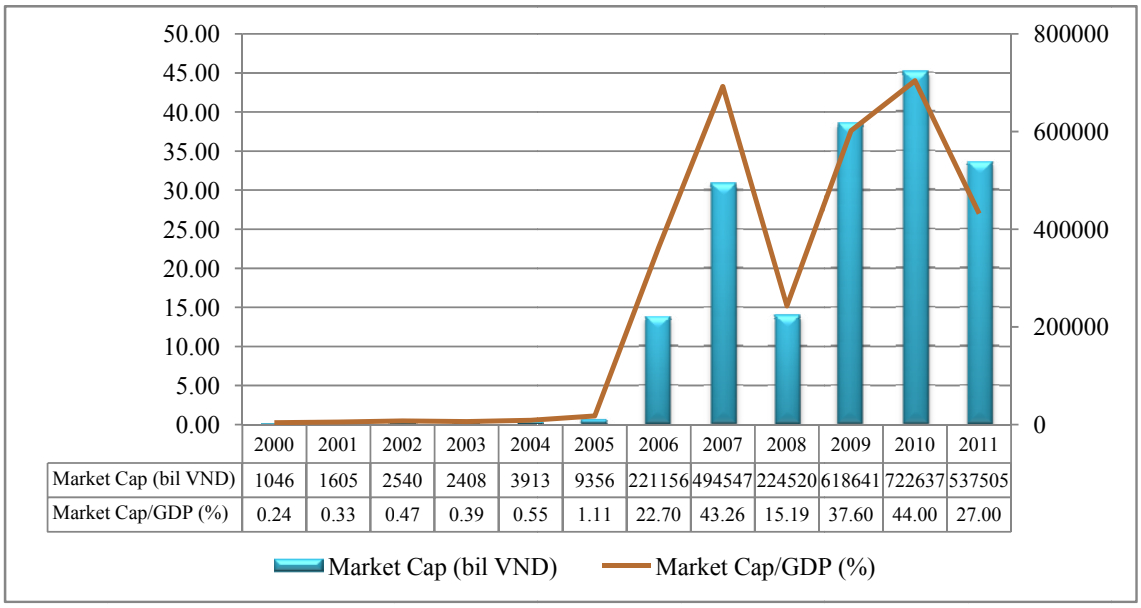
3.2. The stock market

Vietnam's first bourse, the Ho Chi Minh Stock Exchange (HOSE) was founded in July 2000. The launch of HOSE made its milestone in the transitional process of the economy. The second stock exchange, the Hanoi Stock Exchange (HNX), was established in March 2005. In general, the requirements for listing on HNX are looser compared with those of HOSE. Detailed criteria for listing shares in Vietnamese stock exchange are presented in Appendix 1.

The highest authority over the Vietnamese stock market is the State Securities Commission, which regulates and supervises the operations of both stock exchanges. The legal framework on the securities market in Vietnam includes the Law on Securities (No. 70/2006/QH11) and other sub-law documents.

After slow increases from 2000 to 2005, there was a boom in the stock market in 2006 and 2007 due to expectations over country's strong economic growth and the accession to WTO. In 2006, there were 193 listed firms, an increase by more than 350% compared with 2005. In 2008, affected by the global economic crisis, VN-Index has fallen down dramatically; nevertheless, the number of listed companies has increased sharply in 2008. There have been 88 newly listed companies in 2008 accounting for 26% of the total listed companies in Vietnamese stock market.

Starting with five listed stocks with market capitalization accounting for 0.2% of total GDP in 2000, the Vietnamese stock market has become an important channel of raising financing for 695 firms with a total market capitalization of approximately 27% of total GDP in 2011. Table 4 presents increasing numbers of listed firms on the two stock exchanges from 2000 to 2011. As Figure 1 illustrates, despite such rapid growth, the Vietnamese stock exchanges remain quite small by international standards.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Market Cap (bil VND)	1046	1605	2540	2408	3913	9356	221156	494547	224520	618641	722637	537505
Market Cap/GDP (%)	0.24	0.33	0.47	0.39	0.55	1.11	22.70	43.26	15.19	37.60	44.00	27.00

Figure 1. Market capitalization of Vietnam's stock market (2000-2011)

(Source: HOSE, HNX)

Table 4. Number of listed firms on HOSE and HNX (2000-2011)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
HOSE	5	10	20	22	26	32	106	138	174	200	275	302
HNX	-	-	-	-	-	9	87	112	168	257	367	393
Total	5	10	20	22	26	41	193	250	338	457	642	695

(Source: HOSE, HNX)

3.3. The bond market

Vietnam's corporate bond market has been in existence since the early 1990s. Although the number of successful issues and liquidity of corporate bonds have shown significant improvements recently, problems hampering the development of the corporate bond market remains (Vuong and Tran, 2010). The Vietnam's corporate bond market is still in a nascent stage. The majority of local currency bond issuance comes from the government or government sponsored institutions. The overall bond market accounts for about 15% of total GDP, which is well below the East Asian average of about 65%, of which the corporate bond market accounts for 1.4% of GDP (Leung, 2009; Vuong and Tran, 2010). More than 90% of corporate bonds are issued by only 15 firms in Vietnam (Siackhachanh, 2012). The maturity structure of the Vietnam corporate bond market is unique in the region. According to ADB (2012), 92% of Vietnam's corporate bonds outstanding had maturities of 1-3 years, and there were no corporate bonds with maturities greater than 5 years at the end of 2010. Given the weak primary market and virtually nonexistent secondary market, the corporate bond market in Vietnam reflects the relationship-based and rent-seeking behavior in the financial markets (Vuong and Tran, 2010). There is no domestic rating service in Vietnam; only several banks and the government have public international ratings at this time. Corporate bonds are traded on both of the two bourses; however, the HNX is the exclusive trading floor for government bonds. There are some differences in the listing requirement of corporate bonds between HOSE and HNX (see Appendix 2 for detailed information).

3.4. The banking sector

The financial sector in Vietnam is characterized as a bank-based system, where state-owned commercial banks (SOCBs) play an important role (Leung, 2009). The banking sector has expanded substantially in recent years with the total domestic assets more than doubling between 2007 and 2010, growing from VND 1,097 trillion (USD 52.6 billion) to VND 2,690 trillion (USD 129.1 billion) (IMF, 2011). There were 101 banks and foreign bank branches

including 5 SOCBs, 38 joint-stock commercial banks, 53 100% foreign-owned banks and foreign bank branches, and 5 joint-venture banks by the end of 2010. More than 50% of the total loans of the sectors was made by SOCBs (Vietcombank, 2011). The State Bank of Vietnam regulates that the maximum VND lending tax rate set by credit institutions is 150% of the base interest rate. As of December 31 2009, VND lending rates were around 12%. According to Malesky and Taussig (2008), even though Vietnam's banking sector is in transition towards a healthier system, banks place greater value on connections than performance and firms with greater access to bank loans are not more profitable than other firms. Debt financing is the dominant financing source through either formal bank credits, non-bank loans or informal credits (Rigg and Schou-Zibell, 2009).

3.5. Tax reform in 2009

Corporate Income Tax (CIT) plays an important role in Vietnamese economics since it not only is the government revenue source but also helps create a more attractive business environment and promote domestic and foreign investment (Yui and Phan, 2006). According to Shukla et al. (2011), total average tax revenue was 22.2% of GDP for the period 2001-2009. Together with VAT, CIT has been a dominant source of revenue, with each of the two instruments contributing slightly less than 6% of GDP.

New taxations laws were introduced in Vietnam for the year 2009 including the Corporate Income Tax law. The law on Corporate Income Tax 14/2008/QH12 was passed by the National Assembly on June 2008, and has taken effect from 1 January 2009. Compared with the previous income tax law, the recently approved one has three main differences. Firstly, it reduces the tax rate. Secondly, it narrows the scope of tax exemptions and reductions. Thirdly, according to the tax reform, a single corporate income tax regime for all economic sectors is applied.

Table 5 shows that the corporate tax rates in Vietnam are gradually reduced during the period 2000-2011. It is in line with Mooij's (2011) conclusion that many countries have introduced or tightened rules that restrict the deductibility of interest.

Table 5. Corporate income tax rates in Vietnam (2000-2011)

	2000	2001-2003	2004-2008	2009-2011
CIT rate (%)	32.5	32	28	25

Among those adjustments, the most prominent change is the reduction of the standard CIT rate from 28% to 25%. However, there are some exceptions. The CIT rate applicable to businesses conducting exploration and exploitation of oil and gas and other valuable and rare natural resources is between 32% and 50%. Preferential CIT rates of 20% and 10%, in the form of incentives, apply if the enterprise meets certain specific criteria. CIT payable is assessable income multiplied by the CIT rate. Assessable income within any one tax period is equal to taxable income minus tax exempted income and losses carried forward, and taxable income includes business and other income.

Another alternation in the new tax reform is about deductible expenses. Under the new law, a taxpayer is entitled to deduct all expenses (instead of only "reasonable" expenses as specified in the prior law) provided that such expenses are (i) actual and related to the taxpayer's operation, (ii) can be established by proper invoices, vouchers, and (iii) are not classified as non-deductible expenses as described below.

The tax reform is a pro-active effort by the Government to enhance the competiveness of the economy and attract more long-term foreign investment. Objectives pursued by tax reform include low economic distortions or efficiency, fairness in the distribution of tax burdens, stimulation for further investment and enhancing the competitiveness of Vietnamese firms.

CHAPTER 4. HYPOTHESES

This chapter develops hypotheses illustrating the impact of the market timing theory and tax reform on capital structure of Vietnamese listed firms. The hypotheses are formulated based on the discussed literature in the previous chapters.

4.1. Market timing effect on capital structure

The market timing theory of capital structure introduced by Baker and Wurgler (2002) stipulates that firms issue equity when the market value of their shares are overvalued and repurchase equity when the market value of their shares are underpriced. In other words, firms issue equity when the cost of equity is low and repurchase equity where the cost of equity is high. Firms' capital structure is the cumulative outcome of past attempts to time the equity market.

Baker and Wurgler's (2002) findings have inspired a growing number of papers testing the relevance of equity market timing on capital structure. In agreement with Baker and Wurgler (2002), several studies confirm the market timing effects (Jenter, 2005; Elliott et al., 2007, 2008; Gaud et al., 2007; Huang and Ritter, 2009; Bougatef and Chichti, 2010). Moreover, empirical evidence supporting the market timing theory derives from both developed and developing countries. Cohen et al. (2007) employ data of listed companies in the Athens Stock Exchange during the hot period of year 1999 and show that managers opportunistically time their equity issuance decisions in such an upward moving market to taking advantage of the temporary overvaluation of the stocks. Ni et al. (2010) and Bo et al. (2011) analyze the motivation of equity issuance in Chinese context. The findings show that market timing is an important consideration when Chinese firms undertake equity financing. Similarly, Henderson et al. (2006) conclude that firms are more likely to issue equity when stocks are considered overvalued by testing a sample of firms from numerous countries around the world.

Some studies confirm the impact of market timing on capital structure of firms by testing the relationship between the amount of leverage with the market conditions when IPOs take place (Alti, 2006; Umutlu and Karan, 2008; Doukas et al., 2011; Kaya, 2012). In the IPO context, firms are more likely to go public when managers perceive the market conditions to be favorable. In such studies, the issue markets are classified as hot and cold markets. According to Alti (2006), market timers are firms that go public in hot issue market - the market with high IPO volumes in terms of number of issuers. If the impact of hot market on equity issuance exists, IPO firms issue more equity in hot equity markets compared to the

IPO firms in cold equity markets to take advantage of windows of opportunities. As a result, the leverage ratios of hot market IPOs firms are lower than the leverage ratios of cold market IPOs firms. The findings suggest that IPO issuers in hot markets have lower leverage ratios than those in cold-market firms.

Capital market in Vietnam is in its early stage of development with immature stock market. The transparency and disclosure of listed firms are still limited; therefore, high information asymmetry exits between managers and investors (Leung, 2009). In addition, the macroeconomic conditions in general are favorable, and the stock market in particular witnesses unprecedented growth in 2006 and 2007. As a result, it is likely that the share prices are mispriced, and managers take advantage of such opportunities to time the equity market. Based on a review of the existing theoretical and empirical evidence the following hypothesis is advanced.

Hypothesis 1: Firms issuing IPOs in hot markets have lower leverage than firms issuing IPOs in cold markets at the end of IPO year.

If there is evidence of hot market issuers have lower debt ratio than cold market issuers, the existence of market timing in IPOs market as well as the short-term effect of market timing on capital structure is proved.

After examining the existence of market timing effect, the study tests the persistent impact of market timing on capital structure, i.e., whether hot market issuers remain low leverage ratios in years subsequent to their IPOs. Despite the fact that Baker and Wurgler (2002) confirm a persistent impact of market timing effects, a number of papers share the conclusion that market timing is an important determinant of financing activity in the short run, but its long-run effect is limited. Alti (2006) shows that hot market firms pursue a policy of reversing the past market timing effect on leverage by issuing relatively more debt and less equity than cold market firms. The negative impact of market timing on leverage reverses completely two years after IPO issuance. In line with Alti (2006), a number of papers challenge the persistent of market timing effect on leverage choice (Flanner and Rangan, 2006; Hovakimian, 2006; de Bie and de Haan, 2007; Kayhan and Titman, 2007; Nguyen and Boubaker, 2009). De Bie and de Haan (2007) suggest that there is no persistent impact of market timing on capital structure of Dutch firms. Even alternative specifications of market timing measures do not significantly change this result. In a similar vein, Kayhan and Titman (2007) do not confirm the long-term negative persistency effect of historical market-to-book ratios on US corporate leverage. Market valuations have slight effects on the observed

fluctuations of leverage of Tunisian firms in the short-term; in the long run, the impact of market timing is not present (Nguyen and Boubaker, 2009). Consequently, the paper assumes the following hypothesis.

Hypothesis 2: Firms issuing IPOs in hot markets do not have low leverage ratios in years following IPOs.

If there is not a statistically significant negative relationship between hot dummy variable and the leverage ratio of IPO issuing firms in a period after IPO, it can be concluded that the IPO market timing does not have a persistent impact on firms' capital structure.

4.2. Tax change effect on capital structure

The effect of corporate income tax on capital structure has been the focus of both theoretical and empirical literature in financial area (for surveys see e.g., Graham 2003; Hanlon and Heitzman, 2010). Studies that focus on examining tax as a determinant of firms' capital structure find positive relationship between firm's leverage ratio and tax rate (MacKie-Mason, 1990; Givoly et al., 1992; Graham, 1996). Although equity does not constitute an obligation for firms to pay interest, interest payments on debt reduce firms' liablity for taxation. Consequently, firms may favor the issue of debts over equity because of tax advantage of debt.

The previous review of theoretic and empirical literature reveals that to the extent that changes in tax laws that alter tax benefit of debt will lead to changes in corporate capital structures. Givoly et al. (1992) test the effect of the Tax Reform Act of 1986 on capital structure of US firms. The study finds that the propensity of firms to decrease leverage as a result of a drop in the statutory tax rate is greater with a higher effective tax rate. In a different paper, Gordon and Lee (2001) find that reducing the corporate tax rate by 10%, holding personal tax rates fixed, is forecasted to decrease the fraction of assets financed by debt by around 3.5%. Klapper and Tzioumis (2008) document that lower tax rates result in increased equity levels and decreased long-term debt levels. Wu and Yue (2009), on the other hand, test how an exogenous change of the tax rate affects firms' capital structure by investigating a circumstance in which the Chinese government increased the corporate tax rate of firms that had previously received tax rebates. The findings show that firms that had received local government tax rebate increased their leverage by 3.3% in the following three years after the tax rebate termination compared with firms that had no change of tax rates.

Most studies have focused on variation in corporate tax rate across firms to examine the impact of tax on capital structure (e.g., MacKie-Mason, 1990; Graham, 1999; Gropp, 2002).

Virtually all firms face the same statutory corporate income tax rate at given time; nevertheless, different opportunities for tax deferral or tax reduction among firms lead to cross-sectional differences in effective tax results. The reduction of the CIT rate for Vietnamese firms from 28% pre-reform to 25% (from 1 January, 2009) decreases the effective tax rates of all corporations in general, and generates a greater change in effective tax rates of firms that initially have high effective tax rate in particularly. This variation allows us to test for the effects of taxes on firms' financial policy. Lower effective tax rate implies lower tax advantage of debt. As a result, a smaller decrease in leverage is stemming from a cut in the statutory tax rate. A relationship between the effective tax rate and change in leverage should be negative as the higher the effective tax rate is, the larger the decrease in leverage is. Therefore, the following hypothesis is proposed.

Hypothesis 3: Firms with higher effective tax rate reduce their leverage more than firms with lower effective tax rate.

If I find evidence of the negative correlation between changes in leverage and effective tax rates, it could be concluded that the impact of tax on capital structure does exist as the prediction of tax theories.

CHAPTER 5. METHODOLOGY AND DATA

This chapter first details the model and methodology that are used to test the hypotheses of the market timing and tax change effects on capital structure decisions of firms. Then it discusses the variable construction and data sets used for the analysis.

5.1. Methodology

5.1.1. Methodology for testing market timing effect on capital structure

Prior literature uses different research methods to test the impact of the market timing theory on capital structure. Several studies replicate the methodology used in Baker and Wurgler (2002) to test the market timing effects on capital structure (Hovakimian, 2006; Bie and Haan, 2007; Mahajan and Tartaroglu, 2008; Nguyen and Boubaker, 2009; Bougatef and Chichti, 2010; Chang et al., 2010). The advantage of this approach is that the findings are comparable to the results of Baker and Wurgler (2002). However, this method is subject to the same criticism regarding the multiple interpretation of the measure of market timing - the external finance-weighted average of historical market-to-book ratio since the ratio captures asymmetric information, growth opportunities, and debt overhang problem (Elliott et al, 2007; Kayhan and Titman, 2007). To overcome this problem, some papers decompose the market-to-book ratio into different variables to capture the market timing attempts. Rhodes-Kropf et al. (2005) decompose the market-to-book ratio into market-to-value and value-to-book ratios to capture misvaluation and growth opportunities. Kayhan and Titman (2007) decompose Baker and Wurgler (2002)'s timing measure into yearly timing and long-term timing. Yearly timing captures the degree of stock misvaluation. It is a more accurate measure of market timing. Long-term timing reflects growth opportunities. Moreover, Kahle (2000) and Jenter (2005) suggest that insider trading is a better proxy than market-to-book ratio to test the market timing theory of capital structure. It is argued that managers in low market-to-book ratio firms purchase equity on their own and repurchase equity for the firms. Market timing becomes evident in managers' own portfolios, as well as in the firm's financing decisions. Therefore, insider trading, or more particularly insider selling, can be used as another measure to test for the impact of equity market timing on capital structure. However, the lack of information makes this approach impractical in Vietnamese context.

In order to test equity market timing in IPOs, I follow Alti (2006). Alti (2006) uses hot market dummy variable as market timing measure. Following this approach has several advantages. Firstly, it allows the analysis to deviate from much concern of using the market-to-book ratio as proxy for market timing as discussed in the previous chapter. Secondly,

according to Alti (2006), the idea of hot markets is consistent with both versions of the market timing theory (i.e. misvaluation and adverse selection). Finally, this timing measure is a function of market conditions, rather than firm-level characteristics compared with other proxies such as the external finance-weighted average of historical market-to-book ratios (Baker and Wurgler, 2002) or the yearly timing and long-term timing measure (Kayhan and Titman, 2007). A number of papers follow this approach to test the market timing hypothesis including Wagner (2007), Umutlu and Karan (2008), Xu (2009), Doukas et al. (2011), Kaya (2012) among others.

Since the hot market effect on the amount of equity issue can be due to firm-level factors, some control variables are included in the model, which is consistent with Baker and Wurgler (2002) and Alti (2006) among others. The following regression is employed to test the impact of market timing on capital structure in the IPO year.

$$Y_t = \beta_0 + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{t-1} + \varepsilon_t \quad (1)$$

In which the dependent variable Y_t is year-on-year change (or year-end) in book leverage from pre-IPO level to the level at the end of IPO year. The control variables employed are consistent with previous literature (e.g., Rajan and Zingales, 1995; Alti, 2006), include market-to-book ratio, earnings before interest, taxes and depreciation scaled by assets (profitability), natural logarithm of net sales (size), property, plant and equipment (tangibility), and book leverage. All firm characteristics are lagged one year. Since market-to-book ratio data are unavailable before IPOs, market-to-book ratio of IPO year data are used instead. These variables and their computations are discussed in Section 5.2. In line with hypothesis 1, hot dummy variable is expected to be negatively and statistically correlated to the dependent variable.

To further control for heterogeneity, this and all subsequent regressions are estimated using industry fixed effects. This estimator captures the time-invariant unobserved effects for firms within each industry. Some studies include average industry leverage as an independent variable. However, Gormley and Matsa (2012) document that controlling for unobserved group-level heterogeneity by including the group average of the dependent variable can lead to bias. Therefore, models should instead include group fixed effects to ensure consistency of the estimated parameters.

After examining the temporary influence of the market timing attempts on capital structure, I test for the long-run impact of market timing in equity using the regression as follows.

$$Y_t - Y_{Pre-IPO} = \beta_0 + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{pre-IPO} + \varepsilon_t \quad (2)$$

The dependent variable is the cumulative change in book leverage for the next one, two, three, four or five years after IPOs. In accordance with hypothesis 2, the coefficient on hot dummy should become smaller in absolute value as t increases as hot market firms rebalance their leverage ratio. The complete rebalancing may imply that the coefficient become insignificant or even change its sign eventually.

5.1.2. Methodology for testing tax change effect on capital structure

I examine the tax effect on capital structure based on the first difference (change) regression of the change in leverage on tax variable and other capital structure determinants following Givoly et al. (1992), Graham (1999) and Wu and Yue (2009). It is argued that change regression is better than level regression since there are too many factors influence capital structure decisions (Wu and Yue, 2009). It seems impossible to completely control all of the potential factors. However, any factors that are not considered may introduce the omitted variable bias in a level regression. On the contrary, in a change regression, we only need to take into account the factors that have changed. Heider and Ljungqvist (2012) argue that first-differencing removes unobserved firm-specific fixed effects in the corresponding levels equation, while including industry-year fixed effects remove unobserved industry shocks.

As pointed out by previous literature, firm's leverage ratio depends on many different factors (Frank and Goyal, 2009). Since I employ a change regression, I do not need to control for factors that have not changed during the period. Control variables modeling the impact of non-tax factors on leverage are based on standard models in previous literature which include profitability, size, tangibility (Rajan and Zingales, 1995).

As a result, the basic OLS regression equation is:

$$\Delta Y = \beta_0 + \beta_1 ETR_{t-1} + \beta_2 EBITDA/A_{t-1} + \beta_3 SIZE_{t-1} + \beta_4 PPE/A_{t-1} + \beta_5 D/A_{t-1} + \varepsilon_t \quad (3)$$

where ΔY is the change in leverage either the year-on-year change or cumulative change in leverage; ETR is the effective tax rate, EDBITDA/A is profitability, SIZE is firm size, PPE is

tangibility, D/A: leverage at t-1, e is an error term. The variables and their computations are provided in Section 5.2.

Based hypothesis 3, it is expected that coefficient on ETR to be negative and statistically significant. The higher the effective tax rates, the larger the reduction in leverage caused by the drop of CIT. Myers (1977) shows that the adjustment of capital structure may be difficult and can only be completed after a long period. Therefore, the cumulative change captures the tax effect better than the year-on-year change. I expect that the coefficient on ETR will be negative during the period after the tax reform. I also include 2006, 2007 and 2008 as control years.

5.2. Variable construction

5.2.1. Dependent variable

Leverage

Two common measures of leverage in the literature of capital structure are book leverage and market leverage. The opinions about which is a better measure of leverage differ. Scholars who advocate book leverage argue that financial market fluctuates a great deal, and managers believe that market leverage is an unreliable guide for firms' financing policies (Frank and Goyal, 2009). Moreover, survey by Graham and Harvey (2001) shows that managers focus on book values when setting financial structure. Heider and Ljungqvist (2012) argue that book leverage is a cleaner measure of debt policy since firms have greater control over book leverage than market leverage. Advocates of market leverage insist that book leverage is backward looking, meanwhile managers are generally assumed to be forward looking.

In this study, I define book leverage as total liabilities divided by total assets (see, for example, Fama and French, 2002; Frank and Goyal, 2003; Alti, 2006; and Kayhan and Titman, 2007). Book leverage is used as the proxy for leverage in the main text of this study. Most studies focus on a single measure of leverage, but it is common to report that crucial findings are robust to alternative definitions (Frank & Goyal, 2003). In this vein, I rerun the regressions using another measure of book leverage, long-term leverage, which is defined as long-term liabilities divided by total assets (Frank and Goyal, 2009; Welch, 2011).

5.2.2. Independent variables

Hot market

Following Alti (2006), I define hot and cold market based on the monthly IPO volume. Since Vietnamese economy grew by about 7% over the 5-year period (World Bank, 2012), I

detrend the monthly moving average IPO volume at a rate of 0.58% per month. Following Helwege and Liang (2004) and Alti (2006), a three-month centered moving average of IPO volume for each month is taken to smooth out any seasonal variation. Hot markets are defined as periods when the three-month centered moving average of the total number of IPOs is above its median value. For each IPO in the sample, a dummy variable HOT takes the value of one if the firm goes public in a hot month, and zero otherwise.

Effective tax rate

There are many ways to measure the tax factor including the statuary tax rate, the effective tax rate, marginal tax rate, non-debt tax shields (e.g. Titman and Wessels, 1988; MacKie-Mason, 1990; Graham, 1996; Alworth and Arachi, 2001). Follow Booth et al. (2001), Green and Murinde (2008), Cheng and Green (2008), Klapper and Tzioumis (2011), I use the effective tax rate to measure the impact of the tax on firm leverage. Effective tax rate is defined as tax expense over financial accounting income before tax (pre-tax income). This measure of effective tax rate has been used widely in the taxation literature (Omer et al., 1991; Callihan, 1994; Gupta and Newberry, 1997; Shackelford and Shevlin, 2001; Klapper and Tzioumis, 2008; Dwenger and Steiner, 2009; Noor et al., 2010). Effective tax rate varies across firms, meanwhile the statutory tax rate is the same for all firms. Therefore, it has been used as a tool to analyze the impact of taxation on firm policies. Particularly, effective tax rate has long been used by policy makers and interest groups in tax reform debates, especially those related to corporate tax provisions (Gupta and Newberry, 1997).

5.2.3. Control variables

Market-to-book ratio

Following Baker and Wurgler (2002), Dittmar and Mahrt-Smith (2007) and Bates et al. (2009) among others, market-to-book ratio is computed as assets minus book equity plus market equity all divided by total assets. Market value of equity is market capitalization of equity at the fiscal year end.

Market-to-book ratio is used as a proxy for growth opportunities. Capital structure theories disagree over the relationship between growth opportunities and leverage. The trade-off theory predicts that firms with more growth opportunities may find that their financing needs exceed retained earnings and therefore use more leverage. On the contrary, according to the pecking order theory, a negative relationship between growth and leverage is suggested. High-growth firms may find it costly to rely on debt to finance growth. Empirical evidence in developing countries indicates mixed results. Booth et al. (2001) and Delcoure (2007) find

that firms finance their investment opportunities with debt; Deesomsak et al. (2004), on the other hand, show that the relationship between growth opportunities and leverage is negative.

Profitability

Profitability is defined as the ratio of earnings before interest, tax and depreciation to total assets (Alti, 2006; de Jong et al., 2008; Mahajan and Tartaroglu, 2008; Gungoraydinoglu and Öztekin, 2011).

There is no consistent relationship between profitability and capital structure based on different theories of capital structure. The trade-off theory argues that profitable firms have greater needs to shield income from corporate tax and should borrow more than less profitable firms. While pecking order theory suggests greater profitability should lead to less use of debt. As profit increases, there are more retained earnings available to finance investments. Profitable firms prefer internal funds rather than external due to asymmetric information and transaction costs. This preference leads firms to use retained earnings first as investment funds and move to external financing only when retained earnings are insufficient. When facing the choice between bonds and equity, firms will prefer debt issue to equity issue. Most empirical studies confirm the negative correlation between profitability and leverage (see, for example, Rajan and Zingales, 1995; Fama and French, 2002; Frank and Goyal, 2009) while the positive relationship are rarely supported by empirical studies.

Size

Firm size can be measured in several different ways. Some papers define firm size as natural logarithm of total assets (Booth et al., 2001; Hovakimian, 2006; Bates et al, 2009). However, total assets variable is also the denominator of the independent variable (leverage) in the regression formula. Therefore, using this measure may induce a spurious relationship in the regression. Instead, firm size is measured as natural logarithm of net sales in millions of 2005 VND (Alti, 2006; Mahajan and Tartaroglu, 2008). Green and Murinde (2008) show that sales are less likely to be contaminated by idiosyncratic asset structures or reporting procedures.

The trade-off theory postulates that leverage is positively correlated with firm size. Size may be an inverse proxy for the probability of bankruptcy. Larger firms are often diversified and have more stable cash flows; therefore, the probability of bankruptcy for larger firms is lower compare with that of smaller firms. In case of bankruptcy, larger firms bear lower costs relative to firm value. On the other hand, size can be regarded as a proxy for information asymmetry between firm insiders and the capital market. Accordingly, the pecking order theory of the capital structure predicts a negative relationship between leverage and size since

large firms are more closely observed by analysts and therefore should be more capable of issuing equity, and have lower debt. A large number of studies show a positive relationship between firm size and leverage (see, for example, Booth et el., 2001; Korajczyk and Levy, 2003).

Tangibility

Tangibility is calculated as the ratio of net fixed assets to total assets (Rajan and Zingales, 1995; Booth et al., 2001; Bevan and Danbolt, 2002).

Theories generally state that tangibility is positively related to leverage, which has been proved by empirical studies (see Hovakimian et al., 2001; Frank and Goyal, 2003 among others). Since tangible assets can be used as collateral in external borrowing, firms with high tangibility can access to bank loans at a lower interest rate. Furthermore, bondholders monitor high-levered firms more closely; therefore fewer resources are left available for managers to waste on perquisites. Hence, firms with high fraction of tangible assets are expected to have more debt.

All variables used in this study are defined in Table 6 below.

Table 6. Variable definition

Variable	Definition	Reference
Book leverage	Book debts divided by total assets	Baker and Wurgler (2002), Alti (2006), Hovakimian (2006)
Long-term leverage	Long-term debts divided by total assets	Frank and Goyal (2009), Welch (2011)
Market equity	Common shares outstanding times share price	Alti (2006)
Hot market	The variable takes the value of 1 if the IPO happens in a hot month, and 0 otherwise. (Hot months are defined as periods when the three-month centered moving average of the total number of IPOs is above its median value)	Helwege and Liang (2004), Alti (2006)
Effective tax rate	Corporate income tax divided by earnings before tax	Green and Murinde (2008), Dwenger and Steiner (2009), Klapper and Tzioumis (2008)
Market-to-book ratio	Book debt plus market equity divided by total assets	Baker and Wurgler (2002), Alti (2006)
Profitability	Earnings before interest, taxes, and depreciation divided by total assets	Alti (2006), Kayhan and Titman (2007), de Jong et al. (2008)
Size	The natural logarithm of net sales (in millions of 2005 VND)	Alti (2006), Kayhan and Titman (2007)
Tangibility	Net fixed assets divided by total assets	Alti (2006), Kayhan and Titman (2007)

5.3. Data

The initial sample consists of all non-financial IPOs between January 1, 2006 and December 31, 2010 reported by HOSE and HNX. The data before 2006 is excluded from the sample because of the following reason. The HOSE and HNX were put into operation in 2000 and 2005, respectively. The scale of the markets before 2006 was relatively small in comparison with it afterwards; therefore, it might make estimation results biased. This also results in the justification for using of sample of non-financial IPOs firm-year observations between 2006 to 2010 to conduct the tax analysis.

This study mainly relies on secondary data. The necessary firm-specific data is acquired from the database of Golden Bridge Investment Consultant Joint Stock Company, which provides the annual financial reports as well as stock price information of listed companies on both stock exchanges. Data on consumer price index used for adjusting the size variable is collected from World Development Indicators of the World Bank.

Financial institutions are excluded from the sample because they have distinctive capital structure and the determinants of their capital structure are different from those of non-financial institutions. Because my regression specification includes lagged variables, I further restrict the sample to those firms that have available data for the last fiscal year before IPO.

The data set for examining the tax reform influence is the above mentioned data set with the exclusion of the pre-IPO data since there is no data of stock price to compute the market-to-book ratio for observations in pre-IPO years. In previous test of market timing effect, this problem can be overcome by using the market-to-book ratio in IPO-year. Nevertheless, as the analysis of the tax change effect is conducted in calendar time, this approach is unsuitable. The sample for testing the tax reform hypothesis includes of 1253 firm-year observations for 297 firms from 2006 to 2011.

Table 7 presents the number of the sampled non-financial IPOs in Vietnam stock market from 2006 to 2010. The sample for testing the market timing hypothesis includes 1550 firm-year observations for 297 firms. Figure 2 illustrates the sample according to industrial classification. Since there is no standard classification in Vietnamese stock market, the classification is based on the both the criteria of HOSE and the sample provided by some investment and securities firms. The majority of examined firms come from industry sectors, with 96 firms accounting for 32% of the total sample. The second largest sector is consumer goods (43 firms – 14%).

Table 7. Number of non-financial IPOs (2006-2010)

	2006	2007	2008	2009	2010
HOSE	40	26	25	34	49
HNX	46	20	39	15	3
Total	86	46	64	49	52

(Source: HOSE, HNX)

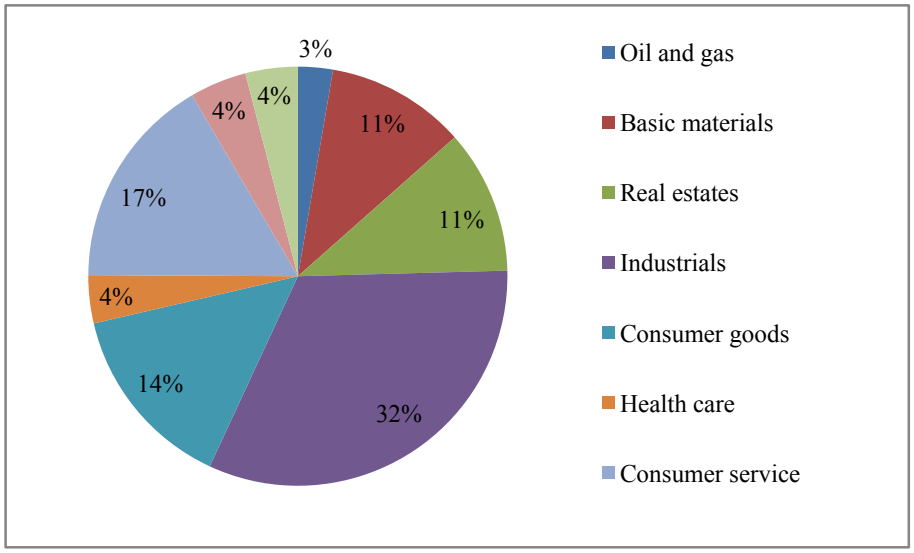


Figure 2. Proportion of firms by industrial classification

CHAPTER 6. RESULTS

This chapter first presents a descriptive analysis of the variables used in testing the models. Then, the empirical results of the tests on the market timing hypothesis and tax reform effects on firms' capital structure are reported.

6.1. Descriptive statistics

The detrended monthly moving average IPOs in Vietnam's stock market during the period 2006-2010 are shown in Figure 3. The horizontal line is the median at 4.17. We can see from Figure 3 that there are huge fluctuations in the IPO volumes. In the main sample of 297 IPOs, 241 IPOs occur in hot months (81% of the sample), and 56 IPOs (19% of the sample) take place in cold months.

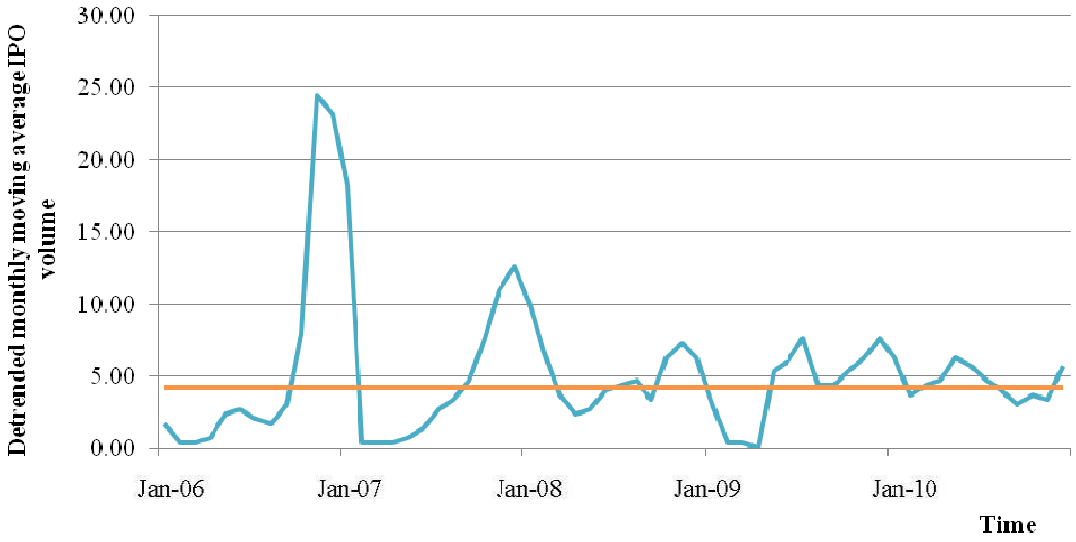


Figure 3. Time series of the detrended monthly average IPO volume (2006-2010)

Table 8 reports summary statistics on IPO firms. The analysis is conducted in IPO time. IPO year is defined as the fiscal year in which the IPO takes place. Year pre-IPO is the previous year before the IPO year. Year IPO+k is the k^{th} fiscal year after the IPO. The whole sample includes of 297 observations at the end of the first fiscal year after IPOs, 245 at the end of the second fiscal year after IPOs, et cetera, down to 86 observations at the end of the fifth year after IPOs.

As we can see from Table 8, the average of total leverage of Vietnamese firms varies between 51.23% and 55.64%, which is consistent with previous findings of other papers in the Vietnam context. Biger et al. (2008) show that the total leverage of their sample is 52%.

Nguyen et al. (2012) document a slightly lower ratio of 48%. 42. It is also close to the average total book-debt level of 51% in developing countries (Booth et al., 2001). In IPO year, the average leverage ratio is 53.6% which is high compared with the value of 38.7% of firms from the US (Alti, 2006). As reported in Table 8, book leverage declines in the IPO year, however, the degree is reasonably slightly. Firms remain such a lower debt level for the next two years after IPOs, and increase the ratio again in IPO+3. However, in the next two years, we observe the decline of the ratio.

Table 8 shows that market-to-book ratios range from a minimum of 0.344 to a maximum of 8.717. There is a decrease in the market-to-book ratio of Vietnamese listed firms. The mean of market-to-book ratio starts at 1.67 in the IPO year, then drops to 0.99 in the IPO+3 year, and down to 0.81 in the IPO+5 year.

There is also a reduction in profitability following the IPOs. The mean of the profitability decreases from 12.87% in the IPO year to 10.72% in the IPO+5 year. The findings are consistent with previous papers. Doan and Nguyen (2011) also document the average return-on-assets ratio of Vietnamese listed firms of 9.58%. Similarly, Nguyen et al. (2012) show that the average profitability of their sample is 10%. Pastor et al. (2009) prove that firm profitability decline after the IPOs by testing a sample of 7183 IPOs in the US between 1975 and 2004.

As we can see from Table 8, net sales of IPO firms increase significantly in years following their IPOs. The average net sales of firms are VND 563,052 mil, VND 873,128 mil and VND 1,278,583 mil at the end of pre-IPO year, IPO+1 year and IPO+5 year respectively. Pagano et al. (1998) also document that IPOs are followed by increased turnover of Italian firms. In a similar vein, Kim et al. (2004) note that sales of IPO firms increase over the next 4 years after IPOs. There is little change in tangibility over the observed period. Firms keep the average tangibility at about 30%.

Table 9 presents descriptive statistics for the main variables involved in the analysis for tax effects in the calendar time. The average debt ratio drops from 56.39% in 2006 to 51.80% in 2007. This may results from the boom of the stock market in 2007. Thank to the favorable market conditions, a huge number of firms go public during such year. The increase in equity financing means the decrease in leverage ratio. Nevertheless, in the following year, the stock market witnesses the burst. Firms find difficulty in raising equity financing, thus debt level increases in 2008. However, surrounding year 2009, little variation in leverage ratio is found. Firms remain the ratios at the average of about 52%.

As shown in Table 9, despite the fact that the statutory tax rate of 28% and 25% during the examined period, the effective tax rate are at the lower level. The mean effective tax rate is at 9.36% in 2006, continues to rise to 19.24% in 2011. The low effective tax rate is due to the fact that the tax relief for newly listed firms is granted by the government in an attempt to boost the market in the early stage. The tax relief involves a 50% reduction in corporate tax rate for two years since IPOs. However, this tax relief was terminated since Jan 1st 2007. However, first that going public before that time can continue to enjoy the tax relief. As we can see from Table 9, standard deviation of effective tax rate is larger than the mean in year 2006, 2009 and 2011. It can be implied that the range of effective tax rate have to be rather large for this to occur.

As reported in Table 9, the market-to-book ratio is higher during 2006-2007 than the previous years. The findings reflect the market conditions as well as firms' growth opportunities. The decrease in the growth opportunities of firms may due to the recently decline of the whole economy in general and the financial crisis in particular. In terms of profitability, the average is rather stable over time of about 12%. Net sales keep increasing from VND 499,486 mil in 2006 to VND 768,073 mil in 2008 and reach VND 1,362,275 in 2011. Since firm size is defined as the natural logarithm of net sales in millions of 2005 VND, there is a substantially drop in firm size from mean of 15 to mean of 9 in 2006 and 2007 respectively. Firm size increases afterwards and keeps the average of about 12. Tangibility remains stable at about 30%.

Table 8. Summary statistics of variables in IPO time

The table reports the mean, the median, the standard deviation, the minimum and the maximum of variables in calendar time. Leverage (D/A) is measured as book debt divided by total assets. Effective tax rate (ETR) is measured as corporate income tax divided by earnings before tax. Market-to-book ratio (M/B) is measured as book debt plus market equity divided by total assets. Profitability (EBITDA/A) is measured as earnings before interest, taxes, and depreciation divided by total assets. Size is measured as the natural logarithm of net sales (in millions of 2005 VND). Net sales is in millions of VND. Asset tangibility (PPE/A) is measured as net fixed assets divided by total assets.

		IPO-1	IPO	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5
Number of observations		297	297	297	245	196	132	86
D/A	Mean	0.561	0.536	0.532	0.522	0.551	0.523	0.512
	Median	0.589	0.556	0.566	0.544	0.593	0.577	0.558
	SD	0.227	0.215	0.217	0.225	0.224	0.216	0.225
	Min	0.032	0.051	0.003	0.033	0.028	0.064	0.055
	Max	0.964	0.948	0.957	0.968	0.977	0.936	0.942
M/B	Mean		1.666	1.413	1.014	0.995	0.979	0.811
	Median		1.297	1.124	0.969	0.928	0.920	0.786
	SD		1.052	0.896	0.327	0.324	0.292	0.246
	Min		0.344	0.459	0.419	0.247	0.473	0.379
	Max		8.717	7.252	2.927	2.265	2.233	2.130
EBITDA/A	Mean	0.126	0.129	0.116	0.120	0.117	0.112	0.107
	Median	0.106	0.113	0.105	0.108	0.099	0.106	0.106
	SD	0.087	0.078	0.090	0.088	0.081	0.076	0.078
	Min	0.011	(0.039)	(0.657)	(0.242)	(0.012)	(0.134)	(0.227)
	Max	0.601	0.650	0.520	0.598	0.563	0.388	0.358
SIZE	Mean	12.191	11.769	12.359	12.425	12.492	12.596	12.298
	Median	12.212	12.733	12.427	12.406	12.409	12.639	12.383
	SD	1.364	4.024	1.387	1.422	1.485	1.464	1.480
	Min	7.348	0.669	6.938	6.948	8.372	9.428	9.281
	Max	16.462	18.572	16.267	16.253	16.301	16.300	16.366
NET SALES	Mean	563,052	726,281	873,128	1,036,985	1,316,704	1,463,366	1,278,583
	Median	254,694	331,215	371,307	405,941	438,507	536,676	472,987
	SD	1,149,947	1,652,936	1,709,931	2,004,365	2,645,728	2,802,344	3,004,586
	Min	2,224	1,736	1,720	2,061	8,565	21,619	21,253
	Max	14,100,792	21,399,752	13,498,891	16,381,840	18,404,026	20,017,304	25,370,247
PPE/A	Mean	0.307	0.296	0.298	0.306	0.306	0.307	0.325
	Median	0.258	0.246	0.240	0.255	0.249	0.252	0.257
	SD	0.232	0.219	0.220	0.216	0.219	0.224	0.222
	Min	0.002	0.002	0.003	0.008	0.004	0.001	0.026
	Max	0.976	0.941	0.950	0.938	0.927	0.910	0.876

Table 9. Summary statistics of variables in calendar time

The table reports the mean, the median, the standard deviation, the minimum and the maximum of variables in calendar time. Leverage (D/A) is measured as book debt divided by total assets. Effective tax rate (ETR) is measured as corporate income tax divided by earnings before tax. Market-to-book ratio (M/B) is measured as book debt plus market equity divided by total assets. Profitability (EBITDA/A) is measured as earnings before interest, taxes, and depreciation divided by total assets. Size is measured as the natural logarithm of net sales (in millions of 2005 VND). Net sales is in millions of VND. Asset tangibility (PPE/A) is measured as net fixed assets divided by total assets.

		2006	2007	2008	2009	2010	2011
Number of observations		86	132	196	245	297	297
D/A	Mean	0.564	0.518	0.538	0.530	0.521	0.536
	Median	0.560	0.558	0.560	0.558	0.552	0.559
	SD	0.218	0.210	0.227	0.220	0.217	0.222
	Min	0.118	0.046	0.047	0.067	0.003	0.028
	Max	0.925	0.873	0.968	0.956	0.948	0.977
ETR	Mean	0.094	0.097	0.127	0.156	0.193	0.191
	Median	0.101	0.118	0.131	0.140	0.210	0.197
	SD	0.098	0.085	0.105	0.191	0.120	0.133
	Min	0	0	0	0	0	0
	Max	0.294	0.297	0.545	0.506	1.273	0.962
M/B	Mean	2.005	2.426	0.995	1.172	1.123	0.841
	Median	1.571	2.020	0.958	1.078	1.034	0.830
	SD	1.196	1.248	0.300	0.424	0.353	0.229
	Min	1.029	0.580	0.432	0.330	0.344	0.247
	Max	8.717	7.252	2.611	3.400	4.155	2.537
EBITDA/A	Mean	0.124	0.119	0.115	0.125	0.121	0.113
	Median	0.113	0.109	0.111	0.102	0.112	0.101
	SD	0.058	0.059	0.080	0.089	0.094	0.085
	Min	(0.022)	0.008	(0.242)	(0.080)	(0.657)	(0.227)
	Max	0.399	0.328	0.469	0.598	0.650	0.520
SIZE	Mean	15.233	9.236	12.373	12.382	12.487	12.394
	Median	14.982	11.267	12.334	12.398	12.471	12.368
	SD	1.234	4.476	1.388	1.425	1.408	1.488
	Min	13.051	0.669	8.408	7.032	6.938	6.948
	Max	18.572	16.267	16.253	16.301	16.300	16.366
NET SALES	Mean	499,486	615,524	768,073	881,486	1,133,723	1,362,275
	Median	196,138	259,150	307,618	344,702	434,971	465,714
	SD	1,457,182	1,171,651	1,502,063	1,777,035	2,219,773	2,746,122
	Min	1,308	875	1,172	1,736	1,720	2,061
	Max	21,399,752	13,498,891	16,381,840	18,404,026	20,071,304	25,370,247
PPE/A	Mean	0.311	0.285	0.313	0.309	0.297	0.298
	Median	0.277	0.238	0.243	0.258	0.245	0.241
	SD	0.212	0.205	0.213	0.218	0.226	0.226
	Min	0.002	0.004	0.007	0.005	0.002	0.001
	Max	0.933	0.938	0.941	0.927	0.941	0.950

Table 10 reports the coefficients of simple correlation between the main variables for testing market timing effect. I test the correlation among variables using the Pearson correlation coefficient. It is not surprising to notice that the correlation coefficients between leverage and most independent variables are mostly significant. From the table, it can be seen that book leverage is negatively related to market-to-book ratio and profitability, is positively correlated with size and tangibility, which is mostly consistent with the predictions. Correlation matrix is also used as one technique to detect multicollinearity. A high correlation between two of the independent variables may indicate the presence of collinearity. As shown, the correlation among independent variables are generally less than 0.30, suggesting that collinearity is not a serious problem.

Table 10. Correlation coefficients among variables in market timing analysis

	D/A	M/B	EBITDA/A	SIZE	PPE/A
D/A	1				
M/B	-0.092**	1			
EBITDA/A	-0.372**	0.251**	1		
SIZE	0.191**	-0.162**	0.038	1	
PPE/A	0.039	-0.043	-0.102**	0.021	1

** Correlation is significant at the 0.01 level (2-tailed)

Table 11 displays the correlation matrix for variables in the analysis of tax effects. The matrix indicates that there is no high level of correlation between any two of the independent variables. Thus, the concern about collinearity problems among explanatory variables is relieved. Besides, in line with the tax theory, effective tax rate is found to be positive correlated with debt level despite the fact that the relationship is not significant.

Table 11. Correlation coefficients among variables in tax analysis

	D/A	ETR	M/B	EBITDA/A	SIZE	PPE/A
D/A	1					
ETR	0.028	1				
M/B	-0.127**	-0.124**	1			
EBITDA/A	-0.351**	-0.033	0.277**	1		
SIZE	0.190**	-0.002	-0.158**	0.043	1	
PPE/A	0.045	-0.070**	-0.047	-0.106**	0.030	1

** Correlation is significant at the 0.01 level (2-tailed)

6.2. Empirical results

6.2.1. Empirical results on the market timing effect

Panel A of Table 12 reports the mean values of book leverage for hot- versus cold-market firms. The measure indicates that hot-market firms reduce the leverage ratio more than their cold-market counterparts. Hot-market firms reduce leverage by 0.6 percentage points more than cold-market firms. As the result, at the end of IPO year, the mean leverage of hot-market firms is lower than the mean leverage of cold-market firms. The mean leverage of hot-market firms and of cold-market firms is 0.53 and 0.55 respectively. Nevertheless, there are no statistically significant differences between the mean of leverage change and level of leverage between hot-market firms and cold-market firms. The differences, therefore, are likely due to chance.

The results of change in book leverage between IPO year-end data and pre-IPO year-end data regressing on the hot-market dummy and other control variables are shown in Panel B of Table 12. The hot-market dummy variable coefficient in regression without and with industry fixed effects is -0.013 (t-statistics=-0.771) and -0.011 (t-statistics=-0.664) respectively. The coefficient on the hot-market dummy is negative as expected, indicating that hot-market firms have lower leverage ratios than cold-market firms by the end of IPO year. However, the results are not statistically significant. The market-to-book ratio, on the other hand, is found to be negatively and statistically significant correlated with the change in book leverage at the 1% level. Prior studies claim that market-to-book ratio captures the market timing effect on capital structure (Baker and Wurgler, 2002; de Bie and de Haan, 2007). As both hot dummy variable and market-to-book ratio capture the market timing effect, the effectiveness of the market-to-book ratio in capturing the effect may result in the insignificant of the hot dummy proxy. Therefore, in order to isolate the impact of hot dummy variable, I exclude the market-to-book ratio variable from the regression and re-estimate the model. The findings as shown in column 3 and 5 of Panel B of Table 12 keep showing that the hot-market dummy variable has no significant relationship with the change in book leverage.

Panel B of Table 12 also reports the results of regressing book leverage at the end of the IPO year on the hot-market dummy variables, and the same control variables as in the (1) except for the book leverage of pre-IPO year. Overall, the estimated coefficient on hot-market dummy variable with and without the market-to-book ratio variable is negatively, but statistically insignificant.

Table 12 presents the results for different firm-factor variable such as market-to-book ratio, profitability, firm size, tangibility and leverage ratio, which are mainly consistent with the

hypothesis and previous literature. In line with Alti (2006), Chang and Dasgupta (2009), lagged leverage is consistently found to be negative and significant correlated to change in total leverage as shown in Table 12 and Table 13. The detailed discussion on these control variables will be presented later.

Table 13 shows the results of the tests for the long-run impact of market timing on capital structure in IPO markets. In Panel A, the mean of difference in book leverage between firms issuing IPOs in hot and cold markets during 5 years following the event is reported. As we can see, firms conducting IPOs in hot markets have generally lower leverage ratio than cold-market firms, but the differences are still not statistically significant. Firms issuing IPOs in HOT markets have higher leverage ratios at the end of years IPO+2, IPO+3, IPO+4, and IPO+5 compared to the firms issuing IPOs in COLD markets. The cumulative changes in the leverage ratios of the IPO issuing firms are regressed on the hot-market dummy and five firm-specific variables (market-to-book, profitability, size, tangibility, and pre-issue leverage) and the hot market dummy. In Panel B, the first column shows the coefficient for the HOT market dummy is negative, but insignificant (coefficient=-0.008, t-statistics=-0.390). The sign on the coefficient is mixed afterwards, and the estimate is statistically insignificant.

Panel C and D of Table 13 present the mean leverage ratio of hot- and cold-market firms together with the results on regression using year-end debt level as dependent variable. Panel D replicates the analysis in the Panel B for levels of leverage with the exclusion of lagged leverage variable. The results are generally the same as those reported in Panel B. The hot dummy coefficient is negative in the first year after the IPOs, but the sign changes to positive during the next 4 years. The t-statistics keeps showing that the estimate is statistically insignificant. Market-to-book ratio remains its impact on the level of leverage during the first two years following the IPOs and then disappears. The negative relationship of profitability and lagged leverage and the positive relationship of firm size with cumulative change in leverage is persistent and statistically significant during the examined period. The models for change in leverage and debt level with industry fixed effect have reasonable explanatory power compared with studies using the same methods. The adjusted R-squared in this analysis vary from 0.23 to 0.46; Alti (2006) reports the the R-squared between 0.33 and 0.49; Chang and Dasgupta (2009) shows the explanatory power of their models between 0.15 and 0.20.

In conclusion, there is no statistically different between the effects of IPO market timing on firms issuing equity in hot versus those in cold market. Hot-market firms do not have lower leverage than cold-market firms in the IPO year. Moreover, IPO market timing does not have

a long-run impact on capital structure. The replication of study by Alti (2006) in Vietnam does not yield the same results regarding the effect of market timing effect. Nonetheless, the findings are in line with those in other developing countries such as Brazil and China. Studying the market timing theory in the Brazilian market, Mendes et al. (2005) do not find evidence supporting the theory. Using different proxy for market timing rather than the hot-market dummy variable, Tian et al. (2008) also document that the leverage is inversely related to the proxy, but not significant.

6.2.2. Empirical results on the tax effect

This study identifies the effects of taxes on capital structure by regressing the change in leverage and debt level on the level of effective tax rates and traditional firms control variables. The results with and without industry fixed effects are reported. As shown in Panel A of Table 14, the effective tax rate coefficient is positive in the first regressions where dependent variables are the difference in leverage between year 2009 and 2008. However, the coefficients are found to be negative in the next regressions with the cumulative change in leverage as dependent variables. The effective tax rate coefficients when dependent variable is cumulative change of leverage between 2011 and 2008 without and with industry fixed effect are -0.032 and -0.064 respectively. These are higher than the coefficient in the regressions with dependent variables of difference leverage between 2010 and 2008. This is in line with the predictions that the cumulative change better captures the tax effect than the year-on-year change in leverage and firms with higher effective tax rate reduce more leverage than firms with lower effective tax rate. Nevertheless, the results are not statistically significant. The statistically insignificant results may be due to the fact that despite the decrease in the statutory tax rate, the mean of effective tax rate keeps increase until 2010 as shown in Table 9. The results are consistent with Homaifar et al.'s (1994) conclusion that there is no significant short-run contemporaneous relationship between leverage and tax rate. Booth et al. (2001) when analyzing the determinants of capital structure of firms in developing countries document the insignificant and even negative impact of tax on leverage ratio. The authors argue that the average tax rate seems to be a proxy for corporate profitability rather than for debt tax-shield value. An alternative explanation comes from a recent paper by Heider and Ljungqvist (2012). The authors document that contrary to standard trade-off theory, tax sensitivity of leverage is asymmetric. Firms increase leverage in response to tax increase, but tax cuts do not result in a corresponding decrease in the use of debt. In case of Vietnam, after the tax relief of a 50% reduction in corporate tax rate for two years after firms go public terminated in 2007, the effective tax rate increase. The debt levels

of firms may, therefore, increase. According to Heider and Ljungqvist (2012), tax increases that are later reversed nevertheless lead to permanent increase in debt level of firms. MacKinlay (2012) shows that the effect of taxes on firms' capital structure to be insignificant and proposed tax law changes would likely have little effect on debt usage.

Panel B of Table 14 shows that the effective tax rate is mostly positively correlated to leverage, but statistically insignificant. The positive relationship between effective tax rate and debt leverage confirms that the increase in tax rate which is synonymous with increase in tax shield encourages firms to use more debt financing. The result is in line with previous papers such as Mackie-Mason (1990), Givoly, et al. (1992), Prasad et al. (2001), and Klapper and Tzioumis (2008). On the other hand, the negative relationship between effective tax rate and leverage is found is some estimates. This can be explained as in Booth et al. (2001) that tax rate is a proxy for profitability. Since profitability is negatively related to leverage, tax rate also has an inverse relationship with debt level. One possible explanation is the reverse causation between tax and debt level, firms with more debt pay less debts (Antoniou et al., 2008).

6.2.3. Empirical results on the control variables

Market-to-book ratio

Table 13 shows evidence that market-to-book ratios have strong effect on capital structure. The coefficient on market-to-book ratio is significantly negative at the 1% level. As we can see from Table 13, the market-to-book coefficient is consistently negative and significant at the 1% level until year IPO+3. As market-to-book ratio is used as a proxy for firm's growth opportunities, these findings suggest the inverse relationship between growth opportunities and debt level. The results support the predictions that high growth firms use less debts so that they are not subject to the restrictions imposed by lenders. Another explanation for this finding is that the increased stock prices have reduced the cost of equity capital for Vietnamese listed firms, thus encouraging firms to use equity financing. This is in line with Baker and Wurgler's (2002) view that firms with high market-to-book ratio would rather raise financing externally. An alternative reason is that firms with growth prospects are reluctant to employ more debt in order not to increase their probability of bankruptcy. Authors such as Rajan and Zingales (1995), Wiwattanakantang (1999), Fama and French (2002), Frank and Goyal (2004), Deesomsak et al. (2004), Xu (2009) document the negative relationship between growth opportunities and leverage ratio. Table 13, on the other hand, shows in some regressions that the market-to-book ratio coefficient is found to be positive, but not statistically significant. This may be due to the fact that firms with growth prospects

employ more debt as a way of signaling to the market. The positive relationship between growth opportunities and debt level is in line with the findings of Chen (2004), Gaud et al. (2005).

Profitability

As shown in Tables 12, 13 and 14, the estimated coefficients on profitability are consistently negative and statistically significant. The results confirm the predictions of the pecking order theory that firms prefer using retained earnings to finance investment than external debt and equity capital. Profitable firms with available internal fund borrow less. The findings also support the view that the less-developed capital market in Vietnam forces firms to rely on internal financing. Booth et al. (2001) in their study on capital structure of developing countries find that the importance of profitability is related to the significant agency and information asymmetry. Firms with intangible growth opportunities may have difficulty in raising capital externally. Rajan and Zingales (1995), Wald (1999), Bevan and Danbolt (2002), Fama and French (2002), Chen (2004), Deesomsak et al. (2004) and Antoniou et al. (2008) among others confirm the negative relationship between profitability and leverage. The findings also comply with Nguyen et al.'s (2012) conclusion that profitability has a negative relationship with all measures of leverage including total leverage, long-term leverage and short-term leverage.

Firm size

Tables 12 and 14 report that firm size is positively related to both change in leverage ratios and leverage level mostly at the 1% significance level. In sixteen out of twenty regressions reported in Table 13, size is found to be consistently positive linked to the dependent variable. This is consistent with the predictions of the trade-off theory. Firm size is an inverse proxy for probability of default. Larger firms are more diversified in terms of investment projects; therefore, their risk of facing financial distress is expected to be low. Besides, larger firms are less likely to be affected by information asymmetry problems and have greater power of bargaining with lenders, which results in less difficulty in raising new financing and lower their cost of debt. Thus, larger firms are less likely to go bankruptcy than smaller firms. The results show that Vietnamese listed firms employ more debt when the possibility of bankruptcy is lower due to their larger size, and firm size is an important determinant of capital structure of non-financial listed firms in Vietnam. The finding is in line with international empirical research (Rajan and Zingales, 1995; Wiwattanakantang, 1999; Booth et al., 2001; Bevan and Danbolt, 2002, 2004; Deesomsak et al., 2004; Antoniou et al., 2008;

Frank and Goyal, 2009) and prior studies in case of Vietnam (Nguyen and Ramachandran, 2006; Biger et al., 2008; Nguyen et al., 2012).

Tangibility

The impacts of tangibility on firms' capital structure are mixed. The tangibility coefficient is found to have both negative and positive, but mostly insignificant relationship between tangibility and leverage is documented. The result is not strange in case of Vietnam as Nguyen et al. (2012) in their study on capital structure of Vietnamese listed firms also find that tangibility is not a relevant determinant of total leverage. In a similar vein, Deesomsak et al. (2004) in their research on capital structure choices of firms in Thailand, Malaysia and Singapore claim that there is no statistically significant correlation between tangibility and leverage. Similarly, Arcas and Bachiller (2008) find that tangibility is not correlated with leverage when testing the sample of private and recently privatized firms in the European Union.

The insignificant effect of tangibility on capital structure can be explained by the concentrated government ownership. Nguyen and Ramachandran (2006) show that government-owned corporations in Vietnam have several advantages such as better protection from the market for corporate control, easier access to alternative sources of financing and guaranteed solvency. About 40% of Vietnamese listed firms are state-owned (Nguyen et al., 2012). These facts result in the less important role of tangibility as the determinants of capital structure of Vietnamese firms. An alternative explanation is based on the close relationship between firms and bank. Relationships with bank and networking have strong influence on leverage choices of Vietnamese firms. The stronger the relationship with banks firms have, the larger amount of bank loans firms can obtain to finance their operations (Nguyen and Ramachandran, 2006). Rauh and Sufi (2010) also find that bank debt does not rise with the extent to which assets are tangible, suggesting that bank relationship can substitute for collateral. The weak impact of tangibility on leverage in case of Vietnam may be due to the fact that the long-term debt accounts for a small proportion of total liabilities of Vietnamese firms (Nguyen and Ramachandran, 2006; Nguyen et al., 2012). As short-term debt can be borrowed without collateral, the need for collateral in order to borrow is lessened.

Table 12. Short-term impact of market timing effect on capital structure

Panel A reports the mean value of difference in leverage ($\triangle D/A_t$) and level of leverage (D/A_t) between hot- and cold-market firms and the t-value of their difference. The time subscript t denotes the IPO year. Panel B reports the coefficients of regression of the model:

$$Y_t = \beta_0 + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{t-1} + \varepsilon_t$$

The dependent variable Y_t is either the change in book leverage ($\triangle D/A_t$) or book leverage (D/A_t) at the end of IPO year. When the dependent variable is the level of book leverage, the lagged book leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

	$\triangle D/A_t$	$\triangle D/A_t$	$\triangle D/A_t$	$\triangle D/A_t$	D/A_t	D/A_t	D/A_t	D/A_t
Panel A: Mean values								
Hot	-0.025				0.533			
Cold	-0.019				0.551			
t-value (difference)	(-0.347)				(-0.577)			
Panel B: Regression analysis								
Constant	0.010	-0.008	-0.018	-0.038	0.170	0.154	0.063	0.046
	(0.151)	(-0.119)	(-0.228)	(-0.458)	(1.684)	(1.495)	(0.517)	(0.373)
HOT	-0.013	-0.007	-0.011	-0.005	-0.011	-0.006	-0.006	-0.001
	(-0.771)	(-0.410)	(-0.664)	(-0.285)	(-0.393)	(-0.226)	(-0.218)	(-0.049)
M/B_t	-0.044***		-0.043***		-0.035***		-0.032***	
	(-6.785)		(-6.551)		(-3.371)		(-3.126)	
$EBITDA/A_{t-1}$	0.022	-0.137	0.032	-0.117	-0.973***	-1.086***	-0.873***	-0.968***
	(0.243)	(-1.450)	(0.353)	(-1.232)	(-7.627)	(-8.672)	(-6.967)	(-7.830)
$SIZE_{t-1}$	0.015***	0.012**	0.018***	0.015***	0.046***	0.043***	0.047***	0.044***
	(2.951)	(2.253)	3.332	(2.690)	(5.833)	(5.426)	(5.885)	(5.526)
PPE/A_{t-1}	0.015	0.017	0.010	0.011	0.001	0.003	-0.008	-0.006
	(0.535)	(0.567)	(0.318)	(0.334)	(0.017)	(0.058)	(-0.159)	(-0.131)
D/A_{t-1}	-0.247***	-0.261***	-0.266***	-0.285***				
	(-7.122)	(-7.028)	(-7.354)	(-7.390)				
Industry fixed effect	No	No	Yes	Yes	No	No	Yes	Yes
Adjusted R^2	0.261	0.146	0.269	0.161	0.279	0.253	0.333	0.312
N	297	297	297	297	297	297	297	297

* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 13. Long-term impact of market timing effect on capital structure

Panel A and C report the mean value of difference in leverage ($\triangle D/A_{t\text{-pre-IPO}}$) and level of leverage (D/A_t) between hot- and cold-market firms and the t-value of their difference. Panel B and D report the coefficients of regression of the model:

$$Y_t = \beta_0 + \beta_1 HOT + \beta_2 M/B_{t-1} + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{pre-IPO} + \varepsilon_t$$

The dependent variable Y_t is the cumulative change in book leverage ($\triangle D/A_{t\text{-pre-IPO}}$) from pre-IPO year to years IPO+1, IPO+2, IPO+3, IPO+4, IPO+5, book leverage (D/A_t) at the end of IPO+1 to IPO+5 year. When the dependent variable is the level of book leverage, the lagged book leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

$\Delta D/A_{t\text{-pre-IPO}}$										
t	IPO+1	IPO+1	IPO+2	IPO+2	IPO+3	IPO+3	IPO+4	IPO+4	IPO+5	IPO+5
Panel A: Mean values										
Hot	-0.030		-0.040		-0.054		-0.099		-0.112	
Cold	-0.025		-0.071		-0.037		-0.091		-0.062	
t-value (difference)	(-0.172)		(0.903)		(-0.466)		(-0.160)		(-0.743)	
Panel B: Regression analysis										
Constant	0.332***	0.324***	-0.130	-0.205	-0.142	-0.190	-0.164	-0.348*	-0.206	-0.637**
	(6.873)	(4.683)	(-1.357)	(-1.610)	(-1.229)	(-1.271)	(-1.180)	(-1.865)	(-0.994)	(-2.297)
HOT	-0.008	-0.006	0.036	0.035	-0.006	-0.007	0.012	0.023	-0.002	0.016
	(-0.390)	(-0.259)	(1.274)	(1.267)	(-0.187)	(-0.247)	(0.300)	(0.601)	(-0.034)	(0.273)
M/B_{t-1}	-0.035***	-0.032***	-0.033***	-0.034***	-0.005	-0.001	-0.060	-0.026	0.011	0.065
	(-3.878)	(-3.553)	(-2.928)	(-2.970)	(-0.134)	(-0.032)	(-1.289)	(-0.515)	(0.123)	(0.712)
$EBITDA/A_{t-1}$	-0.393***	-0.384***	-0.434***	-0.371***	-0.645***	-0.584***	-0.795***	-0.722***	(-0.864)**	-0.741**
	(-3.167)	(-2.990)	(-3.488)	(-2.926)	(-4.241)	(-3.856)	(-4.262)	(-3.711)	(-2.490)	(-2.030)
$SIZE_{t-1}$	-0.002	-0.002	0.030***	0.036***	0.034***	0.039***	0.044***	0.052***	0.038**	0.056***
	(-0.862)	(-0.711)	(4.079)	(4.610)	(3.731)	(4.235)	(4.238)	(4.714)	(2.251)	(3.253)
PPE/A_{t-1}	-0.040	-0.049	0.121**	0.115**	0.080	0.079	0.010	0.012	0.128	0.145
	(-1.027)	(-1.148)	(2.539)	(2.245)	(1.395)	(1.331)	(0.888)	(0.163)	(1.304)	(1.449)
$D/A_{pre-IPO}$	-0.376***	-0.399***	-0.451***	-0.492***	-0.451***	-0.520***	-0.536***	-0.568***	-0.520***	-0.609***
	(-9.419)	(-9.349)	(-9.407)	(-9.638)	(-7.672)	(-8.575)	(-7.600)	(-7.676)	(-4.794)	(-5.461)
Industry fixed effect	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.264	0.258	0.312	0.325	0.298	0.355	0.424	0.458	0.297	0.389
N	297	297	245	245	196	196	132	132	86	86

Table 13. Long-term impact of market timing effect on capital structure (cont.)

D/A_t										
t	IPO+1	IPO+1	IPO+2	IPO+2	IPO+3	IPO+3	IPO+4	IPO+4	IPO+5	IPO+5
Panel C: Mean values										
Hot	0.529		0.522		0.552		0.533		0.516	
Cold	0.545		0.520		0.549		0.470		0.493	
t-value (difference)	(-0.496)		(0.034)		(0.071)		(1.266)		(0.331)	
Panel D: Regression analysis										
Constant	0.743***	0.670***	-0.015	-0.139	0.009	-0.104	-0.056	-0.331	-0.206	-0.672**
	(13.557)	(7.962)	(-0.130)	(-0.917)	(0.063)	(-0.603)	(-0.349)	(-1.569)	(-0.895)	(-2.253)
HOT	-0.007	-0.002	0.023	0.029	0.002	0.003	0.050	0.055	0.034	0.045
	(-0.254)	(-0.054)	(0.670)	(0.870)	(0.063)	(0.082)	(1.131)	(1.289)	(0.513)	(0.738)
M/B_{t-1}	-0.025**	-0.019	-0.044***	-0.043***	-0.026	-0.025	-0.095*	-0.076	-0.040	0.021
	(-2.032)	(-1.641)	(-3.115)	(-3.147)	(-0.556)	(-0.519)	(-1.768)	(-1.353)	(-0.411)	(0.216)
$EBITDA/A_{t-1}$	-1.071***	-1.028***	-0.713***	-0.599***	-0.711***	-0.608***	-0.656***	-0.489**	-0.774**	-0.538
	(-6.801)	(-6.590)	(-4.699)	(-4.024)	(-3.884)	(-3.465)	(-3.063)	(-2.271)	(-2.012)	(-1.390)
$SIZE_{t-1}$	-0.001	0.000	0.052***	0.054***	0.051***	0.053***	0.059***	0.066***	0.065***	0.076***
	(-0.282)	(-0.139)	(5.859)	(5.918)	(4.795)	(5.017)	(5.047)	(5.452)	(3.749)	(4.359)
PPE/A_{t-1}	-0.054	-0.087	0.069	0.047	0.033	0.008	-0.065	-0.082	0.034	0.050
	(-1.021)	(-1.573)	(1.169)	(0.776)	(0.486)	(0.118)	(-0.825)	(-1.007)	(0.321)	(0.484)
Industry fixed effect	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.176	0.232	0.230	0.302	0.162	0.290	0.240	0.315	0.145	0.303
N	297	297	245	245	196	196	132	132	86	86

* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 14. The impact of tax change effect on capital structure

Panel A and B report the coefficients of regression of the model:

$$Y_t = \beta_0 + \beta_1 ETR_{t-1} + \beta_2 EBITDA/A_{t-1} + \beta_3 SIZE_{t-1} + \beta_4 PPE/A_{t-1} + \beta_5 D/A_{pre-tax\ reform} + \varepsilon_t$$

The dependent variable Y_t is the cumulative change in book leverage from 2008 (pre-tax reform year) to 2009, 20010, 2011, book leverage at the end 2007 to 2011. When the dependent variable is the level of book leverage, the lagged book leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

Panel A	**$\Delta D/A_{2009-2008}$**	**$\Delta D/A_{2009-2008}$**	**$\Delta D/A_{2010-2008}$**	**$\Delta D/A_{2010-2008}$**	**$\Delta D/A_{2011-2008}$**	**$\Delta D/A_{2011-2008}$**
Constant	0.008	-0.044	-0.042	-0.049	-0.146*	-0.152
	(0.123)	(-0.492)	(-0.619)	(-0.542)	(-1.822)	(-1.413)
ETR_{t-1}	0.037	0.071	-0.031	-0.052	-0.032	-0.063
	(0.506)	(0.943)	(-0.856)	(-1.421)	(-0.494)	(-0.974)
M/B_{t-1}	-0.010	0.003	-0.064***	-0.055**	-0.007	-0.015
	(-0.366)	(0.111)	(-2.823)	(-2.245)	(-0.208)	(-0.435)
$EBITDA/A_{t-1}$	-0.049	-0.030	-0.383***	-0.313***	-0.702***	-0.575***
	(-0.481)	(-0.288)	(-3.883)	(-3.130)	(-4.666)	(-3.682)
$SIZE_{t-1}$	0.009*	0.012**	0.026***	0.028***	0.032***	0.035***
	(1.696)	(2.112)	(4.567)	(4.803)	(5.036)	(5.311)
PPE/A_{t-1}	-0.042	-0.037	-0.049	-0.029	-0.005	-0.001
	(-1.206)	(-1.010)	(-1.379)	(-0.769)	(-0.124)	(-0.038)
D/A_{2008}	-0.162***	-0.192***	-0.259***	-0.277***	-0.267***	-0.300***
	(-4.747)	(-5.326)	(-7.259)	(-7.384)	(-6.595)	(-7.121)
Industry fixed effect	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.097	0.160	0.272	0.308	0.249	0.301
N	196	196	196	196	196	196

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 14. The impact of tax change effect on capital structure (cont.)

Panel B	**D/A_{2007}**	**D/A_{2007}**	**D/A_{2008}**	**D/A_{2008}**	**D/A_{2009}**	**D/A_{2009}**
Constant	0.847***	0.703**	0.735***	0.586***	0.072	-0.033
	(2.811)	(1.995)	(7.441)	(3.202)	(0.507)	(-0.188)
ETR_{t-1}	0.162	0.163	0.029	0.018	0.144	0.168
	(0.750)	(0.715)	(0.103)	(0.062)	(0.944)	(1.127)
M/B_{t-1}	-0.021	-0.008	-0.041**	-0.043*	0.022	0.036
	(-0.857)	(-0.311)	(-1.977)	(-1.921)	(0.410)	(0.676)
$EBITDA/A_{t-1}$	-1.442***	-1.470***	-0.779*	-0.680	-0.613***	-0.613***
	(-3.317)	(-3.248)	(-1.892)	(-1.587)	(-2.989)	(-3.066)
$SIZE_{t-1}$	-0.006	-0.005	-0.005	-0.003	0.042***	0.038***
	(-0.273)	(-0.249)	(-1.091)	(-0.557)	(3.716)	(3.395)
PPE/A_{t-1}	-0.126	-0.178	0.038	0.045	-0.012	-0.056
	(-1.155)	(-1.481)	(0.369)	(0.409)	(-0.169)	(-0.775)
Industry fixed effect	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.188	0.225	0.108	0.140	0.094	0.241
N	132	132	196	196	245	245
	D/A_{2010}	**D/A_{2010}**	**D/A_{2011}**	**D/A_{2011}**		
Constant	-0.066	-0.107	-0.160	-0.197		
	(-0.615)	(-0.758)	(-1.515)	(-1.543)		
ETR_{t-1}	-0.026	-0.069	0.160*	0.089		
	(-0.414)	(-1.159)	(1.765)	(1.022)		
M/B_{t-1}	-0.067**	-0.071**	-0.035	-0.045		
	(-2.110)	(-2.269)	(-1.020)	(-1.376)		
$EBITDA/A_{t-1}$	-0.875***	-0.734***	-0.854***	-0.723***		
	(-5.789)	(-5.046)	(-6.676)	(-5.861)		
$SIZE_{t-1}$	0.063***	0.061***	0.064***	0.064***		
	(7.456)	(7.148)	(8.356)	(8.257)		
PPE/A_{t-1}	0.012	-0.007	0.012	-0.011		
	(0.221)	(-0.124)	(0.249)	(-0.234)		
Industry fixed effect	No	Yes	No	Yes		
Adjusted R^2	0.306	0.388	0.295	0.376		
N	297	297	297	297		

6.3. Robustness check

Several tests are conducted to check for the robustness of the results. Regarding the analysis of the market timing effect on capital structure, I redefine the hot-market definition. In the main text, following Alti (2006), hot market is defined as months with the three-month centered moving average of IPO volume is above its median value. In this robustness check, hot-market is defined as the top 25% of the months in terms of three-month centered moving average of IPO volume, and the bottom 75% is classified as cold. The Table 15 reports the regression on the differences in leverage and level of leverage until IPO+2. The results are similar for regressions conducted in years afterward, thus are not reported. In terms of change in leverage between the IPO year and pre-IPO year data, there is a statistically significant different between those of firms issuing IPO in hot-market and in cold-market. Hot-market firms have lower leverage ratio than cold-market firms as expected. The effect continues until year IPO+1, and disappears afterwards. As discussed earlier, since both market-to-book ratio and hot dummy variable may capture the market timing effect, Table 15 shows that when the market-to-book ratio variable is omitted, there is a negative and statistically significant relationship between hot market variable and cumulative change in leverage as expected.

In terms of the analysis on tax effect on capital structure, I investigate the robustness of the model by considering different measure of leverage – long-term leverage. The findings are presented in Table 17. The effective tax rate coefficient in regression on cumulative change in leverage is still not statistically significant. In case of regression with dependent variable of debt leverage, the effective tax rate is found to be positive and significant at the level of 10%. These findings confirm the previous results that the effective tax rate has a positive relationship with leverage. One notable finding is that in the robustness test, tangibility is positively and statistically significant with the long-term leverage at level of 1%. It is in line with several empirical studies such as Titman and Wessels (1988), Rajan and Zingales (1995). Empirical studies generally provide evidence for a positive correlation between tangibility and long-term leverage (Cassar and Holmes, 2003; Sorgorb, 2005). Meanwhile in the main test, there is no relationship between these two variables. The possible explanation is that long-term debt is mostly used for financing tangible; therefore it is reasonable for the highly correlation between these two variables. Meanwhile the total leverage used in the main text composed of both long-term debt and short-term debt, and Vietnamese firms are mostly rely on short-term financing (Nguyen and Ramachandran, 2006; Nguyen et al., 2012). Thus, the relationship is underestimated in the main analysis.

Table 15. Robustness test for the short-term impact of market timing effect on capital structure

Panel A reports the mean value of difference in leverage ($\Delta D/A_t$) and level of leverage (D/A_t) between hot- and cold-market firms and the t-value of their difference. The time subscript t denotes the IPO year. Panel B reports the coefficients of regression of the model:

$Y_t = \beta_0 + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{t-1} + \varepsilon_t$

The dependent variable Y_t is either the change in book leverage ($\Delta D/A_t$) or book leverage (D/A_t) at the end of IPO year. When the dependent variable is the level of book leverage, the lagged book leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

	$\Delta D/A_t$	**$\Delta D/A_t$**	**D/A_t**	**D/A_t**
Panel A: Mean values				
Hot	-0.038		0.538	
Cold	-0.004		0.534	
t-value (difference)	(-2.260)		(0.158)	
Panel B: Regression analysis				
Constant	-0.020	-0.031	0.064	0.055
	(-0.262)	(-0.371)	(0.531)	(0.448)
HOT	-0.015	-0.027*	-0.013	-0.022
	(-1.052)	(-1.848)	(-0.600)	(-1.036)
M/B_t	-0.042***		-0.031***	
	(-6.316)		(-3.003)	
$EBITDA/A_{t-1}$	0.014	-0.141	-0.889***	-0.988***
	(0.154)	(-1.478)	(-6.969)	(-7.910)
$SIZE_{t-1}$	0.018***	0.016***	0.047***	0.045***
	(3.389)	(2.800)	(5.913)	(5.588)
PPE/A_{t-1}	0.007	0.004	-0.011	-0.013
	0.222	(0.118)	(-0.221)	(-0.257)
D/A_{t-1}	-0.266***	-0.284***		
	(-7.369)	(-7.405)		
Industry fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.271	0.170	0.333	0.314
N	297	297	297	297

* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 16. Robustness test for the long-term impact of market timing effect on capital structure

Panel A and C report the mean value of difference in leverage and level of leverage between hot- and cold-market firms and the t-value of their difference. Panel B and D report the coefficients of regression of the model:

$$Y_t = \beta_0 + \beta_1 HOT + \beta_2 M/B_{t-1} + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{pre-IPO} + \varepsilon_t$$

The dependent variable Y_t is the cumulative change in book leverage from pre-IPO year to years IPO+1, IPO+2, book leverage at the end of IPO+1 and IPO+2 year. When the dependent variable is the level of book leverage, the lagged book leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

	$\Delta D/A_{t\text{-pre-IPO}}$	**$\Delta D/A_{t\text{-pre-IPO}}$**	**D/A_t**	**D/A_t**
t	IPO+1	IPO+2	IPO+1	IPO+2
Panel A: Mean values				
Hot	-0.046	-0.058	0.530	0.525
Cold	-0.005	-0.020	0.533	0.516
t-value (difference)	(-2.065)	(-1.466)	(-0.093)	(0.296)
Panel B: Regression analysis				
Constant	0.331***	-0.175	0.675***	-0.124
	(4.873)	(-1.385)	(8.168)	(-0.827)
HOT	-0.025	-0.008	-0.013	0.019
	(-1.368)	(-0.344)	(-0.538)	(0.736)
M/B_{t-1}	-0.030***	-0.034***	-0.018	-0.044***
	(-3.309)	(-2.903)	(-1.538)	(-3.218)
$EBITDA/A_{t-1}$	-0.411***	-0.361***	-1.043***	-0.592***
	(-3.183)	(-2.846)	(-6.598)	(-3.980)
$SIZE_{t-1}$	-0.001	0.036***	0.000	0.053***
	(-0.644)	(4.620)	(-0.112)	(5.841)
PPE/A_{t-1}	-0.055	0.108**	-0.091	0.046
	(-1.299)	(2.100)	(-1.627)	(0.758)
$D/A_{pre-IPO}$	-0.397***	-0.491***		
	(-9.308)	(-9.523)		
Industry fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.262	0.320	0.233	0.302
N	297	245	297	245

Table 17. Robustness test for the impact of tax change effect on capital structure

Panel A and B report the coefficients of regression of the model:

$$Y_t = \beta_0 + \beta_1 ETR_{t-1} + \beta_2 EBITDA/A_{t-1} + \beta_3 SIZE_{t-1} + \beta_4 PPE/A_{t-1} + \beta_5 D/A_{pre-tax\ reform} + \varepsilon_t$$

The dependent variable Y_t is the cumulative change in long-term leverage from 2008 (pre-tax reform year) to 2009, 20010, 2011, long-term leverage at the end 2007 to 2011. When the dependent variable is the level of long-term leverage, the lagged long-term leverage is excluded from the regression. Robust t-statistics are in parentheses. See Appendix 1 for the definitions of the variables.

Panel A	**$\Delta D/A_{2009-2008}$**	**$\Delta D/A_{2010-2008}$**	**$\Delta D/A_{2011-2008}$**
Constant	-0.089	-0.040	-0.126
	(-1.141)	(-0.487)	(-1.375)
ETR_{t-1}	0.117	0.028	0.040
	(1.791)*	(0.848)	(0.730)
M/B_{t-1}	0.030	0.007	-0.013
	(1.291)	(0.328)	(-0.437)
$EBITDA/A_{t-1}$	-0.035	-0.207**	-0.099
	(-0.399)	(-2.302)	(-0.755)
$SIZE_{t-1}$	0.006	0.008	0.012**
	(1.165)	(1.491)	(2.304)
PPE/A_{t-1}	0.027	0.087**	0.191***
	(0.689)	(2.173)	(4.844)
D/A_{2008}	-0.144***	-0.351***	-0.464***
	(-2.867)	(-6.485)	(-8.182)
Industry fixed effect	Yes	Yes	Yes
Adjusted R^2	0.136	0.303	0.296
N	196	196	196

* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

Table 17. Robustness test for the impact of tax effect on capital structure (cont.)

Panel B	**D/A_{2007}**	**D/A_{2008}**	**D/A_{2009}**	**D/A_{2010}**	**D/A_{2011}**
Constant	-0.388*	-0.005	-0.343***	-0.194**	-0.238***
	(-1.746)	(-0.041)	(-2.723)	(-1.980)	(-2.715)
ETR_{t-1}	0.174	0.077	0.203*	0.026	0.107*
	(1.207)	(0.434)	(1.912)	(0.630)	(1.785)
M/B_{t-1}	-0.031*	-0.005	0.015	0.013	-0.011
	(-1.859)	(-0.363)	(0.404)	(0.584)	(-0.469)
$EBITDA/A_{t-1}$	-0.228	-0.772***	-0.138	-0.401***	-0.131
	(-0.796)	(-2.872)	(-0.967)	(-3.964)	(-1.544)
$SIZE_{t-1}$	0.026*	0.001	0.023***	0.020***	0.019***
	(1.854)	(0.393)	(2.840)	(3.315)	(3.663)
PPE/A_{t-1}	0.234***	0.318***	0.409***	0.334***	0.374***
	(3.074)	(4.644)	(7.909)	(8.797)	(11.283)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.283	0.322	0.420	0.376	0.410
N	132	196	245	297	297

* Significant at 10% level
** Significant at 5% level
*** Significant at 1% level

CHAPTER 7. CONCLUSION

This chapter presents the main conclusions and possible implications. Finally, it ends with discussion of limitations of the study and suggestions for further research.

7.1. Findings and implications

This study attempts to test whether the market timing hypothesis help explain the capital structure decisions, and whether changes in corporate tax rate affect leverage choices of Vietnamese listed firms. Examining a sample of 297 non-financial IPOs in the Vietnam stock market between 2006 and 2010, the analysis finds no significant support for the market timing theory. There is no statistically significant correlation between hot market dummy variable and leverage. Although the finding is contradictory to the predictions of the market timing theory, it is in line with the results found in some other developing countries. Studying the market timing theory in the Brazilian market, Mendes et al. (2005) do not find evidence supporting the theory. Tian et al. (2008) also document that the leverage is inversely related to the proxy, but not significant, hence not supporting the validity of the market timing in Chinese context. The market timing theory is also found irrelevance in case of developed countries. Using a sample of IPOs and SEOs by US firms between 1970 and 2004, Wagner (2007) finds no empirical support for the hypotheses of the market timing theory. Xu (2009) also shows that there is no evidence that market timing affects Canadian firms' capital structure.

There are several explanations to non-proof of the market timing theory in Vietnam. The capital market in Vietnam is still in the early stage of development with significant difference compared with those of developed countries. Listed firms especially state-owned enterprises which still account for nearly 40% of total listed firms might not follow closely market behaviors (Nguyen et al., 2012). Therefore, the capital structure theory that explains well the firm's actual financing decisions in mature economies might not be relevant in case of an emerging country due to institutional and cultural differences. Among institutional settings that have proved to influence leverage choices of firms is the level of development of a country legal and financial system (Booth et al., 2001; de Jong et al., 2008). Moreover, Booth et al. (2001) argue that the unexpected results in case of developing countries could derive from a greater dependence on short-term financing; such financing sources have a different set of determinants from long-term debt.

Another possible explanation is that as the Vietnamese stock market is under the control of the government, firms need to get the inspection and approval from the government authority before issuing new equity. Such procedure might be lengthy, which restricts firms from fully and quickly exploit the favorable market conditions.

There is a possibility that the hot market dummy variable is not a suitable proxy to capture market timing effects in Vietnamese stock markets. Helwege and Liang (2004) compare IPOs over cycles during 1975-2000 and find that hot and cold IPO markets exhibit almost no discernible differences in the characteristics of the firms that go public as in the quantity of firms that go public.

This thesis also studies the impact of tax change policy on the capital structure decisions of Vietnamese listed firms by focusing on the corporate income tax reform, a major business tax reform that came into effect from January 1 2009. The findings indicate that there is no strong evidence with respect to tax change effects on firms' capital structure. The coefficient of effective tax rate is found to be positive in case of level of leverage as dependent variable and negative in case of cumulative change in the leverage as dependent variable. Although the signs are in line with the theoretical predictions, the magnitudes are not large enough to make it statistically significant. Despite the fact that the finding is not in line with predictions of the tax theory, it is consistent with several prior studies. Homaifar et al. (1994) find that there is no significant short-run contemporaneous relationship between leverage and tax rate. Booth et al. (2001) when analyzing the determinants of capital structure of firms in developing countries document the insignificant and even negative impact of tax on leverage ratio.

Several possible explanations why tax change does not have a significant impact on firms' leverage ratios are as follows. In order to further develop the stock market at its nascent stage, the government granted a tax relief of a 50% reduction in corporate tax rate for two years since IPOs. However, this tax relief was terminated since Jan 1st 2007. As a results, despite the fact that statutory tax rate is reduced as stipulated by the tax reform from 28% to 25%, the effective tax rate is increased due to termination of the previous tax relief. Moreover, studies show that firms do not reduce leverage in response to tax cuts, and tax increases that are later reversed nevertheless lead to permanent increase in debt level of firms (Heider and Ljungqvist, 2012). The insensitivity of responses to tax cuts may come from the fact that managers are reluctant to issue equity which is consistent with the predictions of the pecking order theory (Heider and Ljungqvist, 2012). Another possible explanation is that

firms are reluctant to reduce leverage because in case of increasing leverage, benefits are subject to the lenders (Admati et al., 2012). Chen and Gong (2012) document that the non-linear relationship between market leverage ratio and marginal tax rate (i.e. corporate leverage may first increase and then decrease as the corporate tax rate rises) explains why the tax rate is sometimes not a reliable determinant of leverage ratios in linear regression.

With regard to control variables, the empirical findings suggest that the firm-specific factors affect leverage choices in a way that support both the trade-off theory and pecking order theory. Consistent with the predictions of the trade-off theory, size is found to have positive relationship with leverage, and tangibility is found to have positive relationship with long-term leverage. In line with the hypothesis of the pecking order theory, market-to-book ratio and profitability are negatively correlated with leverage.

The findings contribute to the literature in some aspects. Firstly, it reinforces the observation that there is a divergence between capital structure theories and practice in an emerging market. The generality of the market timing theory of capital structure is challenged as no empirical evidence of short-term and long-term impact of market timing effects on Vietnamese firms' capital structure is found. Furthermore, no strong correlation between tax and leverage is documented. Secondly, it confirms the fact that no single theory can fully explains the variation in capital structure choices of firms in reality (Lemmon et al., 2008; Bharath et al., 2009). The influences of other firm-factor determinants on leverage choice found in this study are mostly supportive of both the trade-off theory and the pecking order theory. Thirdly, it enhances the understanding of capital structure choices of Vietnamese firms in terms of the impact of not only market timing and tax change but also other firm-specific factors on capital structure in Vietnamese context.

Several implications can be drawn from the results of this research. The findings that the market timing theory is not dominant in Vietnamese stock market may indicate that participating in equity issuance might be an attractive opportunity for investors. The motivation of equity issuance is due to growth opportunities of firms rather than to market timing attempts by managers. The research findings also have some implications for policy makers in Vietnam. The Vietnamese government should take further steps to support the development of both the stock and bond market and the liberalization of the banking system so that firms can have more alternative sources of financing as well as improve their accessibility to such sources. This could be done through the improvement of legal framework, the establishment of credit rating for firms. An efficient capital market is

important for financial development in an emerging market. The findings on factors that influence leverage ratio of firms may be useful for financial managers and investors.

7.2. Limitations and recommendations

Although this study provides a number of insights, there are still some limitations. Firstly, in this study, I examine the market timing effect on capital structure by focusing on IPOs. IPO is regarded as one of the most important financing events in a firm's life cycle, and market timing effect is considered apparent in the IPO markets (Alti, 2006). Nevertheless, the conclusion on the relevance of the market timing theory drawn from this single event may be limited. Therefore, further research may extend the investigation to other activities including IPOs, SEOs and repurchase activities. Moreover, not only the equity market timing but also the debt market timing should be tested. It would be interesting to examine the debt market timing separately whether there is evidence of market timing attempts in debt market and simultaneously with the equity market timing whether which effect is stronger.

Secondly, this study investigates the impact of change in corporate tax rate on firms' capital structure by focusing on the tax reform in 2009. Further research can be carried out to extend the investigation to corporate tax change happening in prior years such as 2001 and 2004. Moreover, the fact that corporate tax changes coincide with changes in personal taxes could either magnify or weaken the effects of corporate tax rates on leverage. A possible extension could involve the analysis of the influence of both corporate tax change and personal tax change on capital structure choice of Vietnamese firms.

Thirdly, the limitation may come from the various proxy variables used in this analysis. In spite of the fact that there are strong theoretical and empirical arguments for using such proxy variables including the hot dummy variable and effective tax rate, they may not perfectly capture the theoretical propositions. Nevertheless, it is common that problems arise from proxies in empirical studies (Graham and Leary, 2011). Although the hot dummy variable defined based on the IPO volume monthly can capture the market timing attempts in the US, it may not suitable in case of Vietnamese stock market because of the different IPOs procedure characteristics. Future study may employ hot dummy variable defined based on the IPO volume quarterly. Future study may use other proxy variables to capture market timing effects such as yearly timing variable (Kayhan and Titman, 2007), insider trading (Jenter, 2005) or using an earning based valuation model (Elliott et al., 2007, 2008). Alternative measures of corporate tax rates can be employed for further examination of the tax change

effects such as marginal tax rate (Graham, 1996; Alworth and Arachi, 2001), King tax's ratio (Cheng and Green, 2008).

Another limitation stems from the data set. The accuracy of data is a common problem in developing countries in general and in Vietnam in particular where transparency and disclosure of the listed firm are very low (Leung, 2009). According to a survey by Ernst & Young (2012), more than a third of respondents admit the threat of financial performance misstatement in Vietnam. Moreover, earnings management can distort the information content of the financial statements. Teoh et al. (1998) document that earnings management around the IPO is high for issuing firms. Empirical evidence suggests that IPO firm's managers have incentives to manage earnings both in the financial statements prior to going public and in the first annual report as a public firm (Teoh et al., 1998; Roosenboom et al., 2003). In addition, compared with a very large sample of firms used in finance literature, the small sample size consisting of 297 firms in this study may limit the generalization of the findings. Further study might attempt to extend the current examination of this study by using a larger sample and longer time horizon.

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APPENDIXES

Appendix 1: Criteria for lising shares on Vietnamese stock exchange

Criteria for listing shares on HOSE:

i. The applicant must be a joint-stock company with paid-up capital recorded in the financial statements, at the time of registration for listing, equal to or over VND 80 billion.

ii. Business performance of 2 consecutive years prior to the time of registration for listing must have been profitable and have no accumulated loss at the time of listing registration;

iii. There must not be overdue debts that are not set up provision according to the rules and regulations of accounting; the applicant must publicize all debts to the company owed by members of the Board of Directors, Board of Supervisors, (General) Director and Deputy (General) Director(s), Chief Accountant, major shareholders and related persons;

iv. At least 20% of the applicant's voting shares must be held by at least 100 shareholders;

v. Members of the Board of Directors, Board of Supervisors, (General) Director and Deputy (General) Director(s), Chief Accountant must undertake to hold 100% of the shares they owned within 6 months from the listing date and 50% of those shares for the following 6 months, excluding the shares held by such individuals as representative of the State owner;

Criteria for listing shares on HNX:

i. The applicant must be a joint-stock company with paid-up capital recorded in the financial statements, at the time of registration for listing, equal to or over VND 10 billion;

ii. Business operations in the year immediately preceding the year of registration for listing must have been profitable,

iii. There must not be no debts which have been overdue for more than one year, and all financial obligations to the State must have been discharged;

iv. At least 100 shareholders must own voting shares in the company;

v. Shareholders being members of the Board of Directors, Supervisory Board, the Manager or General Manager, the Deputy Manager or Deputy General Manager and the Chief Accountant of the company must commit to hold 100% of the shares they

own for a period of 6 months from the listing date and 50% of this number of shares for the following 6 month.

Appendix 2: Criteria for lising bonds on Vietnamese stock exchange

Criteria for listing corporate bonds on HOSE:

i. The applicant must be a joint-stock company or limited liability company or state-owned company with paid-up capital recorded in the financial statements, at the time of registration for listing, equal to or over VND 80 billion;
ii. Business performance of 2 consecutive years prior to the time of registration for listing must have been profitable, have no debts which have been overdue for more than one year, and complete all financial obligations to the state;
iii. Bonds of one issue must be held by at least 100 bond-holders;

Criteria for listing corporate bonds on HNX:

i. The applicant must be a joint-stock company or limited liability company or state-owned company with paid-up capital recorded in the financial statements, at the time of registration for listing, equal to or over VND 10 billion;
ii. All bonds of one issue must have the same maturity date.

In case of Government bonds, bonds underwritten by the Government and municipal bonds, listing on HNX is pursuant to the request of bond issuer.