

## Impact of market timing on capital structure: Evidence from Thai IPOs

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#### Abstract

For many firms, market timing is important for making a decision to go public as firms usually prefer to go for an Initial Public Offering (IPO) when cost of capital of equity issuance is low. Evidences in this paper prove that Thai non-financial firms do time the market as they have tendency to issue their equities more while market is still 'Hot' than in the 'Cold' market. Moreover, market timing has negative impact on leverage level in the short run, especially for those that launch IPO in 'Hot' market. This finding implies that traditional corporate finance theories do not always hold for Thailand's non-financial firms when it comes to determining the balance of their capital structure.

## Chapter 1 Introduction

In capital market, market timing is key factor to make equity issuing decision for firm to go public. Equity market timing refers to the practice of issuing share at high prices and repurchase at low price (*Baker and Wurgler, 2002*). In general, firms tend to issue equity when cost of capital of equity issue appears to be temporary low. In efficient market, there is indifferent between using debt or equity (*Modigliani and Miller, 1958*). However, capital markets in real world are inefficient. Therefore, managers have incentive to time the market if they think it is possible and if they care more about ongoing shareholders. At the time that firms decide to go public is the implication of the attempt to time the market since it is important for firms to go public at the right time when cost of equity issue is low.

The practice of the effect of market timing on capital structure had been documents in many studies, for example, *Taggart (1977), Marsh (1982), Asquith and Mullins (1986), Korajczyk, Lucas, and Mcdonald (1992), Jung, Kim, and Stulz (1996), Hovakimian, Opler, and Titman (2001), and Baker and Wurgler (2002)* in different ways of market timing measurement.

Earlier of many studies, for example, *Taggart (1977), Marsh (1982), Jalilvand and Harris (1984), and Asquith and Mullins (1986),* market timing is studied on the basis of the past stock returns as determination of decision of issuing debt or equity. Later, studies of *Jung, Kim, and Stulz (1996), Pagano, Panetta, and Zingales (1998), Hovakimian, Opler, and Titman (2001), and Baker and Wurgler (2002)* are studies focus on the market-to-book ratio to capture timing attempts. The important explanations for choice between issuing debt and equity are explained by pecking order model, agency model, and timing model.

Recent study of *Alti (2006)* directly measure market timing by using IPO volume in term of number of issuers. This study does not use market-to-book ratio because it is closely to growth opportunity determinant, which firms with growth opportunity typically have high market-to-book ratio.

The effects of market timing are found to be important to capital structure. However, the results are found in different ways. *Flennery and Rangan (2004), Kayhan and Titman (2006), Hovakimian (2005), and Alti (2006)* suggest that the impact of equity market-timing on average are short-lived. On the other hand, *Baker and Wurgler (2002) and Huang and Ritter (2005)* suggest the impact is long-lasting effect on capital structure.

Therefore, the effect of market timing is not under dispute. However, the persistent of long-term effect in U.S. market as in the study of *Baker and Wurgler* (2002) – refers to 'market timing hypothesis' are found to be interesting to study in other markets whether there is persistent impact of market timing on capital structure.

Beside, the most interesting aspect of firms especially in developing and emerging markets is ownership concentration since it can determine level of debt and firm performance. *La Porta et al (1999)* shows that ownership structure plays important role in corporate finance in emerging market more than in developed countries. In most Asian countries, corporate control is enhanced through pyramidal ownership structure and cross-holding among family-controlled firm (*La Porta, Lopez-de-Silanes, and Shleifer, 1999*). Ownership and control structure of the East Asian firms is highly concentrated among few families. Owners are not only managers, but also gain control over firms as controlling shareholder (*Claessens et al, 2000, Fan and Wong, 2002*). In Thailand, ownership concentration is high and controlling shareholders are mainly family (*Wiwattanakantang, 1999*).

In Thailand, firms go public with many reasons. Firstly, they can raise fund from the market. Additionally, they can gain tax benefit<sup>1</sup>. Firms also go public because they want to rebalance their financial position after investing (*Pagano*, *Panetta*, and Zingales, 1998). Market timing also affects number of firms go public. The numbers of firms go public increase if the previous year SET index is high, while, numbers of firms go public decrease if previous year SET index is low (*Thuwajaroenpanich*, 2002). Hence, market timing will tell when firms should go public and whether investors should invest in the Hot- or Cold-market firms. Also, Thai's ownership structure are unlike those in U.S., to study impact of market timing

<sup>&</sup>lt;sup>1</sup> In 2002, the government reduces corporate income tax rate from 30 percent to 25 percent and 20 percent for new listed firms in SET and MAI (Market for Alternative Investment), respectively. The tax benefit is valid until November 2004, and firms can apply for 5 years after getting listed in next fiscal year.

in Thailand would be interesting in the way that the impact would be different from U.S. market. However, there is not many studies about market timing in Thailand, thus, my findings may help the issuers and investors decide when to issue and purchase equity and may explain how the market timing shapes firm's capital structure in long-run.

The ownership concentration are highly concentrated approximately 81 percent before firms go public. After going public, ownership concentrations are higher than 50 percent. In addition, ownerships are highly in hand of individual and family in total 47.23% for pre-IPO and 41.82% for post-IPO.

#### Research question

Whether the market timing is key factor to the change of capital structure of firm and how market timing impacts to capital structure.

#### **Objectives**

Objectives of study are:

- Investigate impact of equity market timing on capital structure at the time of IPO.
- Investigate whether effect of equity market timing is persistent in subsequent year of IPO, and
- Investigate impact of equity market timing on performance of firms in subsequent year of IPO.

#### Scope of study

My scope of the study is only for non-financial IPOs listed in SET during year 1995 – 2005 excluding non performing groups and delisted companies. Figure 1 shows the numbers of IPOs listed in Stock Exchange of Thailand (SET) are represented below:



Figure 1: The number of newly listed companies and SET index during 1995-2005.

#### Limitation

Since there is special regulatory for financial firms, therefore, I excluded financial firms from this study. This paper also excluded IPO firms that delisted from SET and also excluded existing IPO firms which merged to other firms within year 1995-2005. In addition, the study is limited only to IPO firms which have completely data available both pre-IPO and post-IPO. In addition, ultimate shareholders may not be traced due to lack of information disclosure.

The remainder of this paper is organized as follows. Section 2 discusses the literature reviews of the study. Section 3 discusses the theoretical framework and hypotheses. Section 4 describes data sources, market timing measurement, and other variables.

## Chapter 2 Literature reviews

#### Market timing and capital structure

#### Market timing measured by past stock returns.

Taggart (1977) studies the understanding or corporate financing pattern. He finds that firms base their stock and bond issue decision on the need for permanent capital and long-term debt capacity. Liquid assets and short-term debt play important role because the speed of adjustment to capital target is relatively slow. From the study, there is evidence that timing strategies may speed up or postpone firms' adjustment to target, but interest rate and stock market timing seems more questionable.

Marsh (1982) empirically studies of securities issued by U.K. companies during year 1959-1974 focus on how companies select between financing instruments at a given point of time. He finds that market conditions and past history of security prices influence the choice between choosing debt and equity. In addition, companies make choices as if they have target level of debt in mind and target level of debt is determined by company size, bankruptcy risk, and asset composition.

Jalilvand and Harris (1984) study financial decision by U.S. corporations to examine the issuance of long-term debts, short-term debts, maintenance of corporate liquidity, issuance of new equity, and payment of dividends during year 1963-1978. They document the financial decisions are interdependent, that is, market imperfection may not lead to completely adjustment in long run target in every time period. The speed of adjustment is affected by firm size, interest rate condition, and stock price level. In addition, the pattern of adjustment is depends on their remaining financial needs. Large firms adjust faster to target level of long-term debt, but slowly adjust to target level of equity than smaller firms.

#### Market timing measured by market-to-book ratio

Jung, Kim, and Stulz (1996) investigate the ability of the pecking order model, agency model and timing model to explain firm's decision whether to issue debt or equity using proxy of market-to-book ratio (investment opportunity) and measure of

long-term post-issue abnormal return. Their results support agency model, that is, firm issuing equity typically have good investment opportunity and experience asset growth from pre-issue to end of year following the issue. In addition, firm with most valuable investment opportunity do not experience adverse stock return when they issue equity. Equity issue-firms with most valuable investment opportunity do not experience adverse stock return when they opportunity equity issue-firms with most valuable investment opportunity do not experience adverse stock return, while equity issue-firms with poor investment opportunity have significant drop in share price.

Pagano, Panetta, and Zingales (1998) empirically study the determinants of IPOs in Italy by comparing ex ante and ex post characteristic. The likelihood of IPO is increasing in the company's size and industry's market-to-book ratio. Companies are likely to go public because they want to rebalance their accounts after high investment. They also find reduction in profitability, investment, and leverage after the IPO, however, the effect of market timing is short-lived.

Baker and Wurger (2002) study of whether market timing has a short-run or long-run impact on U.S. firm during year 1968-1999. They measure market timing based on historical market-to-book ratio (external finance weight-average historical market-to-book). The main finding is that low leverage firms raise funds when their market valuation is high (measured by market-to-book ratio), while high leverage firms raise funds when market valuation is low. They find that leverage is negatively related to historical market-to-book ratio and market timing has large and persistent effect on capital structure. They conclude that capital structure is the cumulative outcome of attempts to time the equity market.

The study of Baker and Wurger (2002) that catch the attention from many researchers document the result of persistent of market timing on capital structure in U.S. market. Since then, many papers had been studied in other markets based on Baker and Wurger (2002)'s paper.

Huang and Ritter (2005) empirically study to test market timing theory on capital structure on the U.S. firms during 1964-2001. They find that firms are more likely to use equity financing when the cost of equity is low. In addition, the result is consistent with market timing hypothesis, that is, securities issue decisions have long-lived effect on capital structure.

Bie (2005) examines market timing and its effect on capital structure of Dutch firms during year 1983-1997. They measure market timing as in Baker and Wurgler (2002). Based on historical market-to-book ratio, they do not find persistent effect of market timing on capital structure. They find evidence of market timing based on stock price such that stock price run-up increase the probability that firms issue equity. And stock return has significantly negatively related to leverage.

Arvind and Semih (2006) examine the equity-market timing on capital structure based on historical market-to-book ratios in G-7 countries. They find that the historical market-to-book ratio is inversely related to leverage in G-7 countries. However, the inverse relations are not solely attributed to equity market timing. The inverse relations in most countries, such as, Canada, France, UK, and US are found to be consistent with both market-timing hypothesis and with some dynamic models of trade-off with adjustment costs. Further, they suggest that the relation between historical market-to-book value and leverage cannot be due to equity market-timing in Japan's case since there is no association between equity issuance and the market-to-book ratio observed at the time of external financing in Japan. In conclusion, their result do not support market timing hypothesis.

Xu (2006) studies the effect of market timing on capital structure by using equity finance weighted average relative market-to-book ratio (RMB<sub>efwa</sub>) as market timing measurement. They find that market timing have significant impact on leverage. The equity issues at the IPO affect capital structure persistently. Moreover, equity issues in hot market do not significantly reduce more leverage than cold market.

#### Market timing measured by hot-market period

Alti (2006) examines the capital structure implications of equity market timing of all IPOs during year 1971-1999. Since Hennessy and Whited (2004) show that a dynamic trade-off model with no market timing opportunities is able to replicate the empirically observed link between historical market-to-book series and current leverage. Thus, to avoid the concern surrounding the use of the market-to-book ratio, Alti identifies market timing based on hot-market period. He finds that the short-term impact of market timing to leverage is negative. Hot-market firms have greater decline in leverage in the IPO year. However, the negative impact is reversed immediately following IPO year. Leverage ratio of hot-market firms increase significantly in the 2 years following the IPO. In conclusion, market timing is important determinant of financing activities only in short-run.

#### The study of market timing in Thailand

Thuwajaroenpanich (2002) studies impact of market timing on capital structure by using historical market-to-book ratio and stock return as a proxy to measure market timing. The market timing measured by historical market-to-book ratio cannot explain firm's capital structure. However, it does not mean that there is no market timing in Thailand, but the effect of market timing is very short as the study finds positive relationship between 30-day of stock return before equity issue announcement date and number of equity issue.

Jaroenjitrkam (2003) studies cycle of IPOs in Thailand and finds that there is a cycle in IPO return, measured by first month's average return. The hot issue market can be predicted in Thailand. Since there is positively relationship between hot issue market and numbers of offerings and gross proceeds, issuers want to issue IPO during hot issue market. The higher the first month's average return, the more possible trend of hot issue market. Investors are also want to buy in hot-market since they can gain more from underpriced that yield high initial returns.

#### **Ownership structure and firm performance**

Unlike developed countries, the ownership structure in developing countries and emerging market are highly concentrated in hand of family. In Thailand, about 80% of non-financial firms in Stock Exchange of Thailand are associated with diversified business groups that are controlled by family (Wiwattanakantang, 2001).

There are both cost and benefit associated with ownership concentration. The presence of large shareholders with high stakes or controlling shareholders may be harmful to firm since the controlling shareholder's interest may not align with non-controlling shareholders (Shleifer and Vishny, 1997, La Porta et at, 1999). Controlling shareholders may act for their own benefit, for example, paying themselves excessive salary. On the other hand, the presence of controlling shareholders may benefit to firm

in the way that they mitigate free rider problem of monitoring management team, and hence reduce agency cost (Shleifer and Vishny, 1986, Admati et al, 1994). In countries where the legal and institutional frameworks do not offer sufficient protection for outside investors, concentrated ownership can mitigate shareholder conflicts (La Porta et at, 1999, and Gomes, 2000).

Four different types of controlling shareholders in Thai firm are individual or family, foreign investors, the Thai government, and a group of more than one controlling shareholders (Wiwattanakantang, 1999). The individual or family controlling shareholder can deteriorate firm value if they put interest on family above interest of shareholders (La Porta et at, 1999). On the other hand, family controlling shareholder may provide good monitoring, resulting in lower agency costs (Fama and Jensen, 1983). Family has incentive to increase firm value because their wealth is linked to the continuation of firm. Foreign-controlled firms may outperform because of superior technology know-how and investment promotion benefit from Thai government. However, they may perform poorer because of difficulty in monitoring since they are not located domestically. Government-controlled firms are outperforming since they are operating in a monopoly or regulated duopoly markets. For firms that have more than one controlling shareholder may perform superior since large shareholders may monitor each other, hence reducing agency cost (Wiwattanakantang, 2001).

The study of Wiwattanakantang (2001) shows that ownership and control appear to be more concentrated in hand of controlling shareholders, which are typically involved in management in the majority of firms. Especially in family-owned firms, the participation of family controlling shareholder in board is even greater after crisis. The study suggests that the controlling shareholders seem to be self-constrain and not to extract private benefits for themselves. Instead of diverting corporate assets, the controlling shareholders seem to act as monitors who increase firm's value for other stakeholders. For controlling shareholders involved in management found to be both alignment (increase) and entrenchment (decrease) in firm's value. At 25%-50% of ownership level, controlling-shareholder-and-manager becomes entrenchment since they gain significant control over firm and may utilize this power to divert corporate resources to his own interest. However, when their ownerships are higher than 75%, they become alignment since the result of non-value

maximizing activities will be finally borne by themselves according to proportion of their stakes. Firms that are controlled by family have significantly higher profitability. In addition, the involvement in management by families is not significantly associated with performance measure. Hence, families seem to provide good monitoring and incentive alignment to other stakeholders.

## Chapter 3 Theoretical framework

#### Pecking order theory

Pecking order theory is based on asymmetry information (Myer, 1984) between new investor and manager who maximize wealth of existing shareholder. According to information asymmetry, manager acts in the interest of existing shareholder. If manager use private information to issue risky securities, investors are aware of this asymmetry information and interpret new issuance in bad way. Thus, manager prefers debt to equity to avoid asymmetry information problem. Pecking order theory assumes that firms use external financing only when internal funds are insufficient. Therefore, firms are driven by information asymmetries and transaction costs to use internally generated capital first before turning to more expensive sources of financing. Hence, the sequences of sources of funds are (i) retained earnings, (ii) debt, and (iii) equity

#### Static Trade-off theory

The trade-off theory emerges in the work of Modigliani and Miller (1958) assuming perfect and frictionless capital market to prove irrelevance theorem. According to irrelevance theorem, the firm's financing policy should not affect firm's value of cost of capital. The firm's value is solely determined by investment decision. Thus, it implies that there is no interaction between corporate finance and investment decision. However, by introducing market imperfection, firms seem to get an optimal, value maximizing debt-equity ratio by trading the advantages of debt against the disadvantages.

Trade-off theory argues that firms have optimal capital structure determined by trading off the cost and benefit of issuing debt. The optimal point can be attained when the marginal value of the benefits associated with debt issued exactly offsets the increase in the present value of costs associated with issuing more debt (Myers, 2001). The benefit of debt is debt tax shield from interest payment and mitigation the agency costs of manager-shareholder agency conflict since debt financing limits the free cash flow available to managers and thereby helps to control agency problem (Jensen and Meckling, 1976). The cost of debt is cost of financial distress and agency cost of debt and equity. Thus, trade-off theory predicts that firms adjust their capital structure in response to temporary shock that cause their capital structure deviate from target, that is, firms have their target capital structure and if actual leverage ratio deviates from their level, they will adjust its financial in a way to bring back at optimal level.

#### Market timing theory

The market timing theory argues that firms time their equity issues in the way that they issue new stock when the stock price perceived to be overvalued and repurchase when stock price perceived to be undervalued. There are two versions of market timing appears in the previous studies that can explain firm's financial behavior.

First version is based on information asymmetry and adverse selection problem (Myers and Majluf, 1984) which is extended and argue that investors and managers are rational, but timing opportunities arise nevertheless as the degree of information asymmetry change (Lucas and McDonald, 1990, Korajczyk, Lucas and McDonald, 1992). In this version, economic agents are assumed to be rational. Firms will issue equity after a positive information release, which reduces asymmetry problem between managers and investors. Then, the decrease in information asymmetry coincides with an increase in stock price. The hot market timing are correspond to low adverse selection costs period (Loughran and Ritter, 1995).

Second version based on time-varying mispricing in the equity market. When managers perceived the stock to be mispriced and if they act in interest of existing shareholders, they will issue equity when the stock is overvalued and repurchase when stock is undervalued (Baker and Wurgler, 2002). The opportunities to sell overvalued stock induce firms to use more equity capital than usual.

#### **Hypotheses**

#### H1: Equity market timing affects capital structure of pre-IPO.

If manager times the market by issuing equity in hot market period, the impact of market timing on leverage in the IPO year is likely to be negative, which means that hot-IPOs will have negatively related to debt in the IPO year.

From the anonymous survey, managers admit to market timing. Graham and Harvey (2001) find that two-thirds of CFOs agree that "the amount by which our stock is undervalued or overvalued was an important or very important consideration" in issuing equity. Baker and Wurgler (2002), find that low leverage firms are those that raised funds when their market valuations were high, as measured by market-tobook ratio, while high leverage are those that raised funds when their market valuation were low.

As Jaroenjitrkam (2003), it shows that hot-issue market can be predicted in Thailand. Since there is positive relationship between hot issue market and numbers of offerings and gross proceeds, thus, issuers want to go public during hot issue market.

Since during hot-market, issuers can issue more equity, therefore, I expect the hot-IPO firms have negatively related to leverage in the year of IPO.

#### H2: Favorable market condition may trigger IPOs of less profitable firm.

Under this hypothesis, less profitable IPO firms trigger the hot-market period as opportunity to issue equity if they find difficulty to sell in less active period or cold-market period (Alti, 2006). Therefore, the hot-market IPO firms are less profitable than cod-market IPO and low profitability of the hot-market firms persist well beyond IPO year.

Manager may issue equity when they foresee that firm will have less profitability in subsequent period. Therefore, hot-IPO firms will have less profitability in subsequent year than cold-IPO firms. The poor performance in subsequent year was explained that since stock prices diverge from fundamental values and managers take advantage of overpricing by selling stock to optimistic investors (Loughran and Ritter, 1995, Baker and Wurgler, 2002).

For Thailand, hot-IPO firms may not have less profit after IPO if the groups of shareholders, which are typically individual and family, are the same for both pre-IPO and post-IPO since they may severe suffer from decline in post-IPO performance. Yammeesri and Lodh (2001) document family-controlling ownership has a positive and significant relationship to market return and profitability. However, Chotchirawut, W. (2006), who measures performance by using CARs (cumulative adjusted returns), finds the two year aftermarket performance is still profitable. However, it tends to be lower profit afterwards because the concentrated ownership among Thai firms often implies family-dominated ownership and hence perhaps less effective monitoring.

I expected high profitability of the hot-IPO firms persist after the IPO year.

H3: Equity market timing has persistent effect to capital structure after following year of IPO.

Under this hypothesis, I would like to test whether cumulative effect of equity market timing has effect to capital structure after following years of IPO. If the persistence exists, the traditional trade-off theory of capital structure will not be applied, but market timing theory instead.

The persistence of market timing may depend on how fast firms rebalance their capital structure. As traditional way in corporate finance, firms attempt to maintain an optimal structure that balance costs and benefits associated with varying degrees of financial leverage (Leary and Robert, 2005). When firm's leverage level is deviated from their optimum, firms will rebalance their level of leverage back to optimal level. Firms are more likely to increase (decrease) leverage if their leverage is relative low (high), if leverage has been decreasing (accumulating), or if they have recently decrease (increase) their leverage through past financial decision.

However, Fama and French (2002) document that debt ratio is adjusted slowly toward their targets. Baker and Wurgler (2002) find the historical effort to time equity issuance with high market valuation has persistent effect on firm's capital structure.

Also, the unique of ownership structure in Thailand can cause the different result compared to developed countries like US and UK since ownership structure in Thailand mostly are either individual or family ownership. Thus, the control and decision of running firms depend on those individual and family. Wiwattanakantang (1999) finds that Thai listed firms mostly are under control single-family-owned and management's ownership of single-family-owned are positively related to debt since they use debt to protect their voting power in firms, or as a commitment to limit agency costs. Therefore, according to nature of ownership structure in Thailand, market timing has no persistent effect to capital structure of firms in long run.

## Chapter 4 Methodology

#### Sample and data sources

The study focus on non-financial IPOs listed in Stock Exchange of Thailand (SET) from year 1995-2005. The sample excluded non-performing groups, delisted firms, and merged firms during the study period. The sources of data are from multiple databases. The ownerships and financial data of pre-IPOs are obtained from database of IPO filing at Capital market information center at Thailand Securities and Exchange Commission (SEC). Ownerships and financial data after IPO are obtained from SEC database, SEC website, and SETSMART database. Daily stock prices and daily set indexes of year 1995–2005 are obtained from DataStream.

#### Measurement of market timing

I define hot and cold market period following paper of Alti (2006). I define hot and cold market on the basis of the monthly IPO volume. I use the number of IPOs for each month between January 1995 and December 2005. To smooth out seasonal variation, I take a 3-month center moving average of the number of IPOs for each month. Hot (cold) months are defined as those that are above (below) median of the series. A dummy variable HOT takes the value of one if the firms go public in a hot month, and zero otherwise.

Figure 2 plots the monthly moving average IPO volume from 1995 to 2005. The horizontal line is the median at 70,000,000 shares.



Figure 2: Time series of the monthly moving average IPO volumes during 1995-2005.

In the main sample of 145 IPOs, 119 occur in hot months (82% of the sample), and 26 occur in cold months (18% of the sample).

#### Ownership structure

Ownership structures are categorized according to percentages of shareholder at the level that they can have control over firms, which is at least 25%.<sup>2</sup> Ownership structures can be classified in to individual, family, domestic corporation, government, domestic financial institution, foreign corporation, more than one group of shareholders, and diffused ownership if no one holds more than 25%. From table 1, mostly both pre-IPO and post-IPO firms are owned by family and individual totally 47.23% and 41.82% respectively. Family or individual who gain control over pre-IPO firms are also the same group or same person for post- IPO firms, but with slightly decrease in percentage of shares holding because of the increase in number of share outstanding. For firms with more than one group of shareholders mostly consist of two groups of shareholders who hold approximately same percentage. The shareholders are also the same group for both pre-IPO and post-IPO. However, post-IPO of some firms, only one group of shareholder remains the control level. In addition, some firms after the IPO became diffused ownership with the same group of shareholders, but with reduction in percentage of share holding.

	Pre-I	PO	Post-IPO	
Shareholders	Number of	%	Numbers of	%
	firm		firm	
Individual	23	15.98%	21	11.48%
Family	45	31.25%	44	30.34%
Domestic corporation	18	12.50%	14	9.66%
Government	11	7.64%	10	6.90%
Foreign firm	15	10.42%	17	11.72%
More than one group	20	13.89%	13	8.97%
Diffused ownership	12	8.33%	26	17.93%
Total	144		145	

Table 1: Ownership structures of pre-IPO and post-IPO of IPO firms year 1995-2005.

 $<sup>^{2}</sup>$  According to the study of Wiwattanakantang (2000), the shareholders who hold at least 25% of outstanding shares will have adequate controlling rights on firms' management.

## <u>Variables</u>

Dependent variables	Explanation
Change in leverage $(D/A_t - D/A_{t-1})$	Change in book debt <sup>3</sup> divided by total
Net equity issues $(e/A)$	assets.
	Change in book equity <sup>4</sup> minus change in
$\Delta CASH/A$	retained earning divided by total assets.
	Change in cash and short-term investment
$\Delta O$ ther assets/A	divided by total assets.
	Change in other assets divided by total
$\Delta RE/A$	assets.
	Change in retained earnings divided by
EBITDA/A	total assets.
	Earnings before interest, taxes, and
	depreciation divided by total assets.
Independent variables	Explanation
<b>Independent variables</b> HOT	<b>Explanation</b> Dummy variable = 1 if firm is in hot-
<b>Independent variables</b> HOT	Explanation Dummy variable = 1 if firm is in hot- market period.
Independent variables HOT Market-to-book ratio (M/B)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by
Independent variables HOT Market-to-book ratio (M/B)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A SIZE	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.Logarithm of net sales.
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A SIZE Assets tangibility (PPE/A)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.Logarithm of net sales.Net plant, property, and equipment divided
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A SIZE Assets tangibility (PPE/A)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.Logarithm of net sales.Net plant, property, and equipment divided by total assets.
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A SIZE Assets tangibility (PPE/A) Book leverage (D/A)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.Logarithm of net sales.Net plant, property, and equipment divided by total assets.Book debt divided by total assets.
Independent variables HOT Market-to-book ratio (M/B) EBITDA/A SIZE Assets tangibility (PPE/A) Book leverage (D/A) Ownership concentration (CONCEN)	ExplanationDummy variable = 1 if firm is in hot- market period.Book debt plus market equity divided by total assets.Earnings before interest, taxes, and depreciation divided by total assets.Logarithm of net sales.Net plant, property, and equipment divided by total assets.Book debt divided by total assets.Cumulative stock ownership of large

Summary of variable used for the regressions are as follow:

 $<sup>^{3}</sup>$  Book debt = Total liabilities and preferred stock minus deferred taxes and convertible debt.  $^{4}$  Book equity = Total assets minus book debt.

#### <u>Hypothesis I:</u> Equity market timing affects capital structure of pre-IPO.

Change in leverage is defined as  $D/A_t - D/A_{t-1}$  where, time subscript t denotes the IPO year.

To examine that change in leverage is effected from net equity issues as market timing implies. The change in leverage can be decomposed as follows:

$$\frac{D}{A_t} - \frac{D}{A_{t-1}} = -\frac{e}{A_t} + \left(\frac{E}{A}\right)_{t-1} x \left(\frac{\Delta Cash + \Delta Other \ assets}{A_t}\right) - \frac{\Delta RE}{A_t}$$
(1)

The first term on right-hand side of above equation is negative of net equity issues in year *t*. If firm issues new equity capital to pay down debt, then change in leverage resulting from equity issues equals to negative of equity issued. However, the reduction in leverage is less than one-to-one since new equity capital adds to total assets. Thus, the second term is to capture effect through the growth in assets. Third term is change in retained earnings. Newly retained earnings will add to equity and reduce leverage.

Therefore, regression to investigate capital structure effect is

$$Y_t = \propto + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_7 CONCEN_t + \beta_6 D/A_{t-1} + \varepsilon_t$$
(2)

The dependent variable  $Y_t$  is the change in book leverage, net equity issues, the change in cash, the change in other assets, and the change in retained earnings. The time subscript *t* denotes the IPO year.

# <u>Hypothesis II:</u> Favorable market condition may trigger IPOs of less profitable firm.

To study that, hot-IPO firms will have different profitability to cold-IPO firms in subsequent year of IPO.

$$EBITDA/A_{t} = \alpha + \beta_{1}HOT + \beta_{2}M/B_{IPO} + \beta_{3}M/B_{t-1} + \beta_{4}SIZE_{t-1} + \beta_{5}PPE/A_{t-1} + \beta_{6}CONCEN_{t} + \varepsilon_{t}$$
(3)

The variable  $EBITDA/A_t$  is the profitability for years IPO, IPO+1, IPO+2, and IPO+4.

# <u>Hypothesis III:</u> Equity market timing has persistent effect to capital structure after following year of IPO.

To examine the cumulative effect of equity market timing to capital structure of hot-IPO whether the effect is persistent.

$$D/A_{t} - D/A_{Pre-IPO} = \propto +\beta_{1}HOT + \beta_{2}M/B_{t-1} + \beta_{3}EBITDA/A_{t-1} + \beta_{4}SIZE_{t-1} + \beta_{5}PPE/A_{t-1} + \beta_{6}D/A_{Pre-IPO} + \beta_{7}CONCEN_{t} + \varepsilon_{t}$$

$$(4)$$

If market timing has cumulative effect on capital structure, it will have negatively related to debt. I test the persistent on IPO+2, IPO+3, IPO+5, and IPO+7.

#### Other control variables

I use other control variables followed by Rajan and Zingale (1995).

#### Investment opportunity

Investment opportunity of firms is measured by market-to-book ratio.

Debt financing gives an incentive to managers to invest in risky projects (Myers, 1977, Jensen and Meckling, 1976). Thus, high growth firm are likely to have low debt ratio to reduce this manager incentive problem.

Market-to-book ratio can be linked to cost of financial distress (Myer, 1977, Smith and Watts, 1992, Rajan and Zingales, 1995,). High growth firms have the most to lose when overhang debt prevents new capital from being raised. In addition, firms with high market-to-book imply that the market value is higher than book value, thus, firms may decide to issue equity, and hence debt is reducing.

Johnson (1997) suggests that market-to-book ratio can be thought as a negative indicator of firm's liquidation value. Thus, higher market-to-book firms will lower the ability to use debt.

In contrast, high growth firms can lead to higher debt because of higher debt capacity. However, in pecking order theory of *Myers (1984)*, adverse selection leads

manager to avoid issuing equity. Hence, high growth firms may reduce leverage to avoid issuing equity in the future.

#### **Profitability**

Profitability measured as earnings before interest, taxes, and depreciation divided by total assets.

High profitability may have positive relationship to leverage. Since high profitable firms can reduce cost of financial distress, firms may increase the use of debt. Furthermore, managers in high profitable firms may invest in risky project, thus, the debt is used to mitigate such a problem.

In contrast, according to pecking order theory, profitability should have negative effect to leverage since firm will prefer internal funds than other sources (Myers and Majluf, 1984). Negative relation exists if manager prefer to avoid the disciplinary role of debt (Rajan and Zingale, 1995).

Wiwattanakantang (1999) find the profitability, which measured as ROA (return on assets) is negative to leverage. It supports the pecking order theory. High profit firms use internal financing, while low profit firms use more debt because their internal funds are not adequate.

#### Size

Firm's size is measured as logarithm of net sales. Larger firms tend to be more diversified and hence are less likely to go bankrupt. In addition, large firm tends to have higher capacity to borrow than small ones (Scott and Martin, 1975, Ferri and Jones, 1979).

However, Rajan and Zingales (1995) argues that larger firms tend to release more information to public than small firms. Thus, larger firms may prefer equity financing. With economic of scale, large firm can create entry barriers with associated the benefit on effect on performance of firm. Degryse and Ongena (2001) argue that more market power and greater efficiency may result in higher profitability.

Wiwattanakantang (1999) documents positive relation of size to leverage. Large firms will face lower direct costs of bankruptcy. In addition, larger firms are more diversified, hence enhance debt capacity. Furthermore, large firms have an advantage over small firms in accessing credit market. Large firms can obtain loan without collateral.

#### Tangibility of assets

Tangibility of assets is the ratio of property, plant, and equipment to total assets.

Myer (1977) and Wiwattanakantang (1999) document size is positive related to leverage. Lenders require assets that can be used as collateral to compensate for the chance of the assets-substitution problem occurring. For firms that cannot provide collateral, lenders may require higher lending rate. Thus, debt financing is more costly than equity financing. The higher the value of tangible assets, firms are more likely to have a high leverage ratio.

#### **Ownership** concentration (CONCEN)

Ownership concentration is cumulative stock ownership of large shareholders who own 5% or more.

Ownership concentration may be either alignment or entrenchment (Jensen and Meckling, 1976), which give increase or decrease in firm value. Greater concentration may produce behavior closer to profit maximization by alleviate agency cost associate with the separation of ownership and control. On the other hand, concentrate ownership may create managerial consumption of perquisite and entrenchment of management, thus reduce firm value.

Mehran (1992), Ikeo and Hirota (1992), and Berger et al. (1997) document positive relationship of ownership concentration and leverage. Managers with high stakes in a firm prefer high level of debt since they use debt to limit agency problem and increase firm's value. Harris and Raviv (1988) and Stulz (1988) also document that managers may use debt to protect their voting power.

Shleifer and Vishny (1986) document that in very diffusely own firms where ownership and control are separate, they will have less incentive to monitor the management. However, if small number of shareholders hold large stakes in firm, this problem will not occur. The large shareholders have both incentive and voting power to put pressure on management. If concentrated ownership structure induces a higher level of monitoring, thus, debt financing used to mitigate the moral hazard problem is less widely adopted. The presence of large shareholders serves as a signal that the firm is committed, and not going to pursue any non-profit maximization activities (Zeckhauser and Pound, 1990).

## Chapter 5 Empirical Result

#### **Descriptive statistic**

Table 2 summarizes firm characteristic during 1995-2005. The analysis is conducted in IPO time. I define the IPO year as the fiscal year which IPO takes place. Year IPO+k is then the k<sup>th</sup> fiscal year after the IPO. The table summarizes as of pre-IPO, IPO, IPO+1, IPO+2, IPO+3, IPO+5, and IPO+7.

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#### Table 2 is here

Book leverage declines substantially in the IPO year from 0.56 to 0.43, and continue to increase to 0.70. Size increases with age from 13.89 to 14.47, while profitability decrease from 0.16 to 0.10 and market-to-book ratio decreases from 1.38 in IPO year to 1.13 in IPO+5, but increase to 1.50 in year IPO+7. Cash increases in the IPO year from 0.10 to 0.14 and decreases after IPO year and remains constant thereafter. Ownership concentration (CONCEN) decreases from 80.99 to 51.65. Debt to equity ratio is substantially decline from 2.35 to 0.69 in the IPO year. Then, after the IPO year, even though debt to equity ratio increases, but it is still less than pre-IPO debt to equity ratio except in year IPO+2 and IPO+7.

#### **Regression results**

The regression results report from table 3 to table 5. Table 3 reports the regression result of impact of market timing on capital structure of pre-IPO. Table 4 reports the regression result of impact of market timing on firm's profitability. Table 5 reports the regression result of persistence impact of market timing on capital structure.

#### I) Impact of market timing on capital structure of pre-IPO

Table 3 presents the regression result if there is impact of market timing on capital structure of pre-IPO.

Table 3 is here

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First column, Panel A, reports the mean change in book leverage for hot- and cold- market firms, which are -0.15 and -0.04, respectively. Book leverage of both hot- and cold-market firms are decline from pre-IPO, however, book leverage of hot-market firms is greater decline than cold-market firms by 0.11 percentage points, and is significant difference from cold-market firms. This supports that hot-market firms issue significantly more equity and less debt in the IPO year than cold-market firms do (Alti, 2006).

First column, Panel B, reports the coefficient estimates of regression (2), where independent variable  $Y_t$  is change in book leverage. The coefficient of hot-market effect on the change in book leverage in IPO year is -0.09, and is statistically significant.

For further investigation, I run regression by decomposing change in leverage as in (1) to examine whether the effect is from net equity issues, as implied by market timing. The second to fifth column in Panel A and Panel B report the mean values and regression analysis for the terms on the right-hand side of (1). Mean values of the IPO-year net equity issues,  $e/A_t$ , for hot-market firms is statistically significant difference from cold-market firms and is higher than 0.10 percentage point (0.24 for hot-market firms, and 0.14 for cold-market firms). The coefficient of hot-market effect on net equity issues is 0.10 and statistically significant. Change in cash, change in other assets<sup>5</sup>, and change in retained earnings are not affected by whether firm goes public in hot or cold market, but they have positive relation to market timing. Since hot-market firms issue equity more than cold-market firm, thus, change in cash, change in other assets, and change in retained earnings of hot-market firms are increasing. The result consistent to Alti (2006) that hot-market effect on equity issues and reduces leverage in short-run. As hot-market is viewed as good market timing, firms will take this as opportunity to issue more equity, hence reduce debt

Market-to-book ratio is not significant. Unlike the expectation of positive relationship of market-to-book ratio to change in leverage, the result shows that the effect of high market-to-book ratio is to lower leverage (coefficient -0.00), but to increase net equity issues (coefficient 0.00). This is also consistent to Baker and Wurgler (2002) in the aspect that firms increase equity when market valuations are high.

 $<sup>^5</sup>$  In column 3 and 4 of Table 3, the dependent variable  $\Delta Cash/A_t$  and  $\Delta Other Assets/A_t$  are not multiplied by  $E/A_{t-1}$ .

As expectation, profitability with coefficient -0.52 is statistically significant negatively to change in leverage (t-stat = -4.56), while, profitability is positively related to newly equity issues (coefficient 0.79, t-stat = 6.06), change in cash (coefficient 0.59, t-stat = 5.21), and change in retained earnings (coefficient 0.131, tstat = 1.64). According to pecking order theory (Myers and Majluf, 1984), profitability should have negative effect to leverage since firm will prefer internal funds than other sources. The result also supports this aspect. Profitable firms affect the decrease in change in leverage. High profit leads to increase in retained earnings. In addition, as firm performance increases, it would attract more investors; therefore, high profitable firms can issue more equity than less profitable firms at the IPO.

As expectation, Wiwattanakantang (1999) finds positive relation of size to leverage. Size is statistically negatively significant to newly equity issues (coefficient -0.02, t-stat = -2.96), change in cash (coefficient -0.01, t-stat = -1.72), but, it is positively insignificant to change in leverage (coefficient 0.00, t-stat = 0.60). Since larger firms have more borrowing capacity, change in leverage will raise. At IPO, smaller firms use market timing as opportunity to issue more equity than larger firms because investors do not have much information about firms, thus, the perception between small and large firms would not be different for investors.

Assets intangibility, PPE/A, is statistically positively to change in leverage (coefficient 0.11, t-stat = 2.15), while statistically negatively to newly equity issues (coefficient -0.15, t-stat = -2.64). As expected, high asset tangible firms can raise more debt since they can use assets as a collateral to lenders, and the lenders may require lower rate of return which cause cost of debt is lower, thus, firms can borrow more.

As expected, leverage has straight forward effect on change in leverage and newly equity issue. Leverage is statistically significant and negatively related to change in leverage (coefficient -0.52, t-stat = -9.46) and positive to newly equity issues (coefficient 0.20, t-stat = 3.21). Firm simply adjust level of leverage according to past level. Since leverage level of pre-IPO is considerably high, thus, to limit too much financial distress, level of leverage should be reduced afterward.

I extend to the illustration that the market timers tap equity market more than their capital needed. Perhaps the important is how much firms deviate from their target level. I estimate the following regression as of the IPO year-end to answer this question.

$$D/A_{t} = \propto + \beta_{1}HOT + \beta_{2}M/B_{t} + \beta_{3}EBITDA/A_{t-1} + \beta_{4}SIZE_{t-1} + \beta_{5}PPE/A_{t-1} + \beta_{6}CONCEN_{t} + \varepsilon_{t}$$

The last column in Panel B of table 3, shows that hot-market is negatively, and statistically significant to leverage of IPO year (coefficient -0.08, t-stat = -2.01). Thus, leverage ratios of hot-market firms after IPO are too low to explain by traditional theory, but, instead, can be explained by market timing.

According to regression result, it supports the impact of market timing on capital structure at the time of IPO. Firms that go public in hot-market period can reduce more leverage than those go public in cold-market. Therefore, firms do not always need to have optimal capital structure since firms take opportunity to issue more equity in good market. From the decomposition of change in leverage, it also supports the hypothesis that the change in leverage is only affected by newly equity issues, not from other compositions of change in leverage.

#### (II) Impact of market timing on firm's profitability

According to H2, favorable market conditions may trigger IPOs of less profitable firms if these firms find more difficulty to go public in less active market, it implies that firms that go public in hot-market will have lower profitability.

Table 4 presents the regression result whether hot-market firms is low profitable firms.

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#### Table 4 is here

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Panel A, reports mean value among hot- and cold- market firm (0.16 and 0.15 at IPO, 0.11 and 0.13 at IPO+1, 0.09 and 0.06 at IPO+2, and 0.04 and 0.01 at IPO+4) shows that there is no significant difference between profitability of hot- and cold-market firms. Hot-market has no significant impact on profitability; in addition, as expected, it is positively related to profitability (coefficient 0.01, -0.02, 0.02, and 0.10 at IPO, IPO+1, IPO+2, and IPO+4). Unlike result of Alti (2006), firms that go public in hot-market are not the firms that perform poor after IPO. Perhaps this effect comes from the ownership concentration. Wiwattanakantang, 2001 finds that controlling

shareholder at level 25%-50% has negative effect to performance. However, from statistic shows that ownership concentration of IPO firms is greater than 50%, thus, it will increase firm's performance. Firms with high ownership concentration will do effective monitoring and they behave to maximize shareholders value since because of high proportion of stocks they hold.

Market-to-book ratio has both positive and negative relationship to profitability. Market-to-book ratio (IPO) has statistically positive significant to profitability at IPO, while, has statistically negative to profitability at IPO+2 (coefficient 0.01, and -0.03; t-stat = 1.84, and -2.18 respectively). Market-to-book ratio simply imply to growth opportunity. When firms have high growth opportunity, profitability is also increase. However, high growth opportunity firms may have less in profitability as time passes since firms may reach to the end of the growth. These reasons are also applied to market-to-book ratio (t-1) as well.

Size and asset tangibility are insignificant, however, as expected, when size and asset tangibility increases, profitability of firms also increase since firms have more market power and greater efficiency.

For Thai market, the results do not support this hypothesis. Hot-market has no significant relationship to profitability. Firms that go public in hot-market do not have poor long-run profitability compared to those go public in cold-market. Unlike U.S. market, even though the portions of shareholding of the post-IPO ownership are reduced, however, they still hold at dominant level and mostly are the same groups of shareholder of pre-IPO. In addition, the ranges of ownership concentration are found to be 50%-58% in the study, which implies effective monitoring, and thus, increase firm's value.

#### (III) Persistence of the impact of market timing on capital structure

In the previous section I, presents the evidence that market timing plays significant role to the capital structure of firms in short-run. In this section, I study for the question that whether market timing is also plays significant role in long-run.

Table 5 presents the regression if there is persistence impact of market timing on capital structure.

Table 5 is here

Panel A, column 1 and 2, report mean value of change in leverage from pre-IPO of hot- and cold- market firms respectively. The result shows that there is only significant different in change in leverage from pre-IPO only in year IPO+1 (-0.08 for hot-market firms, and 0.02 for cold-market firms). In year IPO+2, mean value of hotmarket firms is 0.04, and mean value of cold-market firms is 0.06.

First two columns of panel B show that, there is very little persistence in hotmarket effect and is not significant in year IPO+2. In addition, the negative effect of hot-market to change in leverage is no longer exists in year IPO+2. The results of unreported regression in year following IPO+2 are similar to result in IPO+2. Thus, I conclude that the hot-market effect is gone from year IPO+2 onward.

The effect of profitability is consistent to section I, which is statistically significant negatively related to change in leverage. Size and assets intangibility are insignificant, but positively related to change in leverage. The results are also consistent to section I.

Unlike section I, ownership concentration is statistically significant, and negatively related to debt. Firms with higher ownership concentration may produce good monitoring. Firms do not need to use debt as a tool to limit agency cost problem, hence, higher ownership concentration reduce leverage.

Besides, to investigate how much firms deviate from their target level as in section I, I also run regression where level of book leverage is dependent variable. The results, in Table 5.1, show that, in year IPO+1 and IPO+2, hot-market is insignificant and negatively related to change in leverage (coefficient -0.06 and -0.01; t-stat = -1.46 and -0.11).

Since both market-to-book and HOT dummy variable affect market timing, thus, HOT dummy variable may turn out to be insignificant. I re-estimate the regression without market-to-book ratio. The results, in Panel C, show that hot-market is statistically significant and negative related to change in leverage in year IPO+1 (coefficient -0.06, t-stat = -1.66), but the effect is gone in year IPO+2. The effect of market timing only exists in short-run, but it does no longer exist in the second year after the IPO. However, ownership concentration is statistically significant and has negative impact on level of leverage. Large ownership concentration may produce good monitoring, thus, firms do not need to use debt to limit agency cost problem in the early year after IPO.

The results support the hypothesis, that is, market timing has no persistence effect on capital structure. Thai IPO firms' capital structures have only short-term effect from equity market timing. After the second year of IPO, the determinant of firms' capital structures are profitability and leverage of pre-IPO, and this shows that capital structure are follow the pecking order, and the trade-off theory. According to pecking theory, firms prefer internal sources prior than other sources. Thus, firms with high profitability will reduce debt. Further, according to trade-off theory, firms with high leverage of pre-IPO will reduce leverage later since they would face high cost of financial distress. The leverage of hot-market firms substantially increase after year IPO+2. Perhaps, the current ownership increases debt in order to maintain their voting power and avoid issuing equity in the future.

#### **Chapter 6**

#### Conclusion

In Thailand, as number of Initial Public Offering increases since they can raise more funds from the market. The timing to enter the market is the important factor for firms since they can take opportunity from timing the market. In many previous studies in U.S. market, the market timing has both persistent and non-persistent impact on the firm's capital structure depending on the market timing measurement. If there is the persistent effect of market timing, the traditional determinant of firm's capital structure will taken placed by market timing theory.

This paper investigates the effect of equity market timing to capital structure for Thai non-financial IPO firms during year 1995 to 2005. The measure of market timing is defined by the peak of IPO cycle, in IPO volume. The result supports the short-lived effect of market timing on capital structure, that is, firms that go public in hot market period will have substantially decline in change in leverage from pre-IPO. The reduction in leverage at IPO is solely from the substantially newly equity issued at IPO. In addition, market timing is also has negative impact on level of leverage at IPO year, and thus, level of leverage at IPO are too low to be explained by traditional theory.

Further, the results support the non-persistent effect of market timing. The effect of market timing is gone after the second year of IPO. Following two year after IPO, hot-market firms issue more debt than cold-market firms do. This, perhaps, can be explained in the way that when firms go public, they do not act in the way to optimal between debt and equity issuance, but to take opportunity in hot-market. On the contrary, in long-run, firms will rebalance the equity by issuing more debt. If the current ownership does not want to lose control over firms, they may try to increase leverage in order not to issue equity in the future. The determination of capital structure of firms after IPO depends on the benefit and cost of issuing debt or equity rather than on market timing.

Unlike U.S. market, the result does not support in the aspect that favorable market condition may trigger IPOs of less profitable firms. The market timing has no significant effect to firms' performance and hot-market firms have better profitability than cold-market firms at the IPO. Thus, less profitable firms do not take opportunity of hot-market period, where they can issue equity easier than in cold-market period. Also, in the long-run, hot-market firms have more profitable than cold-market firms.

Since the ownership concentration is greater than 50%, therefore, high ownership concentration will pursue effective monitoring as ownership concentration has significant negatively impact on change in leverage from pre-IPO. In addition, according to high proportion of shares they hold, they do not consume the perquisites since it is more costly, thus, firm performance is increased.

From my findings, the investors should invest in hot-market firms since the long-run performance of hot-market firms do not perform poorer than cold-market. Thus, hot-market firms are firms that pursue shareholder's maximization. Also, the most important factor to determine firm's value and capital structure is ownership concentration. For managers, they should time the market, that is, they should go public in hot-market period since they will get benefit from higher market valuation, which they can issue more equity, and consequently they can rise more funding since investors will want to invest for these firms. Also, firms can avoid financial distress.

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# Table 2 Summary Statistics of Firm Characteristics and Financing Decisions

The table reports the means and the standard deviations of several firm characteristic in IPO time during 1995-2005. All variables except M/B and SIZE are in percentage terms. Book leverage, D/A, is the ratio of book debt to total assets. Market-to-book ratio, M/B, is defined as book debt plus the market value of equity divided by total assets. Net debt issue, d/A, is the change in book debt. Net equity issue, e/A, is the change in book equity minus the change in retained earnings. Newly retained earnings,  $\Delta RE/A$ , is the change in retained earnings. Profitability is measured by EBITDA/A, which is earnings before interest, taxes, and depreciation. SIZE is the logarithm of net sales. Asset tangibility, PPE/A, is defined as net plant, property, and equipment. CASH/A is defined as cash and short-term investments. CONCEN is ownership concentration, defined as cumulative stock ownership of large shareholders who own 5% or more. D/E is book debt to book equity ratio. The variables d/A, e/A,  $\Delta RE/A$ , EBITDA/A, PPE/A, and CASH/A are normalized by fiscal year-end total assets. The sample consists of IPOs between 1995 and 2005, which have completed information for the pre-IPO year. I define the IPO year as the fiscal year which IPO takes place. Year IPO+k is then the k<sup>th</sup> fiscal year after the IPO. The sample excluded financial firms, non-performing group firms, delisted firms, and merged firms.

	Ν	D/A	M/B	d/A	e/A	ΔRE/A	EBITDA/A	SIZE	PPE/A	CASH/A	CONCEN	D/E
Pre-IPO	143	0.56	-	-	-	-	0.16	13.89	0.41	0.10	80.99	2.35
		(0.24)	-	-	-	-	(0.11)	(2.10)	(0.27)	(0.13)	(15.86)	(4.49)
IPO	143	0.43	1.38	0.02	0.22	0.05	0.15	14.29	0.39	0.14	57.54	0.69
		(0.20)	(1.18)	(0.18)	(0.19)	(0.09)	(0.09)	(1.70)	(0.26)	(0.16)	(14.20)	(3.99)
IPO+1	112	0.48	1.35	0.12	0.04	0.00	0.12	14.38	0.41	0.11	54.54	1.43
		(0.21)	(1.41)	(0.17)	(0.10)	(0.10)	(0.11)	(1.88)	(0.27)	(0.14)	(13.65)	(1.57)
IPO+2	83	0.58	1.16	0.06	0.02	-0.07	0.08	14.51	0.42	0.11	52.76	12.08
		(0.27)	(0.89)	(0.29)	(0.09)	(0.18)	(0.16)	(1.35)	(0.27)	(0.14)	(14.03)	(93.79)
IPO+3	66	0.65	1.07	-0.04	0.03	-0.04	0.10	14.28	0.45	0.11	53.14	1.47
		(0.37)	(0.67)	(0.24)	(0.09)	(0.17)	(0.15)	(1.71)	(0.28)	(0.15)	(14.61)	(6.61)
IPO+5	51	0.81	1.13	-0.11	0.00	0.05	0.08	14.18	0.45	0.11	49.89	1.76
		(0.96)	(1.14)	(0.36)	(0.24)	(0.46)	(0.16)	(1.45)	(0.28)	(0.14)	(18.29)	(12.84)
IPO+7	50	0.70	1.50	-0.02	0.02	0.05	0.10	14.47	0.44	0.10	51.65	11.04
		(0.84)	(1.43)	(0.27)	(0.13)	(0.24)	(0.14)	(1.50)	(0.27)	(0.11)	(20.60)	(63.42)

#### Impact of Market Timing on Capital Structure of Pre-IPO

For each variable  $Y_t$ , Panel A reports the mean value among 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 regressions of the form

# $Y_t = \alpha + \beta_1 HOT + \beta_2 M/B_t + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{t-1} + \beta_7 CONCEN_t + \varepsilon_t$

All regressions are estimated with industry-fixed effects. The constant term is not reported. Robust *t*-statistics are in parentheses. The dependent variable Y<sub>t</sub> are the change in book leverage  $(D/A_t-D/A_{t-1})$ , net equity issues  $(e/A_t)$ , change in cash  $(\Delta Cash/A_t)$ , change in other assets  $(\Delta Other assets/A_t)$ , and change in retained earnings  $(\Delta RE/A_t)$ , in columns 1-5, respectively. In column 6, the dependent variable is the level of book leverage  $(D/A_t)$ . HOT is dummy variable equal to 1 if firm is in hot-market period. M/B, is defined as book debt plus the market value of equity divided by total assets. Profitability is measured by EBITDA/A, which is earnings before interest, taxes, and depreciation. SIZE is the logarithm of net sales. Asset tangibility, PPE/A, is defined as net plant, property, and equipment. Book leverage, D/A, is the ratio of book debt to total assets. CONCEN is cumulative stock ownership of large shareholder who owns 5% or more.

	D/At - D/At-1	e/A <sub>t</sub>	$\Delta Cash/A_t$	$\Delta O$ ther Assets/A <sub>t</sub>	Δ <i>RE</i> /A <sub>t</sub>	D/A <sub>t</sub>				
	Panel A: Mean Values									
Hot	-0.15	0.24	0.08	0.02	0.05	0.42				
Cold	-0.04	0.14	0.07	0.00	0.03	0.46				
t-value (difference)	(2.61)**	(2.49)**	(0.15)	(1.30)	(0.71)	(0.93)				
		Panel B: R	Regression /	Analysis						
НОТ	-0.09	0.10	0.01	0.02	0.02	-0.08				
	(-2.71)**	(2.67)**	(0.21)	(1.23)	(0.77)	(-2.01)**				
M/B <sub>t</sub>	-0.00	0.00	-0.01	-0.00	0.00	-0.01				
	(-0.14)	(0.20)	(-0.55)	(-0.08)	(0.40)	(-0.48)				
EBITDA/A <sub>t-1</sub>	-0.52	0.79	0.59	0.01	0.13	-0.66				
	(-4.56)**	(6.06)**	(5.21)**	(0.21)	(1.64)*	(-4.56)**				
SIZE <sub>t-1</sub>	0.00	-0.02	-0.01	-0.00	-0.00	0.01				
	(0.60)	(-2.96)**	(-1.72)*	(-1.76)*	(-1.12)	(1.85)*				
PPE/A <sub>t-1</sub>	0.11	-0.15	-0.06	-0.02	0.04	0.13				
	(2.15)*	(-2.64)**	(-1.22)	(-0.74)	(1.28)	(2.04)**				
D/A <sub>t-1</sub>	-0.52	0.20	-0.05	-0.01	0.03	-				
	(-9.46)**	(3.21)**	(-0.92)	(-0.34)	(0.84)	-				
CONCEN	0.00	0.00	0.00	0.00	-0.00	0.00				
	(0.20)	(0.97)	(1.12)	(1.44)	(-0.97)	(1.36)				
R <sup>2</sup>	0.56	0.44	0.33	0.19	0.12	0.38				
F-test	5.93**	3.71**	2.32**	1.13	0.66	3.07**				
N	143	143	143	143	143	143				

\*\*, \* is significance at 0.05 and 0.10 level.

Note: In column 3 and 4, the dependent variables  $\Delta Cash/A_t$  and  $\Delta Other Assets/A_t$  are not multiplied by  $E/A_{t-1}$ .

#### Impact of Market timing on Profitability

For each variable  $Y_t$ , Panel A reports the mean value among hot- and cold- market firms and *t*-value of their difference. Panel B reports the coefficient of regression of the form

$$EBITDA/A_{t} = \alpha + \beta_{1}HOT + \beta_{2}M/B_{IPO} + \beta_{3}M/B_{t-1} + \beta_{4}SIZE_{t-1} + \beta_{5}PPE/A_{t-1} + \beta_{6}CONCEN_{t} + \varepsilon_{t}$$

All regressions are estimated with industry-fixed effects. The constant term is not reported. Robust *t*-statistics are in parentheses. The dependent variable *EBITDA/A<sub>t</sub>* are profitability for year IPO, IPO+1, IPO+2, and IPO+4 in column 1-4, respectively. HOT is dummy variable equal to 1 if firm is in hot-market period. M/B, is defined as book debt plus the market value of equity divided by total assets. SIZE is the logarithm of net sales. Asset tangibility, PPE/A, is defined as net plant, property, and equipment. Book leverage, D/A, is the ratio of book debt to total assets. CONCEN is cumulative stock ownership of large shareholder who owns 5% or more.

		EBIT	DA/A <sub>t</sub>	
Т	IPO	IPO+1	IPO+2	IPO+4
	F	Panel A: Mean Values	3	
Hot	0.16	0.11	0.09	0.04
Cold	0.15	0.13	0.06	0.01
t-value (difference)	(0.20)	(0.58)	(0.55)	(0.53)
	Pane	el B: Regression Ana	lysis	
HOT	0.01	-0.02	0.02	0.10
	(0.68)	(-0.85)	(0.60)	(1.91)*
M/B <sub>IPO</sub>	0.01	0.00	-0.03	-0.02
	(1.84)**	(0.19)	(-2.18)**	(-1.13)
M/B <sub>t-1</sub>	-	-	0.03	-0.03
	-	-	(2.84)**	(-1.43)
SIZE <sub>t-1</sub>	-0.00	0.00	0.00	-0.01
•••	(-0.43)	(0.03)	(0.01)	(-0.52)
PPE/A <sub>t-1</sub>	-0.00	0.06	0.05	-0.02
	(-0.01)	(1.49)	(0.80)	(-0.20)
CONCEN	-0.00	0.00	0.00	-0.00
	(-0.70)	(1.49)	(1.66)	(-0.15)
$R^2$	0.55	0.47	0.62	0.77
F-test	5.66**	3.27**	3.92**	4.62**
N	143	112	83	55

\*\*, \* is significance at 0.05 and 0.10 level.

#### Persistence of the Impact of Market Timing on Capital Structure

For each variable  $Y_t$ , Panel A reports the mean value among hot- and cold- market firms and the *t*-value of their difference. Panel B reports the coefficients of regressions of the form, where subscript *t* denotes time at IPO+1, IPO+2, IPO+3, IPO+5, and IPO+7.

$$D/A_t - D/A_{Pre-IPO} = \propto +\beta_1 HOT + \beta_2 M/B_{t-1} + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \beta_5 PPE/A_{t-1} + \beta_6 D/A_{Pre-IPO} + \beta_7 CONCEN_t + \varepsilon_t$$

All regressions are estimated with industry-fixed effects. The constant term is not reported. Robust *t*-statistics are in parentheses. The dependent variable  $D/A_t - D/A_{pre-IPO}$  are change in book leverage from the pre-IPO year to years IPO+1, IPO+2, IPO+3, IPO+5, and IPO+7. HOT is dummy variable equal to 1 if firm is in hot-market period. M/B, is defined as book debt plus the market value of equity divided by total assets. Profitability is measured by EBITDA/A, which is earnings before interest, taxes, and depreciation. SIZE is the logarithm of net sales. Asset tangibility, PPE/A, is defined as net plant, property, and equipment. Book leverage of pre-IPO, D/A<sub>pre-IPO</sub>, is the ratio of book debt to total assets. CONCEN is cumulative stock ownership of large shareholder who owns 5% or more. Panel C, the regression are without market-to-book ratio.

	D/A <sub>t</sub> – D/A <sub>pre-IPO</sub>						
t	IPO+1	IPO+2	IPO+3	IPO+5	IPO+7		
	Panel	A: Mean Valu	e				
Hot	-0.08	0.04	0.16	0.47	0.27		
Cold	0.02	0.06	0.10	0.12	0.09		
t-value (difference)	(2.06)**	(0.26)	(0.49)	(1.27)	(0.75)		
	Panel B: F	Regression Ana	alysis				
НОТ	-0.06	0.02	0.06	0.31	0.13		
	(-1.46)	(0.38)	(0.50)	(1.42)	(0.69)		
M/B	-0.01	-0.04	0.00	0.91	0.54		
	(-1.05)	(-2.02)**	(-0.07)	(4.57)**	(6.72)**		
	-0.86	-0.85	-1.08	-0.51	-1.03		
LDI DAAt-1	(-4.47)**	(-3.47)**	(-2.95)**	(-0.65)	(-1.34)		
SIZE	0.01	-0.00	0.04	0.04	0.00		
SIZE	(0.58)	(-0.27)	(0.75)	0.49	(0.07)		
	0.06	0.03	0.07	-0.17	0.55		
FFC/At-1	(0.87)	(0.29)	(0.32)	(-0.39)	(1.30)		
	-0.65	-0.55	-0.83	-1.23	-0.71		
D/Apre-IPO	(-7.89)**	(-3.84)**	(-3.20)**	(-2.63)**	(-1.64)*		
CONCEN	-0.00	-0.00	0.00	-0.01	0.01		
CONCEINt	(-2.06)**	(-1.28)	(-0.33)	-1.05	(2.46)**		
R <sup>2</sup>	0.64	0.54	0.48	0.82	0.81		
F-test	6.38**	3.03**	1.67*	5.18**	5.18**		
Ν	112	83	66	51	50		

\*\*, \* is significance at 0.05 and 0.10 level.

	D/A <sub>t</sub> – D/A <sub>pre-IPO</sub>					
t	IPO+1	IPO+2	IPO+3	IPO+5	IPO+7	
	Panel C: Regressio	n Analysis (wit	hout M/B ratio)			
НОТ	-0.06 (-1.66)*	-0.00 (-0.00)	0.06 (0.50)	0.52 (1.84)	0.24 (0.82)	
M/B <sub>t-1</sub>	-	-	-	-	-	
EBITDA/At-1	-0.88 (-4.67)**	-0.85 (-3.39)**	-1.08 (-3.04)**	-3.42 (-5.59)**	-0.96 (-0.77)	
SIZE	0.01 (0.52)	-0.00 (-0.30)	0.04 (0.77)	0.04 0.37	-0.13 (-1.16)	
PPE/A <sub>t-1</sub>	0.06 (0.80)	-0.01 (-0.10)	0.06 (0.32)	-0.18 (-0.32)	0.76 (1.12)	
D/A <sub>pre-IPO</sub>	-0.64 (-7.82)**	-0.57 (-3.92)**	-0.83 (-3.35)**	-1.29 (-2.10)**	-0.97 (-1.39)	
CONCENt	-0.00 (-2.04)**	-0.00 (-1.17)	0.00 (-0.33)	-0.01 (-0.74)	0.02 (2.62)*	
R <sup>2</sup>	0.63	0.51	0.48	0.67	0.49	
F-test	6.60**	2.84**	1.79**	2.60**	1.27*	
N	112	83	66	51	50	

#### Table 5.1

#### Persistence of the Impact of Market Timing on Capital Structure

For each variable  $Y_t$ , Panel A reports the mean value among hot- and cold- market firms and the *t*-value of their difference. Panel B reports the coefficients of regressions of the form, where subscript *t* denotes time at IPO+1, IPO+2, IPO+3, IPO+5, and IPO+7.

$$\begin{split} D/A_t = & \propto +\beta_1 HOT + \beta_2 M/B_{t-1} + \beta_3 EBITDA/A_{t-1} + \beta_4 SIZE_{t-1} + \\ & \beta_5 PPE/A_{t-1} + \beta_6 D/A_{Pre-IPO} + \beta_7 CONCEN_t + \varepsilon_t \end{split}$$

All regressions are estimated with industry-fixed effects. The constant term is not reported. Robust *t*-statistics are in parentheses. The dependent variable D/A<sub>t</sub> book leverage for IPO+1, IPO+2, IPO+3, IPO+5, and IPO+7. HOT is dummy variable equal to 1 if firm is in hot-market period. M/B, is defined as book debt plus the market value of equity divided by total assets. Profitability is measured by EBITDA/A, which is earnings before interest, taxes, and depreciation. SIZE is the logarithm of net sales. Asset tangibility, PPE/A, is defined as net plant, property, and equipment. Book leverage of pre-IPO, D/A<sub>pre-IPO</sub>, is the ratio of book debt to total assets. CONCEN is cumulative stock ownership of large shareholder who owns 5% or more. The regression excluded lag leverage of pre-IPO.

			D/A <sub>t</sub>								
t	IPO+1	IPO+2	IPO+3	IPO+5	IPO+7						
	Panel A: Mean Value										
Hot	0.47	0.58	0.67	0.98	0.78						
Cold	0.53	0.59	0.61	0.62	0.60						
t-value (difference)	(0.19)	(0.79)	(0.69)	(1.34)	(0.76)						
	Panel B: F	Regression An	alysis								
НОТ	-0.06 (-1.46)	-0.01 (-0.11)	0.04 (0.36)	0.32 (1.49)	0.12 (0.66)						
M/B <sub>t-1</sub>	-0.01 (-1.05)	(-0.03) (-1.74)*	0.00 (0.08)	0.91 (4.67)**	0.54 (6.74)**						
EBITDA/A <sub>t-1</sub>	-0.86 (-4.47)**	-0.81 (-3.23)**	-1.15 (-3.31)**	-0.49 (-0.63)	-1.13 (-1.50)						
SIZE	0.01 (0.58)	-0.00 (-0.07)	0.06 (1.23)	0.03 (0.37)	0.02 (0.30)						
PPE/A <sub>t-1</sub>	0.06 (0.87)	0.11 (0.86)	0.06 (0.32)	-0.13 (-0.30)	0.46 (1.18)						
D/A <sub>pre-IPO</sub>	-	-	-	-	-						
CONCENt	-0.00 (-2.06)**	-0.00 (-1.68)*	-0.00 (-0.22)	-0.00 (-1.11)	0.01 (2.59)						
R <sup>2</sup>	0.58	0.48	0.43	0.80	0.79						
F-test	5.05**	2.36**	1.46	5.17**	5.15**						
N	112	83	66	51	50						

Pairwise	Correlation	Matrix
	0011010101	

Pairwise Co	rrelation Ma	trix: Hypot	hesis I					
	D/At - D/At-1	НОТ	M/Bt	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/At-1	D/A <sub>t-1</sub>	CONCEN
D/At - D/At-1	1							
НОТ	-0.2144	1						
M/Bt	-0.0018	0.1735		1				
EBITDA/A <sub>t-1</sub>	-0.2276	-0.0332	0.192	.5 1				
SIZE <sub>t-1</sub>	-0.1085	0.0101	-0.015	0.1038	1			
PPE/At-1	0.1036	0.0633	0.066	-0.0608	-0.1561	1		
D/At-1	-0.5812	0.0992	-0.138	-0.1902	0.1634	-0.0497	1	
CONCEN	0.0426	-0.1278	-0.052	0.0062	0.0279	-0.0024	-0.0073	1
Pairwise Co	rrelation Ma	trix: Hvpot	hesis I					
	e/At	НОТ	M/Bt	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/At-1	D/At-1	CONCEN
e/At	1							
НОТ	0.2049	1						
M/Bt	0.1503	0.1735		1				
EBITDA/A <sub>t-1</sub>	0.4499	-0.0332	0.192	5 1				
SIZE <sub>t-1</sub>	-0.0755	0.0101	-0.015	0.1038	1			
PPE/A <sub>t-1</sub>	-0.1831	0.0633	0.066	-0.0608	-0.1561	1		
D/At-1	0.1083	0.0992	-0.138	-0.1902	0.1634	-0.0497	1	
CONCEN	-0.0310	-0.1278	-0.052	0.0062	0.0279	-0.0024	-0.0073	1
Pairwise Co	rrelation Ma	trix: Hypot	hesis I					
	$\Delta Cash/A_t$	НОТ	M/B <sub>t</sub>	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/At-1	D/At-1	CONCEN
$\Delta Cash/A_t$	1							
НОТ	0.0122	1						
M/Bt	0.0672	0.1735		1				
EBITDA/At-1	0.4391	-0.0332	0.192	5 1				
SIZE <sub>t-1</sub>	-0.0388	0.0101	-0.015	9 0.1038	1			
PPE/At-1	-0.1223	0.0633	0.066	9 -0.0608	-0.1561	1		
D/A <sub>t-1</sub>	-0.1546	0.0992	-0.138	4 -0.1902	0.1634	-0.0497	1	
CONCEN	0.0599	-0.1278	-0.052	3 0.0062	0.0279	-0.0024	-0.0073	1

Pairwise Correlation Matrix: Hypothesis I											
	$\Delta O ther Assets / A_t$	НОТ	M/Bt	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/At-1	D/A <sub>t-1</sub>	CONCEN			
$\Delta Other Assets / A_t$	. 1										
НОТ	0.1089	1									
M/B <sub>t</sub>	0.0203	0.1735	1								
EBITDA/At-1	-0.0165	-0.0332	0.1925	5 1							
SIZE <sub>t-1</sub>	-0.1270	0.0101	-0.0159	0.1038	1						
PPE/At-1	-0.1209	0.0633	0.0669	-0.0608	-0.1561	1					
D/At-1	0.0064	0.0992	-0.1384	-0.1902	0.1634	-0.0497	1				
CONCEN	0.0246	-0.1278	-0.0523	0.0062	0.0279	-0.0024	-0.0073	1			

Pairwise Cor	relation Ma	atrix: Hypo	thesis I					
	$\Delta RE/A_t$	НОТ	M/Bt	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/A <sub>t-1</sub>	D/At-1	CONCEN
$\Delta RE/A_t$	1							
НОТ	0.059471	1						
M/Bt	0.025498	0.173491	1					
EBITDA/At-1	0.09576	-0.03317	0.192489	1				
SIZE <sub>t-1</sub>	-0.10456	0.010082	-0.01587	0.103792	1			
PPE/At-1	0.120523	0.063325	0.066941	-0.06079	-0.15615	1		
D/A <sub>t-1</sub>	0.043244	0.09923	-0.1384	-0.1902	0.163385	-0.04972	1	
CONCEN	-0.07931	-0.12781	-0.0523	0.006172	0.027876	-0.0024	-0.00731	1

Pairwise Cor	Pairwise Correlation Matrix: Hypothesis II (IPO)											
	EBITDA/A <sub>t</sub>	НОТ	M/B <sub>IPO</sub>	EBITDA/A <sub>t-1</sub>	SIZE <sub>t-1</sub>	PPE/A <sub>t-1</sub>	CONCEN					
EBITDA/At	1											
НОТ	0.0172	1										
$M/B_{IPO}$	0.2243	0.1735	1									
EBITDA/A <sub>t-1</sub>	0.6400	-0.0332	0.1925	1								
SIZE <sub>t-1</sub>	0.0357	0.0101	-0.0159	0.1038	1							
PPE/At-1	0.0102	0.0633	0.0669	-0.0608	-0.1561	1						
CONCEN	-0.0709	0.2032	-0.0220	0.0279	0.0283	-0.0114	1					

Pairwise Cor	Pairwise Correlation Matrix: Hypothesis II (IPO+1)											
	EBITDA/At	НОТ	M/BIPO	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/A <sub>t-1</sub>	CONCEN					
EBITDA/A <sub>t</sub>	1											
НОТ	-0.055	1										
M/BIPO	0.158	0.180	1									
EBITDA/At-1	0.593	-0.006	0.150	1								
SIZE <sub>t-1</sub>	0.121	0.022	0.017	0.217	1							
PPE/At-1	0.080	0.071	0.023	-0.128	-0.237	1						
CONCEN	0.146	0.153	0.041	0.023	0.113	-0.028	1					

Pairwise Co	Pairwise Correlation Matrix: Hypothesis II (IPO+2)											
	EBITDA/A <sub>t</sub>	НОТ	M/B <sub>IPO</sub>	M/B <sub>t-1</sub>	EBITDA/A <sub>t-1</sub>	SIZE <sub>t-1</sub>	PPE/A <sub>t-1</sub>	CONCEN				
EBITDA/At	1											
НОТ	0.0613	1										
$M/B_{IPO}$	-0.0303	0.1894	1									
M/B <sub>t-1</sub>	0.0916	0.1638	0.5822	1	_							
EBITDA/At-1	0.5899	-0.0844	0.1103	0.0354	ł 1							
SIZE <sub>t-1</sub>	0.1165	0.0637	0.0402	0.0149	0.1634	1						
PPE/At-1	0.1187	0.0185	-0.0365	0.1138	-0.0367	-0.2390	1					
CONCEN	0.1398	0.1233	-0.0350	0.0676	0.0754	0.1404	-0.0657	1				

Pairwise Co	Pairwise Correlation Matrix: Hypothesis II (IPO+4)											
	EBITDA/At	НОТ	M/BIPO	M/B <sub>t-1</sub>	EBITDA/At-1	SIZE <sub>t-1</sub>	PPE/A <sub>t-1</sub>	CONCEN				
$EBITDA/A_t$	1											
НОТ	0.0725	1										
M/BIPO	-0.2371	0.1616	1									
M/B <sub>t-1</sub>	-0.4902	0.1865	0.2151	1	<u>_</u>							
EBITDA/At-1	0.8188	-0.0554	-0.1812	-0.4837	' 1							
SIZE <sub>t-1</sub>	0.2907	0.2305	-0.0483	0.0015	0.3535	1						
PPE/At-1	0.0274	0.1318	0.0450	0.0109	-0.0187	-0.0667	1					
CONCEN	0.3033	0.1293	-0.1199	-0.2476	0.3280	0.3549	-0.0789	1				

Pairwise Corr	Pairwise Correlation Matrix: Hypothesis III (IPO+1)										
	$D/A_t - D/A_{pre-IPO}$	НОТ	M/B <sub>t-1</sub>	EBITDA/A <sub>t-1</sub>	SIZE	PPE/A <sub>t-1</sub>	D/Apre-IPO	CONCEN <sub>t</sub>			
$D/A_t - D/A_{pre-IPO}$	1										
НОТ	-0.1926	1									
M/B <sub>t-1</sub>	-0.0376	0.1805	1								
EBITDA/A <sub>t-1</sub>	-0.3315	-0.0055	0.1497	1							
SIZE	-0.3264	0.0217	0.0171	0.2167	1						
PPE/At-1	0.0882	0.0707	0.0230	-0.1283	-0.2370	1					
D/Apre-IPO	-0.5665	0.0771	-0.1695	-0.1089	0.3932	-0.1365	1				
CONCENt	-0.1640	0.1534	0.0414	0.0226	0.1125	-0.0281	0.0003	1			

Pairwise Correl	airwise Correlation Matrix: Hypothesis III (IPO+2)											
	$D/A_t - D/A_{pre-IPO}$	НОТ	M/B <sub>t-1</sub>	EBITDA/A <sub>t-1</sub>	SIZE	PPE/At-1	D/Apre-IPO	CONCENt				
D/At - D/Apre-IPO	1											
НОТ	-0.0283	1										
M/B <sub>t-1</sub>	-0.1152	0.1716	1									
EBITDA/At-1	-0.3166	-0.0850	0.0256	1								
SIZE	-0.3154	0.0628	0.0141	0.1644	1							
PPE/A <sub>t-1</sub>	0.1590	0.0194	0.1156	-0.0380	-0.2392	1						
D/Apre-IPO	-0.4329	0.0521	-0.0796	-0.2038	0.3782	-0.1241	1					
CONCENt	-0.1160	0.1233	0.0608	0.0759	0.1412	-0.0665	-0.0017	1				

Pairwise Corr	elation Matrix: H	lypothesis I	II (IPO+3)					
	$D/A_t - D/A_{pre-IPO}$	НОТ	M/B <sub>t-1</sub>	EBITDA/At-1	SIZE	PPE/A <sub>t-1</sub>	D/Apre-IPO	CONCENt
$D/A_t - D/A_{pre-IPO}$	1							
НОТ	0.0611	1						
M/Bt-1	-0.1180	0.1684	1					
EBITDA/At-1	-0.4610	0.0428	0.0991	1				
SIZE	-0.1800	0.2089	0.0971	0.2976	1			
PPE/At-1	0.0624	0.0991	0.1121	0.0089	-0.0540	1		
D/Apre-IPO	-0.3617	0.0350	0.1053	-0.0483	0.3368	-0.0235	i 1	
CONCENt	-0.2739	0.1615	0.0853	0.4326	0.2115	-0.1650	0.0743	1

Pairwise Correlation Matrix: Hypothesis III (IPO+5)										
	$D/A_t - D/A_{pre-IPO}$	НОТ	M/B <sub>t-1</sub>	EBITDA/At-1	SIZE	PPE/At-1	D/Apre-IPO	CONCENt		
$D/A_t - D/A_{pre-IPO}$	1									
НОТ	0.1786	1								
M/B <sub>t-1</sub>	0.8392	0.0838	1							
EBITDA/At-1	-0.7099	0.0322	-0.8275	1						
SIZE	-0.2724	0.1463	-0.2757	0.4020	1					
PPE/At-1	0.1054	0.2180	0.0423	-0.0058	-0.0504	1				
D/Apre-IPO	-0.2415	0.0171	-0.0175	0.0676	0.1985	-0.1406	1			
CONCENt	-0.1438	-0.0201	-0.0184	0.0821	0.3557	-0.0536	0.2002	1		

Pairwise Corr	Pairwise Correlation Matrix: Hypothesis III (IPO+7)										
	$D/A_t - D/A_{pre-IPO}$	НОТ	M/B <sub>t-1</sub>	EBITDA/A <sub>t-1</sub>	SIZE	PPE/At-1	D/Apre-IPO	CONCENt			
D/At - D/Apre-IPO	1										
НОТ	0.1083	1									
M/B <sub>t-1</sub>	0.8126	0.0770	1								
EBITDA/A <sub>t-1</sub>	-0.2736	0.0859	-0.1314	1							
SIZE	-0.3333	-0.0088	-0.3361	0.1545	1						
PPE/At-1	0.1497	0.2203	0.0089	-0.1090	-0.0966	1					
D/Apre-IPO	-0.2290	-0.0031	-0.1127	0.0746	0.2349	-0.1521	. 1				
CONCENt	0.2136	-0.0127	0.1161	-0.1821	0.0321	0.0135	0.0860	1			