Bookbuilding vs. Fixed Price: The Effective Pricing Procedures in Thailand

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May 2007

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An Independent Study
Submitted in Partial Fulfillment of
the Requirement for the Degree of
Master of Science Program (Finance)

Master of Science Program in Finance (International Program)
Faculty of Commerce and Accountancy
Thammasat University, Bangkok, Thailand
May 2007

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On May, 2007 by

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Acknowledgement

For the accomplishment of this research paper, I would like to thank warmly my advisors, Assoc. Prof. Dr. Seksak Jumreornvong and Dr. Piman Limpaphayom, for their kindness supporting me valuable times, remarks, and suggestions. I also would like to express my appreciation to Ajarn Visit Ongpipattanakun for his time sacrificed being a member of my committee and provided many valuable comments. I, moreover, would like to thank sincerely Assoc. Prof. Dr. Tatre Jantarakolica for his suggestion in terms of technical concern on this paper. Furthermore, let me give special thank to two of my MIF#7 friends: Khun Sirima Dissara for introducing me an idea on this research topic, and Khun Dusadee Chantrataragul for his expertise, kindly re-check my language.

Finally, I would like to fully thank my family for their supports, encouragement, and understanding, also my friends in MIF for the special and valuable time sharing during my academic years.

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Abstract

This paper tries to investigate the effectiveness of selecting a pricing procedure for an IPO in Thailand. The study estimates initially on 121 IPOs in the Stock Exchange of Thailand from year 2002 to 2006. The results show that Thai underwriters incorporate with IPO issuers use bookbuilding primarily to access market demand. Large IPO companies tend to take advantage from bookbuilding to extract the companies' true value from market, while small ones seem to avoid using this strategic pricing procedure regarding to higher cost and transparency requirement. Fixed price can guarantee income for a risk-averse issuer. Bookbuilding can generate greater income, but leads issuer to greater uncertainty. Institution Investors are targeted in this private evaluation eliciting process and evidently rewarded by larger shares allocation. The study, however, does not find that bookbuilding can significantly beat fixed price in term of IPOs aftermarket performance. Underwriter does not take pre-offering market conditions as key factors when selecting a pricing procedure for an IPO. The bookbuilding procedure in Thailand is not optimal utilized for its ability to counteract adverse conditions created by low market profitability high market volatility and uncertainty as evidently found in other international efficient markets.

1. Introduction

In Thailand, the Initial Public Offerings (IPOs) market grows continuously. The numbers of IPOs proposed to the market during the past decade show the actively increasing trend. Thai capital market, however, is still small comparing to other Asian countries' markets. According to the statistic from the Stock Exchange of Thailand (SET), it appears only 513 listed companies (as at Aug, 2006), whereas Korea has 1,661 listed companies, Malaysia has 1,029 listed companies, and Singapore has 693 listed companies. Moreover, an investor proportion is very low to Thai population. The statistic shows only 0.42% of Thai population take an action in the capital market (source: SET), where it is up to 30% in Singapore, and 8% in Korea. These evidences suggest further potential growth to Thai capital market.

Basically, any Thai companies who intend to go public must file a draft, then the final prospectus with the Securities and Exchange Commission of Thailand (SEC). Offering is therefore engaged publicly once releases the prospectus. The prospectus needs to contain much information as required by SEC, as well as announcing the number of shares and a certain price that are up for sale, in order that any prospective investors can consider then determine to book the issues. Here, what notified in the prospectus seems to be the only one source of issue's information gathering by investor. Due to the fact that Thai capital market is semi-strong form, the information asymmetry exists as one of major problems. Only informed investors[1] would know the real value of an issue and would invest in IPOs which have good deals and left the others with worse deal to uninformed investors. Figure1 shows the IPO steps recommended by SEC. The step **[6]** is not applied to an IPO using fixed price procedures. The offering price is internally determined.

Agency conflicts are another common problem to Thai capital market. The controversial expectations among issuance parties generally exist. For example, when the parties deal with an issuance, issuer would expect for higher price to gain higher proceeds. Meanwhile, the underwriter, particularly when a deal is firm

[1] To become an informed investor means taking times to examine each investment opportunity before invest. This type of investor has adequate inside information to make sure they understand what they is buying.

commitment, would try to lower the price to induce investors. Also, for investors, they certainly expect for something cheap or worthy. Theoretically, an effective pricing mechanism can partly solve these problems on IPOs.

Figure 1: IPOs processes, notified by The Stock Exchange Committee.

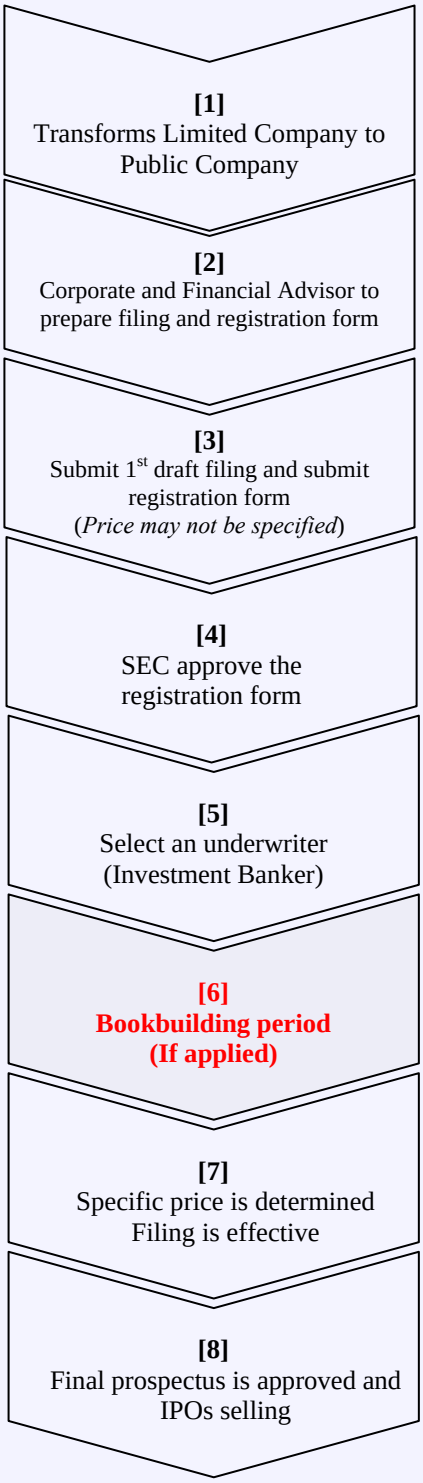
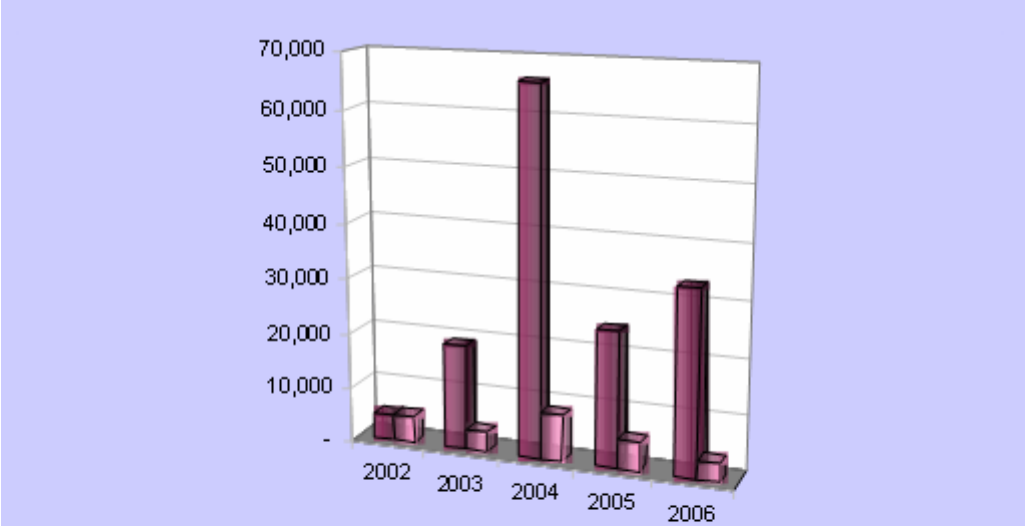
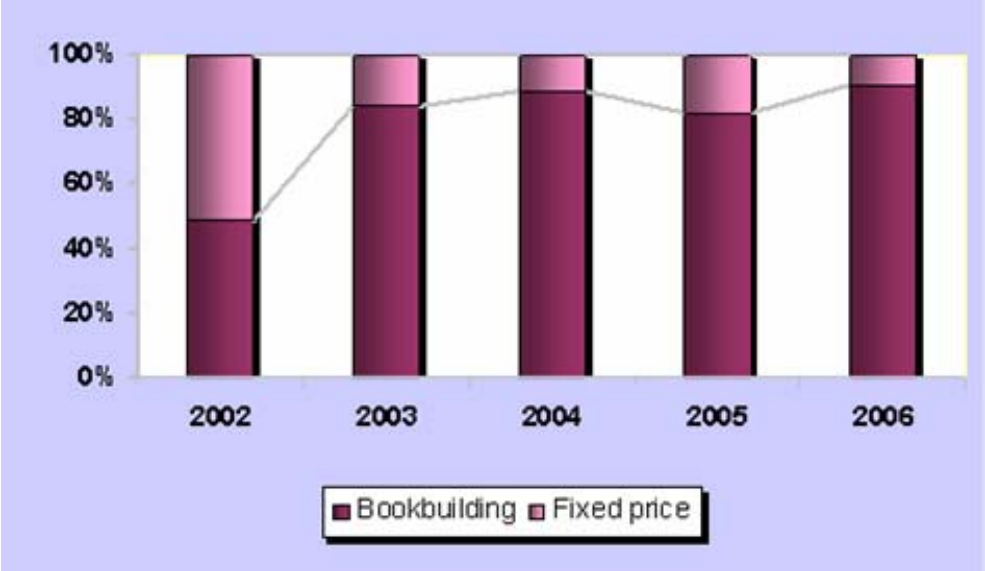


Figure 2: IPOs value introduced to public market in year 2002-2006: Comparative between 2 different pricing procedures



Unit :MB	2002	2003	2004	2005	2006
Bookbuilding	4,705.00	19,157.91	66,018.40	24,643.87	33,445.76
Fixed Price	4,914.78	3,654.71	8,492.24	5,396.21	3,340.92

Figure 3: Percentage comparison of IPOs value between bookbuilding and fixed price procedures in year 2002-2006



The pricing mechanism of an initial public offering in Thailand's market is conducted by the 2 choices of mechanisms: fixed price and bookbuilding, as informed by SEC regulation. Fixed price procedure has been historically originated as a basic standard applied to general public offerings. Alternatively, bookbuilding was later introduced upon the last 5 years as a new procedure. The first official notification announced by SEC on bookbuilding is shown in year 2000. After that, though fixed price is still a dominant pricing mechanism, there is evidently a trend of growing in number applying bookbuilding to new issues in Thai IPOs market. Interestingly, fixed price procedure still dominates bookbuilding procedure in number of IPO's companies, but doesn't in IPO's value (volume), an obvious sample shows in figure1 and figure2. In addition, Table1 summarizes an interesting number and value of new listed companies in Thai capital market from year 2002 to year 2006. The figure shows an extensively growth in value of IPOs using bookbuilding. There is total IPOs value of 4,705 MB (out of 9,619.78 MB for all IPOs) use bookbuilding in year 2002, and there is 33,445.76 MB (out of 36,768.68 MB for all IPOs) in year 2006. Alternatively, focusing to number of new listed companies beyond each pricing procedures are not explicitly different. The table shows continuously high number of firms using fixed price than bookbuilding procedures from year 2002 to 2006. (companies using fixed price vs. bookbuilding: 11 vs. 6 in year 2002, and 8 vs.4 in year 2006).

Bookbuilding is claimed by many previous literatures for several advantageous dimensions, particularly to the ability on dealing with the aforementioned market efficiency problems. They suggest by using bookbuilding to positively adjust an IPO price for issuer, the ability to less under pricing is widely accepted. The price generated by this process is partially adjusted by pre-market private information. Some literatures suggest that bookbuilding can lower the sensitivity of an IPO in a volatile market or to when market is cold. The benefits of bookbuilding have been confirmed by many researchers studying in many international markets. Statistically, bookbuilding is becoming the method of choice, founding as an increasingly dominant form in worldwide market. In US, where the market is the most studied, bookbuilding has been a standard practice that investment banks commonly do before pricing an equity issue, seeming that there are positive economic value. In many other countries and also in Thailand, where fixed price

offerings were traditionally used, the bookbuilding procedure is however becoming increasingly common. Unfortunately, none of study has been done in researching for bookbuilding in Thailand. No evidence on the effectiveness of bookbuilding in Thailand has been observed and reviewed. The fact that capital market in Thailand is an emerging market with high level of volatility, placing an IPO at the right time to the right investors' preference is challenging to both an issuer and an underwriter. Whether fixed price procedure or bookbuilding procedure is the most optimal procedure for Thailand's stock market is an interesting case to study.

This paper, therefore, is motivated from the features of bookbuilding as proposed by previous international empirical evidences. The paper intends to figure out how the bookbuilding is determined by the relevant parties, how effective is the bookbuilding used by underwriters incorporate to Thai capital market structure and nature of Thai investors, and how bookbuilding is important to Thai IPOs market. To study with Thailand's data, applying those previous theories, diverse results may happen by the fact that Thai capital market is not similar to other observed markets in US or Europe in both size and structure, for example. Moreover, bookbuilding in Thailand is lately employed to Thai capital market, whereas it happens long historically in US and Europe. However, to start studying with Thai IPOs market would lead to the development for greater effectiveness of pricing procedure that to be a fundamental on setting up the capital market more efficient.

In this paper, 121 IPOs in Stock Exchange of Thailand (SET) are observed as research samples. My first empirical findings show that, firm size and investor-target (institution investors) are primary factors for an underwriter to consider when choosing an appropriate pricing procedure for an IPO issuance. Second, the result demonstrates that, in after market, IPOs priced by bookbuilding procedure can have lower impact from pre-market uncertainty. Bookbuilding procedure itself has significant explanatory power to the level of abnormal return for an IPO than it would have in aftermarket that the IPO's price tends to be constant.

The remaining of this research paper is set firstly to propose the review of previous literatures. Next would introduce the theoretical framework, testing hypotheses and research methodologies respectively. Finally the testing result will be

concluded in the summary part. Significant relationships are expected so that it would represent some principles factors for an issuer together with his underwriter to consider for their own issues. However, I would begin with introducing both fixed price and bookbuilding in term of individual character and application.

1.1 What is Fixed Price?

Fixed price procedure is the traditional pricing mechanism of public offering. The offering process begins with the issuer and underwriter agrees on an "issue price". In Thailand, the fixed price is determined according to historical market price, demand and firm value on comparable issues that have been available and traded in the market. The firm's value can be calculated by Discounted Cash Flow (DCF) and PE ratio. The price, however, is set without first soliciting investor demand in particular. Most frequent used approaches are "Market Comparable", "Adjusted Book Value", and "Discounted Cash Flow", for instant. A certain price is notified to the market and reveal to investors waiting for booking.

Fixed price procedure seems to be attractive to risk-averse issuer. Those investors are uncertain about the market valuation of their issues. To apply the fixed price procedure can create such a cascading demand following the information reflected from the private signaling of the first investor in line. Fixed price can also guarantee the issuer some certain proceeds.

There are many extensive researches revealing the identically basis that the fixed price offering makes the investors suffer from "*IPO under pricing*" due to the price discovery is taking place mainly in the after market once corporate to information available in the market. The argument on this topic exposes that none of the issuers or the underwriters know the true price of their own share offerings, but only the market does. Then, without market observation, the underwriter and the issuer agree to under price the share value to induce more investors.

1.2 What is Bookbuilding?

Bookbuilding is an important process for investment banker to price and to place an initial public offering (IPOs). The fundamental purpose on this procedure is to elicit information from informed investors. An appropriate price is expected from this process that generally induces investors' attraction. The process of bookbuilding begins with consultation between all related parties, deriving a price range with a median point at which the demand for the company's share is in maximum. The investment bank, as underwriter in equity offering, then fixes a price range for the issue. Investors are informed about the price range, then bid at a price they think more appropriate. The bid is conducted within the registration period and before the offer price is finally set, that should be a short-time before proposing the offer price but long enough to operate and evaluate a survey.

The bid would express a requested quantity and a limit price, which would illustrate the aggregated demand. Generally, if an investment banker observes the demand trend and combines them all into the consideration, the final offer price will be adjusted upward or downward to stand at the most appropriate point. Consequently, the issue price would reflect the expectation of investors. Bookbuilding procedure in someway resembles an auction like, but there are some important differences. The most important difference is that the pricing and allocation rules are not announced, but are left to the discretion of the investment banker. Another difference is that investors' bids do not represent a commitment, but merely an indication of interest. Following the bookbuilding process, the investment banker uses the information to construct a demand curve. The issue price is not set according to any explicit rule, but rather based on the banker's interpretation of investors' indications of interest. However, as an underwriter, they generally set the price at a level at which the demand exceeds supply, and then allocates shares to the bidders at his discretion.

Figure 4: Pricing procedures comparison

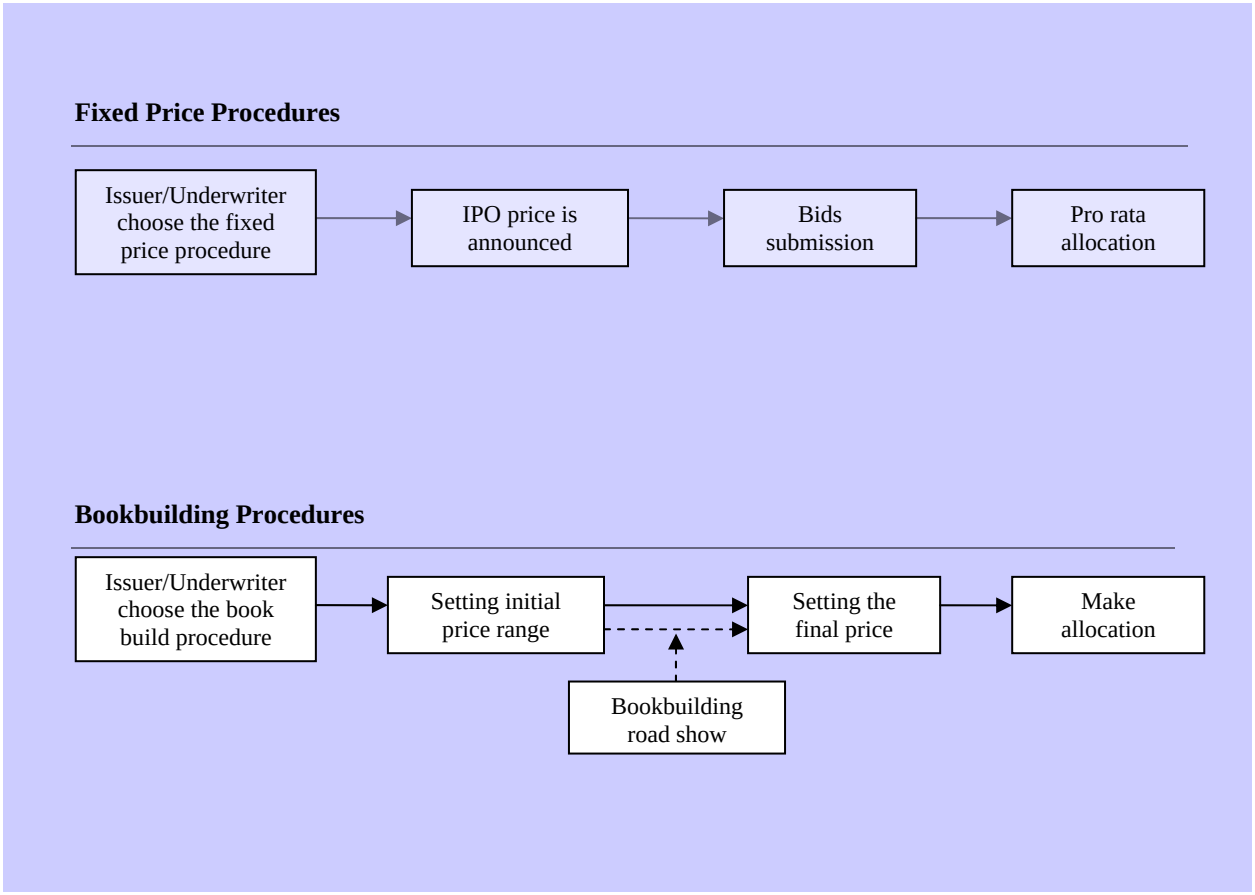
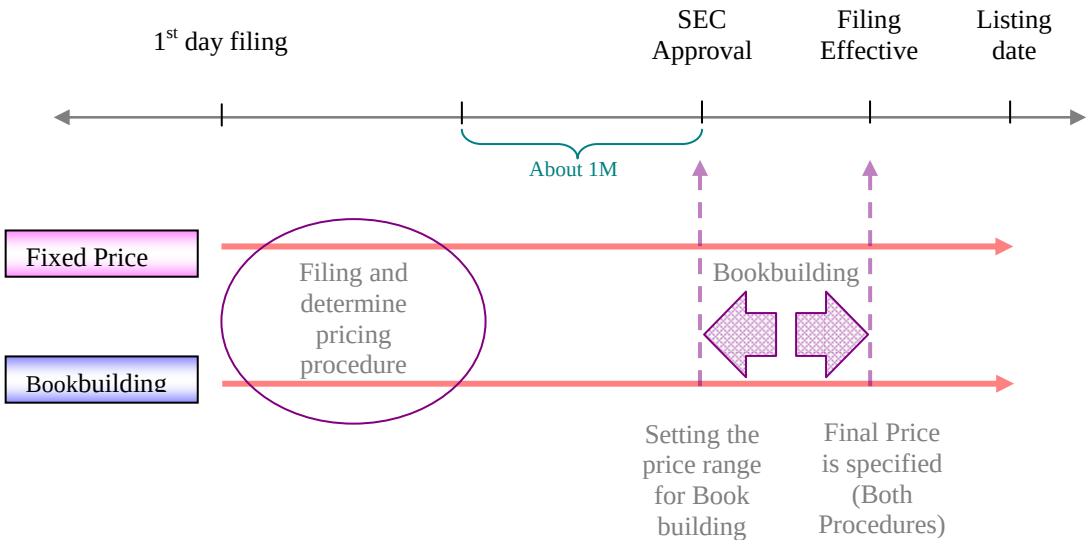


Figure 5: Time line on the IPO pricing process



In Thailand, bookbuilding process is a new procedure suggested to capital market, being an alternative procedure from the original fixed price. According to the notice from The Securities and Exchange Commission of Thailand (SEC), bookbuilding is not a regulation for all the going public companies, but leave to be the underwriter's consideration. SEC suggests on applying bookbuilding if the offering cannot obtain the historical price or an appropriate price. In the SEC's notice, however, limits the investors' characteristic to *Institutional investors.* The SEC claims that institution investors have high purchasing power. Moreover, this type of investor is an informed investor, having adequate knowledge on analyzing the fair price of offering. Their bargaining power to the issuer is also as high as to acquire all adequate information on the offering.[2]

[2] Notification of SEC, Nor Jor.1/2545: SEC has announced the guidance of book building process in the following characteristics:

1) Only institutional investors to be involved.
2) Suggested offer price range is set for investors to indicate their demand price and number.
3) Observation period should be a short time before the final price setting date.
4) Draft of Prospectus is handed to individual institutional investor. The draft is required to contain adequate information, but left off the price and share allocation method.

2. International Empirical Evidence: Literature Review

There are many literatures deal with various aspect of going public, an offer price is set in a complicated balancing methodology. Also, there are some, theoretical and empirical, that proposes the comparison upon several of Public offering procedures. Fixed Price and Bookbuilding are ones which many times are referred by the literatures as an interesting candidate in determine pricing since they are commonly used. Most of the studies are attempting to explain the under pricing of an offering price, while some pay attention to the variety of public offering procedure and its advantage. These kinds of literatures, however, are needed in the process of giving first step of what individual procedure is.

This chapter will summarize the reviewed articles for simplicity according to the literature's objective upon the study: Bookbuilding vs. Fixed price, Share allocation Strategy, Partial Adjustment Hypothesis to public and private information, and finally Bookbuilding and after-market performance.

2.1 The Efficiency Comparison: Bookbuilding vs. Fixed price

Prior studies have shown basically the ideas regarding the best way to price and place Initial Public Offering of equity (IPOs). Further, they also based on the study of distinguishing each pricing processes of public offering. Some papers are debating between the traditionally "*fixed price*" procedure, which has been dominant across many countries and the new approach "bookbuilding" procedure. Benveniste and Busaba (1997) theoretically compare these two processes of selling IPOs when investors have correlated information and can observe each other's subscription decision. They apply the fixed price approach from Welch (1992), whereas from which Benveniste and Spindt (1989) is used the formalization of the bookbuilding approach. Their comparison show the result for bookbuilding to generate higher expected proceeds but expose the issuer to greater uncertainty, and that it provides the option to sell additional shares that are not under priced on the margin. Benveniste and Wilhelm (1990) and Spatt and Srivastava (1991) are other samples of this kind of study, showing the similar result that bookbuilding generates higher

expected proceeds than fixed price. Spatt and Srivastava (1991) argue on their evidence that bookbuilding stochastically dominate the fixed price procedure. Benveniste and Wilhelm (1990), reach a similar result when the winner's curse is possible in an environment that admits both informed and uninformed investors. This result follows by Rock (1986), where the offerings with fixed price procedure need to be under priced in order to compensate the uninformed retail investors from facing the winner's curse.

Some studies examine the effect of bookbuilding on under pricing. Worldwide evidence by Loughran, Ritter, and Rydqvist (1994), show countries that use bookbuilding typically have less experience with under pricing than countries using fixed price offerings. Ljungvist, Jenkinson, and Wilhelm (2003) offer extensive evidence based on data from 65 countries between 1992 and 1999. Comparing bookbuilding and fixed price IPOs, they find a controversy result that bookbuilding issues do not necessarily lower under pricing in all countries, but statistically show that under pricing is lower for bookbuilding IPOs when issuers use U.S. lead managers and are marketed in the U.S. The paper concludes that the choice of lead manager is as important as the IPOs procedure. Benveniste and Spindt point out that in the U.S., lead managers engage in extensive information production during bookbuilding. Benveniste and Spindt model illustrates such information gathering activities in a mechanism design setting and demonstrate that the empirical implications match the data.

2.2 The Shares Allocation Strategy

As an identical perception, literatures clarify that an investment bank, as an underwriter, uses bookbuilding to extract private information from institutional investors, as informed investors, according to the valuation and their risk tolerance on a particular equity. That is those investors who are induced by some beneficial trading with their revelation, as by shares allocation, or else the fear on penalty of not being the primary market. Some works look over on bids and allocations in IPOs. Hanley and Wilhelm (1995), and Ljungqvist and Wilhelm (2002), for instant, find that greater under pricing is associated with greater allocation to institutional bidder. These papers rely on the relationship between allocation and price revision to proxy

for the information contained in bids. Consistent with Benveniste and Spindt's theory, Ljungqvist and Wilhelm (2002) find that institutions that reveal more valuable information during the registration period are rewarded with higher allocations when such information is positive. Sherman (2000) extends the framework to allow for costly information acquisition and suggest that it is the information acquisition constraint, rather than the truth-telling constraint, that determines pricing and allocation. However, none of these models specify the precise form in which information is revealed to the underwriters.

Cornelli and Goldreich (2001) present evidence from an investment bank on the actual bids and allocation of European IPOs. They find that investment banker favor certain bids when allocate the shares. After that in 2003, Cornelli and Goldreich add in their further study that the bids which most influence the issue price are favored in the allocation of share. This evidence supports the information extraction hypothesis of bookbuilding. Jenkinson and Jones (2005) explain to their result that it is possible for investment banks with better access to informed investors and better deal flow would be able to extract more information from bidders and reward them through greater allocations.

2.3 The Determination of Partial Adjustment Hypothesis

Benveniste and Spindt (1989) propose the originated "*partial updating hypothesis"*, containing predictions on the effects of private versus public information in the pricing process. They post that informed investors provide underwriters with private information about the value of the IPO firm during the filing period. Underwriters compensate these investors for the private information they provide by only partially incorporating it into the offer price, thus allowing the informed investors to earn especially high returns on the first day the IPO firm trades.

On another hand, the idea that underwriters do not fully incorporate all private information into the offer price has been disclosed by Benveniste and Spindt (1989). As support by the theory, Hanley (1993) and Cornelli and Goldreich (2001) argue that only the partial of private information, learned during the registration

period, is incorporated into an offer price. In other words, underwriters only partially adjust the final offer price, and thus leave some money on the table for its regular clients. Cornelli and Goldreich also show that private information in bids, especially those of large and frequent bidders, partially affect the issue price.

In responding to the public information, Loughran and Ritter's (2002) suggest that public information is incorporated into the offer price even though Benveniste and Spindt (1989) would not predict this, seeming to suggest that the IPO pricing process is not efficient. That is, by not fully incorporating public information, the underwriter seems to freely reward all buyers of the IPO at the expense of the issuer. Some other prior empirical studies have mixed results as to whether public information learned during the registration period is or is not fully incorporated into the offer price. Ritter and Loughran (2000) and Bradley and Jordan (2002) show that pre offer market run up is positively related to under pricing, while Lowry and Schwert (2002) find no significant relationship. Recent evidence on the partial adjustment phenomenon includes Lowry and Schwert (2004), investigate underwriters' treatment of public information throughout the IPO pricing, and there by shedding light on the extent to which the IPO price setting process is efficient. Their results find underwriters disregard some public information when they set the final offer price. However, the small economic significance of this relation indicates that the IPO pricing process is almost efficient.

2.4 Bookbuilding and After-Market Performance

Many studies show the pricing process incorporating both public and private information, either partially or fully, along the registration period. Some empirical studies further enhance their test to after-market performance in short-run and long-run. In other words, several recent studies have investigated whether information uncovered in the registration process can be used to predict post-offer price movements.

Hanley (1993) provides early and robust evidence on the *"partial adjustment phenomenon*", a key prediction of the Benveniste-Spindt bookbuilding model. He is the first to study and report on the direction of the final offer price adjustment

relative to the suggested price range as a good predictor of initial return on the first day of trading. His study examines the relationship between the IPO price and the preliminary price ranges, finds that issue priced near the maximum of the range perform better in the after market. Afflect-Graves, Hedge, and Miller (1996), examine the relation of short-term aftermarket trends on the initial direction of mispricing on NasDaq. As the results, in relative to match the firm size, returns in IPOs in the first few months of trading are in the same direction of as the initial return. Winners (losers) on the first day continue to be winners (losers) in the after market that they added not only that short-term trends can follow public announcements, but that the direction of the trend can be conditional in the initial signal. Meanwhile, they find no significant difference between the underpriced and overpriced IPO in long-term. Krigman and Womack (1990) express the predictive power of flipping. They argue that first-day winners continue to be winners over the first year.

Another proposed by Bradley and Jordan (2002), Loughran and Ritter (2000), and Lowry and Schwert (2004) say that issue price and the following first-day after market return are affected by public information such as market index return and industry. As well as Loughran and Ritter (2002), they find that initial returns are significantly related to value weighted market returns, while Lowry and Schwert (2004) find much statistically and economically weaker effect since they include the updated price in the regression. Also, Congseng Wu (2005) finds that, on average, hot issue with offer price above the upper bound of initial price range provides significantly higher first day return than others and continues to be hot for at least 3 months. Ritter and Welch (2002) argue that the theories based on asymmetric information are unlikely to explain average first day returns of 65%. The result on research lining in long-run performance is sensitive not only to methodology, but also the exact time period chosen. Cornelli and Goldreich (2003) have given the result to this topic with another point of view, finding that oversubscription and demand elasticity are positive correlated with the first day return. These studies commonly decompose newly acquired information into two types; public available information as represented by market-wide return that comes to life during the registration period, and private information that underwriters obtain from informed investors through their expressions of interest for the issue.

2.5 Research Relevance

In summary what I find upon reviewing process is that the advantage of bookbuilding has been perceived and this procedure has been applied cascading in developed and developing countries, particularly the U.S. and some European countries, for many decades. Some papers also show that bookbuilding is becoming a standard process to set an equity price. The data is much available for them to study. This limitation of data availability in Thai market becomes the first element that can make my result a difference. To be illustrated, Congsheng Wu does his research with 2,580 IPOs in U.S. market. Derrien and Womack (2003) do the study with 135 bookbuilding samples in French market, and lastly Shiguang Ma and Robert Faff (2006) have 51 bookbuilding samples on their research in China market. Meanwhile, my research appears only 55 bookbuilding samples in Thai capital market for the last 5 years. Moreover, I mark the different of study period. The data set contained in some papers, Cornelli and Goldreich, and Jenkinson and Jones, for examples, have been collected by the time that bookbuilding is already well-known and has historically been available in their market, while bookbuilding appears to be a new approach for Thai market upon the period of my study. Thus, the data set to my paper is quite limited and undiversified.

Another limitation of my study is that I do not observe the price range for bookbuilding and how the final price is set according to the range. According to Congsheng Wu (2005), how the final price of an IPO is set regarding to the initial price range can be determined the quality of the IPO. When an IPO is good, and informed investors must know this fact, a lot of demand from market would raise the price up to the top bound of range. In the contrary, when an IPO is not worth to be invested, lowest price is called from the investors. To extract the qualification from this “price adjustment”, as such in US research, will lead to further apparent implication on the aftermarket performance of an IPO. Even though this observation is not identified in my paper, the result, however, can demonstrate the overview of gain from using bookbuilding in Thai IPOs market.

Apart from the limitation of data, the unique market structure and investors’ behavior in Thailand can also lead to different results. The public offering procedures, particularly on bookbuilding process, between Thailand and either U.S.

or European countries or some other countries are not totally alike. In Thailand, bookbuilding is not absolutely equivalent to the American bookbuilding which has been introduced in various American researches. Some, most of them, is mixed between bookbuilding and fixed price procedure in the sense that the bookbuilding is applied as a basic procedure for the price and allocation rules. Meanwhile, some small fraction of shares reserved for retail investors may be sold via a fixed price procedure but at the price form by bookbuilding procedure. The followings are examples pointing out that individual market characters are significant. Aussenegg, Pichler, and Stompler (2003) work on German Neuer Markt and propose some different finding to U.S. NASDAQ. They find that information was revealed prior to the bookbuilding phase for IPOs on German Neuer Markt, but not on NASDAQ. Another finding is that neither partial adjustment nor any evidence that bookbuilding provides information for IPO pricing in German Neuer Markt as in U.S.

Lastly, my study will not primary focus on finding out the reason of why the price is underpriced or whether the bookbuilding assumption is true or not, as most prior papers have been observed, but my study basically overview two different pricing mechanisms of initial public offering: fixed price procedure and bookbuilding procedure in order to investigate the effectiveness each approach may have regarding the public offering in Thai market. My research will investigate on determinant of different price setting procedure and after market performance when they actually trade in the market.

3. Theoretical Framework

3.1 IPO Underpricing Theory

Initial public offering (IPO) is widely-empirically documented for the existence of short-run excess returns. This phenomenon is called “underpricing” and is found almost every equity market in the world. The theory is linked to basic concept of IPOs price setting process. There are many extensive researches have reveal on the identically basis that the fixed price offering makes the investors suffer from “*IPO underpricing*” They suggest using bookbuilding to positively adjust an IPO price. Beveniste and Spindt (1989) explained that underpricing would induce informed investors to reveal their private valuation information. Bookbuilding therefore be created by this benefit. A common theme in the theories that explain IPO underpricing links underpricing with information asymmetry. The level of underpricing depends on the amount of uncertainty or information asymmetry. Literatures working on the underpricing theory agree that bookbuilding would be more appreciate to the issuer as it causes lower level of underpricing of the issue price.

3.2 Information Asymmetry Phenomenon

Basically, previous IPOs literatures concern to IPOs underpricing phenomenon. They believe the reason can be explained as underwriters tend to set an IPO at conservative prices in order to reduce underwriting risks due to their firm commitment basis. A common theme in the theories that explain IPO underpricing links underpricing with information asymmetry. According to what Rock (1986) argued is that informed investors would subscript to only the high-quality issues, leaving uninformed investors step into the poor ones. Thus, underpricing must occur on average as adequate compensation to uninformed investors to participate in those weak deals. This is what to be called the winner curse. Beveniste and Spindt (1989) explained that underpricing would induce informed investors to reveal their private valuation information. Bookbuilding therefore be created by this benefit. The level of underpricing depends on the amount of uncertainty or information asymmetry. This

may not be the case for retail investors even though mostly obtain overpriced shares, can theoretically earn the positive abnormal profit if they condition on the publicly information available by the time the subscription period closes.[3]

3.3 Partial Adjustment Theory

This "*Partial adjustment Phenomenon*" is proposed by Benveniste and Spindt (1989) as well as Hanley (1993). Those of the two literatures relate to the original knowledge on initial public offering theory, and so do on bookbuilding theory, that mentioned in most the subsequent papers. In addition, by linking the underpricing to market conditions, when the market condition is good, underwriter prefers to adjust only partially information to the offer price to allow them to favor large regular investors and to avoid setting too high price. On the other hand, if the market condition is bad, issuers may refuse to lower the IPO price too much relative to their expectation on initial return. Furthermore, questions have been raised on the consideration of excess return to happen or to justify relatively to this market uncertainty. (Derrien and Womack, (2003))

3.4 Agencies Conflict Theory

Some literatures have argued that to build a book would well-favor the underwriter by the higher of commission fee and opportunity on selling IPOs successive. In contrast, some findings suggest that fixed price is better to the issuer, as that it leads to a certain proceeds. Apart from buying at reasonable price, investors may expect to take on additional benefit from bookbuilding, specifically the direction of the final price adjusted away from the middle of preliminary price range to forecast the possible performance on an issue: high demand when observing positive adjustment and low demand otherwise.[4]

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[3] Vincente Pons-Sanz , on his working paper series with European Central Bank in 2005-"Who benefit from IPO underpricing", expressing the profits retail investors may have even though institutions capture the "lion's share" in the Spanish equity market.

[4] Congsheng Wu (2005) did the research on this hypothesis and found "Hot issue" in average provide significantly higher first day returns than other issues and continue to be hot for at least 3 months after the first day of trading.

3.5 Bookbuilding Theory

"*Bookbuilding theory*" proposes a concept of procedures to elicit private information from informed investors, the institutional investors in particular. The actual rules on conducting bookbuilding are not announced, but left to the discretion of an underwriter. Once obtaining information, underwriter will partly consider it into his discretion upon price-setting process. Partial adjustment hypothesis is relevant in this process as the final price is set after having done bookbuilding process to gather some private information. The discretion gives investment banks greater credibility in extracting information because it offers investors the incentive to engage in more aggressive information gathering prior to an issue. Bookbuilding is playing the role of traditional information gathering, suggested by theories developed for mature capital market. As argued by Benveniste and Busaba (1997), although the bookbuilding procedure generates higher expected proceeds, but exposes the issuer to greater uncertainty.

The theories in various related fields give the idea on the origination and utilization of the bookbuilding. By working on those aforementioned theories, measuring how firm could be effective on taking bookbuilding procedure in the Thai market is the principle objective of this research. The ideas of endogenous factors and exogenous factor such as market drives are taking into consideration as to picture out the characteristic to make bookbuilding available. Since the bookbuilding procedure contains higher cost than the fixed price procedure, not all firms going public are introduced by this costly mechanism, as taking into considerations on the trading off between gain and loss.

4. Data and Basic Methodologies

The study in this paper based on samples of the IPO companies listed in "The Stock Exchange of Thailand" (SET) from year 2002 to 2006. IPOs issuances on Employee Stock Option Program (ESOP) or for specific investors are excluded. The exclusion deals to the fact that those IPOs are unnecessary to select the most inducing price to common investors which is a principle purpose of bookbuilding. The 121 IPOs are provided as initial sample size. This specific period is chosen in obtaining samples data. Bookbuilding procedure has been officially introduced in Thailand Stock Market since year 2000 according to Nor.Jor.1/2543-"*The Guidance to Bookbuilding Process*" notification from The Securities and Exchanges Commission of Thailand (SEC). However, my study does not include the first 2 years (2002 and 2001) by the fact that underwriters may not be familiar with this new procedure beforehand. The bias may be occurred in favored of using fixed price procedure. There also found less number of new IPOs listed to market in these two years (2 companies in 2000, and 7 companies in 2001). The second notice from SEC (Nor.Jor.1/2545), related to bookbuilding process, is announced as a replacement to the first one. The new revised notice is currently existed. Therefore, the period is selected in line with most recent notice. Basic data referred to an offering information is obtained from companies' prospectuses which provided by the Securities and Exchanges Commission of Thailand (SEC). Capital market to both pre- and post-offering data and Stocks' performance data, also, are provided by SET Market Analysis and Reporting Tool (SETSMART).

Two analyses models followed Derrien and Womack (2003), are constructed in order to response to the study's objectives: How an underwriter determines a proper pricing procedure, and whether bookbuilding in Thailand is used effectively by observing aftermarket performance as proxies. The dependent and independent (control) variables are identified in model specification parts.

4.1 The determinants of choosing an IPO allocation procedure.

Hypothesis Specification

One of the important processes in order to make successful IPOs is to obtain the effective pricing procedure. In Thailand, to make the most benefit on an IPO, the underwriter systematically deals a private agreement with the issuer which is an unpublicized internal process. Therefore, to study over this strategic process, I would observe from the public information and set the initial hypotheses according to prior literatures' evidences. Potential proxy variables are determined as expected to have impacts on Thai underwriters' pricing procedures, similarly found in international cases. The first-stage testing is consistent with following hypotheses.

Hypothesis1: Company's profiles (issuer own characteristics) are key determinants regarding IPO pricing procedure selection.

When an underwriter incorporates with the shares' owner in order to take an appropriate pricing procedure for IPO issuances, the firm's characteristics: firm size, shareholder composition, market capital, and sometimes the reputation of company, etc., tend to be primary factors that underwriter can observe and concern. These general characteristics partly illustrate company's management strategies and internal conditions on company's own business plan. Benveniste and Busaba (1997) conclude the firms with more price uncertainty, or more risk averse, are likely to prefer fixed price for their offering. So does the case in Thailand, companies expected to list in the stock market are various by size and some specific characteristic. Thai equity market has been divided into 2 sub-markets: SET (The Stock Exchange of Thailand) and MAI[5] (Market for Alternative Investment). The minimum requirement for SET is that a company must contain at least 300MB or more in shareholder's equity. However, SET still contains variety of size of listed companies. According to the statistic summary shown in table3, smallest company from samples has total asset equal to 303.81 MB, while the largest has 99,350 MB. Moreover, each company has their own ownership structure. Some are family-own companies,

[5] MAI allows companies which are quite small in comparative size having opportunities to raise external funding and prepare themselves before move to SET which is greater one.

some are entity-own companies, and some are significantly own by foreign shareholders. So do the other details that an underwriter needs to specify on individual IPO companies. These various characteristics lead underwriters to act differently in providing the best alternative approach to companies.

Hypothesis2: Offering conditions is significantly concerned to pricing procedure selection.

Besides of the quality of offering its own shares, potential investors who are going to invest in the offering are also important. In Thailand, the major investors are retail investors, then foreign investors and institution investors respectively. Figure6 shows summary of trading transaction value by the investor's type in Thailand. Explicitly, percentage of institution investors participating in Thai capital market grows from 5% in year 2002 to 11% in year 2006 by reducing portion of retail investors from time to time. This can expect for a well-form of Thai market in the future by the fact that institution investors have market controlling power and have low risk tolerance. They basically focus in medium to long term investment horizon. This type of investor, therefore, prefers to invest in large companies to ensure stock liquidity. The institution investors would pay attention in fundamental of a company. They know the real value and the issuer may expect to provide that essential information. Bookbuilding is benefit in this case. However, this eliciting procedure consumes longer time and higher cost by which may not well-suited for a firm with time and budget-constraint. Another point of view is to set a price without surveying the market demand may result in a loss of market interest. This weak-attractiveness causes problem to IPO with large issue size. As shown in the figure2 and 3, IPOs market in Thailand continuously grows in size. Simultaneously, size of IPOs using bookbuilding is also increasing. This positive trend motivates the belief that bookbuilding is a preferred procedure by large size companies. According to statistic summary in Table3, the companies' with bookbuilding have mean of market capitalization at 8,263.76 MB, meanwhile companies' with fixed price

have significant lesser, mean at 1,746.92 MB. So is the companies' total asset, the summary shows that companies using bookbuilding have larger total asset on average (9,015.68 MB and 1,441.30 MB with bookbuilding and fixed price respectively). This significant different gives me an idea that large companies have higher resistance to risk. While smaller companies prefer fixed price procedure to guarantee their proceeds, larger companies would try on bookbuilding procedure as expected for their true market value solicited. They also anticipate for positive adjustment on their offering price. In addition, bookbuilding costs more to issuer (Sherman, 2000). Small companies may not appreciate such a costly procedure. The statistic in summary table (Table3) also shows bookbuilding procedure is used by an IPO with 271.50 million shares on average. An IPO with 66.47 million shares on average would use fixed price procedure. These two figures are significant in mean-differentiate testing. The situation can be explained by the hypothesis of risk-aversion of an underwriter. The fact that underwriter with firm-commitment offering would protect themselves from the risk of illiquid shares. IPOs with large size frequently use bookbuilding procedure to gain demand from investors. In the process of building up demand level, underwriter reputation theoretically gives trustfulness to investors. They basically have their own regular investors who frequently propose the bids. This helps the underwriter processing bookbuilding. The international claim, such as Vandemaele (2003), is also predicted that underwriter's reputation have positive relationship to the pricing procedure.

Hypothesis3: Impact from market conditions are key determinants regarding IPO pricing procedure selection.

Derren and Womack (2003) claim that bookbuilding would incorporate information from recent market conditions into price. Vandemaele (2003) claims fixed price is a preferably method when the markets are bearish. However, risk-averse issuer may prefers fixed price when the market is high in volatility, the certain proceeds is guaranteed. Market timing is a primary condition to be considered for when the IPOs are to

be listed and how. Figure7 shows the relation of number of IPOs issues to market trend. Thai IPOs tend to be launched more frequently when market is bullish. In year 2003 – 2004, SET index rose continuously, as well as number of IPO issuance. After that, market moved sideway and then once the index dropped in 2006 the IPOs number also dropped significantly. This statistic confirms the theory of hot market. Pricing process is one of the steps relative to an IPO success, such that an appropriate price should reflect the true value and receive more attraction from investors. This is a hard work when market is cold (low return), or has high volatility as in Thai market. Market Condition is expected to be a concerned issue in order to obtain the most appropriate pricing procedure as part of successful IPO.

Figure 6: Transaction summary by investor types (Source: SET)

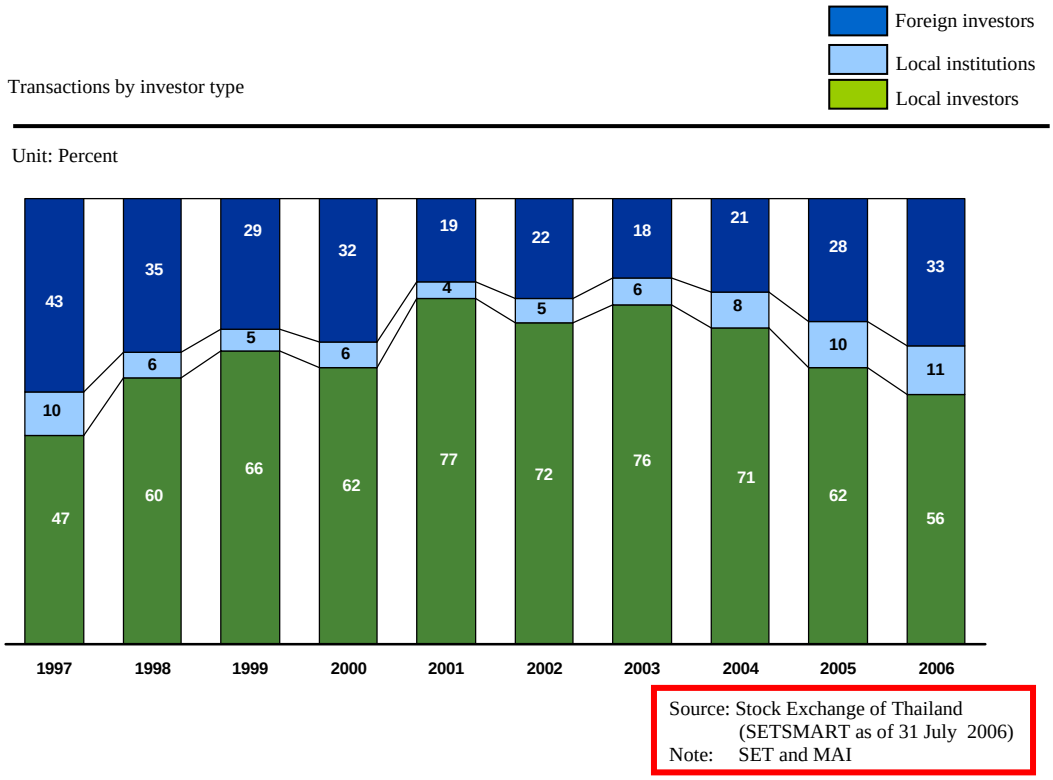
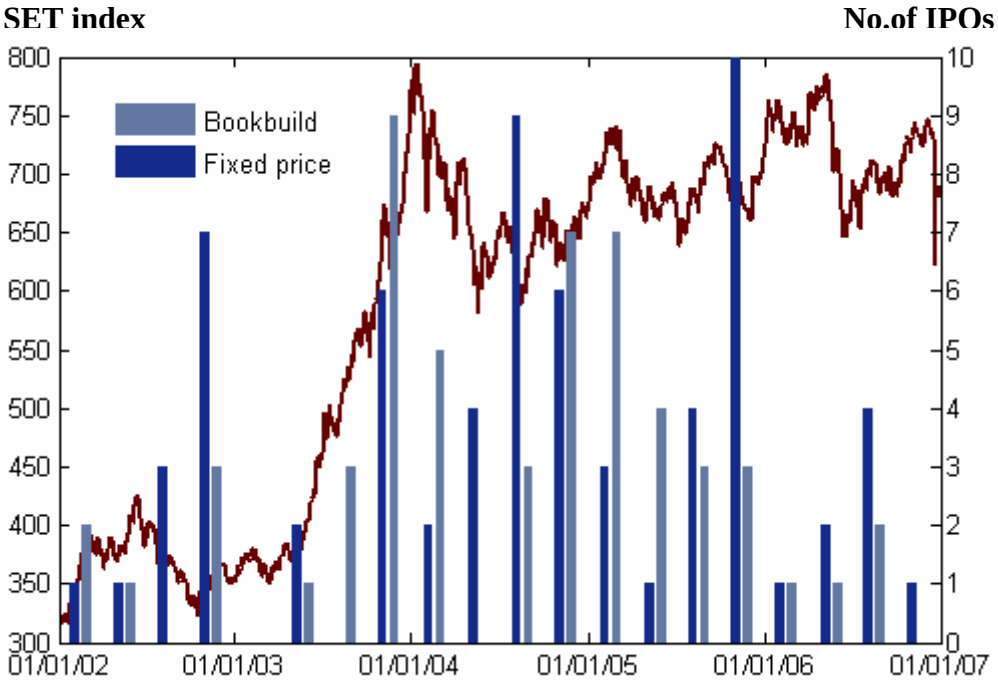


Figure 7: SET index and Number of IPOs issuance (Source: SET)



Model Specification

To work on the first 3 hypotheses, A Binomial Logit Model is constructed in which the dependent variable is qualitative. That is, for simplicity, the model can be applied when estimating the impact between the forces from potential environment factors to pricing procedures on initial public offering (Principal Fixed Price and Bookbuilding).

The first model is encompassed the entire initial sample of 121 IPO companies in Stock Exchange of Thailand (SET) from year 2002–2006, that include companies who applied bookbuilding procedure and who applied fixed price procedure. IPOs issuances offer to Employee Stock Option Program (ESOP) and offer to specific investors (or specific issuing purpose) are excluded from sample. The reason for the exclusion is, as prior determined, insignificance of attractive power required to those kinds of IPOs. The price is basically set as to deal with particular investors' appreciation. To identify the determinants of pricing procedures,

the primary key is to aim for the probability of a firm that would select bookbuilding as its IPO pricing procedure. This is by considering the impact of endogenous factors (company's profile, and offer conditions), and the exogenous factors (pre-market conditions: market return and market volatility). These proxy variables are public information that is easily obtained. By the fact that the internal agreement among a company issuer and its underwriter is unrevealed, some technical terms or dealing issues such as the actual fee and any specific conditions under the agreement are unobservable. Therefore, the pricing procedure would be determined under the variables obtained from public sources. Company's prospectus is the primary source which gives the information over the company and its offering characteristic. SET index is calculated to correspond to market performance proxies. Other information about IPOs in Thailand market can be further extensively found through the Securities and Exchanges Committee of Thailand (SEC).

The Logit model is constructed on the assumption that probability function of the chosen bookbuilding is logistic distribution. The probability lies upon 0 and 1. The logit regression is set up as below,

$$Prob(Y = 1 \mid X) = f(OFSIZE, DU, INS, Ln\_MCAP, ROE, MR, MV) \qquad (1)$$

According to the model (1), proxy variables are used to estimate the significant driving power over the probability that bookbuilding would be selected. The variables correspond to the model can be defined as follow.

Dependent Variable (Y) – a binary dummy variable defined to represent the bookbuilding as IPO pricing procedure.

Y = 1 if Bookbuilding is chosen by a firm,

Y = 0 otherwise

Independent Variables – The indicated independent variables partly have influenced the determinant of offering procedures.

a. "Company's Profile" (company characteristic control variables)

According to the first hypothesis, the variables represented the company's profile is estimated as company fundamental information. Individual issuer probably has its own preference and limitation. Firm size or level of risk tolerance is selected as expected for significant impact to a firm when planning the new offering as explained in the hypothesis above. The variables *Ln_MCAP*, is established as representing "*Company's market capitalization*".

By the theoretical evidence from many literatures, bookbuilding is claimed as a favor mechanism to reduce underpricing. V.Siraprapasiri (1991) shows the result in his research paper, regarding the underpricing of IPOs, that Ownership concentration is set as a proxy for ownership retention has significantly relationship to the level of underpricing. He suggests ownership concentration can identify the entrepreneur and corporate insider. Also, retention of ownership can guide the company's direction and performance. Therefore, *Pre_Own* variable is included as a suggested control variable, determined to the "Pre-offering Ownership Concentration". This variable is not directly subjected to any particular direction of pricing procedure to be selected, but depending on the agency cost consideration. I would adopt the methodology propose in paper of Mitton T. (2001)[6], that he considers ownership at 5% level or more.

To test whether the firm pre-offering performance is related to the choice of pricing for underwriter's concern. *ROE*, as "*Return on equity*", is established. When company appears high return background, investors who are risk-averse would be induced and they consider the company as it has strong performance efficiency and expect for further return growth. Bookbuilding itself may not necessary generate enough attraction to investors.

[6] I replicate the determinant of ownership concentration from Mitton T, 2001 A cross-firm analysis of the impact of corporate governance on the east asian financial crisis Journal of financial economics 64, 215-241

b. "Offering Condition"

According to Derrien and Womack (2003), they claim for the influence power of number of shares created in the IPO that large number leads to the high probability a firm chooses bookbuilding procedure. Therefore, this idea is being illustrated in this research paper and *OFSIZE* is set as another independent variable. According to the Derrien and Womack's work, this variable is adopted by calculating from "*Ration of Offering Number to Total Existing Shares before IPO*".

The next variable, *DU*, is led by the belief that bookbuilding requires the experienced underwriter. The "*Underwriter Reputation*" is crucial in order to effectively conduct the process of eliciting information from institution investors to which the strong trustfulness is called. As proposed by Richard, the right underwriter is another success key in public offering. The reputation of lead underwriter can induce trustfulness from investors. Which underwriters is the best depends on the issuer's individual appreciation, some prefer who can fill current and future need. Normally the underwriters' reputation is all about the success of the offering. Ljungvist, Jenkinson, and Wilhelm (2003)'s research, show that the IPO underpricing is lower for bookbuilding when issuer uses US lead underwriters and when IPO is marketed in the US. They claim this as the result of underwriter reputation. This variable is to notify whether the underwriters are ranked in top 5. Table4 expresses the underwriter ranking procedures on this paper, and explicitly be observed that ranking is little change through out the study period where underwriters are with large IPO activity in year 2002.

Last proxy is generated by the fact that institutional investors are informed in the market. They would not take the position in an issue that is overvalued. Institution investor is solely observed target, limited by SEC, since they have high purchasing power to point the direction of an issuer price. The bargaining power to the issuer is also as high as all adequate information on the offering. The bookbuilding approach, as acknowledged by theory, would give an opportunity to institutional investors to do their own appraisal on the issue. The issuer, for the most benefit, probably will focus on the selling target to these informed investors in particular. A particular portion of issues are kept as standing for institutional investors, entrusted them the adequate amount to trade off with their private

information. Benveniste and Busaba (1997) disclose the repeatedly deals of an underwriter with the same pool of investors and condition future allocations according to the investor' behavior. I select the variable *INS* to represent the underwriter's, incorporate with the issuer's, intension to target on a specific type of investor. This variable is simply calculated from the IPO selling report submitted to SEC, showing the percentage of shares allocated to institutional investors.

c. "Market Condition"

The next group of control variables to which I would try to estimate, market condition is evidently affirmable on its potential effect to firm choice. As argued by Ibbotson et. al (1994), the offering, IPO in particular, easily gain attraction from investor in the hot market, whereas it hardly finds investor to buy at any reasonable price when the market is cold. Vandemaele (2003) suggests the fixed price is more favorable when market is bearish. Shiguang Ma and Robert Faff (2006) studying the market in China claim that bookbuilding is the most efficient among the others since it seems to be largely immune from the impact of market conditions. The bookbuilding is also optimal in counteracting adverse condition created by low market proficiency, high market volatility and uncertainty during the listing time. To follow the theories observed above, the first proxy group contains *MR* and *MV*, established to represent pre-offering "*market return*" and "*market volatility*" respectively.

According to these two variables, I assume underwriter would take into account the market situation at a time registration process is prepared. The market return is specified from the index return on Stock Exchange of Thailand. This market return would demonstrate how the market trend is, in numerical, as well as how the investors participation in the market, and how the underwriter incorporates those information to the judgment on choosing the right pricing procedure. When market is cold, issuer may need to set a fixed price with highly underpriced so to induce investors' interest. Bookbuilding may be more favored by this market situation. Market return is calculated from the 3 months cumulative return on market index (SET index) prior to a pricing procedure is selected.

Market volatility is another market condition proxy describes as the standard deviation of the SET index return in 3 months prior to the pricing period. The price should reflect public information during the registration period. Market volatility represents directly the information available in the market showing the investor uncertainty. When the market contains uncertainty, the risk-averse investors are going to slow down any high risk position. To motivate these investors accepting the offering, bookbuilding may preferably illustrate fundamental value of the issues. In the contrary, fixed price method seems to be attractive to risk-averse issuer. During high market volatility, risk averse issuer prefers fixed price to guarantee a certain proceeds. Therefore, both positive and negative relationships can be expected regarding which party to be concerned.

Noted for the specific period of pre-market conditions, Table5 expresses the regression on 1st day return by the different periods of pre-market conditions. 1 month, 3 months, and 12 months prior to the date-select pricing procedure, as independent variables, are presented in column 3, 4, and 5, respectively. Meanwhile, the control variables and their symbols are presented in column 1 and 2. According to the regressions' result, market return has significant impact to the level of the IPO 1st day return. T-statistics exhibit that the independent variables are significant at 1% level for 1 and 3 months pre-periods, and significant at 5% for 12 months pre-period. Model with 3 months pre-period appears the highest explanatory power (adjusted R^2 = 0.1297 in column 4). These 3 months pre-period of market return and market volatility, therefore, will be selected to adopt for further empirical tests.

Table2 expresses the summary of variable for model(1)'s variables. 1st column is the variable's symbol and name where as the 2nd column would give the extensive description of each variable and basic setup in accordance with the above theoretical hypotheses.

4.2 Optimal Pricing Procedure to IPO performance: Shor-term and Long-term **Hypothesis Specification**

The second objective of this paper is to determine whether the IPO that uses bookbuilding performs better in after-market. There are many extensive literatures on the topic of choosing the right procedure for the best IPO issuance. They basically examine the ability of pricing procedure to stabilize the IPO value. The underpricing phenomenon is the standard problem which frequently set as initial benchmark when comparing performance of different IPO pricing procedure. Furthermore, short-term and long-term aftermarket performances have been examined empirically. This paper would adopt the concept of the ability of pricing procedure to control the aftermarket performance illustrates by Derrien and Womack (2003). Testing methodology is constructed in consistent with following hypotheses.

Hypothesis 4: Bookbuilding mechanism leads to the lower underpricing of an issue.

Most of the recent studies learn basically on how the underpricing can be reduced by bookbuilding. They find lower in underpricing when bookbuilding is applied than fixed price. Benveniste and Spindt (1989) for instance, suggest the bookbuilding is efficient since it solicits the investors demand that a preferable price is generated and can lower the level of underpricing. This claim has been many times tested in different areas of equity markets: either in the US, Europe, or even in Asia such as China or Japan. Some claims are true. Ibbontson et al. (1994) found that the issuers can sell their offering at an acceptable price in “hot market”, meanwhile it is not likely so in the “cold market”. However, some don’t agree to those findings. Ritter (1984) finds large underpricing happened in the period of “hot issue market”. In many studies related to Thai IPO market, underpricing is a primary problem which is the result from information asymmetry in the market. This issue can be support by the statistic that the mean of first-day return of the sample is 13% (Table3). Also, bookbuilding provides underwriter an opportunity to observe demand. The price can be set higher as long as there is demand available in the market.

Hypothesis 5: Bookbuilding is the approach, which can immune issues from the effect of market uncertainly

Bookbuilding is the process dealing with institution investors, who are defined as informed investors for Thai market. Therefore, the final price generates from bookbuilding should reflect public and private information through the process of institution investors' evaluation. Information asymmetry problem is reduced, and the IPO price in aftermarket should not be too sensitive to further public information. That is, the price is immunized. In supporting the evidence, Afflect-Graves, Hedge, and Miller (1996), claim that Winners (losers) on the first day continue to be winners (losers) in the after market, They also added not only that short-term trends can follow public announcements, but that the direction of the trend can be conditional in the initial signal. Krigman and Womack (1990) express the predictive power of flipping. They argue that first-day winners continue to be winners over the first year.

Model Specification

In order to gain the research evidence on IPO performance, I construct a cross-sectional regression model to regress the first day returns. Furthermore, 3 additional cross-sectional regression models are constructed to test the aftermarket performance in short run and long run. These 4 models are basically on the attempt to examine the proxies that determine IPO performance in the market, including the underwriter's selection of pricing procedure which is either fixed price or bookbuilding procedure. The advantage on this conditional testing is to detect the ability of specific pricing procedures to immune the IPO from market uncertainty that is the procedure is best utilized by underwriter.

The second model is encompassed the entire sample of 109 IPO companies in Stock Exchange of Thailand (SET) from year 2002–2005. 12 IPOs listed in year 2006, which initially appeared in model(1), are taken out. We would only consider the IPOs which provide full information for both short and long-term aftermarket

performance. Again, I also exclude IPOs issuances offer to ESOP and offer to specific investors (or specific issuing purpose). The reason for the exclusion is the same as determined in setting up the model(1). The proxy variables are partially similar to the model(1), where the basic information sources are Company's prospectus for endogenous proxies and SET index for exogenous proxy. Other information about IPOs in Thailand market can be extensively found through the Securities and Exchanges Committee of Thailand (SEC).

Model(2.1) and (2.2) below, represent first cross-sectional regression models, regressing the first day return to several control variables which are selected based on IPOs literatures,

$$R1DAY = \alpha + \beta_1 Ln\_MCAP + \beta_2 Post\_Own + \beta_3 D_{bb} + \beta_4 MR + \beta_5 MV + \varepsilon \qquad (2.1)$$

and

$$R1DAY = \alpha + \beta_1 Ln\_MCAP + \beta_2 Post\_Own + \beta_3 D_{bb} + \beta_4 MR + \beta_5 MR * D_{bb} + \beta_6 MV + \beta_7 MV * D_{bb} + \varepsilon \qquad (2.2)$$

The variables in model(2) can be identified as follow,

Dependent Variable:

R1DAY – The initial return of IPO on 1st trading day.

Independent Variables:

To construct these model(2.1) and model(2.2), 3 groups of independent variables are established: Company's profile control variables, Pricing procedures dummy, and Market conditions. The description of variables, pricing procedures appear in Table2.

a. "Company's Profile" (company characteristic control variables)

This group is conceptually similar to that suggested in model(1). I select only the variables represent firm size and ownership concentration in which motivated by previous literatures as having significantly impact on the level of underpricing. The ownership concentration to this model deviated from model(1). For this second

stage, I observe the "*Ownership concentration after IPO offering*", namely *Post_Own*, which is calculated similarly to *Pre_Own* but based on the ownership after offering. Firm size is similar to model(1) that is *Ln_MCAP* in Table2.

b. "Pricing procedures dummy variable"

A common theme in the theories that explains IPO underpricing links underpricing with the theory of information asymmetry. Partial updating hypothesis proposed by Benveniste and Spindt (1989) is about the effect of private versus public information incorporate in pricing procedure, especially when bookbuilding is applied. In addition, Rock (1986) suggests fixed price method needs to be under priced in order to compensate the uninformed retain investors from facing the winner's curse. To follow these empirical evidences, pricing procedure dummy is established to detect the pricing technique of an IPO. *Dbb* represents the bookbuilding dummy, which take the value of unity if an IPO uses bookbuilding procedure.

c. "Market Condition"

Market conditions for this model follow the similar idea as in model(1). However, market return and market volatility are calculated in term of 3 months period prior to the listing date instead. This alternative is adopted following prior literatures' determinant as to represent market condition in the period during the most influence power to the performance of IPO in the aftermarket.

Furthermore, I also propose Model(3), (4), and(5) below as, in addition, cross-sectional regression models which are constructed for estimating the aftermarket performance of IPOs when using different pricing procedures. These models are the explanation factor impacting on aftermarket performance. I also test on the same sample set of 109 IPOs companies as in model(2.1) and (2.2). The independent variables for these model(3), (4), and (5) are set similarly to the concept of model(2). However, post ownership concentration, and underwriter reputation are taken out. As explained by many literatures that aftermarket performance is basically impacted by public information available in the market.

Model with 1 month aftermarket performance,

$$CAR1M = \alpha + \beta_1 Ln\_MCAP + \beta_2 D_{bb} + \beta_3 MR + \beta_4 MR * D_{bb} + \beta_5 MV + \beta_6 MV * D_{bb} + \varepsilon \qquad (3)$$

Model with 3 months aftermarket performance,

$$CAR2M = \alpha + \beta_1 Ln\_MCAP + \beta_2 D_{bb} + \beta_3 MR + \beta_4 MR * D_{bb} + \beta_5 MV + \beta_6 MV * D_{bb} + \varepsilon \qquad (4)$$

Model with 12 months aftermarket performance,

$$CAR3M = \alpha + \beta_1 Ln\_MCAP + \beta_2 D_{bb} + \beta_3 MR + \beta_4 MR * D_{bb} + \beta_5 MV + \beta_6 MV * D_{bb} + \varepsilon \qquad (5)$$

In summary, these 3 models are typically adopted from model(2), but regresses on the longer periods of after market performance. By testing these models will give the empirical evidence on how the advantage of pricing procedure can prolong in the aftermarket. The variables for model(3)-(5) can be defined similarly to model(2) except for an independent variables: *Post_Own*, is removed and the dependent variables are changed. Dependent variables for model(3)-(5) are defined respectively as below,

CAR1M – The cumulative abnormal return[7] of IPO for 1 month aftermarket
CAR3M – The cumulative abnormal return of IPO for 3 months aftermarket
CAR12M– The cumulative abnormal return of IPO for 12 months aftermarket

The abnormal return will capture the sensitivity of an IPO to public information when performs in the market.

[7] Cummulative abnormal return is calculated base on market adjusted approach, to capture how the IPOs act to public information differently from the market. This approach is obtained from Lowry and Schwert (2004), saying the issue price and the following aftermarket return are affected by public information such as market index return and industry situation.

Note that, $CAR = \sum (P_i - P_m)$, during the observed period

5. Empirical Results

Following the models specification introduced in the previous section, initial 121 samples data (IPOs listed in year 2002 to 2006) are obtained and calculated for basic statistics as appear in Table3. The information in table shows the summary specification of samples. IPO price averaged for all samples, for example, are about 12.45 Baht. When the samples are segregated in term of pricing procedure, issuers who involve the bookbuilding process can raise their share prices up to 16.19 Baht on average, significantly different from the average share price when fixed price procedure is applied. This statistic can be explain by the bookbuilding hypothesis that the information soliciting process can reduce underpricing and increase price. The bookbuilding procedure generates higher expected proceeds, Benveniste and Busaba (1997). It also partly relates to the winner's curse phenomenon. Obviously, the size of offering seems significantly larger for the bookbuilding group; mean number of share offering with bookbuilding is 271.5 million, whereas mean of shares offering with fixed price is only 66.47 million. Moreover, bookbuilding is more favor in large Thai companies. Total asset of companies, who taking advantage from bookbuilding procedure, appears 8,263.76 MB in average. Meanwhile, fixed price group shows the mean total asset only 1,746.92 MB.

5.1 Logit Model Analysis: The determinant of pricing procedure selection

According to the binomial logit model, model(1), in previous section, the model contains the probability of bookbuilding procedure applied to an IPO as dependent variable. The model also contains 3 groups of control variables for independent variables term. The Company profiles, represented by firm size, ownership concentration, and the ROE showing the company's historical performance, is the first group that primarily observed. Offering conditions, such as offering size, underwriter reputations, and targeted investors, are also added to the model as the second group. Lastly, Market conditions (market return and volatility) are the 3rd group included in the model. This group of variables is theoretically supported by many literatures as another factor, for an underwriter commonly takes into consideration.

The maximum likelihood estimation result of model(1) is presented in Table6. There are several significant factors to be noted. First, the model shows the positive significant coefficient (at 1% level) of firm size and share to institution investors, 1.2094 (*t-stat = 2.915*) and 5.0589 (*t-stat = 3.124*) respectively. Meanwhile, the other control variables seem to have low explanatory power to the probability of underwriter to select bookbuilding. The positive impact to the probability of selecting bookbuilding as pricing procedure from firm size is explicitly agreed to every literature. This is in line with the hypothesis that, most of the time, bookbuilding is favored to firms with large size. This phenomenon can partly be explained by the higher issuer's cost from using bookbuilding procedure than using fixed price procedure (Benveniste and Busaba, 1997). Small companies may not appreciate with the costly procedure (Sherman, 2000). Bookbuilding, even though can generate higher proceeds, brings the issuer to higher risky situation (Benveniste and Busaba, 1997). Only large firm with higher risk tolerance would prefer to take benefit from bookbuilding procedure. Bookbuilding also requires the companies to be transparency. Internal information is elicited by this pricing procedure. Small firm with unimpressive management history or low performance background would avoid declaring their historical information to public. Meanwhile, Large companies are basically well-known and there already been plenty of companies' information available in public market. Size of shares allocated to institution investors also contain positive impact as the theories predicted, supporting by the belief that institution investors know the true market value. To bargain for these investors to express their valuable information some economic benefit must be generated to induce them; rewarding them with higher allocations, Ljungqvist and Wilhelm (2002).

For other endogenous control variables; *Pre_Own, ROE, OFSIZE, DU*, show no significant impact to the chosen determinant. In contrast to many prior literatures, pre-market return and pre-market volatility as exogenous control variables appear to be unrelated to the underwriter decision to use bookbuilding. The model shows no economic significance that can be explained by the primary purpose of Thai underwriter on utilizing this strategic procedure, which is to obtain market demand. Market conditions obviously concern for circumstances of when to issue an IPO (figure7), not a pre-concern of how to price the issue effectively. The counted R^2 of

this model is quite high (78.51%) showing that the explanatory power of variables (only Firm size and Size of shares allocated to institution investors) on the choice of procedure is large.

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In summary, the finding shows that, in Thailand, underwriters would basically consider the size of issuer and the potential investor. Thereafter, a procedure to price the IPO issuance is selected as the most appropriate. Large companies come with large number of IPO shares offering. A lot of demands are requested from market to respond for large supply. Institution investors are primarily focused by the large IPOs issuance because they are informed investors and have high purchasing power. Bookbuilding, in Thailand, is concerned as a strategy to observe demand in market. The procedure is restricted by Securities and Exchanges Committee of Thailand (SEC) to elicit private information only from institution investors. To gain trust from investor, larger offering is offered to institution investors in order to compensate their uncovered private information.

5.2 Multivariate Analysis: The optimal pricing procedure

In this analysis part, the test shows restricted number of sample to be 109, Thai IPOs listed in year 2006 are taken out from initial company samples, in order to screen for sample with complete information of long-term performance (12 months).

Table7 shows the average aftermarket performance of the samples in longer-run, from 1month-period up to 12months-period. These longer performances are calculated using cumulative market-adjusted abnormal returns[8]. The table also distinguishes by the different pricing procedures, and appears that bookbuilding procedure tends to lead underperformance of IPOs in the long run (12months-period). However, this result shows no significant of mean-difference across IPOs pricing procedure, determining low explanatory power. The statistics upon Table7 shows that when buying a bookbuilding IPO and held for 1 month, 3 months, and extend the holding to 12 months, IPOs price tends to generate lower average return than market by 7%, 10%, and 32% in periods respectively. Meanwhile, by the same

[8] See calculation in data and basic methodologies section.

buy-and-hold trading strategies, IPO with fixed price procedure generates lower average return than market by 10%, 9%, and 18% in period respectively. This result can be determined that using bookbuilding can not explicitly support the IPO to perform better in the aftermarket. The IPO price after both procedures are used can move up and down following market information. It can be explained by the fact that majority investors in Thailand are retail investors. This type of investors trades with high sensitivity to news and sometimes rumors. Also, their trading strategy is short-term investing. The price can easily fluctuate by these reactions. However, once an IPO issuance adopts bookbuilding procedure, pulling higher investment from institution investors. By the fact that this type of investor basically performs investment through fundamental analysis and not too sensitive to news or rumors and not acting as a speculator, normally keeps the shares allocated for medium or long periods. Besides, Thai institution investors have high controlling power as long as they hold the shares, this in turn reducing the volatility of stock price. After that, IPOs with bookbuilding procedure and fixed price procedure would gradually be less significant and finally indifferently in performance. Shares are partly transferred from institution investors' to retail investors' hand. In Table8, IPOs with bookbuilding would be significantly less volatile in the aftermarket than IPOs with fixed price. This phenomenon is hold for couple months, but decreases in the statistic significant and then fades away. The mean aftermarket volatility of bookbuilding and fixed price groups are 3.42% and 4.31% (mean difference significant at 1% level) respectively. Whereas, no significant difference found when IPOs perform in market for 1 year (mean = 3.07% for IPOs with bookbuilding procedure and mean = 3.28% for IPOs with fixed price procedure). As aforementioned, this phenomenon is the result from inclining of retail investors holding the shares then the price would fluctuate by the impact from market information.

The Analysis of Regression of First Day Return

Besides from overview analysis over the aftermarket performance as expressed above, I try further for in-depth analysis. First-day return is the primary factor that can reflect the advantage of obtaining appropriate pricing procedure. Table9 demonstrates the result of model(2.1) and (2.2), regressing the first-day return by the independent variables representing company's profiles, pricing procedures, and market conditions. According to model(2.1), the result in first regression is

shown in column 3 and 4 of Table9, market return in overall has significant impact to the return level in first day trading of IPOs. The positive coefficient 0.9407 (*t-stat = 4.441*) can explain to that the first day return has statistically changed by 0.94% when pre-market return changed by 1%. Other independent variables; *Ln_MCAP, Post_Own, Dbb*, and *MV*, appear less statistically implication to the level of first day return (underpricing) in Thai IPOs.

In the extend from model(2.1) which is unconditional on the pricing procedures efficiency measurement, the second regression represented by model(2.2) is developed as a conditional analysis. Apart from first regression, this specific analysis is adopted from which proposed by Derrien and Womack (2003), that two conditional market variables are determined. The first variable is the product of pre-market return with each pricing procedure dummy (*MR*Dbb*). The second variable, pre-market volatility is multiplied by bookbuilding procedure dummy variable (*MV*Dbb*). The results show that pre-market return has the most positive economic significant to the level of first day return. Model(2.1) shows pre-market return has coefficient at 0.9407 (t-stat = 4.441). Model(2.2) shows that when condition the market condition to bookbuilding procedure (interaction terms: *MR*Dbb* and *MV*Dbb*)), negative coefficients (-0.5440 and -17.3920 respectively)[9] can imply to the ability of bookbuilding to lower the effect from those market conditions. The result is explained by many literatures that the negative sign is caused by the fact that an IPO price from bookbuilding has adjusted by the pre-market information. However, when consider the hypothesis claims about the ability of bookbuilding to lower the level of underpricing, no statistic significance is found in my study to prove this hypothesis in Thai IPOs market. Moreover, the pre-market volatility stills appears no impact on first day return in both models(2.1) and (2.2).

In summay, bookbuilding procedure in Thailand does not have significantly greater ability over the fixed price procedure. Bookbuilding does not either protect an IPO from underpricing situation, or reduce impact of pre-market condition to the first day return of an IPO. In addition, the result shows that IPOs underpricing seems

[9] However, these results have low explanatory power. T-statistic is only -1.292 for *MR*Dbb* and -1.1 for *MV*Dbb*.

to have less sensitivity to pre-market volatility. The situation of low explanatory power of market volatility to the underpricing level is explained by the fact that the issuer normally prefers to select the hot market and less uncertainty period for IPOs issuances.

The Analysis of Regression of Aftermarket Performance

In addition to the aftermarket performance overview in Table7, 8 and regression result in Table9, other 3 regressions are constructed in order to test the efficiency of each pricing procedure in longer aftermarket period. Table10 demonstrates the results of model(3), (4), and (5), in consecutive columns. Model(3) regresses cumulative abnormal return in 1 months, *CAR1M*, with control variables adopted from model(2.2). Firm size, *Ln_MCAP*, shows positive significant impact (at 5% level) with coefficient equals to 0.0474 (t-stat = 2.307). Large companies tend to perform well in aftermarket. Market return has no economic significant to IPOs aftermarket performance according to the result. It's apparently that pre-offering market volatility has significant negative impact to IPOs performance in aftermarket with coefficient equals to -21.1959 (t-stat = -2.765). This result demonstrates that IPOs which are issued in the period with high volatility would in average perform worse than market does. However, it is interesting that market volatility when conditional to bookbuilding can reverse the effect to IPO performance in aftermarket. The model(3) demonstrates coefficient of interaction variable (*MV*Dbb*) equals to 21.4683 (t-stat=1.911). In summary, the model(3) shows how bookbuilding procedures can partly immune IPOs from pre-market uncertainty. Bookbuilding can lower the impact of pre-market volatility to IPOs over the first month period in aftermarket.

Furthermore, model(4) and model(5) are set up using the same control variables as in model(3), but the dependent variables are changed to cumulative abnormal return in 3 months and 12 months period, respectively (CAR3M and CAR12M). Longer aftermarket performances of IPOs are specified extensively from model(3). Model(4) shows similar result to model(3), while firm size seems to be insignificant for model(5), regressing for long-term period (12 months). Bookbuilding dummy have significantly negative impact to the aftermarket performance to both model(3), (4), and (5): (coefficients are -0.2727(t-stat = -1.894), -0.3630(t-stat = -

1.764), and -1.1801(t-stat = -2.751) respectively). These results explain that bookbuilding can practically not only to hold the stock price less sensitive in aftermarket, but also optimal in the sense that it has the ability to counteract the influence of market volatility during the offer period. In summary, bookbuilding is an immunization process for an IPO from pre-market uncertainty.

6. Research Conclusion

In Thailand, the Initial Public Offering market grows continuously. The numbers of IPOs proposed to the market during the pass decade years show the actively increasing trend. The way to price and place an initial public offering in Thailand's market is conducted by 2 procedures**.** Fixed price procedure has been originated as a basic standard applied to general public offerings. Alternatively, bookbuilding was later introduced upon the last 5 years as a new procedure. Though fixed price is still a dominate form of bookbuilding in Thai market, there is evidently a trend of growing in number applying bookbuilding to the new issuers. It is very interesting either the bookbuilding may be a better choice of procedure for the Thai market, or the fixed price still is more appropriated and practical form to the nature of Thai investors and market**.**

Previous existing literatures try to detect the most optimal pricing procedure for IPOs. Several literatures, led by Benveniste and Spindt (1989) indicate the efficiency of bookbuilding procedure as it allows underwriter to elicit private information from potential investors who know the true value of issues. In Thailand, the Securities and Exchanges Committee of Thailand (SEC) allows the underwriter to perform bookbuilding process to only institution investors who are informed investor in Thailand. However, there are some literatures claim that bookbuilding leads to proceed uncertainty for issuers. Benveniste and Busaba(1997) suggested issuers who are likely risk-averse would prefer the fixed price procedure to guarantee their proceeds.

For IPOs market in Thailand, there is no evidence on these optimal procedures comparison. Even that, to examine the effective pricing procedure may generate benefit, which is about the success of IPOs, to all parties relevant; Issuer can sell their issue at appropriate price, investors get the valuable IPOs, and Underwriter gain reputation when IPOs succeed. I have been motivated by previous international literatures on this topic and propose this paper as another evidence for Thai IPO market.

According to my research methodologies which test on IPOs listing in the Stock Exchange of Thailand (SET) between years 2002 to 2006, 121 IPOs are included as research samples (taken out IPOs issuance for ESOP and another IPO issuance for a specific investor). I find that, on average, the IPO price with bookbuilding is higher than IPO price with fixed price. In addition, large companies tend to apply bookbuilding for their issues to extract the true value from public. Institution investor is the observed target for bookbuilding procedures since they have high purchasing power to point the direction of an issue price. These institution investors are induced by some incentive to their revelation such as the priority of shares allocation. This is captured in the result that companies' issuances are allocated more to institution investors in bookbuilding. Also, the maximum likelihood model demonstrates that when institution investors are concerned by underwriter, bookbuilding has high probability to be utilized.

It is interesting that, Market condition, which is shown significant impact in many previous literatures studied in widely markets, is found out of consideration by Thai underwriter when they are choosing a proper pricing procedure. I find that only firm size and allocation to institutional investor have positive significant impact. To support this result, several finding from consequent testing confirms that underwriters do not consider about how the market is performed when they do the selection. The situation can be explained that the primary purpose of Thai underwriter to take advantage from this bookbuilding is basically to obtain market demand. Market conditions, however, are primarily concerned for when to sell the IPOs, but not for how to price the issue effectively. In US and other European Countries, underwriter does use bookbuilding to take an opportunity from market when appears low return or high uncertainty. In contrast to US, Thai has historically finding that underwriters agreed with issuer would rarely introduce an IPO in such market condition. Thai underwriters have not fully utilized the bookbuilding procedure. The underwriters are perhaps able to gain further potential benefits from using bookbuilding procedure, such as using this strategic procedure, as theoretically suggested, to gain more attraction from investor and raise the price up when issue during cold market.

Bookbuilding procedure in Thailand does not have significantly greater ability over the fixed price procedure. Bookbuilding does not either protect an IPO from underpricing situation, or reduce impact of pre-market condition on the first day return of an IPO. However, when studying for longer period of IPOs in after market performance. Bookbuilding shows the ability to immune an IPO from pre-offering market uncertainty and also lead to lower fluctuation in price when the IPOs go to public.

My research paper has some limitations on the results since I exclude the observation of the price range for bookbuilding and how the final price is set according to the range. According to Congsheng Wu (2005), how the final price of an IPO is set regarding to the initial price range can be determined the quality of the IPO. When an IPO is good, and informed investors must know this fact, a lot of demand from market would raise the price up to the top bound of range. In the contrary, when an IPO is not worthy to be invested, lowest price is called from the investors. To extract the qualification from this “price adjustment”, as such in US research, will lead to further apparent implication on the aftermarket performance of an IPO.

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Table 1: Number of IPOs issued to public by individual pricing procedures in 2002-2006

Year		2002	2003	2004	2005	2006	Total
Fixed Price	No.of Firm	11	8	21	18	8	66
	No.of Issue *(Mil. Shares)*	233.18	326.97	1,611.50	1,206.65	1,008.91	4,387.21
	Value *(Mil. Baht)*	4,914.78	3,654.71	8,492.24	5,396.21	3,340.92	25,798.86
Bookbuilding	No.of Firm	6	13	15	17	4	55
	No.of Issue *(Mil. Shares)*	439	1,021.96	4,890.98	2,738.34	5,842.42	14,932.70
	Value *(Mil. Baht)*	4,705.00	19,157.91	66,018.40	24,643.87	33,445.76	147,970.94
Total	No.of Firm	17	21	36	35	12	121
	No.of Issue *(Mil. Shares)*	672.18	1,348.93	6,502.48	3,944.99	6,851.33	19,319.91
	Value *(Mil. Baht)*	9,619.78	22,812.62	74,510.64	30,040.08	36,786.68	173,769.80

Initial Public Offering Market in Thailand grows continuously. Value of IPOs introduced to public is increasing from time to time. The table shows details of IPOs introduce to public between years 2002 to 2006. IPOs issuances which are for ESOP, and which are for a specific purpose, such as to exchange for another company's shares, are excluded. In year 2006, few numbers of firms are launched into the IPOs market but large in value.

Table 2: The variables on model(1): A Binomial Logit Model

Dependent Variable: (Y)	Symbol	Description
The bookbuilding procedure	*Dbb*	A binary dummy variable defined as IPO pricing procedure. Dbb = 1 if a company selects bookbuilding, = 0 otherwise

Dependent Variable: (Y)	Symbol	Description
1. Company's Profiles		
Firm Size	*MCAP*	Total number of company's shares existing after offering multiplied by the offer price
Ownership Concentration	*Pre_Own*	Percentage of shares of total ownerships with 5% or more
Return on Equity	*ROE*	3 years-average profit to equity
2. Offering Conditions		
Ratio of Offering Size	*OFSIZE*	Ratio of offering shares to pre-offering total shares
Underwriter Reputation	*Du*	Dummy variable defined the underwriter ranked in TOP5 (see Table4) Du = 1 if a company selects bookbuilding, = 0 otherwise
Share to Institution Investors	*INS*	Ratio of IPO shares allocated to Institutional investor to pre-offering total shares
3. Pre-Market Conditions		
Pre-Market Return	*MR*	3 months cumulative return on market index (SET index) prior the pricing procedure is selected
Pre-Market volatility	*MV*	The standard deviation of SET index return in 3 months prior to the pricing procedure is selected

The binomial logit model(1) is set up as: Prob(Y = 1 / X) = f(*Ln_MCAP, Pre_Own, ROE, OFSIZE, DU, INS , MR, MV*)

The factors are to determine the probability of an IPO issuance would chose bookbuilding as its pricing procedure regarding on potential control factors. I develop the model's control variables by initially factored out the 3 primary participations. "Company's profiles" is firstly determined, followed by the "Offering condition" and the "Market condition", respectively. These independent variables are favored as many literatures have deal into their concentrations on research. They explicitly claim to the variables' potential power over the issuing behavior, also claim to the ability to direct the offering performance

Table 3: Descriptive Statistic of the samples: The Company Profiles, Offering Conditions, Pre-Market Conditions, and After-Market Performance, categorized by IPO pricing procedures

		Bookbuilding	Fixed Price	Total
Number of observation		55	66	121
Company Profiles				
Market capitalization	Mean	8263.76 ***	1746.92 ***	4709.12
(mil Baht)	SD	13621.29	1371.84	9753.43
	Median	3300.00	1200.00	1876.00
	Max	64848.89	7793.50	64848.89
	Min	600.00	468.00	468.00
Total asset	Mean	9015.68 ***	1441.30 ***	4884.20
(mil Baht)	SD	18924.25	1164.51	13275.34
	Median	1843.59	1159.56	1395.46
	Max	99350.00	6545.72	99350.00
	Min	384.87	303.80	303.80
Return on Equity	Mean	0.10	0.34	0.23
	SD	1.06	0.72	0.90
	Median	0.19	0.20	0.19
	Max	2.51	5.64	5.64
	Min	-5.87	-0.08	-5.87
Offering Conditions				
IPO Price	Mean	16.19 ***	9.33 ***	12.45
	SD	13.74	8.56	11.68
	Median	11.00	5.50	8.00
	Max	60.00	39.00	60.00
	Min	1.31	2.00	1.31
No.of Shares	Mean	271.50 ***	66.47 ***	159.67
(mil shares)	SD	556.74	53.39	389.28
	Median	78.50	50.00	60.00
	Max	2756.44	264.00	2756.44
	Min	9.00	6.38	6.38
IPO ratio to pre-offering	Mean	0.37 **	0.31 **	0.34
shares	SD	0.19	0.09	0.15
	Median	0.33	0.30	0.30
	Max	1.18	0.63	1.18
	Min	0.18	0.16	0.16
Ratio of allocation to	Mean	0.38 ***	0.17 ***	0.27
institution investor	SD	0.18	0.16	0.20
	Median	0.37	0.15	0.23
	Max	0.70	0.54	0.70
	Min	0.10	0.00	0.00

		Bookbuilding	Fixed Price	Total
Pre-Market Conditions [a]				
Cumulative market return	Mean	0.06 *	0.02 *	0.04
	SD	0.12	0.11	0.11
	Median	0.03	0.01	0.03
	Max	0.30	0.30	0.30
	Min	-0.18	-0.18	-0.18
Market volatility	Mean	0.01	0.01	0.01
	SD	0.00	0.00	0.00
	Median	0.01	0.01	0.01
	Max	0.02	0.02	0.02
	Min	0.01	0.01	0.01
After-IPOs Performance				
First day return	Mean	0.13	0.14	0.13
(underpricing)	SD	0.24	0.28	0.26
	Median	0.07	0.04	0.06
	Max	0.73	0.92	0.92
	Min	-0.40	-0.45	-0.45

The sample contains 121 IPOs from 2002 to 2006 on the Stock Exchange of Thailand (SET). IPO issuances for ESOP are excluded. An IPO is also taken out by the specific issuance purposes or specific investors: to exchange for another company's shares for instance. An IPO selects the pricing procedure either "Bookbuilding" of "Fixed Price". Market Captital is the outstanding shares after IPO calculated at the offer price. Total asset is counted at the last period before offering. ROE, present the firm performance (return on equity), average for the 3 consecutive years prior to offering. The IPO ratio to pre-offering is the ratio of number of shares in the offer to total share outstanding before offering. Ratio of allocation to institution investors is generated to determine the targeted investors. Cumulative market return is the cumulative SET index return (buy-and-hold returns) in 3 months before pricing procedure is selected. Market volatility is the standard deviation of the returns of SET index in 3 months before pricing procedure is selected. First day return is calculated between the first day closing price and the offer price, representing IPO underpricing.

a. Market return and market volatility represented the market condition upon the period before issuance parties choose a specific IPO pricing procedure.

* Significant different from each other at 10% level

** Significant different from each other at 5% level

*** Significant different from each other at 1% level

Table 4: The determinant of Underwriter reputation. Underwriters are ranked in accordant to the value of offering they lead in the study period (year 2002-2006). The data is obtained from offering prospectus and SETSMART.

Panel A: Top five Underwriters ranked by the value of underwriting IPO in year 2002-2006 (Unit: Mil.Baht)

Lead Underwriter	Rank	Year (study period)					Total
		2002	2003	2004	2005	2006	
PHATRA Securities	1	13,597.10	14,060.75	31,241.19	6,596.70	969.00	66,464.74
Finansa Securities	2	14,083.77	-	12,756.71	-	-	26,840.48
Asset Plus Securities	3	2,400.00	2,194.39	2,578.64	1,924.00	4,910.00	14,007.04
SCB Securities	4	-	-	11,255.25	1,210.00	960.00	13,425.25
KIMENG Securities	5	3,610.94	2,646.58	889.10	3,907.59	393.40	11,447.62
Tisco Securities	6	-	240.00	6,158.50	679.80	420.38	7,498.68
Trinity Securities	7	-	1,461.75	-	4,829.80	183.00	6,474.55
Thanachat Securities	8	-	1,108.83	2,322.75	969.00	1,062.00	5,462.58
Zmico Securities	9	881.17	2,012.98	1,586.50	400.00	-	4,880.64
United Securities	10	-	355.40	1,350.50	84.55	2,870.77	4,661.22
Script Securities	11	1,026.69	1,380.00	1,891.00	-	-	4,297.69
Bualuang Securities	12	240.62	1,105.16	-	815.92	315.00	2,476.70
Globlex Securities	13	-	1,067.50	500.00	424.35	-	1,991.85
Syrus Securities	14	-	710.50	-	339.80	-	1,050.30
Intel Vision. Securities	15	-	434.00	545.00	-	-	979.00
SICCO Securities	16	-	268.00	638.00	-	-	906.00
BT Securities	17	264.60	-	-	427.41	-	692.01
Fareast Securities	18	491.40	175.00	-	-	-	666.40
CLSA Securities	19	-	583.83	-	-	-	583.83
DBS Victor's (Thailand)	20	-	-	562.50	-	-	562.50
KGI Securities	21	-	235.41	-	203.70	-	439.11
Ayudhaya Securities	22	190.40	-	235.00	-	-	425.40
Phillips Securities	23	-	-	-	-	147.00	147.00
Total		36,786.68	30,040.08	74,510.64	22,812.62	12,230.54	176,380.57

Panel B: Underwriters specialization on pricing procedures

IPOs to Pricing Mechanisms			% bookbuilding
Bookbuilding	Fixed price	Total	procedure
10	0	10	100%
4	4	8	50%
7	12	19	37%
3	1	4	75%
11	6	17	65%
5	4	9	56%
4	3	7	57%
6	4	10	60%
2	15	17	12%
0	8	8	0%
2	4	6	33%
4	2	6	67%
3	3	6	50%
1	4	5	20%
0	3	3	0%
2	1	3	67%
0	2	2	0%
0	2	2	0%
1	0	1	100%
1	0	1	100%
1	1	2	50%
0	3	3	0%
0	1	1	0%
67	10	0	

Table 5: Regression of first day return (underpricing) on different period range of pre-offering market conditions and specific IPOs firm characteristic in period of year 2002-2006 of Stock Exchange of Thailand (SET)

		Cumulative Market Return and Market Volatility for		
		1 Month	3 Months	12 Months
Dependent Variable: R1DAY				
Intercept, and Firm characteristic Control Variables:				
Intercept	*C*	-0.0732	0.0117	0.1493
		(-0.363)	(0.057)	(0.627)
Firm Size	*ln_MCAP*	0.0102	-0.0028	0.0126
		(0.447)	(-0.125)	(0.542)
Ownership Concentration	*Post_Own*	-0.0003	0.0634	-0.0149
		(-0.002)	(0.380)	(-0.0836)
Market Return and Market Volatility Variables (SET index return and S.D. ending at IPO pricing date):				
Market Return	*MR*	1.3640	0.8840	0.2769
		(3.220) ***	(4.398) ***	(2.497) **
Market Volatility	*MV*	10.3749	5.8415	-12.0257
		(1.726) *	(0.792)	(-1.331)
Adjusted R^2		0.0664	0.1297	0.0309
F-statistic		3.1348 ***	5.4718 ***	1.9556
Observation		121	121	121

The sample contains IPOs from 2002 to 2006 on the Stock Exchange of Thailand (SET). Share issuances for ESOP and Share issuance for a specific purpose or specific investors are excluded. First day return (underpricing), *R1DAY*, is calculated between IPO price and the closing price as of the end of first day trading. Firm size, *Ln_MCAP*, is captured by the natural logarithm of market capitalization at the first day trade, calculated as multiply the total shares after IPOs by IPO price. *Post_Own* refers to ownership concentration after offering, calculated by the percentage of shares of total ownerships with 5% or more. Market return, *MR*, is constructed as cumulative return of the market index (SET Index return). The period considered is before an IPO price is specified. The period of 1 month, 3 months, and one year before the IPO pricing date are trace to view the period length of underwriter's concentration. Market volatility, *MV*, in addition, is standard deviation of market return (SET Index return) for the same periods as identified to market return. The number of observations for the regression is 121. The coefficient value upon each variable are presented (t-statistic is in parenthesis).

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 6: Maximum likelihood estimation using logit model analysis on the determinants of IPO pricing procedures

Binary Logit Model (Bookbuilding = 1, Otherwise = 0)

Dependent Variable: Dbb		**Coefficient**	**t-statistic**
Intercept		-11.2144	(-3.227) ***
Company Profile			
Firm Size (Natural logarithm of firm's market capitalization)	*Ln_MCAP*	1.2094	(2.915) ***
Ownership contentration (Pre-offering)	Pre_Own	0.1691	(0.103)
Return on Equity	*ROE*	-0.4109	(-1.025)
Offering Condition			
Ratio of Offering Size (Offer Shares/Pre-offering Shares)	*OFSIZE*	3.2674	(1.144)
Dummy of Underwriter Reputation (Dummy is "1" if underwriter is ranked in TOP5)	*Du*	0.0385	(0.079)
Share to Institution Investors (Portion of shares to institution)	*INS*	5.0589	(3.124) ***
Market Condition			
Cumulative Market Return (Buy-and-hold)	*MR*	2.8287	(1.277)
Market volatility	*MV*	-61.0622	(-0.758)
Loglikelihood Function		-55.18622	
Restricted Log likelihood		-83.3701	
Counted R^2		78.51%	
Observation		121	

The logit model contains 121 IPO samples from year 2002 to 2006 on the Stock Exchange of Thailand (SET). IPO issuances for ESOP and for a specific purpose are excluded. The dependent variable is the probability of selecting bookbuilding as IPO pricing procedure. The model captures the determinant of selecting bookbuilding by the specific independent variables that categorized into 3 groups, Company profile, Offering condition, and Market condition. The first 3 variables are categorized as company profile (company performance): *Ln_MCAP* is captured by the natural logarithm of market capitalization at the first day trade, calculated as multiply the total shares after IPOs by IPO price. *Pre_Own* refers to ownership concentration prior to offering, calculated by the percentage of shares of total ownerships with 5% or more. *ROE* represent the 3 years averaged return on equity. The next 3 variables are defined as the offering condition: *OFSIZE* is the ratio of number of shares in the offer to total share outstanding before offering. *Du* is a dummy representing underwriter reputation. The dummy is equal to 1 if an underwriter is ranked in TOP5, and 0 otherwise. The reputation rank bases on the percentage of the IPO value leaded by an underwriter to the total IPO value in the sample period. *INS* represents the percentage allocation to institution investors. The last group contains the market control variables: Market Return (*MR*) and Market Volatility (*MV*). *MR* is constructed as cumulative return of the market index (SET Index return) for 3 months before an IPO pricing procedure is selected. (3 month period buy and hold). *MV*, is standard deviation of market return (SET Index return) for 3 month, representing short-term volatility. The number of observations for the regression is 121. The coefficient value upon each variable are presented in column3 (t-statistic is in parenthesis).

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

Table 7: Statistic of short term and long term after-market performance of IPOs in terms of Market Adjusted Cumulative abnormal return, distinguished by pricing procedures

	Observation	Statistic	Cumulative Abnormal Return 1 Month	Cumulative Abnormal Return 3 Months	Cumulative Abnormal Return 12 Months
Bookbuilding	51	Mean	-0.07	-0.10	-0.32
		Median	-0.04	-0.13	-0.23
		Max	0.30	0.41	0.73
		Min.	-0.38	-0.71	-1.90
		Std. Dev.	0.16	0.27	0.56
Fixed Price	58	Mean	-0.10	-0.09	-0.18
		Median	-0.15	-0.10	-0.26
		Max	0.38	0.82	1.54
		Min.	-0.46	-0.66	-1.98
		Std. Dev.	0.21	0.28	0.62
Total	109	Mean	-0.08	-0.10	-0.25
		Median	-0.09	-0.11	-0.24
		Max	0.38	0.82	1.54
		Min.	-0.46	-0.71	-1.98
		Std. Dev.	0.19	0.27	0.59

The sample contains IPOs issued from year 2002 to 2005[a] in Stock Exchange of Thailand (SET). Share issuances for ESOP and Share issuance for a specific purpose are excluded. The after-market performance of individual IPOs is traced in terms of cumulative daily abnormal return (buy and hold). The daily abnormal return generates from the different between stock return and market return in a same particular day (Market Adjusted Approach).

[a.] We consider only the IPOs which provide full information for long-term after-market performance. This restricts our initial sample from 121 to 109 that is 12 IPOs which listed in year 2006 are taken out.

Table 8: Statistic of short term and long term after-market performance of IPOs in terms of price volatility, distinguished by pricing procedures

	Observation	Statistic	Price Volatility 1 Month	Price Volatility 3 Months	Price Volatility 12 Months
Bookbuilding	51	Mean	0.0342 ***	0.0319 *	0.0307
		Median	0.0341	0.0320	0.0265
		Max	0.0760	0.0541	0.1088
		Min.	0.0134	0.0145	0.0135
		Std. Dev.	0.0124	0.0094	0.0177
Fixed Price	58	Mean	0.0431 ***	0.0356 *	0.0328
		Median	0.0409	0.0348	0.0310
		Max	0.0817	0.0642	0.1142
		Min.	0.0169	0.0143	0.0158
		Std. Dev.	0.0160	0.0116	0.0151
Total	109	Mean	0.0389	0.0339	0.0318
		Median	0.0369	0.0334	0.0288
		Max	0.0817	0.0642	0.1142
		Min.	0.0134	0.0143	0.0135
		Std. Dev.	0.0151	0.0107	0.0163

The sample contains IPOs issued from year 2002 to 2005[a] in Stock Exchange of Thailand (SET). Share issuances for ESOP and Share issuance for a specific purpose are excluded. The after-market performance of individual IPOs is traced in term of stock price volatility. The volatility generates from standard deviation of stock price in aftermarket

[a.] We consider only the IPOs which provide full information for long-term after-market performance. This restricts our initial sample from 121 to 109 that IPOs which listed in year 2006 are taken out.

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 9: Regression of first day return (underpricing) on the pre-offering market condition, and specific IPOs offering and firm characteristic in period of year 2002-2005 of Stock Exchange of Thailand (SET)

	(1)		(2)	
	Coeff.	t-statistic	Coeff.	t-statistic
Dependent variable : R1DAY				
Intercept, and Company's Profile Control Variables:				
Intercept	-0.0510	(-0.221)	-0.1972	(-0.774)
Ln_MCAP.	0.0263	(0.902)	0.0284	(0.979)
Post_Own	-0.0258	(-0.140)	-0.0092	(-0.049)
IPO procedure dummy:				
Dbb	-0.0761	(-1.360)	0.1625	(0.800)
Market Return Variable (buy-and-hold SET index ending on IPO pricing date):				
MR	0.9407	(4.441) ***	1.2433	(4.131) ***
MR * Dbb			-0.5440	(-1.292)
Market Volatility Variable (standard deviation of SET index ending on IPO pricing date):				
MV	0.6061	(0.078)	9.6238	(0.889)
MV * Dbb			-17.3920	(-1.100)
Adjusted R^2	0.1436		4.3853	
F-Statistic	4.622	***	4.385	***
Observation	109		109	

The sample contains 109 IPOs from 2002 to 2005 on the Stock Exchange of Thailand (SET). Share issuances for ESOP and Share issuance for a specific purpose are excluded. First day return, *R1DAY*, (underpricing) is calculated between IPO price and the closing price as of the end of first day trade. Firm size, *Ln_MCAP*, is captured by the natural logarithm of market capitalization at the first day trade, calculated as multiply the total shares after IPOs by IPO price. *Post_Own* is determined by ownership concentration after IPO. It is calculated as total of ownership with 5% or more. *Dbb* is bookbuilding dummy which is unity when an IPO uses bookbuilding and is zero otherwise. Market return is constructed as cumulative daily return of the market index (SET Index) in 3 months before listing date. Market Volatility is the standard deviation of the daily return in the 3 months period of market index (SET index) to market return. The two interaction terms, *MR*Dbb* and *MV*Dbb*, represent pre-offering market return and market volatility conditional to observations with bookbuilding.

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 10: Regression of IPO after-market returns (short and long after-market performance) on the pre-offering market condition, and specific IPOs offering and firm characteristic in period of year 2002-2005 of Stock Exchange of Thailand (SET)

Dependent variable	Model (3) 1 month Cumulative		Model (4) 3 month Cumulative		Model (5) 12 month Cumulative	
	Coeff.	t-statistic	Coeff.	t-statistic	Coeff.	t-statistic
Intercept, and Company's Profile Control Variables:						
Intercept	-0.1785	(-1.039)	-0.0622	(-0.253)	0.2145	(0.392)
Ln_MCAP.	0.0474	(2.307) **	0.0637	(2.170) **	0.0789	(1.206)
IPO procedure dummy:						
Dbb	-0.2727	(-1.894) *	-0.3630	(-1.764) *	-1.1801	(-2.571) **
Market Return Variable (buy-and-hold SET index ending on IPO pricing date):						
MR	0.3234	(1.490)	0.1045	(0.337)	-0.2714	(-0.392)
MR * Dbb	-0.4582	(-1.513)	-0.7255	(-1.677) *	-0.7895	(-0.818)
Market Volatility Variable (standard deviation of SET index ending on IPO pricing date):						
MV	-21.1959	(-2.765) ***	-39.1797	(-3.578) ***	-76.1254	(-3.116) ***
MV * Dbb	21.4683	(1.911) *	26.2829	(1.638)	81.2193	(2.269) **
Adjusted R^2	0.0787		0.1249		0.0727	
F-Value	2.5377	**	3.5684	***	2.4113	**
Observation	109		109		109	

The sample contains 109 IPOs from 2002 to 2005 on the Stock Exchange of Thailand (SET). Share issuances for ESOP and Share issuance for a specific purpose are excluded. Firm size, *ln_MCAP*, is captured by the natural logarithm of market capitalization at the first day trade, calculated as multiply the total shares after IPOs by IPO price. *Dbb* is bookbuilding dummy. Market return, *MR*, is constructed as cumulative daily return of the market index (SET Index) in 3 months before listing date. Market Volatility, *MV*, is the standard deviation of the daily return in the 3 months period of market index (SET index) to market return. The two interaction terms, *MR*Dbb* and *MV*Dbb*, represent pre-offering market return and market volatility conditional to observations with bookbuilding.

* Significant at 10% level

** Significant at 5% level

*** Significant at 1% level

Table 11: Pairwise Correlation Matrix of Variables

Variables	*Dbb*	*MCAP*	*Pre_Own*	*ROE*	*OFSIZE*	*DU*	*INS*	*MR*	*MV*
Dbb	1.0000	0.3341	0.1128	-0.1326	0.1935	0.2155	0.5235	0.1647	-0.0416
MCAP	0.3341	1.0000	0.1595	-0.0049	0.5172	0.2868	0.4877	0.1532	0.0474
Pre_Own	0.1128	0.1595	1.0000	-0.0632	0.2093	0.0661	0.0535	-0.0047	-0.1110
ROE	-0.1326	-0.0049	-0.0632	1.0000	-0.0739	-0.0984	0.0295	-0.1058	0.0334
OFSIZE	0.1935	0.5172	0.2093	-0.0739	1.0000	0.1878	0.2741	-0.0879	-0.1300
DU	0.2155	0.2868	0.0661	-0.0984	0.1878	1.0000	0.2930	-0.0109	-0.0014
INS	0.5235	0.4877	0.0535	0.0295	0.2741	0.2930	1.0000	0.0114	-0.0166
MR	0.1647	0.1532	-0.0047	-0.1058	-0.0879	-0.0109	0.0114	1.0000	0.1215
MV	-0.0416	0.0474	-0.1110	0.0334	-0.1300	-0.0014	-0.0166	0.1215	1.0000