รายงานวิจัยฉบับสมบูรณ์

โครงการ : ความถูกต้องในการพยากรณ์ข้อมูลผลกำไรที่เผยแพร่ในหนังสือชี้ชวน และความผิดปกติของผลตอบแทนที่พบในหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชน: กรณีศึกษาตลาดหลักทรัพย์แห่งประเทศไทย

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31 ธันวาคม 2545

สัญญาเลขที่ PDF/16/2544

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สนับสนุนโดยสำนักงานกองทุนสนับสนุนการวิจัย

Acknowledgements

We would like to express our sincere gratitude to The Thailand Research Fund (TRF) which provided the funding that allowed us to conduct this post doctoral research project. Also, we would like to express our appreciation to Professor Dr. Piyawat Boon-Long, the TRF director, Professor Dr. Vichai Boonsaeng, as well as the other TRF members who graciously assisted us in accomplishing our research.

Ravi Lonkani
Michael Firth

บทคัดย่อ

งานวิจัยนี้เป็นการศึกษาความถูกต้องของผลกำไรที่ได้พยากรณ์และเผยแพร่ในหนังสือชี้ชวนของหลักทรัพย์ที่ได้เสนอขายเป็นครั้งแรกต่อประชาชนของตลาดหลักทรัพย์แห่งประเทศไทย วัตถุประสงค์ของการวิจัยมีดังนี้คือหนึ่งศึกษาทิศทางและระดับของความผิดพลาดของผลกำไรที่ได้พยากรณ์และเผยแพร่ในหนังสือชี้ชวน สองทดสอบความสัมพันธ์ระหว่างความผิดปรกติของผลตอบแทนและความถูกต้องในการพยากรณ์ผลกำไรดังกล่าว และสามเป็นการศึกษาความสัมพันธ์ระหว่างความถูกต้องในการพยากรณ์ผลกำไรดังกล่าวกับประสิทธิภาพที่วัดโดยการคำนวณผลตอบแทนหลักทรัพย์เปรียบเทียบกับผลตอบแทนของตลาดโดยรวม การศึกษาครั้งนี้ได้ใช้ข้อมูลจากหลักทรัพย์ที่ได้เสนอขายต่อประชาชนเป็นครั้งแรกจำนวน 175 หลักทรัพย์ที่มีการซื้อขายครั้งแรกในช่วงปีพ.ศ. 2534 ถึง 2539

ผลการวิจัยปรากฏว่าการพยากรณ์กำไรที่ปรากฏในหนังสือชี้ชวนมีความผิดพลาดในทิศทางสูงเกินค่าจริง และระดับความผิดพลาดของการพยากรณ์ที่วัดได้มีค่าค่อนข้างสูงเมื่อเทียบกับการพยากรณ์ลักษณะเดียวกันในประเทศอื่น อย่างไรก็ตามเมื่อเปรียบเทียบความผิดพลาดของการพยากรณ์ผลกำไรในหนังสือชี้ชวนกับความผิดพลาดของการพยากรณ์ที่คำนวณโดยใช้วิธีทางคณิตศาสตร์อย่างง่ายปรากฏว่าความผิดพลาดของการพยากรณ์ที่ปรากฏในหนังสือชี้ชวนมีค่าต่ำกว่าความผิดพลาดของการพยากรณ์โดยวิธีคณิตศาสตร์พื้นฐาน 2 วิธีคือวิธีการพยากรณ์แบบสุ่มและวิธีการพยากรณ์แบบสุ่มที่ผนวกการขยายตัวของกำไร นอกจากนั้นผลการวิจัยยังแสดงให้เห็นว่าปัจจัยที่มีความสำคัญในการอธิบายความผิดพลาดในการพยากรณ์คือมูลค่าการเสนอขายหุ้นและช่วงห่างของระยะเวลาการพยากรณ์กับวันที่ได้มีการซื้อขายครั้งแรก

เมื่อทดสอบความสัมพันธ์ระหว่างผลตอบแทนวันแรกเข้ากับความผิดพลาดในการพยากรณ์พบว่าผลตอบแทนวันแรกเข้ามีความสัมพันธ์ในทิศเดียวกันกับความผิดพลาดของการพยากรณ์ผลกำไรที่ปรากฏในหนังสือชี้ชวน การศึกษาความสัมพันธ์ระหว่างประสิทธิภาพของหลักทรัพย์ภายหลังที่ได้เข้าตลาดกับความผิดพลาดในการพยากรณ์พบว่าประสิทธิภาพของหลักทรัพย์ที่ได้เข้าตลาดนั้นมีค่าต่ำกว่าดัชนีโดยรวมและมีความสัมพันธ์ในทิศเดียวกันกับความผิดพลาดของผลกำไรที่พยากรณ์และเผยแพร่ในหนังสือชี้ชวน

Abstract

This research project is conducted to test the accuracy of profit forecast published in 175 prospectues of IPOs listed in the Stock Exchange of Thailand (SET). Our objectives are based upon three issues. In the first one, we test the accuracy of profit forecast in these prospectuses. Secondly, we test whether the profit forecast error in the prospectuses can explain the well known anomaly of IPO market:-the underpricing of IPOs. Lastly, we explore the aftermarket performance of IPOs and test its relationship with the profit forecast error.

The 175 IPOs data, listed from1991 to 1996, was used to measure the direction and its magnitude of forecast error. We then compared it with the profit forecast that was obtained from two simple models which are the random walk model and the random walk plus growth model.

We find that forecast profit reported in the offering prospectuses contain some optimistic biases. That is, the forecast profit is made higher than the actual profit. Although these profit forecast errors are relatively high compare with many stock markets in other countries, but these errors are smaller than those obtained from the simple models. We also find that the issue size and length of time that was used to report the actual profit are positively related to the magnitude of forecast profit.

Our results confirm previous research findings indicating that forecast error is a major component used to explain high initial return phenomena, or 'underpricing', observed in the many IPO markets. We also discover that two-year aftermarket performance of IPOs, in terms of cumulative market-adjusted return; have positive relationship with the profit forecast error.

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Thailand Research Fund

The Accuracy of Profit Forecasts Published in the Offering Prospectuses and the Return Anomalies of Initial Public Offerings: The Case of the Thai Stock Market

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Chapter I
Introduction

I. Introduction and Motivation

Profit Forecasts Information

Initial Public Offerings (IPOs) are new issue stocks that are offered for sale to the public by firms for the first time. For general investors, investing in IPO stocks is more risky than investing in already listed companies since information on IPOs is scarce. Lack of information and information asymmetries between management and potential investors are major uncertainties facing investors when deciding whether or not to subscribe to the new issues. In these situations, firms or issuers have to convey or signal information that can be used to value their shares. In the U.S. stock market, where issuers can distribute their shares with a high degree of discrimination (Stoughton and Zechner, 1997), their favored investors are mostly institutional investors and wealthy clients of the investment bankers who underwrite the issues. Institutional investors can make contact directly with the issuers and they participate in "road shows" put on by the IPO firm and its investment bankers. Thus, institutional investors have their own reliable sources of information; and with this information, they can make their investment decisions. In such circumstances, public information is not so important for these investors. However, this circumstance does not prevail in many countries, where, instead, IPOs are marketed directly to the general public. Thailand, for example, does not allow the issuer to discriminate against subscribers in the primary market and most subscribers or investors are individual investors (Lonkani, 2000).

It should be noted that individual investors have a relatively low capability to acquire and evaluate information on IPO stocks relative to institutional investors. Further, they have to rely on public information since they cannot make contact with issuers directly. In this market, the data contained in the prospectus typically represents a substantial proportion of the available knowledge about the firm. It follows that a profit forecast contained in the prospectus of an IPO is

potentially more important to investors (Blair and Taylor, 1989) in countries where IPOs are sold to the general public. Empirical evidence (Firth, 1998) suggests that investors do indeed rely on profit forecasts when subscribing to new issues and they use this information in pricing shares on the first day of listing. We argue that, for the Thai stock market, the profit forecast published in an offering prospectus is very important information since, as mentioned above, investors are primarily individual investors. The role of earnings forecasts in signaling the market value of IPOs and in explaining initial and longer-term stock returns has received very little attention in the finance literature. This may be due, in part, to the virtual absence of published earnings forecasts in American IPO prospectuses. This absence of earnings forecasts is likely due to the high probability of legal suits if the forecasts are proved to be inaccurate (Firth, 1998). The situation is different in the Thai stock market where forecast information about issuing firms' performances is a mandated disclosure in the offering prospectuses. The Securities Exchange Commission (SEC) in Thailand requires an IPO's prospectus to forecast the firm's future performance and publish their key financial information for the next period such as the forecast earning figures, dividend ratio, leverage ratio etc. The forecast financial statements include necessary and important information about the expected future performances of issuing firms including profit forecasts and important financial ratio forecasts.

An obvious concern about the forecasts of a firm's future profits is their accuracy and bias. To date, however, the accuracy of profit forecasts presented in offering prospectuses in Thailand have not been studied. Therefore, the first objective of this study is to examine the accuracy of profit forecasts published in offering prospectuses. The second objective of the paper is to investigate the relationship between the earnings forecast accuracy and stock returns occurring in the initial trading period of IPOs. Finally, the third objective is to see whether there is a relationship between forecast accuracy and the aftermarket performance of IPOs. Such analyses can reveal how reliable profit forecasts are in inferring the new issues' value. This evidence will be of use to investors in the initial market, especially individual investors whose decisions are based on information appearing

in the IPO prospectuses. Moreover, the results can be used to help explain the abnormal returns that are observed in initial and aftermarket trading of IPO stocks.

In summary we examine the accuracy of profit forecasts obtained from IPOs' prospectuses and compare it with the accuracy of profit forecasts from naïve prediction models. Furthermore, forecast accuracy is examined to see if it can help explain the return anomalies typically found in new issue offerings.

II. Objectives of the study

The objectives of our study can be summarized as follows:

- The accuracy of profit forecasts obtained from offering prospectuses of IPO stocks is examined and compared with simple extrapolations from historical profit data.
- Cross-sectional explanations of the magnitude of errors are tested using a regression analysis framework.
- The relationship between the accuracy of profit forecasts published in offering prospectuses and the level of initial stock returns is investigated.
- The relationship between the accuracy of profit forecasts obtained from prospectuses and the long-term stock return performances of IPO firms in the aftermarket are studied.

III. Contribution of the study

Our research will be useful for academicians, practitioners, and policy makers. For investors and financial analysts, the offering prospectus is an important source of information for making decisions as regards investing in IPOs. Our research reveals whether or not the information contained in offering prospectuses – especially profit forecast information – is valuable. Policy makers can apply the results of this research as a benchmark for determining whether or not the forecast information published by issuing firms is made with enough consideration. If forecasts are deemed unreliable then regulators may need to rethink their position on requiring forecasts. Clearly, very erroneous forecasts can undermine the very workings of the stock market. Forecasts are also open to abuse by unscrupulous businessmen. Regulators may need to impose penalties and sanctions on IPO firms and their advisors if there is evidence of widespread bias in making profit forecasts.

The remainder of the paper is structured as follows:- Chapter II discusses the listing procedures of new stocks on the stock exchange of Thailand. Chapter III is a literature review that covers both domestic and international evidence. Chapter IV explains the data and methodology. Chapter V presents and discusses the statistical results, and Chapter VI concludes.

Chapter II

Stock Exchange of Thailand

I. Stock Exchange of Thailand (SET)

In this section, we briefly describe the evolution of The Stock Exchange of Thailand (SET). Originally, the SET was set up as a consequence of Thailand's National Economic and Social Development (NESD) Plan in the year 1961. The plan defined the country's direction and growth objectives. As a consequence of rapid economic growth, the Second Plan (1967-71) incorporated planning for a new capital securities market. The Third NESD Plan (1972-76) gave rise to the SET Act of May 1974, bringing into being The Securities Exchange of Thailand, as it was first named. Securities trading commenced on April 30, 1975. On January 1, 1991, the bourse's official name was changed to The Stock Exchange of Thailand.

In May 1992, the improved SET Act of 1984 (No. 2) was replaced by the Securities and Exchange Act 1992 (SEA) which also established the Securities and Exchange Commission (SEC) as the sole supervisor of the securities business. The SEA is a comprehensive legislative framework regulating all vital elements of a modern capital market, such as disclosure, investor protection, fund management, takeover procedures and the establishment of securities firms. The SEA also provides a clear separation between the primary and secondary markets in order to facilitate their successful development. Both primary and secondary markets are regulated by the SEC. In the primary market, the SEC oversees and regulates issuing companies that wish to issue new securities. Issuing companies that carry out an initial public offering (IPO) or offer additional securities to the public must first apply for SEC approval and comply with its filing requirements. The SEC is then required to carefully review the financial status and operations of the company before allowing the firm to issue securities to the public. The secondary market comprises of the Stock Exchange of Thailand and the Thai Bond Dealing Center (TBDC). The Securities Exchange of Thailand has operated a fully computerized trading system since 1994. The trading system at the Stock Exchange of Thailand is divided into five boards, which are:

1. The Main Board is for the trading of common stocks, preferred stocks, warrants and unit trusts in full-board lots, not exceeding one million units of each security.
2. The Foreign Board is for the trading of stocks registered under a foreigner's name.
3. The Big Lot Board is for the trading of all securities with the minimum value of 3 million baht or the minimum volume of 1 million shares.
4. The Odd Lot Board is for the trading of common stocks, preferred stocks, warrants and unit trusts in less than an on board lot.
5. The Special Board is for the trading of government and state enterprise securities, i.e., bonds, debentures and convertible debentures.

II. Initial Public Offerings in the Thai Stock Market

Ever since the SET was established, a large number of firms have utilized this market as a major source of funding. The level of IPO activity can be conveniently divided into three periods which correlate with the economic conditions in Thailand. The first period is called the 'initial' or 'starting' period (from 1975 to 1986). During this period, there were few IPOs listed on the market. The second period is called the 'prosperous' or 'growth' period (from 1987 to 1996) when Thailand enjoyed rapid economic growth. During these years, many firms exploited the stock market as a major source for external funding. The third period is called the 'crisis' and 'after crisis' period (from 1997 to present). This period began with the Thailand and Asian financial crisis that started in July 1997. The effects of the crisis and its aftermath still linger today and, as a result, the number of IPOs is well below the heyday of the late 1980s and early and mid 1990s. Table 1 details the number of IPO firms and the periods in which they listed. The first period has 20 IPOs with an average of 2.2 IPOs per year. The second period has 317 issuing firms and an average of 31.7 IPOs per year. During 1997 - 2000, there were only eight IPOs in the market or only two IPOs per year.

III. Listing Process

Figure 1 describes the listing procedures of IPOs in Thailand. These listing processes are regulated by the Public Company Act B.E. 2535. Under this act, when the issuer receives approval from the SEC, the selling of new issue shares begins and has to be completed within 180 days as described in Figure 1. In the process of selling the new issues, the financial advisor often set up an Underwriting Syndicate to reduce the marketing risk. Participants in the distribution of the new issues can be divided into three groups as follows:

1. Managing Underwriter or the Lead Underwriter
2. Co-underwriter
3. Selling Agent

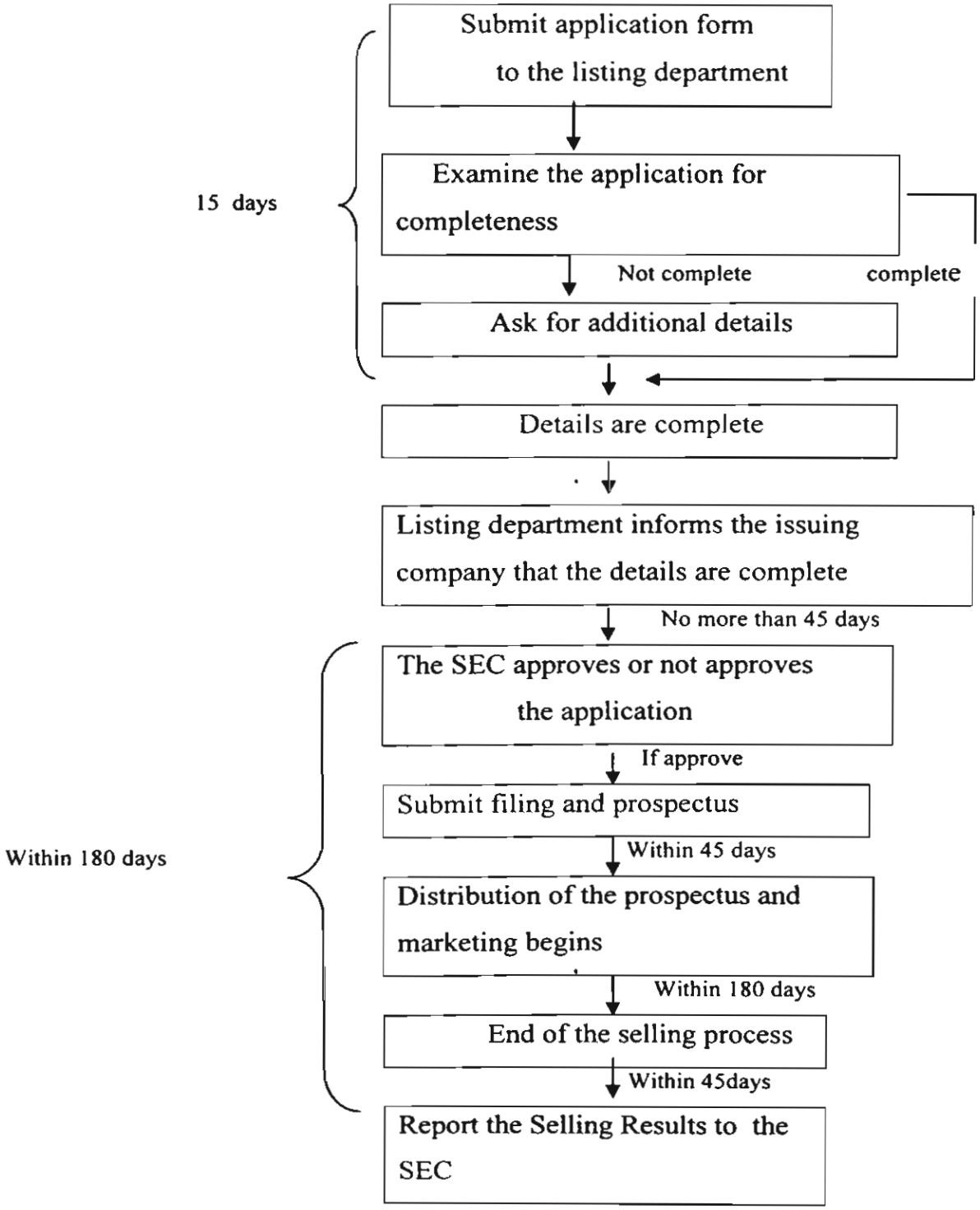
When the application is approved by the SEC, a committee from the SEC, together with the offering participants, decide on a subscription date and the financial advisor prepares the offering prospectus. The contract between issuers and other participants will specify the underwriting method, and normally there are two alternatives to select from.

1. Firm commitment underwriting. In this type, the underwriter agrees to purchase the whole issue from the firm at a particular price for resale to the public. Practically, underwriter guarantees that total shares will be sold out at a fixed offering price.
2. Best efforts underwriting. In this type, the underwriters act as a marketing agent for the firm. The underwriter does not agree to purchase the issue at a predetermined price but sells the security and takes a predetermined spread, with the firm taking the residual.

In Thailand, the underwriting contracts are entirely of the firm commitment method. When the contract is signed, participants begin their marketing process and distribute the details of the new issue including the fixed offering price via the offering prospectus or other media.

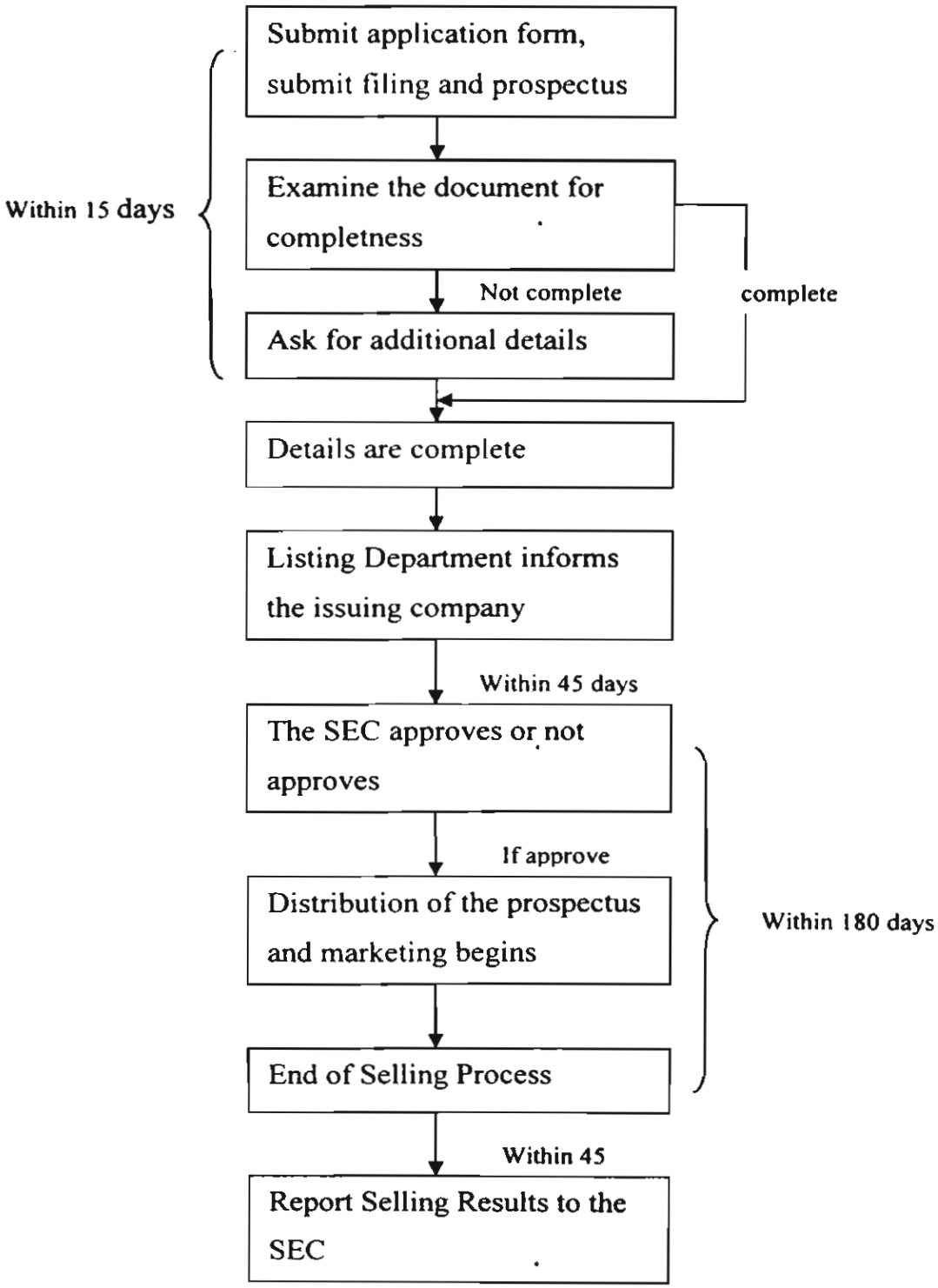
Figure 1. Process of Approval Stock for IPOs[1].

Case I. Submission of listing application and, when approved, issuing companies submit the official filing and prospectus.



[1] Source: The Securities and Exchange Commission library

Case II Submission of listing application simultaneously with the official filings and prospectus



Chapter III

Literature Review

II. IPO Underpricing: The Anomaly

There is a general consensus across research studies that new issue stocks yield very high initial returns on the first day of trading. This anomaly is generally known as the underpricing of IPOs. Many models have been developed in an attempt to explain this anomaly. For example, Rock (1986) posits that underpricing arises so as to compensate uninformed investors for participating in the offering process. Mauer and Senbet (1992) argue that incomplete spanning and limited investor access to the primary issue market are major contributions to underpricing. Benveniste and Spindt (1989) develop a model which relies on market information acquisition by investment bankers through the presale solicitations of interest. In their model, underpricing is a way of compensating 'regular investors' for revealing their private information. Regular investors, in this context, are investors who regularly participate in the primary market. The other type of investor is called occasional investors. This distinguishes capture the real-world facts that some investors participate regularly in the IPO market while others participate only occasionally. Tinic (1988) presents a simple theoretical model suggesting that underpricing may represent a form of insurance against lawsuits by disgruntled investors.

II. IPOs' Initial Returns and the Signaling Model

In a path breaking application of the signaling idea to finance theories, Leland and Pyle (1977) argue that the level of retention of shares by the original owners can be a convincing signal of firm value to outsiders. They model IPO firm value as a positive function of the proportionate share ownership of the entrepreneurs who bring the company to listing. The rationale behind the model is that entrepreneurs who retain a large investment stake in the company only do so if they are very confident about the firm's prospects. Investors recognize this

commitment by the entrepreneur and accordingly place a higher valuation on the IPO. The signaling hypothesis can also be used to explain the short-run underpricing of IPOs. In the signaling hypothesis framework, underpricing arises from attempts by issuers and underwriters to signal their private information on the values of shares. Underpricing, in this case, can be a signal of value. Various forms of the signalling model have been developed by Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989). These models improve the Leland and Pyle (1977) who use fraction of shares retained as a signaling device. The signaling model of Grinblatt and Hwang (1989), for example, predicts that high variance projects are sold at larger discounts in equilibrium. Furthermore, given any variance of returns, issuers with high value projects retain a greater fraction of shares. Underpricing is greater for higher-value projects. This signaling hypotheses works for the following reasons. When the project is valuable, the issuer wishes to demonstrate this. By issuing at a lower initial price, the issuer " proves" that the variance of the project is higher, which in turn "proves" that the issuer's fractional holding is especially costly. Since the issuer is risk averse, they do not want to retain more shares. Discounting the price is costly but is necessary to demonstrate the worth of the signal device, which is the fraction of shares retained by issuers. Thus, the issuer would desire to inform investors when variance of project is high in order to make the fraction retained to signal informative and effective.

Downes and Heinkel (1982) provide an important early application of the share retention signal suggested by Leland and Pyle (1977) to a sample of 297 U.S. IPOs for the period 1965–1969. They operationalize Leland and Pyle's model in the following regression equation:

$$V_j = \beta_0 + \beta_1 NK_j + \beta_2 \alpha + \mu_j, \quad j = 1, 2, \ldots\ldots, n. \qquad (3.1)$$

In this equation, V is the initial market valuation of the firm's equity, α the entrepreneur's proportionate ownership after the issue, and NK the firm's net assets after the issue. Based on this construction, α is expected to have a negative sign in

the regression model. Downes and Heinkel (1982) and Hughes (1989) conclude that the retained ownership model is supported.

Ritter (1984) provides additional empirical evidence using a sample of 559 IPOs for the period 1965-1973. Ritter's findings cast doubt on the Downes and Heinkel (1982) results: the percentage of shares retained was not found to be a significant determinant of market value.

Beatty and Ritter (1986) propose that there is a positive relationship between the initial return and the ex ante uncertainty. Using a sample of 545 IPOs in the U.S., they find that the initial return is negatively correlated with the gross proceeds which are used as a proxy for ex ante uncertainty.

III. Profit Forecast Information from Offering Prospectuses

Profit forecasts are a potentially important piece of information for investors (Berlinger and Robbins, 1986; Firth, 1998). Firth (1998) explores the relationship between earnings forecasts and firm valuation and finds that earnings forecasts are a major signal of IPO value and that they are more important than other signalling tools such as the retained share ownership of the entrepreneurs.

The issue of accuracy of a profit forecast in the IPO prospectus has been explored at length by many researchers. Research in Australia (Lee et al., 1993), Canada (Pedwell et al., 1994) and New Zealand (Firth and Smith, 1992) reveal large forecast errors. Studies on Asian IPO markets have found relatively small forecast errors. Chan et al. (1996) and Jaggi (1997) report mean absolute forecast errors of 18% and 12.9% for listings in Hong Kong, respectively. Mixed results are reported in Malaysia. Mohamad et al. (1994) find low to moderate forecast errors, while a later study by Jelic et al. (1998) find somewhat larger errors.

Kim et al. (1995) investigate the rôle of information disclosed through the prospectus in the new issue market in Korea. The evidence indicates that the market price is significantly affected by financial variables, such as earnings per share, offer size, industry-wide prospects, and offer type. Our study, therefore, examines the importance of financial variables contained in the offering

prospectuses for the pricing of IPOs in the new issues market where information is scarce.

Firth and Smith (1992) examine the accuracy of profit forecasts contained in prospectuses of companies newly issued on the New Zealand Stock Exchange. In their paper, accuracy is measured by forecast errors, absolute forecast errors, and squared forecast errors. They find that the level of forecast accuracy appears to be poor in comparison to studies conducted in the U.K. by Dev and Webb (1972). They also hypothesize that forecast accuracy is related to the initial returns of IPO stocks. However, the empirical results provide no support for this notion. Firth et al. (1995) find comparatively high forecast accuracy for listings in Singapore. Firth (1998) further analyzes the role of the profit forecast for IPOs in the Singapore stock market. He examines 116 IPOs during the period 1977 to 1992. His results reveal that there is strong positive relationship between forecasts and market valuations. Furthermore, company management in Singapore appear to use the earnings forecast to signal firm value and the retained ownership signal is of less importance in explaining valuation. Results from analyses of stock returns in the aftermarket indicate that forecast errors are a major explanatory variable. Chen and Firth (1999) investigate the accuracy of the profit forecast and its relationship with IPO firm valuations for China IPOs. They use all IPOs made on the Shanghai Securities Exchange (SH) and the Shenzhen Stock Exchange (SZ) from 1991 to 1996. The results show that profit forecasts are moderately accurate and they are better than time series extrapolations of historical profits. Similar to Firth (1998), the paper also shows that profit forecasts are related to company valuations.

Cheng and Firth (2000) analyze the bias and rationality of profit forecasts published in offering prospectuses in the Hong Kong stock market. They employ data from 154 IPOs in the period 1992 to 1995. Results indicate that the magnitude of the forecast errors and the magnitude of the absolute forecast errors are much lower than those reported in developed countries such as Australia, Britain, Canada, and New Zealand.

IV. Initial Returns and Profit Forecasts

Firth (1997) argues that profit forecasts may help explain the magnitude of the initial returns in the first day of trading in the IPO. He posits that investors employ the 'appropriate' PE multiple to be a source of pricing for the new issue stocks. In particular, he uses the ratio of the PE multiple of a matched firm that is already listed in the market and the PE multiple of the IPO firm as a signal of, and explanation for, underpricing. Firth (1997) hypothesized that the ratio is positively correlated with the initial return, and his empirical results were consistent with this prediction. Furthermore, Firth concludes that investors are able to anticipate some of the overprediction or underprediction in IPO profit forecasts since he found a positive and significant relationship between initial returns and signed earnings forecast errors.

V. Initial Public Offerings in the Thai Stock Market

IPOs in the Thai stock market also exhibit anomalies similar to those found in other countries (Wethyavivorn and Koo-smith, 1991; Suewattana, 1993, Sribooncharoen, 1997; Kritsemvong, 1998; Lonkani, 2000). Results from these studies indicate that, in the Thai market, the first-day trading prices of IPOs are greater than their offering prices but prices substantially decline in the weeks and years after listing. We describe details of each study as follows:

Wethyavivorn and Koo-smith (1991) examine 32 IPOs that listed in the Stock Exchange of Thaland during 1988- 1989 and find that the average initial returns from this data is 58.1%.

Suewattana (1993) explores the factors that determine why firms make new issues in the Thai stock market and examines the initial returns of IPOs during 1987-1991. She finds that earnings per share, asset size, debt to equity ratio, offering size, and market condition are the main factors used in determining IPO prices; of these factors, earnings per share is the most important. Initial returns of the new issues are highest on the first day of trading and decline in the subsequent period. When initial returns are examined by industry, she finds that the highest initial returns occur in the service sectors and property development sector.

Sribooncharoen (1997) finds similar results to Suewattana (1993). Sribooncharoen studies 79 IPOs during 1992-1993 and discovers that the IPOs seem to be underpriced for only for a short period of time. The average initial return is 34.57%. Furthermore, this study also found a decline in stock performances of the new issues subsequent to their offering. Specifically, both the 3-year holding period returns and the operating performances decline in the after market (operating performance is measured using the return on assets, total asset turnover, EPS, and M/B).

Kritsernvong (1998) studies the underpricing of the Thai stock market. He separates the whole sample into two sub-periods. The first sub-period is during 1992 to 1994 which is the period before the SEC announced rules relating to the fairness of allocating new stock in the primary market. The second period is 1994 - 1996 which is after the announcement of this rule. He finds that the first sub-period sample of IPOs exhibits more underpricing than the second sub-period sample. This finding is consistent with Rock's (1986) implication which asserts that underpricing arises from the intention of issuers to encourage uninformed investors to participate in the offerings and any device that reduces information asymmetry should increase prices and reduce initial returns. Since the SEC regulation enhances the accessibility of information to individual investors (who are classified as uninformed investors), underpricing should decrease after the implementation of these rules (July 1994).

Lonkani (2000) reports that, on average, the first day stock return of IPOs is 46.7%. He used the sample of 292 IPOs during 1987 –1997. He found that the degree of underpricing is positively correlated with percentage of shares allocated to institutional investors and to foreign investors. Those initial returns, in contrast, are negatively correlated with number of shares allocated to individual investors. In the aftermarket, the performance of IPO stocks is worse than the market average, and the industry and size-matched portfolio. The 3-year cumulative adjusted average returns (CARs) for IPOs during 1988-1993 are –55.30%.

Chapter IV
Data and Methodology

I. Data

The principal source of the data is the I-SIM database, which is the official database provided by Securities Exchange of Thailand or SET. These data include price and return information, the offering price, size, age, and other listing information of new issue firms. IPOs' earnings forecasts are not available in this database and so we collect it manually from the offering prospectuses in the SET's main library. In this study, all offerings having relevant information during the period of 1991 to 1996 are examined. We choose this period because the 1991 to 1996 period is the period that has substantial IPO activity (see Table 1). Although the SEC began to enforce the publishing of forecast financial information from 1992, some new issue firms published forecast information before 1992. Thus, the data used for this study began in 1991. Since the Asian economic crisis began in 1997, we ignore the 8 issues after this date. According to I-SIM, there were 254 new issues between 1991 and 1996. However, for some, there is not enough information available to analyze the returns in the primary market or in the secondary market. After excluding IPOs that had incomplete information, we are left with a total of 175 firms in our sample. The distribution by year of offerings is shown in Table 2; the number of offerings was highest in 1991 and lowest in 1995. Table 3 shows the industry breakdown of IPOs between 1991 and 1996. The average market sizes, including maximum and minimum market capitalization, are shown in Table 4. Market size is measured in terms of numbers of shares multiplied by issue price. On average, our sample of IPOs has a market capitalization of 8778.8 million Baht at the offering prices. The top five issues by size are Jusmine International Public Company (JASMIN), Telecom Asia Corporation (TA), Thai Airways International (THAI), KrungThai Thanakit Finance (KTT) and Sri Thai Superware Public Company (SITHAI).

II. Forecast error metrics

The procedures for measuring forecast errors are taken from Cheng and Firth (2000). The first type of error is called the forecast error which is the difference between the actual profit and the forecast profit and scaled by the absolute value of the actual profit. Thus:

$$FE = (AP - FP) / |AP| \quad (4.1)$$

where

FE = forecast error; AP = actual profit; and FP = forecast profit.

For the purpose of comparison, we also compute forecasts error using the forecast profit as the denominator which this method is used in many relevant papers (Firth (1998), Chen and Firth (1999))

The second profit forecast error is given by the absolute forecast error (AFE):

$$AFE = |FE| \quad (4.2)$$

The interpretation of these two versions of the forecast error is that the FE indicates the direction of bias of the forecast error while the AFE indicates the overall level of accuracy. A positive mean value for the FE implies a pessimistic bias where forecasts are less than actual. Conversely, a negative mean value for the FE indicates an optimistic bias where forecasts are higher than actual profits.

The absolute forecast errors (AFE) are compared against the errors obtained by using simple statistical time series extrapolations of historical profits. Information in a prospectus provides historical data of profits for the three years prior to the offering. Therefore, the statistical models used here are implementable in practice. Two time series models are examined; they are the random (RW) model, in which the forecast profit (RWF) is the latest profit before listing (AP_{t-1}), and the growth (G) model, in which the forecast profit (GF) is AP_{t-1} multiplied by one plus the annual compound growth rate of profits over the two years prior to listing. The absolute errors from these statistical models, AFE (RW) and AFE(G), are calculated as:

$$AFE\ (RW) = |(AP - RWF)/AP| \quad (4.3)$$

$$AFE\ (G) = |(AP - GF)/AP| \quad (4.4)$$

To test whether managements' forecasts of profits are better than the statistical models we calculate DIFF (RW) which is the difference between AFE (RW) and AFE. DIFF (G) is the difference between AFE (G) and AFE. The hypothesis here is that profit forecasts obtained from prospectuses are more accurate than naïve statistical models. The hypotheses in alternative forms can be written as:

H1: DIFF (RW) = AFE(RW) – AFE > 0

H2: DIFF (RG) = AFE(G) - AFE > 0

Another approach to comparing the value of IPO profit forecasts with simple naïve models is to employ the superiority measure as used by Brown et al. (1987). The models are:

$$SUP = \log[([AP_t - AP_{t-1}]/[AP_t - FP_t])^2] \quad (4.5)$$

$$SUPG = \log[([AP_t - AP_{t-1} \times G]/[AP_t - FP_t])^2] \quad (4.6)$$

The SUP and SUPG are the superiority of IPO earnings forecasts over the random walk model and the growth model, respectively. Therefore, the hypotheses in alternative forms are:

H3: SUP > 0

H4: SUPG > 0

Here t-statistics are used to test H3 and H4.

A third approach to measuring accuracy, and one which captures the bias, is the methodology of De Bondt and Thaler (1990) and Capstaff et al. (1995). Following their methodology, the actual changes in profits are compared to forecast changes in profits. This is done via the following regression model:

$$(AP_t - AP_{t-1})/AP_{t-1} = \alpha + \beta(FP_t - AP_{t-1})/AP_{t-1} \quad (4.7)$$

where the variables are as described earlier with α and β being estimated by regression analysis. The null hypotheses we test imply $\alpha = 0$ and $\beta = 1$. If $\alpha < 0$, then a profit forecast is interpreted as having an optimistic bias (predicted profits exceed actual profits). Conversely, $\alpha > 0$ is interpreted as having a pessimistic bias. $\beta < 1$ is interpreted as an overreaction to available information (e.g. AP_{t-1}) and

$\beta > 1$ is interpreted as an underreaction to available information (Capstaff et al., 1995). An alternative model is to multiply AP_{t-1} times one plus the compound growth rate in profits in the three previous years (G). Our hypothesis in alternative form is:

H5: $\alpha = 0$ and $\beta = 1$

We use the SPSS software to conduct all the statistical tests.

III. Cross-sectional Explanations for the Forecast Error

We examine factors that may explain the magnitude of forecast errors. In our tests, we employ cross-sectional regression models where the absolute forecast error enters as a dependent variable. Explanatory variables are composed of 5 variables; the new issue size (SIZE), the age of the IPO firms (AGE), the coefficient of variation in the 3-years' of earnings of the IPO before its listing date (VARIAT), the leverage ratio (LEVER), and the approximate length of time (LENGTH) of the forecasting period:-the difference between the listing date and fiscal year end. Since there is no data of prospectus date in the ISIM database, we use the listing date to be the estimation of the prospectus date. The regression model is:

$$AFE = \alpha_0 + \alpha_1 SIZE + \alpha_2 AGE + \alpha_3 VARIAT + \alpha_4 LEVER + \alpha_5 LENGTH \quad (4.8)$$

Where

AFE = is the absolute forecast error as measured in equation 2;

SIZE = is the market capitalization of the new issues as measured by the product of the amount of shares issued in the IPO and the offering price;

AGE = is the logarithm of number of years since the IPO firm was established;

VARIAT = is the coefficient of variation of the last 3-year earnings of the IPO before listing;

LEVER = is the total debt divided by total assets of the new issue firms;

LENGTH = is the number of days between the listing date and the fiscal year end; and

MKT is the monthly return of the stock market in the same month of the issue date.

The rationales for including these factors are based on previous theory-based and empirical-based research, outlined as follows. SIZE is a proxy for the capability of firms to forecast earnings with more accuracy (Firth et al., 1995). Large firms are believed to have more resources to devote to making forecasts. Therefore, we expect a negative relationship between SIZE and AFE. In a similar fashion to SIZE, older firms should have more experience in making profit forecasts and are expected to forecast better than younger firms (Lee et al., 1993). We therefore expect AGE to be negatively correlated with AFE. Since VARIAT represents the fluctuation in earnings before its listing in the secondary market, this variable should be positively correlated with AFE. LEVER is another measure of the risk of a company and high-risk firms are expected to be positively correlated with AFE (Eddy and Seifert, 1992). LENGTH is predicted to be positively correlated with the forecast error based on the argument that the longer the horizon times, the more difficult it is to forecast accurately (Firth et al., 1995). Finally, MKT enters the model as a control variable. Previous research conjectures that there is higher probability of error in forecasting when the market is rapidly changing (Cheng and Firth, 2000).

IV. Initial Returns and Aftermarket Performance Measurement

The initial return (IR) is measured as the difference between the first-day trading price (FT) of the IPO stock and the offering price, divided by the offering price {space here}(OP), or

$$IR = [(FT - OP)/ OP)] \times 100 \qquad (4.9)$$

The aftermarket performance of IPOs is measured using the monthly benchmark-adjusted returns, as in Ritter (1991).

The monthly benchmark-adjusted return is defined as the monthly raw return on a stock minus the monthly benchmark return for the corresponding period. It is calculated for each IPO for 36 consecutive months. Month, in this case, is defined as a successive 21-trading-day period relative to the IPO date. Month 0 is defined as the initial return period, Month 1 consists of event days 2- 22; Month 2 consists of event days 23-43, and so on. The benchmarks used is the SET index. The benchmark adjusted return for stock i in event month t is defined as:

$$ar_{it} = r_{it} - r_{mt} \tag{4.10}$$

The average benchmark-adjusted return on a portfolio of n stocks for event month t is the equally weighted arithmetic average of the benchmark-adjusted returns:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it} \tag{4.11}$$

The cumulative benchmark-adjusted aftermarket performance from event month q to event month s is the summation of the average benchmark-adjusted returns:

$$CAR_{q,s} = \sum_{t=q}^{s} AR_t \tag{4.12}$$

VI. Profit Forecast Accuracy and Initial Returns

The regression model we use to test the relationship between the initial stock returns on an IPO and the forecast error is taken from the model of Chen and Firth (1999). According to the model, the issue price is a function of the profit forecast and the 'underpricing' is a fixed percentage. Then, any variation in the initial return may be a function of investors' perception of the profit forecast accuracy (the ex ante perceptions being proxied by the ex post realizations of forecast errors). The model is

$$IR = \beta_0 + \beta_1 FE + \beta_2 PEMR + \beta_3 SIZE + \beta_4 AGE + \beta_5 MAKT \qquad (4.13)$$

Where

IR = percentage return on the IPO stock on the first day of trading;

FE = percentage forecast error given by equation 1;

SIZE = Gross proceeds of the IPO in million Baht;

AGE = natural log of number of years since the IPO firm was incorporated;

MAKT = market return at the same date as the issuing date of the IPO; and

PEMR = price earnings relative calculated as the PE of a matched firm divided by the PE of the IPO firm. The PE of the IPO firm is the issue price divided by the forecast earnings per share.

A positive sign is hypothesized on the FE variable (Firth, 1997; Chen and Firth, 1999). Another approach to explain the relationship between forecast accuracy and initial returns is the model of Benveniste and Spindt (1989). According to this model, the initial return is a positive function of uncertainty which can also be proxied by FE. In other words, the higher the forecast error, the higher the uncertainty and the larger the underpricing.

Firth (1997) posits that one stock valuation technique used by investors and financial analysts is to multiply the published profit forecast by an 'appropriate' price earnings (PE) ratio. In the initial public offering, the appropriate price earnings ratio can be deduced from the PE ratios of firms already listed on the market. Therefore, the expected initial stock return is a function of the proportionate difference in price earnings ratios, i.e., the ratio used by the issuer and the 'appropriate' ratio. In order to test this conjecture, the ratio between the price earnings ratio of a matched listed firm (the appropriate ratio) and the price earnings ratio of the IPO firm is calculated; this variable is denoted PEMR. According to Firth (1997) the expected sign for PEMR is positive. Match Firm used is the company that listed in the Market at least two year prior to the IPO firm and is in the same industry of IPO firm.

Size and age are used as control variables. Both of them are proxies for the company risk factor (Ritter, 1984; Beatty and Ritter, 1986; Tinic, 1988). In the study of Mauer and Senbet (1992), size and age are proxies for accessibility of information for investors. Mauer and Senbet (1992) explain that investors can exploit the information from large size firms and old firms much more easily than they can from small size firms and young firms. Thus, large size firms and old firms pose a lesser degree of incomplete spanning in the secondary market. In Benveniste and Spindt (1989), size and age can reduce information friction during the IPO process. All of these models predict that size and age are negatively correlated with the degree of underpricing. Thus, initial returns are expected to exhibit a negative relationship with issue size and age in equation (4.12). Issue size is measured by the total Baht value of the offering (gross proceeds). Market return is used as a control variable.

VII. Forecast Accuracy and Aftermarket Performance

The profit forecast is argued to be a major factor in valuing new issues and so errors in these forecasts are expected to be an important determinant of aftermarket stock performance. IPOs whose reported profits exceed their forecasts are likely to experience higher abnormal returns in the first year after issue, and those whose profits are less than expected are likely to suffer lower CARs. To measure the relationship between CARs and the aftermarket performance, the following regression is used:

$$CAR_{year\ 1} = \alpha_0 + \alpha_1 IR + \alpha_2 SIZE + \alpha_3 AGE + \alpha_4 MAKT + \alpha_5 FE + \alpha_6 BV/MV \quad (4.14)$$

where

$CAR_{year\ 1}$ = one-year cumulative adjusted returns using the SET index as the benchmark

IR = initial returns of IPO firms;

SIZE = log value of the gross proceeds raised by the new issue;

AGE = log value of the age of the IPO firm since its incorporation;

FE = forecast error measured as [(Actual Profit – Forecast Profit)/ absolute value of forecast profit];

MAKT = market return at the same date as the issuing date of the IPO; and

BV/MV = market to book ratio measure at the first day trading of IPOs

The overreaction hypothesis predicts that the initial returns are negatively correlated with the aftermarket performance of IPOs. Ritter (1991) documents a negative association between the magnitude of first-day returns and aftermarket performances in his study in the United States. SIZE, AGE and MAKT are used as control variables. Ritter (1991), Field (1997), and Levis (1993) find that small size issues have the poorest aftermarket performance. Ritter (1991) also finds a positive relationship between age and aftermarket performance of IPOs. FE is hypothesized to be positively correlated with $CAR_{year\ 1}$ if investors use profit forecasts in pricing IPOs. If the forecasts turn out to be erroneous, stock prices should react accordingly.

Chapter V

Results and Discussion

I. Direction of Bias and Accuracy of Forecasts

Since the error metrics can be measured and reported in two approaches. We denote (.)-a as the error metric when the standardized value or the denominator is the actual profit and denote (.)-f as the error metric when the standardized value or the denominator is the forecast profit. The forecast errors (FE) and the absolute forecast errors (AFE) calculated using equation (4.1) and equation (4.2) are presented in Table 5. The mean value of FEs in both version of error metrics are negative. FE-a, which is the error metric scaled by actual profit is statistically significant and equal to -89.88%. FE-b, which is the version of error that scaled by forecast profit error is negative and equal to –6.86%. The difference in the mean error metrics from both versions cannot be observed when we use the median value instead of arithmetic mean. With median comparison, both version of error are approximately –4%. The negative sign indicates that issuing firms are, on average, optimistic in their forecasts of the earnings. Table 6 summarizes and compares the results with those from other countries. Table 5 indicates that the mean of AFE-a and AFE-f are 105.68% and 35.76% respectively. All are statistically significant. From Table 6, the comparison with other countries shows that the magnitude of forecast errors reported in the offering prospectus are higher than the AFE found in Hong Kong (Cheng and Firth, 2000), Singapore, (Firth et. al., 1995), New Zealand (Firth and Smith, 1992) and lower than those reported in China (Chen and Firth, 1999).

While AFE is the error metric that compares forecasts with actual, AFE (RW) and AFE (G) are the error metrics using forecast error from the simple random walk model (eq.4. 3) and the random walk model with growth (eq.4.4). Table 5 shows that AFE (RW) and AFE (G) from both error metrics are significantly greater than zero at the 0.01 level. The mean and median of AFE(RW)-a are 94.04% and 33.86%. The mean and median of AFE (RW)-f are 73.40% and 34.15%. The mean and median of AFE(G)-a are 128.89% and 90.58%, and the mean and median of AFE (G)-f are 658.27% and 230.91%, respectively. Using the

mean comparison, the results shows that the error from simple random walk model is better than the error in earning forecasts published in the prospectuses for the actual profit-denominator version. However, for other comparison of error metrics, the results indicate that the error in earnings forecasts published in IPO prospectuses is much lower than the errors from using simple extrapolations of historical earnings.

II. Forecast Superiority

To further examine whether the earnings forecasts from IPO prospectuses are accurate, we compare the absolute forecast error (AFE) with the absolute forecast error with random walk model, AFE (RW). The value of DIFF (RW) is equal to AFE(RW) minus AFE. Table 7 shows that DIFF (RW) is 0.5653 and it is significantly positive at .01 level; this means IPO profit forecasts are more accurate than a random walk forecast. DIFF (G) is the difference between the errors in IPO earnings forecasts and growth model earnings forecasts. Table 7 shows that the IPO forecasts are substantially better than the growth model forecasts. DIFF (G) is 0.9376 and is statistically significant.

We also use the Brown et. al. (1987) measurement of superiority. Equations 5 and 6 are used to examine the superiority of IPO forecasts over two naïve models, i.e., the random walk and the growth model. From Table 7, SUP (RW) and SUP (G) are significantly positive with the value of SUP (RW) equal to 0.4219 and SUP (G) equal to 1.2030. The positive sign and significance of both SUP (RW) and SUP (G) show that the errors associated with IPO earnings forecasts are less than the errors of earnings forecasts that use simple prediction models. The results are similar to those found in Hong Kong (Cheng and Firth, 2000).

Another approach that we use to examine the direction of bias and the accuracy of the forecast is the regression analysis approach suggested by DeBondt and Thaler (1990) and Capstaff et al. (1995); see equation 7. In Panel A, Table 8, the regression equation is $(AP_t - AP_{t-1})/AP_{t-1} = \alpha + \beta(FP_t - AP_{t-1})/AP_{t-1}$ where AP_t and AP_{t-1} are the actual profits of the current year and the previous year, respectively, while FP_t is the forecast profit as published in the IPO's offering prospectus. In Panel B, we replace FP_t with the AP_{t-1} multiplied by growth factor G.

In both panels, the dependent variables are actual profit changes while the independent variables captures the forecast profit changes from the previous year. The regression results shown in Table 8 indicate that changes in the earnings of IPO firms can be explained by forecast profit when the forecast value is obtained from the IPOs' offering prospectuses. The R square and adjusted R squares are 0.771 and 0.769, and the F value is significant at 581.427. In contrast, using the naïve forecasts (see Panel B) does not explain changes in earnings; the R square, adjusted R square, and the F value are 0.057, 0.003, and 0.572, respectively. These results confirm our previous findings that earnings forecasts in prospectuses provide valuable information while simple extrapolations have little or no prediction value.

Regression coefficients in Panel A of Table 8 show that α is not significant and so there is little evidence of systematic bias. The value of the B coefficient indicates managements overreact in their forecasts since the value of B is significantly less than 1.

The evidence from Table 7 and Table 8 indicates that earnings forecasts derived from IPO prospectuses are more accurate than earning forecasts using simple naïve prediction models. In other words, earnings forecasts made by management in IPO prospectuses predict future earnings quite well and are therefore valuable to investors.

III. Cross-Sectional Explanatory of Forecast Error

In this section, we report the results of the regression models that explain the magnitude of absolute forecast errors (AFE). We employ variables that have been frequently used in previous studies (Cheng and Firth, 2000; Firth and Smith, 1992). These factors include company size, age, leverage, variability in historical profits, forecast period, and market returns. Table 9 shows the descriptive statistics of the explanatory variables (Panel A) and the regression results (Panel B). The mean market capitalization is 8,584 million Baht when using the offering price. On average the firms are about 20 years old before listing on the SET. Prior to their listing date, the three-year profit numbers show some variability and, on average, have a coefficient of variation (standard deviation divided by its mean) equal to 0.41.

The mean leverage (total debts divided by total assets) is 60%, with a maximum value of 97%. The average number of days between the listing date and the end of the year is 174 days.

Panel B of Table 9 indicates that firm size (SIZE) is significantly and positively related to absolute forecast value (AFE) at the 0.05 level. However, this direction is opposite to the expected sign. In other words, we find that large IPO firms forecast their earnings with more error when compared to the forecasts made by small IPO firms. Also, we find that LENGTH is positively and significantly related to AFE at the 0.10 level. Thus the longer the forecast horizon, the the greater the error.

IV. IPOs' Initial Returns on the Stock Exchange of Thailand

The initial returns of 175 IPOs that were listed on the Stock Exchange of Thailand during 1991–1996 are reported in Table 10. The mean return is 36.55%, the median is 25.0%, the maximum value is 465% (which was the return of Samart Corporation (SAMART) on December 23, 1993), and the minimum return is –39.39% (which is the return of CVD Entertainment (CVD) on July 5, 1994). We find that 79% of the total sample (138 firms) have an offering price lower than their first-day closing price (i.e. the shares are underpriced). Of the 175 IPOs, 20% (35 firms) suffer overpricing and only 1% are priced equal to their first day closing price. Panel B of Table 10 shows the number of IPO firms by their initial returns. From the table, we can see that initial returns are clustered in the range of –15% to 20%.

V. Initial Return and Forecast Error

In this section, we attempt to find an explanation for the high initial stock returns and use the forecast errors as one independent variable. Forecast errors can be viewed as a part of the model of Beatty and Ritter (1986) who propose that initial returns of new issue stocks have a positive relationship with ex ante uncertainty. Hence we use forecast errors of earnings published in IPO prospectuses as a proxy for ex ante uncertainty and we hypothesize that the forecast error is positively correlated with the initial return of IPOs. The initial return (IR) enters our

model (eq. 13) as a dependent variable while the Forecast Error (FE) enters a model as one of the explanatory variables.

Firth (1997) argues that investors estimate a price for the IPO stock by multiplying the IPO's forecast earnings per share with an 'appropriate' price earnings benchmark from a company in the same industry and closest in size with the IPO firm. Here, the firm, together with its financial advisors, can select the degree of underpricing by varying the 'appropriate' PE multiplier. Therefore if we use the ratio between the PE multiplier of the appropriate benchmark divided by the PE ratio of the new issue, we expect that this will be positively correlated with the initial return of the IPO on the first day of trading. Thus we include the variable PEMR in our model which is the ratio between the price earnings ratio of the matched firm and the price earnings ratio of the new issue stock.

The PE multiple of the matched company is computed at the end of the day on which the IPO first trades and the PE of the IPO using the issue price and forecast earnings per share.

There is no significant correlation between initial return (IR) and forecast error (FE). Like Firth's (1997) results, we find a significant and positive correlation between the initial return and PEMR; see Table 11. .

Table 12 shows the regression results. Initial return (IR) is significant and positively correlated with the forecast error (FE) at the 0.1 level. The positive coefficient on FE confirms our hypothesis that forecast error can be a proxy of ex ante uncertainty and should be positively correlated with the initial return of IPOs (Beatty and Ritter, 1986). The negative and significant relationship between age of firm and initial return (IR) is consistent with the ex ante uncertainty model. In this case, older firms are better known to investors and so uncertainty is lower. The relative price earnings ratio (PEMR) is not significant.

VI. After Market Performance of IPOs

Previous research in many countries has concluded that IPO firms suffer negative abnormal stock returns in the several years after listing and these findings are quite robust as regards the methodology employed. To investigate whether the

international evidence holds in Thailand, we calculate Cumulative Abnormal Returns (CARs) for up to three years after listing. The SET index is used as the benchmark return.[2] Table 13 shows the average benchmark-adjusted returns (ARs) and cumulative average benchmark-adjusted returns (CARs). The t-statistics are computed in the same way as Ritter (1991, 1995). The ARs and CARs are shown for month 1 to month 36. The CARs have negative signs in all months, with one-year, two-year, and three-year cumulative average benchmark-adjusted returns (CARs) of -8.83%, -33.23%, and –60.30%, respectively. During the three years after issue, there are 8 months in which the ARs are positive and there are 28 months in which ARs are negative. Our results confirm the findings of Lonkani (2000). Comparisons with other markets show that the 3-year CAR is relatively high. For example, Ritter (1991) found the 3-year CAR in the U.S. is –47%, Levis (1993) found that a 3-year CAR in Britain varied between –8.31% and –22.96% (depending on the benchmark), and Aggarwal et al. (1993) recorded –47%, -23.7%, and –19.6% 3-year CARs for Brazil, Chile, and Mexico, respectively.

VII. Accuracy of Forecasts and the After Market Performance of IPOs

In this section, we examine whether the performance of IPOs in the market after listing has a relationship with the accuracy of profit forecasts published in the offering prospectuses. Firth (1997) proposed a hypothesis which predicted a positive relationship between profit forecast accuracy and CARs. An intuitive explanation for this is that, subsequent to listing, investors will be constantly evaluating how accurate they believe the forecasts to be and consequently will revise stock prices. With this framework, we run a regression analysis to investigate the relationship between the aftermarket performance of IPOs (represented by the CAR) and the accuracy of the profit forecast published in the offering prospectuses (FE). We use regression equation 14, where CAR is the dependent variable and FE is an independent variable. Other control variables are initial returns (IR), size of the firm (SIZE), logarithm of the age of the firm (AGE), logarithm of the book-to-

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[2] Using other benchmarks (see section IV, chapter IV) gives similar results and conclusions.

market value (BV/MV), and market returns (MAKT). The results of the regression are presented in Table 14. From Table 14, the results do not find any relation between $CAR_{1\,year}$, $CAR_{3\,years}$, and FE. However, a significant and positive relationship between $CAR_{2\,years}$ and FE is found. Thus there is some evidence in support of our prediction. Other control variables are not significant.

Chapter VI
Conclusion

Our study examines the profit forecasts of IPO or new issue stocks and tests the accuracy level of the forecasts and the relationship between the forecast errors and first-day returns and aftermarket returns. The data comprise 175 IPOs that list on the Stock Exchange of Thailand (SET) during the period 1991-1996. Our methodologies are based on Firth (1997, 1998, 2000).

First, we measure the accuracy of profit forecasts using the forecast error (FE) metric and the absolute forecast error metric (AFE). We report our results base on two versions of error measurements. The first version is the forecast error which its value is scaled by actual profit and the second version is the forecast error which its value is scaled by forecast profit. Results from our analyses show that issuing firms have an optimistic bias in their forecasts, where the forecasts are higher than actual. This direction of error is the same on the two versions but its magnitude is very large on the actual profit-denominator version. The value of error in the actual profit-denominator version is rather high relative to those reported in the forecast profit-denominator version. These results strengthen the positive bias of forecast profit. The absolute forecast error (AFE) is, on average, greater than the values documented in other studies.

Second, we test whether the profit forecasts of the new issue stocks published in the offering prospectuses are reliable. In these tests, we compare the accuracy of profit forecasts published in the offering prospectus with the accuracy of profit forecasts using other forecasting models. We employ two other forecasting models in the comparison; the random walk model and the growth-adjusted random walk model. Empirical evidence shows that profit forecasts are much more accurate than the naïve models. In cross-sectional regression models we find that size and length of the forecast horizon are positively related to forecast errors. The positive relationship between size and forecast error is counter-intuitive.

On average, the initial returns of our sample IPOs is 36.55%. This finding confirms the previous results of underpricing of IPOs in Thailand (Wethyavivorn & Koo-smith, 1991, Lonkani and Tirapat, 2000). Investigation of the

relationship between the forecast error and initial returns reveals that forecast errors are significantly and positively correlated with initial return. The positive relationship between initial return and forecast error is consistent with our hypothesis arguing that uncertainty is one major cause of underpricing of IPOs.

Like many papers testing IPOs' performances in the secondary market (Ritter, 1991; Loughran and Ritter, 1995,etc.), we find that the new issue stocks in the Thai market perform poorer than the SET index. We further investigate the relationship between CARs and other possible explanatory variables such as the initial returns (IR), the size of the issue (SIZE), the age of the new issue firm (AGE), the book-to-market value ratio (BV/MV), the forecast error (FE), and the market return (MAKT) using regression analysis. Results reveal that there is no statistically significant association between the CAR_{1year}, CAR_{3year}, and FE. However, the results show a significantly positive correlation between CAR_{2year} and forecast error. These findings indicate that the market spend time of 2 years to reverting its overvalue on the first day.

We conclude that, for the Stock Exchange of Thailand, profit forecast published in the offering prospectuses contain some optimistic biases higher than those in other stock markets reporting similar kind of forecast error. The errors of forecast profit published in the offering prospectuses are lower than the error of forecast profit obtained from simple naïve models except for the case where the mean absolute error is scaled by actual profit. Using the median value, we can conjecture that forecast profits published in the offering prospectuses are reasonable since the absolute forecast errors are lower than the two simple naïve models. We suspect that the huge errors observed in the random walk plus growth models reflect the fact of higher-than-normal profit reported prior to listing. Explanatory variables of the absolute forecast error are length of time and size of firm. Size is counter-intuitive positive correlate with the absolute forecast errors. This result suggests that larger issuers have more optimistic opinion on their forecast profit. Our results further suggest that the initial return usually found in the IPOs stem from the value of profit forecast error which the forecast figures are reported in the offering prospectuses. The aftermarket test indicates that the performance of IPOs in the

secondary market are relatively poor compare with overall market performance and the market spend 2 years period to revert its performance to the true value.

We suggest for further research that deeply investigation of earning report 'prior' and 'after' listing should be studied and test whether some 'window dressing' occur in the IPOs or not. Another interesting issue

Table 1. Issuing Period of IPOs

The table describes the IPO market of the Thai Stock Market. SET started in 1975. Since then the IPO market can be categorized into three distinct periods: initial period, growth period, and crisis period.

Category	Period	Number Of IPOs	Average Number of Issues Per Year
Initial Period	1975-1986	20	2.2
Growth Period	1987-1996	317	31.7
Crisis Period	1997-2000	8	2

Table 2. Sample Distribution of IPOs by Year of Offering

The sample in this research uses175 IPOs that listed on the Stock Exchange of Thailand (SET). The 175 IPOs were listed from 1991 to 1996. The Table shows the distribution by year of offering.

Year of Issue	Number
1991	47
1992	29
1993	35
1994	34
1995	14
1996	16
Total	175

Table 3. Sample Distribution by Sector
Distribution of IPOs by Industry Sector

Sector number	Industry Name	Number of IPOs in the Sample	Number of Companies Listed
1	Agribusiness	13	25
2	Banking	0	15
3	Building and Furnishing Materials	7	25
4	Chemicals and Plastics	4	13
5	Commerce	1	13
6	Communication	6	10
7	Electrical Products and Computer	4	11
8	Electronic Components	4	10
9	Energy	3	10
10	Entertainment and Recreation	3	7
11	Finance and Securities	20	53
12	Foods and Beverages	9	25
13	Health Care Services	9	11
14	Hotels and Travel Services	1	12
15	Household Goods	6	8
16	Insurance	7	22
17	Companies under Rehabilitation	28	71
18	Jewelry and Ornaments	1	3
19	Machinery and Equipment	4	5
20	Mining	0	1
21	Packaging	5	16
22	Pharmaceutical Products and	0	2
23	Printing and Publishing	4	9
24	Professional Services	1	2
25	Property Development	18	30
26	Pulp and Paper	2	6
27	Textiles, Clothing and Footwear	4	27
28	Transportation	4	8
29	Vehicles and Parts	4	9
30	Warehouse and Silo	0	4
31	Others	3	5
Total		175	468

Table 4. Market Capitalization of IPOs

The table shows the market size of IPOs in the sample and the distribution by year of offering. Size of IPOs is presented as Mcap which is the offering price multiplied by number of new shares issued. The unit is million Baht.

Issue Year	Mean Mcap (m. Baht)	Min of Mcap (m. Baht)	Max of Mcap(m.Baht)
1991	6033.81	226.01	55,714.29
1992	9715.46	375.00	84,000.00
1993	7786.85	245.00	122,265.00
1994	11439.94	420.00	154,415.49
1995	14397.77	770.00	70,003.44
1996	6625.61	280.00	28,400.00
1991-1996	8778.87	226.01	154,415.09

Table 5. Descriptive Statistics of the Forecast Error

Forecast Accuracy for each IPO is measured in terms of Forecast Error (FE) and Absolute Forecast Error (AFE). FE-a is forecast error whereby the error is scaled by the actual profit or FE-a = (AP – FP) / | AP | where AP is actual forecast of earnings per share and FP is forecast profit. FE-f is forecast error whereby the error is scaled by the forecast profit or FE-a = (AP – FP) / | FP | AFE-a is measured by taking the absolute value of FE-a and AFE-f is measured by taking the absolute value of FE-f . AFE(RW) is computed as the absolute value of the error metric where the forecast profit or FP is the latest earning . When AFE(RW) is scaled by actual value, we express in term of AFE(RW)-a and when AFE(RW) is scaled by the forecast profit, we express it in term of AFE(RW)-f. AFE(G) is the absolute value of error metric whereby the forecast value is the latest earning multiplied by the 2-year annually compound growth rate of eps prior to listing. When AFE(G) is scaled by actual value, we express in term of AFE(G)-a and when AFE(G) is scaled by the forecast profit, we express it in term of AFE(G)-f.

Forecast Accuracy	Mean	Median	Max	Min	Stdv.
FE-a	-0.8988**	-0.0418	0.7490	-56.7500	4.6671
FE-f	-0.0686	-0.0402	2.9841	-3.7000	0.6091
AFE-a	1.0568***	0.1991	56.7500	0.0067	4.6337
AFE-f	0.3576***	0.2083	3.7000	0.0067	0.3576
AFE(RW)-a	0.9404***	0.3386	33.0000	0.0000	2.7865
AFE(RW)-f	0.7340***	0.3415	20.8571	0.0000	1.9273
AFE(G)-a	1.2889***	0.9058	17.1329	0.0035	2.0299
AFE(G)-f	6.5827***	2.3091	103.9352	0.0035	13.2411

***Statistically significant at the 0.01 level (t-test)

Table 6 Comparison of Forecast Error (FE) and Absolute Forecast Error (AFE)

Forecast error, FE, is the percentage mean forecast error. Absolute Forecast Error, AFE, is the percentage mean absolute forecast error. FE is computed by $FE = (AP - FP)/|FP|$ where AP is the actual forecast of earnings per share and FP is the profit forecast of IPO stocks. AFE is measured by taking the absolute value of FE.

Stock Market	FE	AFE	Researchers
China-(B-Share) **	21.92	40.12	Chen and Firth (1999)
Hong Kong*	9.89	9.89	Cheng and Firth (2000)
New Zealand**	-2.89	11.57	Firth and Smith (1992)
Singapore**	14.00	20.22	Firth et. al. (1995)
Thailand*	-89.88	105.68	THIS STUDY
Thailand**	-6.86	35.86	THIS STUDY

*Error metric is scaled by actual profit

** Error metric is scaled by forecast profit

Table 7 Forecast Superiority

DIFF (RW) is the mean difference between AFE (RW) and AFE. DIFF (G) is the mean difference between AFE (G) and AFE. AFE(RW) and AFE(G) are the mean absolute forecast errors using the last earnings as a forecast of earnings and the last earnings with growth as a forecast of earnings, respectively. They are computed as AFE (RW) = $|(AP - RWF)/AP|$ and AFE (G) = $|(AP - GF)/AP|$ where RWF is the latest earnings before listing. GF is the product of the latest earnings multiplied by one plus the annual compound growth in profits over the three years prior to listing. SUP and SUP(G) are the forecast models as used by Brown et al. (1987)

Forecast Accuracy	Mean	Median	Max	Min	Stdv.
DIFF(RW)	0.5653***	29.3000***	-	-	-
DIFF(G)	0.9376***	0.9460**	-	-	-
SUP (RW)	0.4219***	0.2890	4.1300	-3.1900	1.3241
SUP(G)	1.2030***	1.1563	4.4200	-2.8800	1.4762

***Statistically significant at the 0.01 level (t-test)
** Statistically significant at the 0.05 level (t-test)

Table 8 Regression Results on Forecast Accuracy

Regression analyses are used to capture the bias and under/over reaction of the forecast. In Panel A, we use equation 7, $(AP_t - AP_{t-1})/AP_{t-1} = \alpha + \beta(FP_t - AP_{t-1})/AP_{t-1}$ where AP is the actual profit and the FP is the forecast profit as published in the offering prospectus. In Panel B, we replace forecast profit, FP_t, with last year's profit multiplied by a growth factor, $AP_{t-1}*G$

Panel A: $(AP_t - AP_{t-1})/AP_{t-1} = \alpha + \beta(FP_t - AP_{t-1})/AP_{t-1}$

variable	Value	t- value	
α	-0.109	-1.423	
β	0.808**	24.113	
R^2			0.771
Adjusted R^2			0.769
F			581.427**

** Statistically significant at the 0.05 level.

Panel B: $(AP_t - AP_{t-1})/AP_{t-1} = \alpha + \beta(AP_{t-1}*G - AP_{t-1})/AP_{t-1}$

variable	Value	t- value	
α	.092	0.543	
β	-.091	-0.756	
R^2			.057
Adjusted R^2			.003
F			0.572

Table 9 Cross-sectional Regression of Absolute Forecast Errors: Descriptive Statistics

This table shows the regression results when absolute forecast error (AFE) is the dependent variable. Explanatory variables are as follows: SIZE is the market capitalization in terms of million Baht. AGE is the number of years from establishing the firm to the first trading day in the stock market. VARIAT is the coefficient of variation of earnings for the three-years before the IPO firm lists on the stock market. LEVER is the ratio of total debt to total assets of the IPO firm measured at the end of the first trading year LENGTH is the number of days between the first trading day and the fiscal year-end. MKT is the daily market return on the same date as the day of first day trading of the IPO.

Panel A: Descriptive Statistics of the Variables

Variables	mean	median	max	min
SIZE	8584.50	2821.10	154415.49	226.01
AGE	20.21	13.17	91.19	2.42
VARIAT	0.41	0.50	14.94	-51.11
LEVER	0.60	0.62	0.97	0.03
LENGTH	173.98	158.00	363.00	3.00
MKT(%)	-0.25	-0.38	5.30	-7.25

Panel B: Regression Results

Variables	Coefficients	t-value
Intercept	0.096	0.739
SIZE	0.181**	2.386
AGE	-0.007	-0.090
VARIAT	0.046	0.614
LEVER	0.070	0.905
LENGTH	0.150*	1.956
MKT(%)	0.016	0.213
R^2	.054	
Adjusted R^2	.020	
F	1.585	

** Significant at the 0.05 level

* Significant at the 0.10 level

Table 10. Initial Returns of the IPOs

The sample is drawn from IPOs that listed on the SET during 1991 to 1996. Initial Return is defined as the first day's closing price minus the offering price and divided by the offering price. "Underpricing" are cases where the initial returns are greater than zero. "Overpricing" are cases where the initial returns are less than zero. Normal pricing is when the initial returns are zero.

Panel A: Descriptive Statistics of Initial Returns

Total number of IPOs	175
Mean initial return (%)	36.55
Stdv. of the mean initial return	53.36
Median of initial return (%)	25.00
Max. of initial return (%)	465.00
Min. of initial return (%)	-39.39
Number of Underpriced Firms Percentage	138 78.8%
Number of Overpriced Firms Percentage number	35 20%
Number of Normal priced Firms Percentage number	2 1.2%

Panel B: Distribution of Initial Returns

Distribution of Initial Returns	**No. of Firms**
> 100%	14
> 90 – 100	10
> 80 – 90	6
> 70 – 80	7
> 60 – 70	7
> 50 - 60	9
>40 - 50	14
>30 - 40	14
>20 - 30	14
>10 - 20	16
> 0 - 10	27
> -15 - 0	24
> -30 - -15	7
> -45- -30	6
Total	175

Table 11 Correlation Matrix: Initial Returns, Price Earnings Ratio and Forecast Error

IR is the first day returns of IPOs. PEMR is the ratio between the price earnings ratio of the matched firm divided by price earnings ratio of IPO firm. FE is the difference between actual earnings of an IPO and the forecast earnings published in the offering prospectus, and divided by the absolute value of the forecast profit.

variables	IR	PEMR	FE
IR	1.000		
PEMR	0.135*	1.000	
FE	-0.027	-0.061	1.000

Significant at the 0.1 level

Table 12 Cross-sectional Explanation of Initial Returns: Regression Results

Regression analysis is used to explain the initial returns of IPOs as per the following equation:

$$IR = \beta_0 + \beta_1 FE + \beta_2 PEMR + \beta_3 SIZE + \beta_4 AGE + \beta_5 MKT$$

IR is the initial return or underpricing. FE is the difference between the actual earnings of an IPO and forecast earnings published in the offering prospectus and divided by the absolute value of the forecast earnings. PEMR is the ratio between the price earnings ratio of the matched firm divided by the price earnings ratio of the IPO firm. SIZE is the market capitalization of the IPO. AGE is the logarithm of the number of years since the IPO was established. MKT is the market return measured at the same date as the first day of trading of the IPO.

Variables	Coefficients	t-value
Intercept	70.747**	4.845
FE	13.580*	1.821
PEMR	-0.003	-0.183
SIZE	-0.002	-1.164
AGE	-27.602**	-2.277
MKT	5.217*	1.671
R^2	7.7	
F-value	2.541**	

** Significant at the 0.05 level
*Significant at the 0.1 level

Table 13 Average Bechmark-adjusted Returns (ARs) and Cumulative Average Benchmark-adjusted Returns (CARs)

This Table shows the average SET index-adjusted returns (AR_t) and cumulative average benchmark-adjusted returns ($CAR_{1,t}$). $AR_t = \frac{1}{n}\sum_{i=1}^{nt}(r_{ipo,it} - r_{match,it})$ where $r_{ipo,t}$ is the total return on initial public offering firm i in event month t, and $r_{match,it}$ is the total return on the corresponding matched firm. The t-statistic for the AR is computed for each month as $AR_t \cdot \sqrt{n_t/sd_t}$ where AR_t is the average matched firm-adjusted return for month t, n_t is the number of observations in month t, and sd_t is the cross-sectional standard deviation of the adjusted return for month t. The t-statistic for CAR is computed as $CAR_{1,t} \cdot \sqrt{n_t/csd_t}$, where $csd_t = [t*var + 2*(t-1)*cov]^{1/2}$, t is the event month, var is the average cross-sectional variance, and cov is the first-order autocovariance of the AR series.

Event month	n	AR_t(%)	t-stat	CARs(%)	t-stat
1	142	-1.76	-1.10	-1.76	-1.40
2	140	-0.76	-0.55	-2.52	-1.41
3	137	0.54	0.53	-1.98	-0.90
4	134	0.11	0.11	-1.88	-0.73
5	136	-2.85	-3.10	-4.73	-1.65
6	135	-0.33	-0.29	-5.05	-1.60
7	129	0.06	0.05	-4.99	-1.43
8	129	-1.43	-1.13	-6.42	-1.72
9	122	0.41	0.28	-6.01	-1.48
10	127	0.24	0.18	-5.78	-1.37
11	127	-2.89	-1.74	-8.66	-1.97
12	117	-0.16	-0.11	-8.83	-1.84
13	116	0.02	0.02	-8.80	-1.75
14	119	-2.34	-2.50	-11.14	-2.17
15	117	-2.97	-2.44	-14.11	-2.63
16	115	-2.67	-2.16	-16.78	-3.00
17	113	-2.40	-1.60	-19.18	-3.30
18	108	-1.94	-1.30	-21.12	-3.45
19	105	0.53	0.31	-20.59	-3.23
20	103	-1.88	-1.44	-22.47	-3.40
21	96	-6.12	-4.44	-28.58	-4.08
22	98	-2.52	-2.09	-31.10	-4.38
23	99	-1.52	-1.29	-32.62	-4.52
24	99	-0.60	-0.43	-33.23	-4.50
25	92	-3.59	-2.51	-36.82	-4.71
26	94	-3.17	-1.93	-39.99	-5.08
27	99	-0.59	-0.31	-40.58	-5.19
28	98	-2.53	-1.27	-43.10	-5.38
29	99	0.54	0.36	-42.56	-5.25
30	94	-1.46	-0.87	-44.02	-5.20
31	95	-4.03	-2.54	-48.05	-5.61
32	89	-4.38	-2.59	-52.43	-5.84
33	89	-0.64	-0.30	-53.08	-5.82
34	82	-2.19	-1.61	-55.27	-5.73
35	80	-3.16	-2.22	-58.42	-5.90
36	78	-1.88	-1.14	-60.30	-5.92

Table 14. Cross Sectional Explanation of CARs: Regression Analysis

The regression analysis uses the equation:
$CAR_{x\ year} = \alpha_0 + \alpha_1 IR + \alpha_2 SIZE + \alpha_3 AGE + \alpha_4 MAKT + \alpha_5 FE + \alpha_6 BV/MV$
Where CAR_x year is the cumulative average benchmark-adjusted return for the end of years 1, 2, and 3. IR is the first-day initial return on the IPO. SIZE is the market capitalization of the IPO. AGE is the logarithm of years since the establishment of the firm. MAKT is the return on the market index on the same date as the first-day return on the IPO. FE is the forecast error. BV/MV is the book to market ratio.

	Dependent Variable					
	CAR_{1year}		CAR_{2year}		CAR_{3year}	
Variables	Coefficients	t-stat	Coefficients	t-stat	Coefficients	t-stat
Intercept	2.239	0.214	-10.022	-1.165	-3.451	-0.292
IR	-0.004	-0.974	0.001	0.422	-0.003	-0.761
SIZE	-0.005	-0.682	-0.005	-0.694	-0.004	-0.295
AGE	2.946	0.463	4.758	0.980	-1.410	-0.199
MAKT	-0.526	-0.330	0.848	0.797	-0.492	-0.319
FE	3.539	1.024	5.018**	2.213	2.724	0.827
BV/MV	8.449	0.911	-4.907	-0.599	-2.980	-0.281
R^2	5.1		9.2		1.9	
F stat	0.959		1.405		0.211	

** Significant at the 0.05 level.

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Appendix

Executive Summary

1. ความสำคัญและที่มาของปัญหา

การศึกษาเรื่องการลงทุนในหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชนมีความสำคัญต่อทั้งด้านผู้ลงทุนและต่อการศึกษาในทางการเงิน หลักทรัพย์ที่เสนอขายเป็นครั้งแรกเป็นหลักทรัพย์ที่ผู้ลงทุนมีข้อมูลจำกัดและมักพบความผิดปกติของผลตอบแทนเกิดขึ้นสมอแทบทุกประเทศรวมทั้งในประเทศไทยด้วย (Loughran, Ritter and Rydqvist, 1994, 2000) ความผิดปรกติที่พบเสมอในหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชนคือการมีผลตอบแทนที่สูงในวันแรกของการซื้อขาย (high initial return) และการมีประสิทธิภาพต่ำของหลักทรัพย์ใหม่ในระยะยาว (long-run underperformance)

ในประเทศไทยซึ่งนักลงทุนส่วนใหญ่เป็นนักลงทุนรายย่อยข้อมูลการพยากรณ์ผลกำไรที่ชี้แจงในหนังสือชี้ชวนของหลักทรัพย์ที่เสนอขายต่อประชาชนจึงเป็นข้อมูลที่สำคัญของนักลงทุนในการตัดสินใจลงทุน งานวิจัยในต่างประเทศพบว่าการพยากรณ์ข้อมูลที่ปรากฏในหนังสือชี้ชวนมีระดับความผิดพลาดที่แตกต่างกันและความผิดพลาดดังกล่าวอาจนำมาอธิบายความผิดปกติของผลตอบแทนได้ (Firth,1997,1998) ทั้งนี้เพราะข้อมูลการพยากรณ์ในหนังสือชี้ชวนสามารถใช้ส่งสัญญาณ หรือบ่งบอกมูลค่าของกิจการในอนาคตได้ คำถามของงานวิจัย (research question) ในการศึกษานี้ คือ การพยากรณ์ดังกล่าวมีความถูกต้องเพียงใดและมีความสัมพันธ์กันอย่างไรกับความผิดปกติของผลตอบแทนที่พบในหลักทรัพย์ที่เสนอขายต่อประชาชนครั้งแรก

2. วัตถุประสงค์

2.1. วัดความถูกต้องของข้อมูลการพยากรณ์ผลกำไรจากหนังสือชี้ชวนเทียบกับวิธีการทางสถิติที่ใช้พยากรณ์จากข้อมูลในอดีต

2.2. ตรวจสอบความสัมพันธ์ระหว่าง ความถูกต้องในการพยากรณ์ผลกำไรที่ได้จากหนังสือชี้ชวนและระดับผลตอบแทนเริ่มแรกของหลักทรัพย์ที่เสนอขายต่อประชาชนเป็นครั้งแรก

2.3. ตรวจสอบ ความสัมพันธ์ระหว่างความถูกต้องในการพยากรณ์ผลกำไรและผลตอบแทนภายหลังเข้าทำการซื้อขายระยะยาว

3. ระเบียบวิธีวิจัย

การศึกษาครั้งนี้ใช้ข้อมูลการพยากรณ์ผลกำไรที่เผยแพร่ในหนังสือชี้ชวนของหุ้นที่เสนอขายต่อประชาชนเป็นครั้งแรกในตลาดหลักทรัพย์แห่งประเทศไทย ในช่วงปี พ.ศ. 2534 ถึงปี พ.ศ. 2539 การ

วัดความถูกต้องของข้อมูลการพยากรณ์จะได้ใช้แบบจำลองของ Firth (1997,1998) การวัดความผิดพลาดที่พบในหนังสือชี้ชวนสามารถวัดได้ดังสมการ

$$FE\text{-}a = (AP - FP) / |AP| \text{ และสมการ}$$

$$FE\text{-}f = (AP - FP) / |FP|$$

โดยที่

FE = ความผิดพลาดในการพยากรณ์ (forecast error)

AP = ผลกำไรที่แท้จริง (actual profit)

FP = ข้อมูลจากการพยากรณ์ (forecast profit)

ค่าสมบูรณ์ของความผิดพลาดในการพยากรณ์สามารถหาได้จากสมการดังนี้คือ

$$AFE = |FE|$$

ค่า ความผิดพลาดในการพยากรณ์ (FE) จะเป็นตัวชี้ถึงทิศทางของความผิดพลาดในขณะที่ค่าค่าสมบูรณ์ (AFE) จะเป็นเครื่องชี้ถึงระดับความผิดพลาดในการพยากรณ์

ระดับความผิดพลาดที่คำนวณได้จะนำมาเปรียบเทียบกับวิธีการพยากรณ์ทางสถิติ 2 วิธี คือ แบบจำลองการพยากรณ์โดยใช้ข้อมูลในปีที่ผ่านมา (Random Walk) และแบบจำลองการพยากรณ์โดยใช้ข้อมูลในอดีตซึ่งได้นับรวม อัตราการขยายตัว (growth rate) ไว้ด้วยโดยมี สมมุติที่ตั้งไว้ คือ การพยากรณ์ผลกำไรที่ได้จากหนังสือชี้ชวนมีความแม่นยำมากกว่าผลกำไรที่ได้จากการพยากรณ์ด้วยวิธีทางสิถิติของข้อมูลในอดีต

การวัด ความสัมพันธ์ระหว่างความแม่นยำของการพยากรณ์ และ อัตราผลตอบแทนวันแรกของหลักทรัพย์ที่เข้าตลาดเป็นครั้งแรกได้ใช้วิธีการ Ordinary Least Square (OLS) โดยมีอัตราผลตอบแทนวันแรกเป็นตัวแปรอิสระและความผิดพลาดในการพยากรณ์เป็นตัวแปรตามร่วมกับตัวแปรควบคุมอื่นตามสมการดังนี้

$$IR = \beta_0 + \beta_1 FE + \beta_2 PEMR + \beta_3 SIZE + \beta_4 AGE + \beta_5 MAKT$$

โดยที่

IR = ผลตอบแทนวันแรกของหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชน

FE = ความผิดพลาดในการพยากรณ์ (Forecast Error)

PEMR = อัตราส่วนระหว่าง Price Earning ของหลักทรัพย์อื่นที่มีลักษณะใกล้เคียงกับหลักทรัพย์ IPO กับ Price earning ของหลักทรัพย์ใหม่ในตลาด

SIZE = มูลค่าของหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชน

AGE = ค่าLog ของอายุของกิจการที่มีการเสนอขายหลักทรัพย์เป็นครั้งแรกต่อประชาชน

MAKT = ผลตอบแทนโดยรวมของตลาดหลักทรัพย์ในวันที่ซื้อขายวันแรกของหุ้น IPO

สมมุติฐานที่กำหนดไว้ในส่วนนี้ คือ ความผิดพลาดของการพยากรณ์ จากหนังสือชี้ชวนจะมีความสัมพันธ์ในทางเดียวกับ อัตราผลตอบแทนวันแรกของหลักทรัพย์

ส่วนที่ 3 ของการศึกษาเป็นการใช้วิธีการ Multiple Regresses Analysis เพื่อศึกษาความสัมพันธ์ของผลตอบแทนผิดปกติ 1 ปี สะสมจากวันแรก (Cumulative Adjusted Return) ซึ่งการวัดผลตอบแทนผิดปกติสะสมได้ใช้แบบจำลองของ Ritter (1991)

$$CAR_{year\ 1} = \alpha_0 + \alpha_1 IR + \alpha_2 SIZE + \alpha_3 AGE + \alpha_4 MARK + \alpha_5 ERROR$$

โดยที่

$CAR_{year\ 1}$ = ผลตอบแทนผิดปกติ 1 ปี สะสมจากวันแรก (Cumulative Adjusted Return)

IR = ผลตอบแทนวันแรกของหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชน

ERROR = ความผิดพลาดในการพยากรณ์

SIZE = มูลค่าของหลักทรัพย์ที่เสนอขายเป็นครั้งแรกต่อประชาชน

AGE = ค่าLog ของอายุของกิจการที่มีการเสนอขายหลักทรัพย์เป็นครั้งแรกต่อประชาชน

MAKT = ผลตอบแทนโดยรวมของตลาดหลักทรัพย์ในวันที่ซื้อขายวันแรกของหุ้น IPO

โดยสมมุติฐานในส่วนนี้คือ ผลตอบแทนผิดปกติ 1 ปีสะสมจากวันแรกจะมีความสัมพันธ์ในทางเดียวกันกับความผิดพลาด จากการพยากรณ์ค่ากำไรต่อหุ้นที่ได้จากหนังสือชี้ชวน

4. ผลที่ได้โดยสรุป

ผลการวิจัยปรากฏว่าการพยากรณ์กำไรที่ปรากฏในหนังสือชี้ชวนมีความผิดพลาดในทิศทางสูงเกินค่าจริง และระดับความผิดพลาดของการพยากรณ์ที่วัดได้มีค่าค่อนข้างสูงเมื่อเทียบกับการพยากรณ์ลักษณะเดียวกันในประเทศอื่น อย่างไรก็ตามเมื่อเปรียบเทียบความผิดพลาดของการพยากรณ์ผลกำไรในหนังสือชี้ชวนกับความผิดพลาดของการพยากรณ์ที่คำนวณโดยใช้วิธีทางคณิตศาสตร์อย่างง่ายปรากฏว่าความผิดพลาดของการพยากรณ์ที่ปรากฏในหนังสือชี้ชวนมีค่าต่ำกว่าความผิดพลาดของการพยากรณ์จากวิธีคณิตศาสตร์อย่างง่าย ผลการวิจัยนี้แสดงให้เห็นถึงการพยากรณ์ที่สูงเกินจริงและชี้ให้เห็นถึงการขยายตัวที่มากก่อนการเข้าซื้อขายในตลาดหลักทรัพย์ นอกจากนั้นผลการวิจัยยังแสดงให้เห็นว่าปัจจัยที่มีความสำคัญในการอธิบายความผิดพลาดในการพยากรณ์คือมูลค่าการเสนอขายหุ้นและช่วงห่างของระยะเวลาการพยากรณ์กับวันที่ได้มีการซื้อขายครั้งแรก

เมื่อทดสอบความสัมพันธ์ระหว่างผลตอบแทนวันแรกเข้ากับความผิดพลาดในการพยากรณ์พบว่าผลตอบแทนวันแรกเข้ามีความสัมพันธ์ในทิศเดียวกันกับความผิดพลาดของการพยากรณ์ผลกำไรที่ปรากฏในหนังสือชี้ชวน การศึกษาความสัมพันธ์ระหว่างประสิทธิภาพของหลักทรัพย์ภายหลังที่ได้เข้าตลาดกับความผิดพลาดในการพยากรณ์พบว่าประสิทธิภาพของ

หลักทรัพย์ที่ได้เข้าตลาดนั้นมีค่าต่ำกว่าดัชนีโดยรวมและมีความสัมพันธ์ในทิศเดียวกันกับความผิดพลาดของผลกำไรที่พยากรณ์และเผยแพร่ในหนังสือชี้ชวน

5. แผนการดำเนินงานวิจัยตลอดโครงการในแต่ละช่วง 6 เดือน

แผนการดำเนินงาน	ธ.ค. 2000	มิ.ย. 2544 – ธ.ค. 2544	ม.ค. 2545 – ธ.ค. 2545
เสนอโครงร่าง	→		
จัดหาและเตรียมข้อมูล		→	→
วิเคราะห์ข้อมูล			→
สรุปผล			→
พิมพ์และจัดทำรูปเล่ม			→
นำเสนอ งานวิจัย	ตามกำหนดการของ สกว.		

6. ผลงาน/หัวข้อเรื่องที่คาดว่าจะตีพิมพ์ในวารสารวิชาการระดับนานาชาติในแต่ละปี

ชื่อเรื่องที่คาดว่าจะตีพิมพ์: Accuracy of Profit Forecasts Published in the Offerings Prospectuses: The case of the Thai stock market

ชื่อวารสารที่คาดว่าจะตีพิมพ์: Journal of Business Finance

ชื่อเรื่องที่คาดว่าจะตีพิมพ์: The Relationship between Accuracy of Profit Forecasts and Return Anomaly in Initial Public Offerings: The Case of the Thai Stock Market

ชื่อวารสารที่คาดว่าจะตีพิมพ์: Pacific- Basin Finance Journal