SEASONED EQUITY OFFERINGS IN AN EMERGING MARKET: EVIDENCE FROM THAILAND

By

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SYNOPSIS

Researchers have developed investigations into both initial and seasoned equity offering (SEO) by obtaining data from developed markets (e.g. Denis, 1994; Kothari and Warner, 1997; Corwin, 2003; Eckbo et al., 2006), while the literature in emerging markets is relatively neglected. This thesis provides an overview examination of one specific emerging region, namely Thailand. Equity financing in Thailand has become more widespread in the aftermath of the last economic crisis in 1997. With a more recent data set and larger sample size than previous Thai studies, we examine the performance of SEO firms between 1999 and 2006. Our thesis findings contribute to the existing literature by: (1) examining the SEO samples which focus mainly on issuing new shares to existing shareholders, i.e. rights issuing and private placement, instead of the general aspect of public offering, (2) applying a different benchmark to measure post-issuing performance compared with existing studies and (3) examining the relationship between short-term and long-term abnormal returns.

Our evidence reveals that the stock prices react negatively to SEO announcements. We also find that there is no relationship between short- and long-term abnormal returns. This is a consistent explanation of the characteristics of the Thai capital market in practice. In addition, our results from the determinants of SEO underpricing are mostly consistent with the previous literature (i.e. Corwin, 2003; Intintoli and Kahle, 2009). Lastly, our findings suggest that SEO firms underperform during the post-issuing period, particularly one year after issuing new shares.

“To my ancestors and the family of Lerskullawat”

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CHAPTER 1

INTRODUCTION

1.1 Background and Motivation

In the studies regarding equity offerings, the evidence of whether an expected flotation cost is caused by a security announcement is inconclusive. Nonetheless, it is noticed from these studies that equity offerings may be made in two ways. First, an expected permanent fall in the issue price is a typical result of the announcement of equity offering. Second, the flotation costs could have either a direct or indirect impact when the companies raise new capital via equity. Generally, it is possible to identify two types of flotation costs: direct and indirect ones. The direct flotation costs consist of underwriters' fees and out-of-pocket expenses, e.g. fees to law firms, accountants, registration fees, etc. The indirect flotation costs, however, contain the stock price reaction to both initial public offerings (IPOs, hereafter) and seasoned equity offerings (SEOs, hereafter) and to announcements of delay offering or cancellation and underpricing. Underpricing is stated to be the most important element in the indirect flotation costs, because an underwriter is required to capture the association of security offer underpricing (Eckbo et al., 2006).

The survey paper of Eckbo et al. (2006) shows that the majority of existing studies on SEOs obtain their data or case study from developed markets. A small amount of SEO literature (e.g. La Porta et al., 1999; Salamudin et al., 1999) examines the data from

emerging market(s), leading to a paucity of knowledge in these markets in such a particular area as SEOs. Examining an out-of-sample, e.g. an emerging market, becomes interesting, not only to fill a gap which is lacking in the literature on these markets, but also to highlight differences in institutional characteristics (i.e. high volatility, high level of risk and frequent speculations – see Mody, 2004) which are other worthwhile reasons. Furthermore, we are able to establish whether the consequences from developed markets are carried over to emerging markets. In the present study, Thailand has been chosen as the case study of the emerging market. This is because the main characteristics of the emerging markets match those revealed in the Thai capital market and because Thailand is in transition from a planned economy to a free-market one (Mody, 2004). This leads to an increase in foreign investment in the Thai capital market; for example, a rise in the number of foreign investors in the market, from 19% of total investors in 2001 to 34% of total investors in 2006[1].

In Thailand, financing with equities has become more popular, in particular when the country was badly hit by the financial crisis of 1997. To illustrate this, we should begin with the downturn of the economy during this crisis. Several banks and financial institutions were affected, and some either became bankrupt or had to be taken over[2]. Since these institutions were in trouble in the crisis, other companies had no confidence in the ability of the banks to provide loans for them, or else the banks themselves did not trust these companies to pay back the loans made to them. This

[1] Source: SETSMART as of 31 July 2008.
[2] In fact, not only were the financial institutions hit by the crisis, but other businesses (non-financial companies) were also affected. However, the financial firms appeared to have suffered more from the impact.

was because both (the financial and the non-financial firms) were also affected by the crisis. As a result, when businesses could not be financed with debt, they turned to financing themselves via equities, which would have been the best solution at that time. This is because by the time of the financial crisis in 1997, there were no other alternative markets, such as bond or derivative ones, in Thailand[3]. Consequently, there was an increase in the number of new listed companies on the Stock Exchange of Thailand (hereafter, SET) – from 392 firms in 1999 to 518 firms in 2006 and a marked rise in number of SEO firms – from 41 firms in 1999 to 116 firms in 2006[4].

Although the studies of IPOs appear to have been drawn from a wider circle than the SEO studies, in the emerging markets in particular, not only in Thailand, the number of SEOs in Thailand during the post-crisis period gradually rose (see Figure 3.1 in Chapter 3). This is owing to the regulations on equity offerings in Thailand which allow SEOs to be made at any time after the IPOs. Therefore, this should make the issue of SEOs in Thailand more interesting. Few studies of SEOs have also been undertaken in Thailand. One possible reason is that the Thai capital market depends normally on technical factors (in term of the external factors such as GDP, the exchange rate, inflation, interest rates and money flow-in and –out) rather than fundamental factors. This has led to a lack of interest in providing research based on theoretical issues and academic styles, which are mostly related fundamental factors. As a result, many researchers are likely to be more concerned with technical analyses.

[3] The bond market first began trading on the stock exchange in November 2003, while the derivative market was established in 2004.
[4] Source: The SET, as of 31 July 2008.

1.2 Main Objectives

The main objective of this thesis is to examine and explore comprehensively the performance of SEOs in an emerging market – in the case of Thailand. This will fill one of the gaps in this area, as there is a lack of recent SEO studies in the region. In addition, this thesis is among the first in Thailand to focus on separating considerations on different issuing methods and the offering dilutions (discounting in prices in terms of market capitalisation).

We realise from the survey paper of Eckbo et al. (2006) that indirect flotation costs seem to be easily and vastly expandable in more detail than direct flotation costs. In addition to IPOs, we analyse two categories of indirect flotation costs: stock price reaction to SEOs and underpricing, which refer to the study of short-term performance. This is because SEO has become more widespread and of interest in Thailand. We support this with: (1) a substantial rise in the number of SEOs, from 106 in 1999 to 403 in 2006 and (2) the fact that SEOs are concerned with issuing new equities to existing shareholders rather than to the public. With regard to the stock price reaction, the second objective of this thesis concerns the establishment of whether the SEO announcement affects the stock price reaction, how the shareholders are diluted by the SEO and an examination of the determinant factors which impact on the SEO stock price reaction. The study applies the standard event study framework with the calculation of abnormal returns via the market model. Instead of investigating only the total sample, we intend to make this study more comprehensive in order to consider individually the issuing methods available during our study

period. Subsequently, we develop the estimation of factors which affect the SEO stock price reaction, based on the characteristics of the Thai capital market. In addition, comparisons with the existing literature are brought into the discussion of our evidence. Furthermore, the examination of long-term stock price reaction will explain the relationship between short- and long-term stock price reactions in Thailand, which can be claimed to be new evidence among Thai SEO studies.

We turn our attention to another part of the indirect flotation costs, namely underpricing, which is indicated as the most important element. The third objective of this thesis is to determine the factors which influence SEO underpricing. This is different from our second objective, which concerns precisely the announcement effect and market reaction. In this study, we employ a standard OLS (Ordinary Least Square) regression to test in three categories related to the previous research and the characteristics of the Thai capital market. These categories are information asymmetry and uncertainty, price pressure and manipulative trading. Different issuing methods are also considered separately in order to have a comprehensive view of this area. In our last objective of this thesis, we aim to focus on the way in which SEO companies perform in the post-issuing. We consider whether the companies underperformed during the post-issuing period by using the Buy-and-Hold Return (BHR) approach. Moreover, we bring the issuing methods into consideration, first separately and then as a total sample. We believe that each issuing method produces some interesting outcomes, and explain how each in turn influences Thai SEO companies. In addition, rather than examining the matching firm technique, we

introduce the investigation with the use of benchmarks in the BHR approach. These differentiate the present study from all previous ones, in particular those in Thailand.

1.3 Contributions

Our study embodies several differences from previous research in this particular area of SEOs. First, we provide an out-of-sample examination. Obtaining the data from Thailand as an emerging market, we use the existing SEO literature in developed markets to develop our hypotheses and to apply the suitable methodologies as discussed in those studies to our thesis. Thus, we will examine whether the outcomes from developed markets carry over to emerging ones (e.g. Thailand). If this is not the case, the research in emerging markets should undergo a specific examination. For instance, the data from Thailand (as an emerging market) may need to be examined with the basic methodology (i.e. mean-adjusted model, market model and Buy-and-Hold Return approach) in order to obtain a close reflection of the market in practice. This refers to the fact that the market is highly volatile, causing the reactions of the stock prices to depend mainly on current situations, announcements and rumours. An example of this can be seen when the government announced its intention to return the full loan back to the IMF (International Monetary Fund) in February 2003, the SET index (the Thai main composite index) reached nearly 800 by the end of the year, from around 400 at the beginning of the year. This included a substantial rise in

average daily turnover from THB8,415 million in 2002 to THB20,647 million in 2004[5].

In addition to the out-of-sample tests, we fill one of the gaps in the SEO literature by expanding the study into the markets which existing research only occasionally examines, i.e. the emerging markets. Some examples, which are scrutinised frequently in developed markets but rarely in emerging markets, are SEO underpricing and the post-issuing performance of SEOs (Chapters 5 and 6 of this thesis). The second contribution is that we use a different period of study from previous studies in the same area in emerging markets, notably that of Thailand. With a more recent data set, the evidence provides some differences in analysis, discussions and conclusions. This is because the surrounding situations (e.g. the economy, sample size and regulations) tend to change when the time is changed. This leads to changes in the behaviour of investors and in company decisions when either investments or decisions have to be made. For example, using a period during the post-financial crisis of 1997 (i.e. our study period between 1999 and 2006), investors became more interested in the capital market. This can be seen by the fact that the combination of the size of the equity market (captured via market capitalisation) and the size of the bond market (captured via the total unpaid bonds) was twice as large as the bank loans in 2007. This was caused by a substantial growth in the equity market since 1996[6]. Applying the post-

[5] Source: SETSMART as of 31 July 2008. The exchange rate was briefly at THB33.50: USD1.00.

[6] Although the proportions of the combination of the capital market (equity and bond) were similar to the level of bank loans before 1996, they were slightly different. Unlike the post-financial crisis (i.e. after 1997), this proportion reveals a clear improvement in the investment in the capital market, particularly in the equity market. Information is taken from The Plan of Developing the Thai Capital Market by The Development of the Thai Capital Market Committee on 4 November 2009 (in Thai). Available at: http://www.set.or.th/th/about/vision/files/CMP_Master.pdf [Accessed on 5 November 2010].

financial crisis should also provide a close reflection of the current situation and regulations in the capital market. We can point out a specific regulation of commission fees, which is at a fixed rate. Thus, the security companies (brokers) will benefit from this fixed rate as their main income, leading to high transaction costs for investors (SET Research Note, 2009)[7]. This could influence the movement of stock prices because it leads to a decision by investors as to whether they will be interested in trading in those equities with high transaction costs.

Third, with regard to the SEO sample, our study provides findings which are totally different from those of the existing literature in terms of how the SEOs are issued. In other words, since new equities in Thailand are usually issued via rights issuing, private placement and warrant issuing, there is a small number of firms issuing with public offering, which are defined as SEOs in most previous studies. Thus, we do sometimes exclude this method from our examinations due to a relatively small sample. This elimination should result in differences in the outcomes and other aspects compared with the existing literature, where the majority of SEOs refer to public offering, unless otherwise stated. Furthermore, our sample provides wider sample coverage than the existing literature centred on Thailand. In our empirical studies (Chapters 4, 5 and 6), we present the percentage of data coverage compared to that in the existing Thai SEO literature. This percentage clearly confirms that our sample is much more extensive than previous research in terms of size and the length of the period studied. Hence, the larger sample in our study should provide a wider

[7] The Stock Exchange of Thailand (2009) **SET Research Note: Deregulation of commission fees – to what extent the security companies are ready** (in Thai). Vol. 5, pp.1-5, available at: http://www.set.or.th/setresearch/files/spotlight/200912_Research_Note_05_2552.pdf [Accessed on 2 June 2010].

view and more comprehensive investigations. Fourth, this study considers the characteristics of the Thai capital market and the behaviour of Thai investors on the part of determinants: both of SEO stock price reaction and SEO underpricing. We introduce some factors to be estimated in the regression which are unlikely and not of great concern in developed markets or in other emerging markets. For instance, in Chapter 4, we employ the price-earning ratio (P/E ratio) into our regression because the SET is likely to concern the P/E ratio in the development and improvement of the capital market. Ownership is also brought into our estimation in both Chapter 4 and Chapter 5, since Thai companies are mostly owned by members of the same family. Fifth, we apply a well-known methodology from previous research for measuring post-issuing performance since our study is the first study in Thailand based on the most recent study period (between 1999 and 2006). In Chapter 6, we examine post-issuing performance via the Buy-and-Hold Return approach and investigate the firm's performance with different samples of issuing methods.

Sixth, since no studies in Thailand have separately considered different issuing methods at the same time with such a recent data set, considering and comparing the issuing methods individually will introduce further evidence into the area of SEOs in Thailand. Although some have centred on issuing methods, such as rights issuing and private placement, only a few studies have focused on emerging markets. It seemed interesting to try to identify how companies perform or how certain factors influence SEOs (both stock price reaction and underpricing) in each individual issuing method.

Finally, this study is expected to be useful to investors, as well as the managers of firms, as it provides more knowledge of SEOs in Thailand. Investors will have a better idea of SEOs for their investment decisions based on an analysis of fundamental factors; for instance, they will know how the firms are performing during the post-issuing period with different sample sizes of issuing methods. The firm managers will pay more attention to the factors influencing SEO stock price reaction and/or SEO underpricing. They will also notice from our evidence how companies perform when different issuing methods are applied. This can be seen, for example, from our findings that firms' size positively influences the SEO stock prices reaction in the total sample and in every issuing method when considered differently. This refers to the fact that the larger the company, the more positive is the reaction of stock prices. Thus, it makes no difference if issuing methods are used differently. However, if we have a difference in outcomes from the different issuing methods, the firm managers will be able to choose a specific issuing method (e.g. rights issuing or private placement) in order to raise stock prices from the SEO announcements.

1.4 Type of Data and the Application of the Methodology

Our study is generally described as a quantitative analysis. We initially collected the daily time-series data from the databases (secondary data) during our study period of 1999 to 2006, and turned to the cross-sectional data when we estimated and analysed them. Three main data sources are used throughout this thesis: the SET's fact books, the SETSMART (SET database: SET Market Analysis and Reporting Tools) and the

Thomson One Banker. The first two sources provided the SEO data and the daily trading information, e.g. market capitalisation, trading volume and closed prices (leading to the calculation of daily returns). The Thomson One Banker supplied the financial statements and financial ratios. Initially, our sample shows 1,910 SEOs of 251 firms listed on the SET. This sample was reduced to 173 companies, following the organisation of data in Seiler (2004), together with five different issuing methods: rights issuing, private placement, stock dividend, public offering and warrant issuing. Among these 173 firms, there are 126 issuing via common stocks (the first four methods) and 47 issuing via warrants. We excluded many SEOs due mainly to: (1) the sample firms having an "SP" (suspension) sign during our event study period – 115 days before and after the event and (2) unavailable data, such as no trading and being in the rehabilitation group. We also only used the first SEO of each firm in order to avoid overlapping in the sample. We applied an event-study framework and a standard OLS regression as our main methodology in the study. The abnormal returns (hereafter, ARs) were calculated on the basis of the market model. Moreover, a specific measurement for post-issuing performance (in terms of long-term performance) was obtained, following the suggestions of related studies in these areas, i.e. the Buy-and-Hold Return approach.

1.5 Organisation of the Study

The rest of our study is organised as follows: Chapter Two reviews the surveys in most of the relevant studies of SEOs. We explain in general how the previous studies

of SEOs were done, in both developed and emerging markets. We include in this chapter the main motivations for our study, together with the summary tables of our literature surveys.

In Chapter Three, we begin by discussing why Thailand was chosen as our case study to represent the emerging markets. This is followed by a review of the institutional background in Thailand, giving general information on the Thai capital market, its main characteristics and the national regulations of equity offerings. We present a description of the way in which data were collected for the study in the third part of this chapter. We close the chapter with the conclusions of the main institutional background and our sample size, which will lead to our empirical studies in the following chapters.

Chapter Four is the first of our three empirical chapters. This chapter concerns the SEO stock price reaction in Thailand, referred to as one of the indirect flotation costs. We introduce the investigation in three main categories: (1) announcement day effect and offering dilution, which claim to be the short-term stock price reaction, (2) the determinants of SEO stock price reaction and (3) the long-term stock price reaction. A standard event study framework and OLS regression are introduced to examine these three areas. Furthermore, we provide individual consideration of each issuing method available during our study period. The study in sections 1 and 3 focus mainly on how stock prices react to the SEO announcement, while section 2 (determinants) considers the fundamental factors influencing SEO stock price reaction, developed from the existing literature (mainly in Thailand and emerging markets) and the institutional

background in Thailand. In addition, we discuss several possible robustness tests in sections 2 and 3 in order to confirm how efficient the evidence is.

Chapter Five presents our second empirical study. The chapter aims to estimate the determinants of Thai SEO underpricing, which is another type of indirect flotation cost regarding SEOs. We examine the determinants in three areas: asymmetric information and uncertainty, price pressure and manipulative trading. Moreover, the study takes the different issuing methods into separate consideration. A standard OLS regression is chosen to estimate the determinants of SEO underpricing, together with a possible robustness test to confirm that our results are robust.

Chapter Six is our last empirical study, with a similar structure to the previous two. The chapter concerns the study of the post-issuing performance of Thai SEOs, examining whether there is underperformance of SEO firms. We also analyse post-issuing performance by different issuing methods. This is shown by estimating individually different samples of each issuing method under the null hypothesis that SEO firms underperformed during the post-issuing period. The Buy-and-Hold Return approach is applied in this study as a measurement of post-issuing performance. In addition, we examine the different ways of measuring post-issuing performance as tests of robustness.

Chapter Seven is the concluding chapter. We summarise the outcomes from the three empirical chapters. Moreover, our contributions are compared with the existing

research in Thailand. We also make some suggestions, based on the limitations of the study, for future research in this area.

CHAPTER 2

LITERATURE SURVEY

2.1 Introduction

Since equity offering may be seen as an alternative way of financing companies, several authors have contributed to the broad range of research in this particular area. This chapter surveys various studies relating to both initial public offering (hereafter, IPO) and seasoned equity offering (hereafter, SEO). Theoretical studies introduce several theories about SEOs, such as agency theory, signalling theory and information asymmetry (see Titman and Wessels, 1988; Armitage, 1998; Viswanathan and Wei, 2005). In addition, the evidence of the empirical studies is mostly consistent with those theories in both developed and emerging markets (e.g. Bayless and Chaplinsky, 1996; Ng and Smith, 1996; Jirasetthakulchai, 2000; Corwin, 2003; Capstaff et al., 2004; Intintoli and Kahle, 2009). However, there is paucity of SEO research in emerging markets compared with that in developed markets. Moreover, the emerging market literature focuses mainly on one or two specific areas, such as stock price reaction to published events in short-term performance, whereas there is a lack of studies on long-term performance. In comparison, the literature on the developed market includes wide coverage of the area of SEO. For instance, it considers underpricing in relation to regulations (i.e. Rule 10b-21: Corwin, 2003), short-selling related to the regulations (i.e. Rule 10b-21: Safieddine and Wilhelm, 1996) and ability

to obtain different types of market (i.e. DRs – Depository Receipts in Foerster and Korolyi, 2000).

The chapter is organised as follows: section 2.2 will demonstrate the theoretical literature of SEOs. Section 2.3 gives several surveys regarding the empirical evidence from SEO studies in developed and emerging markets, together with the studies in short- and long-term performance. Section 2.4 will present the literature concerning the use of methodologies in the examination of SEOs. Section 2.5 is the final part of the chapter, containing conclusions about our survey and indicating our motivation.

2.2 Theoretical Literature on SEOs

It may be claimed that the studies on SEOs have been developed from capital structure theories, such as signalling theory and information asymmetry. We will review the studies, which are based on the theories in their examinations and apply to both the developed and emerging markets. We summarise the theoretical literature in the developed and emerging markets in Tables 2.1 and 2.2, respectively. The main details are as follows:

2.2.1 Theoretical Literature on the Developed Markets

Myers (1983) reveals that an offer of exchange debt for equity is followed on average by a rise in stock price and vice versa for the exchange of equity for debt. Titman and

Wessels (1988) analyse the explanatory power of some of the optimal capital structure theories, namely information asymmetry theory, agency theory and bankruptcy cost theory. The suggestion of Grossman and Hart (1982, cited by Titman and Wessels, 1988, p.3) demonstrates that the higher the threat of bankruptcy costs, the higher the debt levels, which reduces the tendency of firm managers to consume more than the optimal level of perquisites. Concerning agency theory, short-term debt would lead to the mitigation of the agency problem rather than long-term debt. Information asymmetry can influence the firms to raise capital from retained earnings, debt and issuing new equity, respectively (Titman and Wessels, 1988, p.6). Moreover, these theories are claimed by the authors to influence the debt-equity choice of firms in different attributes, e.g. asset structure, non-debt tax shields, growth, size, volatility and profitability. They also provide a further explanation of capital structure theory by conducting empirical studies. For instance, this is done by using a factor-analytic technique to measure unobserved variables. This is a direct analogy with the return-generating process assumed to hold in the Arbitrage Pricing Theory (Titman and Wessels, 1988, p.2). This implies that small firms tend to use short-term financing in order to avoid the high transaction costs and this could provide some insights into possible risk factors (Titman and Wessels, 1988, p.14).

Armitage (1998) reviews previous studies, such as Hertzel and Smith (1993), Loughran and Ritter (1995), Armitage and McDiarmid (1997) and Choe et al. (1998), of the process whereby further shares are sold to investors by listed firms. He claims that when companies are undervalued, purchases of new shares by new investors preserve the future gain from being undervalued. Consequently, the existing

shareholders are not certain to gain any profit (Armitage, 1998, p.32). In order to provide an econometric theory which deals with event studies when events are endogenous, Viswanathan and Wei (2005) consider the asymptotic theory for event abnormal returns, beginning with an intermediate lemma. In addition, small sample theory points out that the determination of the expected bias may be explained by sample size and the stationary situation? of the lag number of the events process (Viswanathan and Wei, 2005, p.17).

In recent years, Kim and Purnanandam (2006) have examined the importance of the theoretical explanations[8] for the negative investor reaction and to what extent they affect and interact in pricing newly issued shares. Their findings conclude that a significant cost of issuing new equity in the firm is possibly caused by information asymmetry since the firm value is decreasing and the cost of external equity capital is increasing (Kim and Purnanandam, 2006, p.32). Additionally, a high degree of external monitoring of firms provides no explanatory power from the equity incentive. In contrast, if firms have less outside monitoring, there will be a positive and significant relationship between investor reaction and equity incentive (Kim and Purnanandam, 2006, p.23).

[Insert Table 2.1 here]

[8] The negative investor reactions, according to the authors, consists of the signalling effect, adverse selection problem and agency problems (Kim and Purnanandam, 2006, p.2).

2.2.2 Theoretical Literature on the Emerging Markets

The study of Wiwattanakantang (1999) is perhaps the most relevant paper in this section. Her examination applies optimal capital structure theories (e.g. signalling theory and agency theory) in Thai companies to estimate the traditional factors affecting financing decisions. These factors are stated as profitability, tangibility, taxes and growth. Furthermore, firms with different types of controlling shareholders seem to have a different capital structure and management ownership has no significant effect on debt-equity choice (*ibid*, p.401). Obtaining the data from the questionnaire and applying a multiple regression model, Elashker and Wattanasuwannee (2000) provide the same factorial impact on capital structure in Thailand as was found in Wiwattanakantang (1999), with the additional factor of reputation (associated with the age of firms).

With the review, we realise that information asymmetry, signalling theory and agency theory are the capital structure theories which are most often brought into the study of SEOs. The main concern is claimed to be the way in which the SEO companies perform in the short- and long-term (Titman and Wessels, 1988). Moreover, the value of firms and the movement of stock prices are also among the well-known topics which can be linked with these theories (Myers, 1983; Armitage, 1998; Kim and Purnanandam, 2006). However, it is clear that few studies focus only on theoretical issues without some numerical examples. Therefore, we turn next to the empirical studies of SEOs.

[Insert Table 2.2 here]

2.3 Literature on the Empirical Evidence from SEOs

We provide summaries of the literature on the empirical evidence from SEOs in developed and emerging markets in Tables 2.3 and 2.4 respectively, while the main explanations are to be found below.

2.3.1 Short-Term Empirical Evidence in Developed Markets

2.3.1.1 Stock Price Reaction

Brown and Warner (1985) examine daily stock return properties and the particular characteristics of these data with event study methodologies in order to assess the share price. After applying a mean-adjusted model and market-adjusted model for calculating returns, their results report a highly non-normal for the daily excess returns and daily returns in individual securities. Using a sample size three times greater than that of Brown and Warner, Mikkelson and Partch (1986) investigate further with regard to the nature of information from announcement of offerings. They claim that there is a negative movement in stock prices after the SEOs. Thus, when managers find their shares are overpriced, equity issuing is preferred. However, if the market price is too low, a cancellation action will usually take place. Having analysed 531 registered common stocks in the U.S. market, Asquith and Mullins (1986) calculate the abnormal returns together with Cumulative Excess Returns (CER_i) by employing a two-day excess return to investigate the effect of equity issues on security prices. Their study shows a reduction in stock prices when there is an

announcement of common equity offerings in over 80% of the sample firms used in the study.

Loderer and Mauer (1992), Denis (1994) and Walker and Yost (2007) have produced similar studies regarding the relationship between SEOs and market reaction in the U.S. They apply standard event study methodologies: i.e. calculation of CARs, Tobin's Q, and market-book ratio. Then, they consider either the percentage of reaction or statistical outcomes from the regression, in which the market model is used. All three papers display the same result: that there is no impact between the level of leverage or liquidity and the market reaction to the announcement of newly issued shares from the firms, even the dividend announcements to some extent (Loderer and Mauer, 1992; Walker and Yost, 2007, p.17). Denis (1994), moreover, suggests from his cross-sectional regressions that a high level of profitability of investment opportunities plays a significant role in the justification of market reaction to equity offerings.

Conrad and Kaul (1993) provide an evaluation study concerning the impact of information events to the security prices of American companies. Utilising Cumulative Raw Returns regression, their evidence indicates nothing referring to market overreaction, but the abnormal performance is caused by a measurement of January effect and a bias performance. Shivakumar (2000) studies both managerial reporting behaviour and investor response around public offerings of common stock in the U.S. His results show that there are positive earnings surprises and market reaction at earning releases before an offering announcement. Using the calculations

based on time-series standard deviation and cross-sectional standard deviation, Gajewski and Ginglinger (2002) reveal that there is a negative relationship between the stock price performance prior to the offering announcement and the reaction of security price. Their results also suggest that when either an investment or an acquisition occurs, the market reacts positively, which is consistent with a lower adverse selection effect. Masulis and Shivakumar (2002, p.646) suggest that the incorporation of new information into market prices can be either accelerated or retarded substantially when there are differences in the structure of the market.

After studying the relationship between the sequence of SEOs in the firms making multiple offering and the announcement period returns, D'Mello et al. (2003, p.84) find that there is no impact on stock price reaction to the current equity issue announcement caused by either expectation of superior performance after the current issue or the improvement of firm performance after the previous offer. Furthermore, a survey paper by Eckbo et al. (2006) considers an interpretation on the valuation effect of security issue announcements under the U.S. sample during the period 1980 – 2004. They find that "the amount of price dilution depends on the degree to which the issuer's own shareholders participate in the issue (in a right offer) and the existence of strong investment opportunity, as well as on the sequential nature of the issuer's flotation method choice" (Eckbo et al., 2006, p.114). In addition, Eckbo et al. point out that the regulatory changes can lead to an empirical examination of the exogenous determinants of issue costs and issuers' choice of security and flotation methods. An example of the change in regulation is the Security Exchange Commission's (SEC) Rule 415 (known as shelf registration), which focuses on lower issue costs.

Subsequently, many US firms initially use shelf registration for their SEOs. However, in more recent years, only 15% of those firms have employed the shelf registration procedure (Eckbo et al., 2006, pp.111 and 141). The problem of adverse selection causes the companies to take the benefit of low issuing cost via shelf registration. Consequently, the firms appear to apply shelf registration when there is a relatively low level of information asymmetry.

2.3.1.2 Determinants of Short-Term Performance

Many studies of developed markets are concerned with the determinant of factors related to SEO. The determinant of SEO stock price reaction and the SEO firm's operating performance could be claimed to be the most popular areas for discussion. Some examples of the factors which are normally considered are firm size, book-to-market ratio (sometimes employed as market-to-book ratio), leverage and return on asset (ROA, hereafter). We have conducted a survey of the literature in these areas and summarise its findings as follows.

Hess and Frost (1982) employ an expanded version of the market model[9], which includes the new issue size and stabilisation on stock price 20 days before the new issue to 14 days after it. Similar studies have been made in order to apply size as an explanatory variable in the regressions; these include the Fama-French model and the Buy-and-Hold Return (BHR, hereafter) approach. Some examples of contributors to the literature are Teoh et al. (1998b), Spiess and Afflech-Graves (1999), Hertzel et al.

[9] Hess and Frost (1982) apply a model with the additional two variables onto the original market model, namely a quantity variable with a time dependent coefficient and a binary variable related also to a time dependent coefficient. The reasons for adding these two variables are due to the issue size and the overselling of the new issue, respectively.

(2002) and Jegadeesh and Karceski (2004). Nevertheless, most of the literature relating to SEOs (for instance, Asquith and Muliins, 1986; Eckbo and Masulis, 1995; Rangan, 1998; Errunza and Miller, 2003 and Lyandres et al., 2005) considers size as a significant part in order to influence the firm's valuation and performance. For the studies regarding the size of offerings, an early paper by Dimson and Marsh (1986) provides the evidence that the misleading longer-term performance is caused by the size effect. They also clarify that if there are positive abnormal returns over the pre-event period, this will lead to the market model's alphas having a bias, resulting in spurious negative abnormal returns over the post-event period (*ibid,* p.133). This can imply that size, introduced by market model, has an impact upon the firm's valuation in the U.S. In more recent papers (see Ng and Smith, 1996 and Corwin, 2003), size is indicated as the proxy for asymmetric information and uncertainty. It is believed that large firms are likely to be associated with lower levels of information asymmetry and less uncertainty than small firms (Corwin, 2003, p.2264).

Denis (1994) captures market-to-book ratio (the price-to-book value ratio) for the measurement of a company's growth opportunity. Price-to-book value is additionally applied as an explanatory variable in cross-sectional regressions and tests for robustness (see Foerster and Korolyi, 2000 and Kim and Purnanandum, 2006). However, this proxy is also utilised as the reverse version ratio as the book-to-market ratio, which is normally obtained in the Fama-French model. It is mostly used to proxy the firm's performance as well as the growth opportunity, especially in the U.S.

(see Loughran and Ritter, 1997)[10]. Some of the related papers are those of Spiess and Affleck-Graves (1995), Ng and Smith (1996), Barber and Lyon (1997b), Rangan (1998) and Lyandres et al. (2005). These studies believe mainly that there is a relationship between this ratio and the security returns. Aside from the reverse version, several researchers (e.g. Teoh et al., 1998b; Spiess and Affleck-Graves, 1999; Hertzel et al., 2002; Fama and French, 2006) generally apply the book-to-market ratio as their independent variable for an examination of the firm's performance, particularly the Fama-French model.

Two studies concentrate their analysis of the performance of the firm on the leverage ratio. Bayless and Chaplinsky (1996) believe that equity is preferable to debt, supported by the employment of the target leverage ratio and the leverage ratio itself to reach their identification. Since Asquith and Mullins (1986) argue that an explanation of negative market reaction is related to an association of changes in financial leverage, Lyandres et al. (2005) and Bulter and Wan (2006) apply this ratio for their measurement of a firm's performance.

It is believed that earnings management could be one of the factors used to identify how well the company performs during the time of SEOs. Some authors also analyse whether there has been any change in earnings management at the time of SEOs. In his paper, Bernard (1992) concludes his findings by stating that the overreaction of stock prices might not be a result of the change in the company's earning. However,

[10] The paper examines the relation between issuing activity growth and subsequent stock return is implied by measuring two types of growth: (1) the change in the rate at the investment and (2) the sales growth rate. Therefore, the effect of new issue appears to be independent when high growth seems to exist in issuing firms (Loughran and Ritter, 1997, pp.1844-1845).

he continues to claim that the possibility still exists that earnings management can affect stock price movement. Rangan (1998), who considers all the registered firm-commitment offerings of stock made by firms in the US market, reports his results from discretionary accruals around SEOs, and shows that the earnings in quarters 0 and 1 are deliberately manipulated by these issuing firms. In addition, post-offering performance showing a fall in earnings in the following year is an outcome from earnings management in year 0. Consequently, earnings management over a 1-year period around the issuing negatively relates to market-adjusted returns in the following year (Rangan, 1998, p.113).

Several works have confirmed that profitability certainly affects the firm's capital structure choice: e.g. Rajan and Zingales (1995), Wald (1999) and Glen and Singh (2004). This is applied by utilising ROA, return on equity (ROE, thereafter), EPS (earning-per-share), EBITDA (earnings before interest, taxes, depreciation and amortisation) and ratio of EBIT (earnings before interest and taxes)-to-total asset, as the proxies. For the measurement of operating performance, ROA can be displayed as a main proxy. Cooney and Kalay (1993), Rangan (1998), Hertzel et al. (2002) and Fu (2006) are among the researchers who have employed ROA in their studies regarding equity issuances. Denis (1994) also obtains ROE, instead of ROA, as a proxy linked to a firm's growth opportunity.

2.3.1.3 Underpricing in Developed Markets

The underpricing of SEOs is another interesting topic that several studies have considered. Although Eckbo et al. (2006) indicate that the literature on SEO

underpricing remains lacking, our survey reveals several papers on this particular area. In general, we see that underpricing should be equal to the price effect of the published information, e.g. SEO announcements, dividend announcements or earnings announcements. However, we consider this in a slightly different way in terms of the distinction between SEO underpricing and the price effect. The literature on underpricing reviewed in this section debates whether the prior SEO price is over or under the price after SEOs. In other words, we focus on the way in which the price before and after SEOs differs (SEO discounting), while the price effect is mainly concerned with the reaction of prices to the SEO announcements, with either a positive or negative reaction (focusing more on market reaction). This makes our survey of the literature slightly different in its general understanding.

Altinkilic and Hansen (2003) and Corwin (2003) engage in a similar study in order to examine the relationship between the offer-day return and unanticipated underpricing, and also to analyse the cross-section of seasoned offer pricing and the differences in SEO underpricing over time, which are explained by related factors. While Altinkilic and Hansen's results indicate that the correlation of unanticipated underpricing return depends on the information announced, Corwin's consequences demonstrate, according to the adoption of Rule 10b-21, that SEOs appear to be more underpriced when uncertainty over prices is high. Kim and Hyun-Han (2004) explain that the rise in SEO underpricing is observed when there is a shift in market conditions, i.e. a change in the economy, in the capital market or in the goods markets. These changes are caused by a temporary decrease in prices caused by short sales. Moreover, Mola and Loughran (2004) show that the SEO discount (underpricing) will not be

minimised as long as there is a rise in discounts over time. Nevertheless, the full explanation for increased SEO underpricing is still lacking (Eckbo et al., 2006, p.33).

Having employed three model categories (Ordinary Least Square, Probit model and Tobit model) in his examination, Shaorong (2005) finds no relationship between underpricing and the probability of SEOs, whereas a positive relation to insider selling is revealed at the time of the SEO. The latter case is consistent with the signalling model. Yongtae and Myung Seok (2005) demonstrate the finding that issuers with low information asymmetry are less significant in the negative relationship between earning management and SEO underpricing. Eckbo et al. (2006) review different literature on the underpricing of SEOs. They also conclude that the findings on underpricing are significantly related to three main characteristics: (1) the company's characteristics, e.g. share ownership structure, firm size and financial condition, (2) characteristics of related securities, e.g. security volatility, exchange listing, listed stock options and market microstructure properties and (3) the characteristics of offering, e.g. capital market condition, offer price, offer size and underwriting syndicate (Eckbo et al., 2006, p.36). The study by Intintoli and Kahle (2009) reports that high insider ownership can cause not only an increase in price pressure and lower level of float at the time of SEOs, but also makes the management of the firm concentrate more on underpricing if their personal wealth is affected.

2.3.1.4 Other Related Studies of Short-Term Empirical Evidence in Developed Markets

Some studies use a particular issuing method (e.g. rights issuing and private placement) to examine short-term performance in their SEO research. The findings of Eckbo and Masulis (1992, p.329) reveal that when the firms adopt a dividend reinvestment plan, there is a reduction in rights issues in parallel, allowing common stock to be paid as dividend. Burton et al. (1999, p.461) suggest that companies prefer to issue new shares via rights issuing when existing shareholders have an opportunity to gain ARs by discounting the over-valued shares. In contrast, Gajewski and Ginglinger (2002, p.25) claim that different issuing methods have no impact on a positive reaction in the market when the offering is underwritten. Concerning Australian public companies, Balachandran et al. (2008b, p.30) demonstrate the decrease in the wealth of the rights announcement, together with some degree of subsequent recovery around the offer expiry date. In addition, Balchandran et al. (2008a, p.39) find that the placement of book-building is chosen by firms with the lowest information asymmetry and those with the most widely dispersed ownership, while the rights issue has become popular for firms with low-in-information asymmetry and with intermediate levels of ownership concentration.

Bayless and Chaplinsky (1996) examine the determinants of market condition (i.e. the HOT period) as to whether they are identified by the aggregate volume of equity issues among SEO firms in the US. According to t-statistic and the magnitude of the coefficients, their results report that the relationship between asymmetric information and firm-specific characteristics in hot markets reveals less impact on the errors of

announcement date prediction than in cold markets. Safieddine and Wilhelm (1996) and Kim and Hyun-Han (2004) made a similar investigation into the magnitude and nature of short-selling activity around equity offerings with an adoption of Rule 10b-21[11] of companies listed in NYSE and AMEX. Having estimated that there has been a temporary decrease in prices caused by short-selling if the result shows there is a performance drop, this can indicate that short-selling activities are not manipulative and are information based. This leads to the explanation that the rise in SEO underpricing is shown when there is a shift in market conditions[12] rather than a shift in offer characteristics (Kim and Hyun-Han, 2004, p.362). Furthermore, Safieddine and Wilhelm (1996, p.747) suggest that if a substitution of short-selling becomes the listed options[13], there is less observation of a statistically significant relationship between relative short interest for firms with listed option and issue discounts. Thus, option open interest and abnormally high levels of short-selling play a significant role in characterising seasoned offerings. In addition, since regulatory arbitrage is impossible, short-selling activity is curbed and issue discounts will be reduced by the adoption of Rule 10b-21.

Chaplisky and Ramchand (2000) discover that domestic issues have a lower offer price relative to global equity issues. This lower offer price is suggested by either the opposite movement in price during the offering interval, or no global issues to be offset with higher costs of direct issue (*ibid*, p.2787). Regarding the size-matching

[11] Rule 10b-21 imposes restraints on the covering of short-sales using shares from SEOs. This rule also prohibits traders from covering short positions established during the waiting period with new shares purchased at the offer prices (Kim and Hyun-Hun, 2004, p.344).
[12] For example, change in the economy, change in capital market, and change in goods markets (Kim and Hyun-Han, 2004, p.362).
[13] Firms with listed options face larger expected issue discounts than firms without listed options following the adoption of Rule 10b-21 (Safieddine and Wilhelm, 1996, p.746).

portfolios, Huh and Subrahmanyam (2004) study how SEOs characterise order imbalance and returns with a sample period of 11 years (1988-1998). Their outcomes report a confirmation of correlation coefficient in the two-way sorting, which demonstrates that there is delink in the NOIMB [14] – return during the post-issue period, in which the small-sized SEO firm portfolio is more likely to be bought by individual investors. Having explored the relation between short selling and returns around SEOs, Henry and Koski (2008) find an increase in the discount of manipulative trading with a reduction of the informativeness in secondary market net order flow. As a consequence, profit may be gained by the impact of manipulative short sellers who are trading in the secondary market at a discount, and there is a substantial relation between larger issue discount and short selling closer to the issue date (Henry and Koshi, 2008, p.9).

2.3.2 Empirical Evidence on Long-Term Performance in Developed Markets

There are many studies of long-term performance in developed markets. The paper by Healy and Palepu (1990), to start with, examines the nature of information on equity offers by analysing post-offer changes in asset and equity betas, financial leverage, unsystematic risk, earning levels and analysts' earnings forecasts. They reveal that a post-offer increase in earning volume is not caused by an industry-wide rise in earning volume. When the business risk of firms increases at the same time as a probability of financial distress, financial leverage is reduced by firms' issuing common stock (Healy and Palepu, 1990, p.45). Teoh et al. (1998b) suggest that there is a difference in the large long-run return between conservative and aggressive firms

[14] NOIMB stands for a scaled measured of order imbalances in the number of trades. It is more likely to pick up the trading behaviour of small traders (Huh and Subrahmanyam, 2004, p.5).

in the U.S. Therefore, an explanation of poor post-issue performance is partially presented in the pre-issue earnings management of seasoned new issuers, which might affect the shareholders' wealth.

Apart from surveys of the U.S., Soucik and Allen (1999a) choose the Australian Stock Exchange (ASE) to analyse whether the underperformance of SEO firms during the long-term period (January 1984 through October 1993) is a fact or an illusion. Their findings indicate that there is no aggregate of SEOs underperforming in a real long-run period owing to the crossing over of SEO companies from an under- to an over-performance period. In addition, not only are there significant positive initial returns in firms issuing seasoned equity, but there is also a relationship between the extent of initial returns and subsequent underperformance, conditional on a correct definition of the initial gain (Soucik and Allen, 1999a, pp.23-24). Having studied long-run performance and insider trading around cancelled and completed SEOs, Clarke et al. (2001) demonstrate that a prediction of post-offering returns can depend on pre-filing insider trading in completed offerings and vice versa in cancellation offerings. Regarding the firms conducting private equity issues, Hertzel et al. (2002) find in their results that when investors are willing to overpay the firm's equity, the company would prefer to issue these new shares via private placement, due to the negative nature of post-issue stock-price performance. A similar study by Krishnamurthy et al. (2005), which considers the issue of new shares via private placement, shows no evidence of underperformance among firms which make private placements to affiliated firms, and this is consistent with the view that these investors avoid

placement by firms about which the market is overly optimistic (Krishnamurthy et al., 2005, p.231).

In more recent years, Lyandres et al. (2005) explain why the underperformance following SEO is substantially reduced by capital investment with the result that matching non-issuers invest less than equity issuers both before and after issuance. Moreover, since the measurement of book leverage is applied, their results indicate that leverage ratios are negatively related to future returns and cast additional doubt on the leverage explanation of SEO underperformance. The survey paper of Eckbo et al. (2006) includes extended evidence on the issuing firms' performance in the 5-year post-issue period after examining the short-term performance.

[Insert Table 2.3 here]

2.3.3 Empirical Evidence in Emerging Markets

The study of stock price reaction remains popular in accounts of short-term performance, which several authors give via the sample size from emerging markets. Similar to those of developed markets, the studies of earning management, firm performance, dividend announcement and stock splits can also be used in estimating how the markets react to these particular events. As usual, event study frameworks are normally used, together with other regressions (e.g. cross-sectional regression) in order to determine the factors in the SEO stock price reaction. The short-term performance of the examples in these studies is described as follows. Aydoğan and Muradoğlu (1998) analyse whether the announcement or the implementation of stock

dividend and rights offerings convey new information in a thinly traded market. Obtaining 109 events (rights offerings and stock dividend announcements) between 1988 and 1993 from the Istanbul Stock Exchange, they report that stock prices react positively during the initial phase of the market (during 1988 to 1990). Nonetheless, there are no significant price reactions during the second phase of the market, when the market is stated to be more mature (Aydoğan and Muradoğlu, 1998, p.48).

La Porta et al. (1999) studied the top 20 firms ranked by their market capitalisation of common equity at the end of 1995 to investigate additional evidence on ownership structure in several countries (i.e. Argentina, Korea and Mexico). Their results suggest that ownership may depend on how large the firm is. Applying a standard event study and cross-sectional regression, Salamudin et al. (1999) examine the average abnormal return (AR) around the event dates of rights issues in Malaysia. Their findings indicate that differences in economic conditions sometimes drive the companies to issue new equity via rights offerings (*ibid,* p.421). They also find significant positive pre-announcement returns when there is news (announcements) of impending rights issues (Salamudin et al., 1999, p.417).

Concerning a sample of stock splits undertaken in the Indian stock market in 1999-2005, Mishara (2007) considers the market effect of stock splits on stock price, return, volatility and trading volume. The empirical outcomes suggest that there is a substantial rise in stock volatility and volume, while the reverse is true in stock price and return after splitting. This implies that the induction of stock splits allows brokers to revise their optimistic valuation about the future performance of firms (Mishara,

2007, p.267). In a more recent paper, Dasilas (2009) investigates whether the stock price and trading volume respond to dividend announcements in Greece. Having obtained the "wave model", together with a standard event study, his results provide a statistically significant market reaction on the announcement of a dividend. In addition, the stock price reaction is positively related to the dividend signalling hypothesis.

In Thailand, the studies of short-term performance normally focus on the market reaction to dividend announcements, operating performance and equity announcements (both IPOs and SEOs). For instance, Jirasetthakulchai (2000) examines the relationship between the dividend announcement effect and equity offerings from 1977 to 1997. Her consequences show a positive reaction in the stock price during the post-SEO period and the dividend announcement is referred to as a signal to the market. Lertsupongkit (2002) and Vithessonthi (2008) consider similar investigations into stock price reaction to SEO announcements in Thailand. Their findings report a negative price reaction to the SEO announcements. Moreover, Limpaphayom and Ngamwutikul (2004) explain that operating performance changes when considered with SEO firms' capital structure and their characteristics.

In the above survey of the work on short-term performance in emerging markets, the results from this research mostly appear consistent with those of previous works on either the emerging markets themselves or on the developed markets. Nevertheless, in comparison with the research in the same area in developed markets, the studies in emerging markets of short-term performance need to be expanded. This is possibly

because they are not as widely covered in various areas as they have been in developed markets. Some examples of this could be claimed to be firm performance, the dilution effect, the determinant of factors in the SEO stock price reaction and underpricing. It should also be noted that the studies of emerging markets are still few in number.

Research into long-term performance in emerging markets is scarce. Examples of such studies of long-term performance (including the Asian-Pacific countries) are as follows. Dhatt et al. (1996) study the relationship between market reactions and rights issues in Korea during a 15-year period. Employing the BHR approach, their evidence indicates that there is a positive relation between market reaction and the rights issues in the firms which have a greater decline in level of leverage (*ibid,* p.41), while the firms underperform during the post-issue period. With the sample of SEOs in Australia, Soucik and Allen (1999b) control for risk in order to reassess the factors affecting post-issue performance. With regard to the performance of SEO firms via cumulative abnormal returns (CARs), their consequences confirm that the SEO firms continue to underperform when risk is accounted for (*ibid,* p.1839). Matthew (2002) focuses on three Asian markets, Japan, Korea and Hong Kong, in order to examine whether the regulatory and organisational structures are related to the long-horizon performance. His findings on Japan and Hong Kong provide an explanation of why SEO firms underperform in the post-issuing period long-term, while Korean companies overperform during the same period.

Research on long-term performance in Thailand is rare in terms of SEOs. A recent study by Chorruk and Worthington (2009) still considers the IPO sample, which appears to be a more popular topic in long-term studies. The earlier studies in Thailand, such as Limpaphayom and Ngamwutikul (2004), however, reveal no sign of underperformance in Thai SEOs in the post-offering period. However, we can gather from our survey of the workings of long-term performance in emerging markets that in general companies making SEOs continue to underperform during the post-issuing period.

[Insert Table 2.4 here]

Our review shows that the main concern of the empirical studies of emerging markets seems to be the market reaction to SEO announcements and published events (i.e. dividend announcements and stock splits) in the short term, and the way in which companies perform in the longer term. It is clear that SEO research into emerging markets is not as wide in some areas as it is in developed markets. Although some results in emerging markets provide conclusions consistent with those in developed markets, owing to their high volatility and small size we may have different and more varied outcomes when we obtain the data from emerging markets in any specific period. Consequently, if we believe that the SEO aspect is the same in both markets, the effect should carry over to the emerging markets, or at least move in a similar direction. Further clarification in the literature on empirical evidence in emerging markets is discussed in more specific detail in the empirical chapters.

2.3.4 Summaries of SEO Empirical Evidence

From the review of several studies of the empirical evidence of SEOs in developed markets, it has emerged that the most popular areas in short-term performance (which many authors are concerned with) appear to be the stock price reaction, determinants and underpricing. The papers in these particular areas range from those of Asquith and Mullins (1986), to Mikkelson and Partch (1986), Loderer and Maner (1992), Denis (1994), Altinkilic and Hansen (2003), Corwin (2003), Eckbo et al. (2006), Walker and Yost (2007) and Balachandran et al. (2008a). The outcomes mostly indicate that stock prices tend to decline after an SEO. Moreover, the survey conducted by Eckbo et al. (2006, p.22) identifies an interesting feature to cover the examination of short-term performance: that companies need to consider the flotation costs when they are searching for some source of financing beside debt. In the long-term studies, researchers are mainly concerned with assessing how well the SEO companies perform during the post-issuing period. The general outcomes in most cases reveal that SEO firms perform poorly during the post-event.

The SEO literature on emerging markets is different to the SEO literature on developed markets. This is seen not only in terms of the different amount of SEO research between emerging and developed markets, but also implies that SEO research in emerging markets frequently focuses on a particular area. For instance, we found in section 2.3.3 that the emerging market literature mainly considers stock price reaction to published events (i.e. rights issuing, SEO announcements, stock splits and stock dividend) in short-term performance (see, for example, Aydoğan and Muradoğlu, 1998; Salamudin et al., 1999; Lertsupongkit, 2002). Consequently, the

SEO literature on developed markets is concerned with wider areas, such as the determinants of short-term performance (i.e. in terms of firms' valuation – Dimson and Marsh, 1986; Ng and Smith, 1996; Rangan, 1998; Hertzel et al., 2002), the relationship between the regulations (i.e. Rule 10b-21) and underpricing (Corwin, 2003) or short-selling (Safieddine and Wilhelm, 1996) and offering dilution (Asquith and Mullins, 1986).

Nonetheless, we are aware from our literature survey, in particular on emerging markets, that some topics are relevant enough in our case to be linked with the study of SEOs in Thailand. First, the research on SEOs in this region concentrates mainly on applying the event study framework to examine how SEOs are related to: (1) stock price reaction, (2) the announcement of dividends, or (3) the operating performance of the companies. With samples of different sizes from different emerging markets, most of these works provide a statistically significant market reaction and show that the operating performance influences the capital structure of SEO companies. However, since emerging markets are highly volatile, applying the data from different emerging markets can make the outcomes different, possibly reflecting the characteristics of each market. Consequently, the evidence may remain inconclusive at some stage. Second, the empirical studies of SEOs in emerging markets appear to be less comprehensive and varied in some areas than such studies of developed markets. These areas include the dilution effect, SEO determinants and the firm performance over the long term. Moreover, with so few studies in these areas, we know very little about whether the evidence in emerging markets should be interpreted in the same way as it is in the developed markets. Third, the SEO empirical literature on emerging

markets concentrates less on the different methods of issuing. Although some papers consider such methods as rights issuing and private placements, they are still in limited areas, e.g. examining the subject with regard to the stock price (market) reaction.

2.4 Literature on Methodology for SEOs

Summaries of the literature on methodology for SEOs in both developed and emerging markets are provided in Tables 2.5 and 2.6, respectively. The details of main concern are explained as follows.

2.4.1 The Use of Methodologies in Short-Term Performance in Developed Markets

An early study by Dyckman et al. (1984) compares five return models: (1) Mean-Adjusted Returns Model, (2) Market-Adjusted Return Model, (3) Market Model, (4) Scholes-William Beta Model and (5) Dimson Beta Model, to examine the interaction of portfolio size, the magnitude of abnormal performance and event-date uncertainty as to whether they have a substantial effect on the researcher's ability to detect abnormal performance. Their conclusions report that "estimating with the t-test in Mean-Adjusted Returns Model, Market-Adjusted Return Model and Market Model, the evidence is well specified in rejecting the existence of abnormal performance when it is not presented" (Dyckman et al., 1984, p.10). In addition, their results from

the clustering in the power of the test are illustrated by the lower percentage of times that the abnormal performance is detected in the test. Moreover, issuing new shares can influence the number of shares outstanding and the firm's capital structure. Information asymmetry is also another interesting area affecting the SEO of companies. Krasker (1986) characterises the function relating the change in stock price of American companies and the number of new shares issued when there is information asymmetry. He reports that a non-increasing function of the issue size is able to represent the share price in equilibrium. Furthermore, the author reveals the conclusion of Myers and Majluf (1984, cited by Krasker, 1986, p.103) that the association of the adverse selection problem is reported by the issuance of risky securities, either debt or equity.

The study of Corrado (1989) shows a new nonparametric rank test for abnormal security – price performance during the period of July 1962 through December 1986 in the U.S. His findings, which focus principally on the Rank Test, report that there is a slight difference in the rank statistic and the expectation from a standard normal population in any size of portfolio. Although the Rank Test seems to be unsuitable for the misspecification test, it is more powerful than its parametric counterparts when abnormal performance is revealed (Corrado, 1989, p.395). Lucas and McDonald (1990) generally display models and other characteristics of U.S. firms for their equity issuing and securities prices. Their results (which claim from the study of Korajczyk et al., 1990) suggest that CARs rise until the announcement date and drop substantially on the issue date (Lucas and McDonald, 1990, p.1030). Moreover, they explain the time variation in the aggregate average quality of asset for the issuance of

equity and the stock prices. Harris and Raviv (1991) focus on the theory of capital structure with reference to asymmetric information. They mention a relation between capital structure theory and takeover contests as two points (which may be the closest link to SEOs): (1) a rise in level of average debt caused by the targets of takeovers and accompanied by a positive stock price reaction and (2) a negative relation on average among leverage if the tender offer succeeds.

Fama and French (1992, p.445) describe their findings based on Banz (1981), Bhandari (1988) and Basu (1983), that the relation between earning/price and average return seems to be absorbed by the combination of size and book-to-market equity. Therefore, high book-to-market equity ratio is a consequence when the firm has a high earning-to-price ratio. Fama and French (1992) also present the Fama-French model by using the time-series regression approach of Black, Jensen and Schole (1972, cited by Fama-French, 1992). With this model, a prediction of stock and bond returns can be provided in four different ways: (1) dividend yields, (2) default spreads, (3) term spreads and (4) short-term interest rates. In order to isolate the firm-specific components of returns, the Fama-French model suggests using the residual from 3-factor regression, including SMB and HML[15]. Moreover, size and average return show a negative relationship, while average return and book-to-market equity are positively related and more consistent (Fama and French, 1992, pp.449-450).

In order to investigate the effects and nature of stock price manipulation around an SEO, Gerard and Nanda (1993) apply a concept of equilibrium in the U.S., known as

[15] SMB is small-minus-big, and HML is high-minus-low.

Sequential Nash[16], under their corollary that the expected terminal value of the security conditional on all public information is always higher or equal to the SEO issue price. They show that there is no occurrence of manipulation when the informal trader's information is perfectly disclosed by the second market trading prior to the SEOs. Additionally, an announcement of new equity sales is more preferable for firms in the following week of a quarterly earnings report than before the release of such information (Korajcyk et al., 1991, cited by Gerard and Nanda, 1993, p.236). Thompson (1995) interprets the methodology of event studies in corporate finance. He reveals that daily security return distribution has fatter tails than normal (Fama, 1965, cited by Thompson, 1995, p.988) and suggests two methods for confirmation. These two methods are based on the assumption of cross-sectional independence and normal theory after the elimination of outliers from the sample.

Illustrating the event study framework, which is the study of short-term performance, a classic paper by MacKinlay (1997) explains step-by-step the process of applying an event study. He suggests four possible models for the calculation of abnormal returns: (1) the Constant Mean Return Model – referred to as the simplest model, (2) the Market Model, (3) the Statistical Model and (4) the Economic Model, such as CAPM (Capital Asset Pricing Model) and APT (Asset Pricing Theory). The Sign Test and Rank Test are also identified as non-parametric tests for event studies. Campbell et al. (1997) demonstrate event study models in a way similar to that indicated by MacKinlay (1997). Nevertheless, they describe the statistical models as factor models and another variant of the factor model, the latter being said to be a multi-factor

[16] It can be demonstrated that the complete characterisation of a player's actions is stated to be a strategy for information set in each period (Gerard and Nanda, 1993, p.219).

model. Campbell et al. (1997) also mention some possible biases: for instance, calculation of closing price is not done at the same time every day. Seiler (2004) provides a process of organising the data set in Excel for event studies. Information leakage after the announcement of earning is applied as an example.

Driscoll and Kraay (1998) examine common non-parametric covariance matrix estimate techniques. Utilising Monte Carlo experiments, they find that the performances of the OLS (Ordinary Least Square) and SUR (Seemingly Unrelated Regressions) estimators have an opposite relationship to the size of the cross-sectional dimension. Referring to the previous literature in order to examine reasonable alternative to market efficiency, Fama (1998) suggests that the use of firm-specific models for expected returns (i.e. market model and comparison period approach) would possibly limit bad-model problems, instead of the formal asset pricing model.

Referring to the U.S. and Canadian data, Graham and Harvey (2001) find that there is no relation between stock valuation on equity issuance and information asymmetry indicated by non-dividend paying status and small size. They also note a clarification of small firms that should have an incidence of paying dividends and a proportion of foreign revenue, being lower in credit rating and higher in proportion of management ownership and the chance of being privately owned. Bancel and Mittoo (2002) explore the link between the theory and practice of capital structure, also based on U.S. firms. Their findings show that the behaviour of managers seemed to be driven by two main points in order to face financial policy decisions; namely, the impact of financial statements and the search for financial flexibility. Butler et al. (2005)

evaluate the forecasting ability of the equity share in total new issues. Their evidence shows that the in-sample relationship between future stock market returns is driven by an aggregation of pseudo-market timing.

Cai and Zhang (2006) select the Fama–MacBeth (1973) type cross-sectional regressions for the test of firm characteristics such as earnings and growth opportunity. Their results from this regression show that the effect of capital structure innovation on stock returns is not proxy for the effects of earnings and other firm characteristics. In asset-pricing factors, nevertheless, there is no full explanation for the negative effect of leverage change. Aktas et al. (2007) apply a two-state market model (TSMM) based on Markov Switching regression and developed by Hamilton (1989, 1994) to solve the contaminating event problem. They discover that, compared to the BETA-1 and GARCH models[17], the TSMM is the most powerful test, while those two are not affected by the contaminating events (Aktas et al., 2007, p.140). Dietrich (2007) describes how a requirement of internal funds rises for the investment of first – best optimally when there is more diversity in an issue. McLean et al. (2007) explain the results from Value-Weighted Fama-MacBeth Regressions of holding period returns on share issuance measures thus: if the regression includes the country dummies, there will be a slightly stronger effect of the issuance. This implies that the issuance effect plays a better role within a country, rather than across countries. In addition, a limitation of international buyback effect appears to be in small stocks.

[17] GARCH stands for Generalise Auto Regressive Conditionally Heteroscedastic. For further explanation of these two tests, as well as the other, see Aktas et al. (2007).

Spiegel and Watanabe (2007) describe a model in which firms seek to maximise proceeds from net equity issuance. They discover that shares tend to be markedly issued by growth stocks and their results are also robust to such correlated shocks, e.g. dividend shocks. Since the endogenous equity issuance offsets the exogenous supply shocks, higher equity issuance accompanying higher current price is followed by lower subsequent returns and vice versa (Spiegel and Watanabe, 2007, p.22). Armitage (2008) identifies who the buyers are in rights, placing and open offers by concluding that existing holders are a main source of new equity, even in pure placing. Since the standard Myers-Majluf theory expects that new shares should be bought by new investors, any of the SEO methods used in the UK cannot be applied with this theory (Armitage, 2008, p.35). Finally, Hoechle and Zimmermann (2008) obtain main data in Switzerland to present a regression-based generalisation of the calendar time portfolio approach. There are four approaches mentioned in this paper: (1) the calendar time portfolio approach (Jensen-alpha methodology), (2) a panel regression based approach, (3) the CrossReg approach and (4) the CalTime approach. Their investigations show that "it is important to rely on a technique which explicitly accounts for cross-sectional dependence" (Hoechle and Zimmermann, 2008, p.12). Furthermore, an explanation of private investors pronounced home bias can be claimed when the transaction cost of international stock trades is high (*ibid*, pp.15-16).

Having surveyed the use of different methodologies for short-term performance in the developed markets, we realise that the event study framework and the econometric regressions (i.e. the Fama-French model, the Fama-MacBeth, OLS and the cross-

sectional model) were among the methodologies being used in much of the SEO literature on developed markets regarding short-term performance. In general, we noticed that, with short-term performance, the main objective should be the relationship between particular events (such as the market reaction) and the SEO announcements. Therefore, employing the event study framework would provide a better standpoint from which to investigate how the market reacts, for instance, to the announcement of an SEO. In addition, regarding several regression models, namely, the Fama-French model, the Fama-MacBeth model, the standard OLS and the cross-sectional model, it is a useful methodology for analysing the determinants of SEO stock price reaction or even underpricing. In addition to these two popular methodologies, some studies (e.g. Corrado, 1989 and Driscoll and Kraay, 1998) have introduced non-parametric examinations, such as the rank test and the covariance matrix estimate technique, to examine the explanatory variables in more detail in the cross-sectional regressions.

However, using such typical methodologies as the event study framework can highlight drawbacks. This is particularly the case when different models are employed for measuring abnormal return. For instance, there are as a rule four possible models for capturing abnormal return when we consider the event study technique (see MacKinlay, 1997). Although the market model is claimed to be the one most frequently used, its results may provide a bad model for the estimation (Fama, 1998). This could influence the discussion of the evidence, because the final model would not be the best fit for the data. Consequently, it is to some extent worth employing another model for the robustness check of the results, if possible.

2.4.2 The Use of Methodologies in Long-Term Performance in Developed Markets

A basic study by Asquith and Mullins (1986) contains a calculation of cumulative excess return (CER) in order to examine a firm's performance and that of the market as a whole. Their findings reveal that pre-announcement market-adjusted returns exceed post-announcement market-adjusted returns and that no timing pattern occurred in their data. Dimson and Marsh (1986) present evidence that a distortion of long-term performance measures is due to the size effect, applying methodology which takes account of the size effect in the UK market. They show that an examination of the post-publication period appears to be longer when the abnormal returns are larger in absolute magnitude. Moreover, they observe that studies of the impact of size on events have four severe problems: (1) a long measurement interval, (2) the systematic difference in size of event securities, or in the weighting of the index constituents, (3) a large and/or volatile element in the size effect and (4) the use of CAPM-type methodologies.

Spiess and Affleck-Graves (1995) explore the U.S. in investigating long-run stock prices and returns compared with the ability of managers to exploit over-valuation opportunities. Their evidence reports that an association of smaller firms appears to underperform more severely since there is the least Wealth Relative in the firms which are in the smallest-size quintile. Moreover, there is a scattering of long-term underperformance for issuing firms in most industries, which does not affect particular industries (Spiess and Affleck-Graves, 1995. p.262). Barber et al. (1996) suggest alternative methods for the testing of long-run abnormal returns. These

methods are, for instance, the long horizon of Buy-and-Hold Abnormal Returns (BHARs, hereafter), skewness-adjusted t-statistic and the simulation method. Furthermore, the methods should control for three sources of bias: new listing or survivor bias, rebalancing bias and skewness bias (Barber et al., 1996, pp.1-2).

With a comparison of using CAR and BHAR approaches, Barber and Lyon (1997a, p.346) find that CARs are biased predictors of long-run BHARs; this is known as measurement bias. As a result, the BHARs approach may become a suitable test for detecting long-run abnormal stock returns. Referring to the study of Loungran and Ritter (1997), Betker and Alderson (1997) conclude that attempts are made to sell overvalued shares to a market where there is a sufficient non-reaction to the implication of the action. Kothari and Warner (1997, 2006) study a simulation of random event dates and discuss the use of event study methodology in the longer horizon. Their results demonstrate a positive abnormal performance after three years by employing four models: (1) a market-adjusted model, (2) a market model, (3) CAPM and (4) Fama-French's 3-factor model. The CAR and BHAR approaches are also brought into the examination of event study in the long horizon, in which it is implied that the minimum event window is a 1-year period (Kothari and Warner, 2006, p.7). Furthermore, high book-to-market samples show a systematic positive sign in average abnormal performance when non-random samples are estimated (Kothari and Warner, 1997, p.329). However, Fama (1998, p.291) points out that these long-term BHARs can cause a bad-model problem and Mitchell and Stafford (1997; cited by Fama, 1998, p.294) also suggest that long-term BHARs may give a false impression of the speed of price adjustment to an event.

Employing reference portfolios by size and book-to-market, together with the calculation of CARs, Lyon et al. (1999) reveal that sampling biases cause CARs to impact in an analogous fashion to BHARs. Additionally, a purge of sampling observations of overlapping returns is stated to be the only solution to overlapping as a source of bias in event studies of long-run BHARs (*ibid*, p.190). Although the main concern is debt offering, Spiess and Afflech-Graves (1999) suggest three models for the measurement of long-term performance. These are: (1) rolling portfolios of average monthly returns, (2) the Fama-French 3-factor regression and (3) alternative benchmarks of BHRs. In debt offering, the performance of firms remains negative after the issuing, which is inconsistent with the overreaction of pre-event returns (Spiess and Afflech-Graves, 1999, p.71).

Mitchell and Stafford (2000) claim that the calendar-time approach in conjunction with the bootstrap approach has more substantial efficiency than mean BHARs in measuring the long-term performance of companies. They suggest that the latter approach is not an adequate methodology to detect abnormal performance over an economically important range and after accounting for the cross-sectional dependence of individual-firm abnormal returns. Eckbo et al. (2000) discuss the reflection between the new issue puzzle and a failure of the matched-firm technique in the U.S. market. This technique, according to the authors, makes abnormal performance equal to the difference in holding-period returns of issuing firms and their non-issuing matches by selection based on their size and book-to-market-ranked portfolio. Their results report that during the post-issue period stocks of matched firms are on average

more risky than issuer stocks, while stocks of non-issuing matched firms have much lower liquidity, both absolutely and in relation to industrial SEO issuers.

According to Eberhart and Siddique (2002, p.1396), the examination of long-term performance in firms' bonds and stocks after their SEOs with the event-time approach shows that abnormal bond returns almost completely reflect abnormal stock returns, while the calendar-time approach reveals a significant negative of abnormal stock returns in every model for estimating, for example, the Fama-French model and the market-adjusted model. Byun and Rozeff (2003) take a 12-month period of BHAR and mean BHAR to examine post-splits long-run performance. Their results reveal that there is an appearance of significant abnormal returns which is sensitive to the time period, method of examination and sampling. Jegadeesh and Karceski (2004), using data from the U.S., propose a new test of long-run performance which uses the average long-run abnormal returns for each monthly cohort of event firms. Applying two types of benchmark: (1) Buy-and-Hold size / book-to-market (BM)-match portfolio and (2) Size / BM matched individual control firm in each test statistic[18], the authors' results indicate that there is a high level of size from HSC_t-tests[19] when tabulating the distribution of the test statistic used in these tests. Additionally, in industry clustering, the theoretical levels appear to be closer to the actual sizes of both the SC_t-test[20] and HSC_t-test than to the conventional t-test.

[18] Three statistical tests are used in this paper: (1) t-statistic, (2) Serial Correlation Consistent SC t-statistic, (3) Heteroskedasticity and Serial Correlation Consistent HSC t-statistic. For further information on this point, see Jegadeesh and Karceski (2004).
[19] HSC stands for Heteroskedasticity Serial Correlation.
[20] SC is a reference to Serial Correlation.

Eckbo et al. (2006, p.116) also suggest the BHR approach for measuring the SEO's long-term performance. Their evidence is claimed to match the predictions of asset pricing theory, that a fall in risk profile (leading to a decline in issuers' expected returns) should be affected by the conversion of investment options to assets in place. Consequently, this is too risky for initial matching firms in the post-issue period (*ibid*, p.116). Fu (2006), finally, set up an experiment to find whether the investment of SEO firms still appears heavier than that of non-SEO firms, on the basis of CRSP's file trading on the NYSE, AMEX and NASDAQ by estimating the change in operating performance according to two methods: the Straight Forward Method and the Alternative Method. Suggesting the use of Fama-MacBeth regression to avoid the problem of cross correlations in regression residuals, he discovers that the offer is followed by a significant decline in the operating performance, as identified by these two methods. In addition, the Fama-MacBeth regression shows that there is still overinvestment in some SEO firms whose operating performance seems to have a substantial negative effect.

As revealed in our survey of the use of methodologies for long-term performance in developed markets, most studies frequently employ two popular approaches: CAR and BHR. These methodologies appear to be the basic measurements for several studies in the area of long-term performance (see Barber and Lyon, 1997a; Kothari and Warner, 1997, 2006; Lyon et al., 1999). Moreover, the methodologies, such as bootstrap and matching firms' technique, are also applied in the literature on long-term performance. Nevertheless, it is not easy to identify which methodologies are the most suitable for measuring long-term performance. For instance, while the CAR

approach is stated to be the simplest way to capture the long-term horizon on a monthly basis (Ritter, 1991 in Barber and Lyon, 1997a), CARs tend to evince a measurement bias (bias predictor of the long-term BHAR). Subsequently, the BHR (as well as the BHAR approach) was found to be inadequate as a methodology for detecting long-run abnormal performance (see Mitchell and Stafford, 2000). It was replaced by the bootstrap and calendar-time approaches. Some drawbacks of methodology in long-term performance were also found in the matching-firms technique – that of not identifying any difference among the holding-period returns of issuing firms, non-issuing matched firms and abnormal performance (Eckbo et al., 2000).

As a result, there is no particular methodology suitable for measuring long-term performance, according to our survey of a body of literature on the developed markets. We assume, on the basis of these surveys, that the BHR (BHAR) approach remains the most reliable and widely used methodology for defining long-term performance. However, in selecting the methodologies, the data obtained and the characteristics of each market should also be considered.

[Insert Table 2.5 here]

2.4.3 The Use of Methodologies in Emerging Markets

After these surveys of the literature on emerging markets, it becomes clear that similar methodologies are normally applied in examining SEOs in developed markets. Moreover, we notice from our surveys that no particular methodologies are reserved

for emerging markets. In other words, methodologies used in developed markets can be used in emerging markets' both short- and long-term performance, according to our surveys in previous sections.

Bartholdy et al. (2005) suggest further evidence of the use of event study methodology in a small stock exchange (Copenhagen Stock Exchange in this case, as an emerging market) to be more efficient. Sample return, uniform return, parametric and non-parametric tests are among those suggested methodologies. Their results show that the meaningful performance of firms on a small exchange, such as the Danish one, occurs when obtaining daily data on event study methodology (Bartholdy et al., 2005, p.19). Based on the Athens Stock Exchange (ATSE), Diacogiannis and Makri (2008) describe the calculation of beta (β) in the regression, which can apply in an event study methodology. Since we know from the previous section that the OLS and multiple regressions are also utilised as methodologies to examine the studies of SEO in developed markets, using the same calculation as made in those markets may cause a change in the outcomes. However, their results suggest that "there are no statistically significant differences between the mean betas estimated using the OLS method and the mean beta obtained employing the model of Scholes and Williams (1977; cited by Diacogiannis and Makri, 2008, p.120).

Among the research on the use of methodologies in emerging markets, we note that many writers employ the same methodologies as were used in studies of short-term performance in developed markets. These methodologies are the event study framework, non-parametric tests and econometric regressions (see Salamudin et al.,

1999; Bartholdy et al., 2005; Diacogiannis and Makri, 2008). The literature in Thailand also follows the same methodologies as the others (e.g. Jirasetthakulchai, 2000; Lertsupongkit, 2002; Vithessonthi, 2008). Studies on long-term performance in emerging markets (including those in the Asian-Pacific region) are rare and the studies in our survey reveal that they continue to apply the same methodologies, e.g. the BHR and CAR approach, in their examinations (see Dhatt et al., 1996; Cai and Loughran, 1998 and Brown et al., 2006). Therefore, we found no difference in the kind of methodology used in emerging markets and in developed markets.

[Insert Table 2.6 here]

2.5 Conclusions and Motivation

To summarise, this chapter surveys various issues relating to the SEO studies in both developed and emerging markets and in short- and long-term performance. The literature confirms that companies issue new equities when the security price of firms is overvalued (e.g. Hess and Frost, 1982; Burton et al., 1999). Signalling theory, agency theory and information asymmetry appear to be most relevant and important to the SEOs. This is because, for instance, information asymmetry would influence the movement of stock prices caused by the announcement of SEOs (such as Titman and Wessels, 1988; Armitage, 1998; Kim and Purnanandam, 2006). In short-term empirical studies, the standard event study framework is usually brought into the examination of the market reaction to SEO announcement, which could indicate that

it is the most popular issue. Several researchers have covered this area, including Brown and Warner (1985), Denis (1994), D'Mello et al. (2003) and Bartholdy et al. (2005). Besides the market reaction, underpricing, dilution, earning management and determinants are also frequently focused upon by many researchers, such as Rangan (1998), Corwin (2003) and Balachandran et al. (2008a). Moreover, in long-term empirical works, the investigations are concerned mostly with the performance of companies in the long term, as well as how methodologies are used for measuring long-term performance (i.e. Barber and Lyon, 1997a; Kothari and Warner, 1997, 2006; Mola and Loughran, 2004).

According to our survey, SEO research is considered in several different areas when obtaining the data from developed markets. Thus, we can conclude from the SEO literature on developed markets that it covers wider areas (i.e. stock price reaction, determinants, underpricing and long-term performance) than the SEO literature on emerging markets. As a consequence, there is a lack of SEO research in emerging markets and studies concerned with a specific area, such as the stock price reaction (in terms of short-term performance). Obtaining the out-of-sample (e.g. the data from the emerging markets), we close one gap by expanding research in the wider SEO areas, similar to developed markets. Furthermore, with the data from the emerging markets, it is interesting to consider SEO underpricing. Kim and Hyun-Han (2004) indicate that SEO underpricing increases when the market condition is shifting (e.g. a change in the economy). This should be the case in Thailand (as an emerging market), as the Thai economy was recovering well between 2002 and 2007 after the financial crisis in 1997. There was a substantial rise in the SET index (the main composite index) from

around 350 in early 2002 to approximately 800 by the end of 2003, and then a continued increase to around 950 in 2007. The supporting figures are also shown in the percentage of GDP growth, which increased markedly from -11% in 1998 to 6.1% in 2000, with a slight rise to 6.7% in 2006[21].

With our survey, we can notice several interesting issues, which make studies of emerging markets (e.g. Thailand) worth considering. In Thailand, the different characteristics and institutional backgrounds would be the most interesting issues. These are , for instance: (1) that emerging markets are smaller in terms of market capitalisation than developed markets[22], (2) that Thai listed companies have preferred to issue new shares to existing shareholders than issue to the public during the last decade and/or (3) emerging markets, e.g. Thailand, have a small number of financial products on the capital market, implying that the cross-border listings or the depository receipts (DRs) are just at an initial phase, while in developed markets they are growing substantially (see Table 2.7)[23]. In addition, since the majority of corporate finance theories have been developed by the studies of data from developed markets, it is interesting to examine with the out-of-sample data (e.g. an emerging market, Thailand in our case) whether the results carry over to Thailand.

[21] Source: Office of The National Economic and Social Development Board (NESDB), GDP [online]. Available from: http://www.nesdb.go.th/Portals/0/eco_datas/account/hqgdp/data2_09/AlltableQ2_2009.xls [Accessed on 20 August 2009].

[22] See section 3.2.2.4: market capitalisation, for further details regarding the comparison of market capitalisation between Thailand (as an emerging market) and developed markets, such as the US and UK.

[23] Worldwide capital via depository receipts (DRs) increased significantly from USD8.4 billion in 2001 to USD 29.1 billion in 2005. Source: NYSE, NASDAQ and Bloomberg; cited by The Stock Exchange of Thailand (2007) **In the Spotlight: Liquidity Thieved in Motion** (in Thai), available at http://www.set.or.th.setresearch/setresearch.html, [Accessed on 2 June 2010].

[Insert Table 2.7 here]

Moreover, some specific regulations in Thailand could be an additional interesting issue on which to focus the investigations on Thailand. For example, in Thailand there is no minimum period of follow-on offerings, allowing firms to issue new equity whenever they require. This leads to a high volume of SEOs in each company and the possibility of issuing new shares to existing shareholders with, for instance, rights issues at the same proportion to which shareholders hold shares in the firm (relating to the regulation KorChor.12/2543 – see section 3.2.4.1). This is because with this issuing method it is not necessary to submit any permission forms to the SEC, implying that it takes a shorter period for the new shares to be listed and traded on the market, rather than using the normal public offering method. As a result, rights issuing became one of the three popular issuing methods in Thailand during our study period of 1999 to 2006[24]. In addition, the commission fee regulations have yet to be deregulated[25]. This refers to the fact that the commission fee remains at a fixed rate, leading to high transaction costs for investors. Consequently, these specific regulations in Thailand should be an important and a different case compared with the previous SEO studies we have surveyed in developed markets.

In stock price reaction, several studies demonstrate that companies will see their prices decline after the announcement of equity offering. We have found in the

[24] The other two issuing methods are private placement and warrants. We will discuss these in further detail in the following chapter (Chapter 3: Institutional Background and Data Selection).
[25] Commission fees will be fully deregulated in 2012 as per the announcement of the SET, allowing the security companies (the brokers) to set their own commission rates. This will be a re-enforcement after their suspension since 2002 (which was the first year of deregulation of commission fees).

literature that there may be a number of studies which consider issuing methods separately. Even though some issuing methods, such as rights issuing and private placement, have been considered in some papers (e.g. Balachandran et al., 2008b), they are examined individually, not viewed together with the total sample or with other issuing methods. Moreover, there remain some inconclusive outcomes in the area of market reaction in the literature on emerging markets. The dilution effect could also be another interesting area which is rarely considered in our review. The lack of studies of emerging markets, Asian markets in particular, also makes it intriguing to investigate whether similar aspects are carried over from those found in developed markets. Therefore, we provide an out-of-sample examination (e.g. Thailand)[26] of stock price reaction to SEO announcements.

Regarding underpricing, our review shows that few papers (e.g. Altinkilic and Hansen, 2003; Corwin, 2003) examine this type of indirect flotation cost. Eckbo et al. (2006, p.33) have already made the point that the literature on underpricing is scant, in particular on SEOs. Consequently, it is difficult to see whether the features of previous studies are conclusive or inconclusive. For this reason, we will expand this area by adding a sample from Thailand as an emerging market, since the data in recent studies of underpricing are mostly obtained from developed markets. In addition, it would be original for our study to examine the issuing methods in such an area separately.

[26] We give further reasons why Thailand was chosen in our study in the following chapter: Institutional Background and Data Selection. In brief, the Thai capital market contains the main characteristics of all the emerging markets (i.e. high volatility) and SEOs became more popular during the post-1997 financial crisis period , particularly between 1999 and 2006, our study period (i.e. a substantial rise in number of SEOs).

Since previous researchers consider the performance of firms in both the short- and the long-term, it would be interesting to include a post-issuing study (in terms of a long-term study) in our examination after completing a survey of the short-term performance in two areas (stock price reaction and underpricing). Certainly, there are no writers, or perhaps only a few, who focus separately on issuing methods. In addition, the lack of literature on the emerging markets brings us to the difficulty of comparing the papers to see whether we have any conclusive evidence on the area of long-term performance. Moreover, if we obtain an out-of-sample, such as the data from emerging markets, the results should carry over if they perform in the same way as those in the study of developed markets. Given these reasons, estimating the long-term performance in an emerging market is as interesting as doing so in the short-term.

As a result, in three of the ensuing chapters we empirically examine both the short- and long-term performance of SEOs in Thailand: Stock Price Reaction, Underpricing and Post-Issuing (long-term) Performance. Each chapter will classify the related studies in more detail, including their motivations and hypotheses. In the following chapter, we turn our attention to the institutional background in Thailand and the collection of data.

Table 2.1: Summary of the theoretical literature on SEOs in developed markets

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Myer (1983)	U.S.	N/A	N/A	N/A	N/A	Explanation of the theories related to capital structure	Financing behaviour: (1) internal-external equity, (2) timing of security issue, (3) borrowing against intangibles & growth opp, (4) exchange offer and (5) issue or repurchase of shares
Titman & Wessels (1988)	U.S.	COMPUSTAT	All	1974 – 1982	469	Testing of 8 factors which could influence the capital structure which is elaborated in the long term.	Small firms have less of an effect on larger firms that are less leveraged and use longer term financing.
Armitage (1998)	N/A	Previous literature	N/A	N/A	N/A	Review of previous papers	When firms are undervalued, purchases of new shares by new investors prevent the future gain from being undervalued.
Viswanathan & Wei (2005)	N/A	N/A	N/A	N/A	N/A	Theory of asymptotic for event ARs	The data can be described by a stationary process with regime shifts, though it is hard to distinguish this from a non-stationary process on the basis of unit root tests alone.
Kim & Purnanandum (2006)	U.S.	Thompson Financials SDC database	Non-financial	1994 – 2003	597	The univariate test, Heckman (1979) 2-step selection model	A very high degree of external monitoring of firms does not appear to be driven by explanatory power from the equity monitoring.

Table 2.2: Summary of the theoretical literature on SEOs in emerging markets

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Wiwattanakantang (1999)	Thailand	SET database	Non-financial listed companies in the SET	1 Jan – 31 Dec 1996	270	Method a: aggregate as an entity of all firms in the same group.Method b: use a group of non-individual shareholders.	No difference in capital structure between firms that have conglomerate groups, the government and foreign investors as their major shareholders, and the firms that do not have these investors as their major shareholders
Elashker & Wattanasuwannee (2000)	Thailand	Questionnaires	Selected listed firms in SET Index	N/A	98	Multiple regression model and a mail survey	The top five factors which are in relation to capital structure are: profitability, business risk, growth opp, firm size and reputation (age) /.The results from the regression were not satisfactory.

Table 2.3: Summary of the empirical literature on SEOs in developed markets

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Hess & Frost (1982)	U.S.	NYSE	Utility firms	1 Jan. 1975 – 1 Mar. 1977	152	An expansion of the market model	Expect to have a slight decline in demand for outstanding shares if large investors buy the SEOs.
Brown & Warner (1985)	U.S.	CRSP	All	2 Jul. 1962 – 31 Dec. 1979	250	Mean-adjusted model and market-adjusted model	Highly non-normal for the daily excess returns and daily returns.
Asquith & Mullins (1986)	U.S.	Moody's Industrial Manual, Moody's Public Utility Manual	Industrial firms	Jan. 1963 – Dec. 1981	531	Cumulative Excess Return	SEOs reduce the stock prices.
Dimson & Marsh (1986)	U.K.	The National Press	All	1975 – 1982	862	One-factor market model	Statistically significant over-performance by recommended stock relative to the FTA, but underperformance relative to the Equally-Weighted Index.
Mikkelson & Partch (1986)	U.S.	WSJ Index	All	1972 - 1982	360	Cross-section regressions	Equity issuing is preferable when shares are overpriced.
Healy & Palepu (1990)	U.S.	ASE, NYSE	Industrial firms	1963 – 1981	128	Student t-test, Wilcoxon Signed Rank test	When business risk of firms increases, a probability of financial distress seems to move together; then, financial leverage is reduced when firms issue common stock.
Bernard (1992)	U.S.	Previous literatures	N/A	More than 20 yrs	N/A	Survey papers on mkt efficiency with regard to accounting earnings	Overreaction of stock prices might not be the result of the change in company earning.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Eckbo & Masulis (1992)	U.S.	WSJI	All; excluding combination of primary/secondary stock offers	1963 – 1981	450	Cross-sectional regression, and run regression under post-offer-dominated estimation period	Average direct flotation costs of uninsured rights are significantly lower than the costs of rights with standby underwriting.
Loderer & Mauer (1992)	U.S.	NYSE, AMEX	Non-financial with no right issues	1973 - 1984	450	Matching of firm technique and calculation of informativeness	No relation between market price reaction, dividend and stock offering announcements.
Conrad & Kaul (1993)	U.S.	Losers and Winners firms from DeBondt & Thaler (1985) – NYSE	All	1929 – 1988	35 Losers 35 Winners	Regression of Cumulative Raw Returns	Nothing referring to market overreaction.
Cooney & Kalay (1993)	U.S.	Myers and Majluf's sample	All common stock offerings	N/A	N/A	Re-examination of the Myer & Majluf model	It appears that the firm's prospects for growth and the size and/or age of the firm are important factors in explaining the announcement return
Denis (1994)	U.S.	NYSE, AMEX	All	Jan. 1977 – Dec. 1990	435	Tobin's Q and Pearson & Spearman correlation	A high level of profitability of investment opportunities relates to equity offerings.
Eckbo & Masulis (1995)	N/A	Previous literatures	N/A	N/A	N/A	Survey of the previous literatures regarding SEOs (empirical observations)	The timing of equity issues is affected by business cycle downturns.
Rajan & Zingales (1995)	U.S.	Global Vantage	All	1987 – 1991	8,000	Use of four financial ratios: tangibility of asset, mkt-to-book, firm size and profitability ratio	If in the short run dividend and investments are fixed, and if concerning with debt financing, then changes in profitability will be negatively correlated with changes in leverage

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Spiess & Affleck-Graves (1995)	U.S.	CRSP	All, with common stock offerings	1975 – 1989	1,247 offerings on 974 firms	Aftermarket return from purchasing the shares at the closing price on the day of the offering.	Long-term underperformance scatters for issuing firms in most industries.
Bayless & Chaplinsky (1996)	U.S.	SDC	Industrial firms	1974 – 1990	1,881	Regression: WLS	Asymmetric information and specific characteristics have less impact on a prediction of announcement date.
Ng & Smith (1996)	U.S.	Registered Offering Statistic (ROS)	All negotiated firm commitment SEOs	Jan. 1981 – Dec. 1988	220 – warrants 1,771 – cash compensation	Two – stage procedure of mkt segmentation vs.maximum of net issue proceeds	The use of warrants causes net proceeds to be higher than when they are not utilised.
Safieddine & Wilhelm (1996)	U.S.	Investment Dealers Digest, NYSE, AMEX	Firm commitment	1980 – 1991	2,647	Issue Discount Equation	Short-selling activity has been curbed, and issue discounts will be reduced by adoption of Rule 10b-21.
Barber & Lyon (1997b)	U.S.	CRSP, NASDAQ, NYSE, AMEX	All	Jul. 1973 – Dec. 1994	1,067	Wilcoxon Signed-rank test and student t-statistic	High book-to-market firms outperform low book-to-market firms
Loughran & Ritter (1997)	U.S.	NYSE, AMEX, NASDAQ	All with cash offer of common stocks	1979-1989	1,338	Wilcoxon matched-pairs signed-rank tests	The effect of new issue appears to be independent when high growth seems to be in issuing firms.
Rangan (1998)	U.S.	SEC	Non-financial with no shelf offerings; warrants; and debt & equity offerings on the same day	1987 – 1990	230	Event study	A fall in earnings in the following year is affected from earnings management in yr 0.
Teoh et al. (1998b)	U.S.	SDC	Non-financial	Jan. 1970 – Sept. 1989	1,248	Spearman rank correlation	Poor post-issue performance is partially explained in the pre-issue earnings management of seasoned new issuers.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Burton et al. (1999)	U.S., U.K.	LSE, EXTEL cards	All	1989 – 1991	110	Market model, Clawback's method	Right issues are highly significant and associated in mean returns; and vice versa in non-right issues.
Soucik & Allen (1999a)	Australia	Australian Stock Exchange, DataStream	All with only common stock offerings	Jan. 1984 – Oct. 1993	137	CARs	Significant positive initial returns in SEO firms, and a relationship between the extent of initial returns and subsequent underperformance.
Spiess & Affleck-Graves (1999)	U.S.	CRSP	All with non-warrant offerings, and non-negative book-to-market ratios	1975-1989	2,229	Rolling portfolios of average monthly returns, Fama-French 3-factor model, and Alternative benchmarks of BHRs	Showing relatively insensitive negative performance following debt offering in performance of companies in long term prior to the issue.
Wald (1999)	France Germany Japan U.K. U.S.	Worldscope	All	1993	4,404	Probits model Debt-asset ratio	The factors affecting capital structure are: (1) Cost of financial distress, (2) Moral Hazard, (3) Non-debt tax shield >> this factor presents the negative coefficient, (4) Profitability >>this also has a negative relation with leverage, (5) Growth, and (6) Size >> larger firms may be able to reduce the transaction costs associated with long-term debt issuance
Chaplinsky & Ramchand (2000)	U.S. and global mkts	SDC, PCPlus COMPUSTAT, CRSP	All	1986 – 1995	349 global 459 domestic	Heckman's (1979) 2-stage procedure	Global issues receive a higher offer price relative to domestic issues

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Foerster & Korolyi (2000)	International	Bank of New York, DataStream International	Non-U.S.' firms	1982 – 1996	333	Cross-sectional analysis and BHAR approach	Both DRs (depositary receipts) mkt liquidity & local mkt liquidity are significantly positively related to long-term returns performance
Shivakumar (2000)	U.S.	SDC	Non-financial	Jan. 1983 – Dec. 1992	2,995	A pool regression, a control-firm approach, a calendar-time portfolio approach, a Fama-MacBeth panel procedure.	Showing positive earning surprises and market reaction to earning releases before an offering announcement.
Clarke et al. (2001)	U.S.	SDC	Cancelled & completed common stock SEOs	1984 – 1996	174 cancelled, 3092 completed	Application of logit regression in order to examine the determinants of SEO cancellation. Also, computation of the long-term ARs by Ikenberry et al. (1995)	The logit regression shows that the ARs at announcement and the ARs from filing to cancellation / offering have a negative effect on the probability of cancellation.
Gajewski & Ginglinger (2002)	France	The annual report of the Commission des Opérations de Bourse	All, excluding unit offers, warrants, stock reductions or restructuring plan	1986 – 1996	219	Two parametrics tests: (1) based on time-series S.D.; (2) based on cross-sectional S.D.	The price reaction is negatively related to the stock price performance prior to the offering announcements
Hertzel et al. (2002)	U.S.	Dow Jones News Retrieval Service	All, with private placement	1980 – 1996	619	BHARs approach and the calendar-time portfolio approach	Private placements of equity, like public equity issues, take place when investors appear willing to overpay for the firm's equity.
Masulis & Shivakumar (2002)	U.S.	NYSE, AMEX, NASDAQ	All	Jan. 1990 – Dec. 1992	458 NASDAQ 408 NYSE/AMEX	Multivariate framework	Differences in market structure can significantly accelerate or retard the incorporation of news into market prices.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Altinkilic & Hansen (2003)	U.S.	SDC	Utility firms	April 1998	1,703	OLS model	A relationship between expected discounting and the ratio of new shares to be average trading volume over the month before the offer-day is insignificant.
Corwin (2003)	U.S.	SDC	All U.S. common stock offerings	1 Jan. 1980 – 31 Dec.1998	6,637	Cross-sectional analysis	SEO underpricing relates to the previous closing prices, and SEOs seem to be more underpriced with high price uncertainty since the adoption of Rule 10b-21
D'Mello et al. (2003)	U.S.	SDC	Firms that conduct at least two primary SEOs.	1979 – 1996	2,286 SEOs of 863 firms	Multivariate analysis BHR F-F 3-factor model Cross-sectional correlation	No evidence of improved firm performance after the previous offer or expectation of supervisor performance after the current issue affects stock price reaction to the current equity issue announcement.
Errunza & Miller (2003)	International	Bank of New York, SDC, DataStream	All firms domiciled outside the U.S.	1981 – 1996	78	Event study framework with a simple test	Raising capital globally rather than locally mitigates the negative stock price reaction of SEOs.
Glen & Singh (2004)	Developed and emerging mkts (44 countries)	The CD of Osiris / BVD (May 2002)	All	1994 – 2000	N/A	Size distribution of firms using median assets in the sample	Firm Leverage >> developed market firms have higher levels of leverage than emerging market firms, and there has recently been a decline in leverage in emerging markets // current liabilities are equally utilised in both groups of countries

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Huh & Subrahmanyam (2004)	U.S.	NYSE	All	1988 – 1998	521	Time-series regressions	There is delink in the scaled measured of order imbalances in the number of trades.
Jegadeesh & Karceski (2004)	U.S.	CRSP COMPUSTAT	All	Jul. 1973 – Dec. 1994	70	t-statistic, Serial Correlation Consistent SC t-stat, and Hetero and Serial Correlation Consistent HSC t-stat	High level of size from HSC_t-tests when tabulated distribution of the test statistic is used in these tests.
Kim & Hyun-Han (2004)	U.S.	SDC	All	1983 – 1998	3,304	Regression analysis	Shift of market conditions causes SEOs to be underpriced.
Mola & Loughran (2004)	U.S.	SDC	All with common stock SEOs	Jan. 1986 – Dec. 1999	4,814	The average SEO discount method	SEO discount will not be minimised as long as there is a rise in discounts over time.
Krishnamurthy et al. (2005)	U.S.	SDC Global Financing	All listed on the NYSE, AMEX and NASDAQ	Jan. 1983 – Dec. 1992	2351 public equity issues and 397 PPs	Different benchmarks and tests to control the stat.-problems. Use the F-F calendar time regression. Also, the BHR and BHAR calculations.	Both firms placing their equity and those issuing equity publicly exhibit significant positive ARs in the year prior to the equity issue. / The firms engaging in PPs of unregistered shares are required to indicate explicitly the restricted nature of the shares at the time of the placement.
Lyandres et al. (2005)	U.S.	Thomson Finance's SDC, CRSP	All; following Brav et al. (2000) and Eckbo et al. (2000)	1970 – 2003	8,126	CAPM, FF 3-factor model, Carhart (1997) 4-factor model	Equity issuers invest much more than matching non-issuers both before and after issuance.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Shaorong (2005)	U.S.	Thomson Financial SDC Platinum New Issues database	IPOs and SEOs	1990 – 1997	IPOs = 2,793 SEOs = 3,857 First SEOs by IPO firms within 3 yrs = 918	Market-adjusted returns, OLS, Probit model, Tobit model	A significant negative on the announcement day and the next day for and after lockup. Probit results do not relate to the prob of SEO. Underpricing from Tobit is positive.
Yongtae & Myung Seok (2005)	U.S.	SDC	All with common stock offerings	1989-2000	1,040	Employed the variable PreCAR to control for the effect of the pre-offer price move	The higher the information asymmetries, the more the SEOs are underpriced.
Eckbo et al. (2006)	U.S.	SDC	All with separate financial firms	1980 – 2004	83,282	Floatation method choice, Matching firm technique	The long term performance of issuer is biased downward owing to high expected returns in benchmark
Fu (2006)	U.S.	SDC	All with common stock offerings	1980 – 1999	2,873	Straightforward Method, Alternative Method	Offer is followed by a significant decrease in the operating performance.
Bulter & Wan (2006)	U.S.	SDC New Issue database	Firms with debt offerings	1975 – 1999	3,661 straight debt offerings 632 convert debt offerings	BHR approach FF 3-factor model	Sample firms have significantly higher liquidity than size & book-to-mkt matching peers >> should have low required returns
Fama & French (2006)	N/A	N/A	N/A	N/A	N/A	Three-factor model of F-F (1993), and separate value & growth by E/P ratio & B/M ratio	CAPM is a perfect model to capture the value premium when value stocks have larger market βs than growth stocks

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Walker & Yost (2007)	U.S.	COMPUSTAT	All	1997 and 2000	438	Event study	No impact between the level of leverage or liquidity and the market's reaction to the announcement of SEOs.
Balachandran et al. (2008a)	U.K.	LSE	All	1996 – 2005	1,001	Event study, market model	Suitable methods for SEOs depend on level of information asymmetry, ownership concentration, price discount, and idiosyncratic risk
Balachandran et al. (2008b)	Australia	Bloomberg, DatAnalysis	All with no warrants, convertible, unit trusts, M&A	1995-2005	636	Event study framework (market model), cross-sectional analysis	Revealing the decrease in the wealth on the rights announcement, together with some degree of subsequent recovery around the offer expiry date.
Henry & Koski (2008)	U.S.	SDC, SROs	Short sales and SEOs with common stock offerings	1 Jan. 2005 to 6 Aug. 2007	456 SEOs of 402 unique firms	Test for abnormal short-sale	Found an increasing in the discount of manipulative trading with a reduction in the informativeness in secondary market net order flow.
Intintoli & Kahle (2009)	U.S.	SDC and CRSP	SEO firms with ownership data	1980 – 2004 Ownership data = 1996 – 2004	7,720	Binominal logit model with year fixed effects, the calculation of SEO underpricing	The negative market-adjusted returns leading up to the offer date are the result of temporary price pressures as a consequence of the SEO.

Table 2.4: Summary of the empirical literature on SEOs in emerging markets and the Asian – Pacific countries

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Dhatt et al. (1996)	Korea	PACAP - Korea	All rights issues firms	1977 – 1991	791	BHR approach	Negative ARs in the post-issuing months. Market reaction to Korean rights issues is more positive for firms with a greater fall in leverage.
Aydoğan & Muradoğlu (1998)	Turkey	Istanbul Stock Exchange	All rights offerings and stock dividend	1988-1993	109	Event study framework and non-parametric	Positive reaction in the initial phase (1988-1990), while no significant reaction during the second phase of the market.
La Porta et al. (1999)	Emerging mkts	Worldscope and Bloomberg Financial System	All	Collected until end of 1995	All firms available in 27 countries	Set up the rules and classified the sample into six types: widely held, family-controlled, state controlled, controlled by widely held financial institutions, controlled by a widely held corporation, or miscellaneous	The largest firms in the world: ownership is about as common as family control. // Financial institutions do not typically appear as controlling shareholders
Salamudin et al. (1999)	Malaysia	SCAN	All rights issuing firms	1980-1995	72	Event study Cross-sectional tests	The positive response attributed to issues made during favourable economic conditions being characterised by periods of falling term premiums is indicative of (1) lower issue costs, (2) lower dilution of shareholding and (3) higher funds being raised

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Soucik & Allen (1999b)	Australia	DataStream and SDC	All SEOs	Jan. 1984 – Oct. 1993	94 firms	Event study with CAR approach	SEO firms do underperform more than non-issuers over the extended long-term period
Jurasetthakulchai (2000)	Thailand	ISIM (SET database)	Non-financial with common stock offerings	1977 – 1997	92	CAPM, Chi-square test	New shares are issued when prices are overvalued.
Lertsupongkit (2002)	Thailand	SETSMART	All SEOs	1994 – 2001	59	Event study	Negative stock price reaction after the SEO announcements.
Mathew (2002)	Japan Korea Hong Kong	PACAP	All, except rights, stock distributions and stock splits	1977 – 1992	Japan = 744 SEOs of 631 firms, Korea = 415 SEOs with 344 firms and Hong Kong = 313 SEOs of 209 firms	Mkt model, Equal-weights mkt index and BHAR approach	**Korea:** the insignificant ARs associated with seasoned equity issues is a result of two opposing motives/ **Japan:** firms take advantage of periods in which investors are overly optimistic about the value of the stock / the older firms perform better than the younger firms/ **Hong Kong:** Hong Kong firms use asym info to issue equity when market prices overvalue the firms
Limpaphayom & Ngamwutikul (2004)	Thailand	SET Index	Non-financial	1991 – 1994	62	Regression analysis by using the proxies of operating performance; i.e. ROA, Tobin's Q	More shares are offered when the expectation of operation performance worsens.
Mishara (2007)	India	CMIE BSE	The stock splits firm	1999 – 2005	180	Non-parametric statistical test proposed by Ohlson & Penman (1985)	A negative effect on price and return of stock splits.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Vithessonthi (2008)	Thailand	SETSMART	All PIAC announcement firms	1997 – 2006	156	Event study framework and Standardised ARs	PIAC, on average, convey information to the market / The larger the firm that announces a PIAC, the lower the CAR around the announcement.
Chorruk &Worthington (2009)	Thailand	SETSMART Form 69-1 from SEC	All IPOs	Feb 1997 – Oct 2008	136 and 142 of 145	CARs, BHRs and wealth relatives	Thai IPOs at first outperform the market benchmark, but their longer run performance is generally poor.
Dasilas (2009)	Greece	Dissemination Information Department of ASE	All dividend announcement firms	2000 – 2004	216	Standard event study with the naïve model	A statistically significant market reaction on the dividend announcement day.

Table 2.5: Summary of the methodology literature from the SEOs in developed markets

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Dyckman et al. (1984)	U.S.	CRSP	All	1 May 1974 – 31 Aug. 1979	2,069	(1) Mean-adjusted returns model; (2) Market adjusted return model; (3) Market model; (4) Scholes-William beta model; (5) Dimson beta model.	Showing a reduction of time clustering in the power of the test, as illustrated by the lower percentage of times the test detects abnormal performance.
Krasker (1986)	N/A	N/A	N/A	N/A	N/A	Characterisation of the function relating to the number of new shares issued	An increasing function of the issue size does not include the share price.
Corrado (1989)	U.S.	CRSP	All	Jul. 1962 – Dec. 1986	600	Simulation method, Rank test	Reporting a slight difference in the rank statistic and those expected from a standard normal population in any size of portfolio.
Lucas & McDonald (1990)	U.S.	NYSE, AMEX, OTC stocks	Industrial firms	1974-1983	549	Simulation method	CARs rise until the announcement date, and substantially drop on the issue date.
Harris & Raviv (1991)	N/A	N/A	N/A	N/A	N/A	Descriptive analysis with regard to info asym and SEOs	(1) a rise in level of debt on avr caused by targets of takeovers; (2) negative relation on avr among leverage whether the tender offer succeeds.
Fama & French (1992)	U.S.	CRSP, COMPUSTAT	Non-financial	1962-1989	N/A	Fama-MacBeth regression	High book-to-market equity ratio is a result when firm has high earning-to-price ratio.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Gerard & Nanda (1993)	U.S.	N/A	N/A	N/A	N/A	Concept of Equilibrium known as Sequential Nash	The expected terminal value of the security conditional on all public information is always higher than or equal to the SEO issue price.
Spiess & Affleck-Graves (1995)	U.S.	CRSP	All, with common stock offerings	1975 – 1989	1,247 offerings on 974 firms	Aftermarket return from purchasing the shares at the closing price on the day of the offering.	Long-term underperformance is scattered for issuing firms in most industries.
Thompson (1995)	U.S.	COMPUSTAT, CRSP, WSJ	N/A	Since 1962	N/A	The conditional return generating process: non-event and event	Showing the evidence that daily security return distributions have fatter tails than normal.
Barber et al. (1996)	U.S.	NYSE, AMEX, NASDAQ	All	Jul. 1973 – Dec. 1994	N/A	Simulation method, Bootstrap	Misspecification is reduced in test statistics, and a negative sign is shown in bias test statistic based on BH ref. portfolio.
Barber & Lyon (1997a)	U.S.	CRSP, NASDAQ, NYSE, AMEX	All	Jul. 1963 – Dec. 1993	10,000	Fama-French 3-factor model	A positive bias of CARs calculated using reference portfolio yield test statistics
Betker & Alderson (1997)	U.S.	WSJ Index	All, but no unit offerings, preferred stocks.	1983 – 1990	102	Following the methods for the calculation of abnormal operating performance	Firms attempt to sell overvalued shares to a market that does not react sufficiently to the implication of the action.
Campbell et al. (1997)	N/A	N/A	N/A	N/A	N/A	Provision of event study model	Lists of models for event study: Constant-mean-return model, Mkt model, Factor model, CAPM, APT, Signed tests

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Kothari & Warner (1997)	U.S.	NYSE, AMEX	All	1980 – 1989	250	Application of four models as (1) market-adjusted; (2) Market model; (3) CAPM; and (4) Fama-French 3 factor model	The estimated average abnormal performance is systematically negative for the low book-to-market samples, and it is positive for the high book-to-market samples
MacKinlay (1997)	N/A	N/A	N/A	N/A	N/A	Description of the methodology on event study	Calculation of ARs: (1) Constant mean return model; (2) Mkt model; (3) CAPM or APT
Driscoll & Kraay (1998)	More than 100 countries	N/A	Annual observation	N/A	20 or 30	Monte Carlo experiments, together with non-parametric covariance matrix estimate technique	Performances of the OLS and SUR estimators have a relationship opposite to the size of the cross-sectional dimension.
Fama (1998)	U.S.	N/A	N/A	N/A	N/A	Review of the studies of long-term returns	The utilisation of firm-specific model for expected returns, i.e. mkt model and comparison period approach, is possibly done to limit bad-model problems, instead of the formal asset pricing models.
Lyon et al. (1999)	U.S.	NYSE, AMEX, NASDAQ	All with no ADRs, closed-end funds, foreign domiciled, Prime&Scores and REITs	July 1973 – Dec. 1994	14 size reference port and 10 BM reference port.	Size and book-to-mkt reference port, CARs	The only ready solution to overlapping source of bias in event studies of long-term BHAR is to purge the sample of observation of overlapping returns.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Mitchell & Stafford (2000)	U.S.	CRSP	Long-term stock returns in mergers, SEOs and share repurchases' firms	1958 – 1993	4911 underwritten primary; 2421 open market and tender-offer share repurchases; and 2193 acquisitions of CRSP firms	Employment of F-F 3 factors model, together with the calculation of BHR and BHAR.	The popular approach of measuring long-term abnormal performance with mean BHARs in conjunction with bootstrapping is not an adequate methodology. // Calendar-time approach has sufficient power to detect abnormal performance over economically important ranges.
Eckbo et al. (2000)	U.S.	WSJ Index, SDC	All	1963 – 1979	4,860	Matched-Firm Technique	Stocks of matched firms are on average more risky than issuer stocks during the post-issue period.
Graham & Harvey (2001)	U.S., Canada	FEI	N/A	N/A	8,000	Questionnaires, Trade-off model	Finding no relation of stock valuation to equity issuance and information asymmetry indicated by non-dividend paying status and small size.
Bancel & Mittoo (2002)	EU; plus Switzerland	Survey data	17 EU countries; plus Switzerland	N/A	737	The survey questionnaire	Managers' behaviour seems to be driven by impact of financial statement and search for financial flexibility in order to face financial policy decision.
Eberhart & Siddique (2002)	U.S.	SDC	All	1 Jan. 1980 – 31 Dec. 1992	1368 SEOs of 1083 firms	Cross-sectional regression; together with the event-time and calendar-time approach	Abnormal bond returns almost mirror abnormal stock returns, such that abnormal firm returns are closer to the horizontal axis than abnormal stock returns.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Byun & Rozeff (2003)	U.S.	CRSP	All stock splits and dividends	1927 – 1996	12,474 splits with 247 observations	Application of the calculation of BHAR and mean of BHAR for 12-month period, together with the technique of calendar-time ARs to test post split long-run performance	The authors claim that comparison of the long-term ARs produced by the BHR and CAR methods reveals that they are not very different, nor is one systematically larger than the other.
Jegadeesh & Karceski (2004)	U.S.	CRSP COMPUSTAT	All	Jul. 1973 – Dec. 1994	70	t-statistic, Serial Correlation Consistent SC t-stat, and Hetero and Serial Correlation Consistent HSC t-stat	High level of size from HSC_t-tests when tabulated distribution of the test statistics used in these tests.
Seiler (2004)	U.S.	Yahoo website	Non-financial	N/A	N/A	Risk-adjusted return method with explanation step by step in Excel spreadsheets	No leakage of information during the study period
Bulter et al. (2005)	N/A	Jeffrey Wurgler's web page, Federal Reserve Bulletin	All with equity and debt issues	1927 – 2001	N/A	Out-of-sample methods: conditional and unconditional model	Aggregate pseudo-market timing drives the in-sample relationship between equity issues & future stock market returns
Cai & Zhang (2006)	U.S.	CRSP, COMPUSTAT	Non-financial Non-utilities	1975-2002	N/A	Fama-French model	The effect of capital structure innovation on stock returns is not proxy for the effects of earnings and other firm characteristics

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Kothari & Warner (2006)	U.S.	Previous literature	All	N/A	N/A	CAR approach, cross-sectional distribution and BHAR approach	All event-studies, regardless of horizon length, must deal with several basic issues: (1) risk adjustment and expected/abnormal return modelling; (2) the aggregation of security-specific abnormal returns; and (3) the calibration of the statistical significance of abnormal returns
Aktas et al. (2007)	U.S.	CRSP	All	1 Jan. 1973 – 31 Dec. 2004	1,000	Two-stage market model, based on Markov Switching regression	In comparison with BETA-1 and GARCH models, the TSMM is the most powerful test; while those two are saved from the contaminating events.
Dietrich (2007)	U.S.	Theories and some formulas	N/A	N/A	N/A	Contracting model with long-term investments	Rise in internal funds for the investment of first-best optimally when there is more diversity in an issue.
McLean et al. (2007)	U.S.	DataStream	Monthly stock price indices	Jul. 1981 – June 2006	41 non-U.S. countries indices	Fama-MacBeth regressions, Cross-sectional regressions, the procedure of Pontiff (1996)	The issuance effect plays a better role within a country rather than across countries.
Spiegal & Watanabe (2007)	U.S.	NYSE, AMEX, NASDAQ	Stock dividends and stock splits	Jan. 1963 – Dec. 2004	N/A	Calculation of the excess returns of each portfolio	Shares tend to be markedly issued by growth stocks, and also robust to correlated shocks such as dividend shocks.

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Armitage (2008)	U.K.	The prospectus and lists compiled by Argus Vickers	SEOs: rights issue, open offer and placing	2003 – 2006	275 SEOs: 49 right issues, 142 open offers and 84 placing	The formulas for "New Buyers"	New equities mainly come from the existing shareholders, implying that the standard theory of Myers-Majluf does not apply to any of the SEO methods.
Hoechle & Zimmermann (2008)	Switzerland	European wholesale banks	N/A	Mar. 2000 – June 2005	41,719	(1) Calendar time portfolio approach; (2) panel regression based approach; (3) CrossReg approach; (4) CalTime approach.	An explanation of private investors pronounced home bias can be claimed when the transaction cost of international stock trades is high.

Table 2.6: Summary of the methodology literature from the SEOs in emerging markets

Authors	Market	Sample Source	Firm type	Data Period	Sample Size	Methodology	Results
Cai & Loughran (1998)	Japan	PACAP	All SEOs, excluding the banking section	1971 – 1992	1389	BHR and measurement of ARs with six different benchmarks	The post-issue operating performance of the SEO sample is poor.
Bartholdy et al. (2005)	Denmark	Copenhagen Stock Exchange	All	N/A	N/A	Market model	The probability of trading during the event window is higher than the other period for stocks influenced by the event.
Brown et al. (2006)	Australia	SDC Platinum	All SEOs with XR and PP	1993 – 2001	3650: 664 XR and 2986 PP	BHAR and Mann-Whitney U-Test	XR firms are more profitable and are less levered. The converse is true in PP firms.
Diacogiannis & Makri (2008)	Greece	ATSE	All	Jan. 2001 – Dec. 2004	187	Hawawini (1983) model	Showing a better performance in the low-capital portfolio than in the high-capital portfolio when the direction of change in beta is predicted.

Table 2.7: The varieties of financial products in the Thai capital market and the other markets

	USA	Japan	Hong Kong	Korea	Taiwan	Singapore	Malaysia	Thailand
Equity Products								
Equity	✓	✓	✓	✓	✓	✓	✓	✓
REITs	✓	✓	✓	✓	✓	✓	✓	✓
Warrants	✓	✓	✓	✓	✓	✓	✓	✓
Foreign Equity	✓	✓	✓			✓	✓	
Rights	✓		✓			✓	✓	
ETF	✓	✓	✓	✓	✓	✓	✓	✓
Depository Receipts	✓	✓			✓	✓		
Derivatives Products								
Index Futures	✓	✓	✓	✓	✓	✓	✓	✓
Index Options	✓	✓	✓	✓		✓	✓	✓
Single Stock Futures	✓		✓				✓	✓
Commodity Futures	✓		✓	✓		✓	✓	✓
Currency Futures	✓			✓				
Currency Options	✓			✓				
Interest Rate Futures	✓	✓	✓	✓	✓	✓	✓	
Interest Rate Options	✓					✓		
Bond Products	✓	✓	✓	✓	✓	✓	✓	✓

Source: Bloomberg, cited by The Plan of Developing the Thai Capital Market by The Development of the Thai Capital Market Committee on 4 November 2009 (in Thai). Available at: http://www.set.or.th/th/about/vision/files/CMP_Master.pdf [Accessed on 5 November 2010]

Notes: REITs refer to real estate investment trusts. ETF refers to exchange-traded fund.

CHAPTER 3

INSTITUTIONAL BACKGROUND AND DATA SELECTION

3.1 Introduction

In recent years (up to the first quarter of 2009)[27], the financial outlook for emerging markets in Asia appeared in better condition than that for other regions after the economic recession of 2008, due to the positive expectation of net private capital inflow to the region's capital markets. The money markets in the emerging economies of Asia are all smaller in scope than those in developed economies, as they require further development in many areas. These areas may include hedging in short-term risk, the effective allocation of capital and effective distributive liquidity in their financial institutions. Moreover, the analysis from The Asia Capital Markets Monitor reveals that "the global banking system remains the weakest link in the chain of global financial and economic crises". However, there have been temporary signs that the emerging Asian equity markets are now stabilising after being hit by global financial crises (both in 1997 – 1998 and 2007 – 2008)[28]. Since the performance of the emerging Asian markets appears to be different from that of developed markets, examining the data from the emerging markets may not show up the same results. However, it may be interesting to survey the data from the emerging markets in order

[27] All the information and overview of the emerging Asian capital markets in this chapter is based mainly on **The Asia Capital Markets Monitor**, April 2009, by the Asian Development Bank (ADB)'s Office of Regional Economic Integration. Available via: http://asianbondsonline.adb.org/features/asian_capital_markets_monitor/ACMM-highlights.pdf [Accessed on 30 December 2009].

[28] According to the analysis from The Asia Capital Markets Monitor, these signs of temporary stabilisation refer to an improvement in the valuation indicators. However, it might be a long time before the recovery is complete.

to have different evidence and views from those of the previous research. This is because in practice investors should diversify their investments into different markets, where they can gain the most suitable returns. Introducing the studies in emerging markets could be useful for these investors since we still lack evidence in this area.

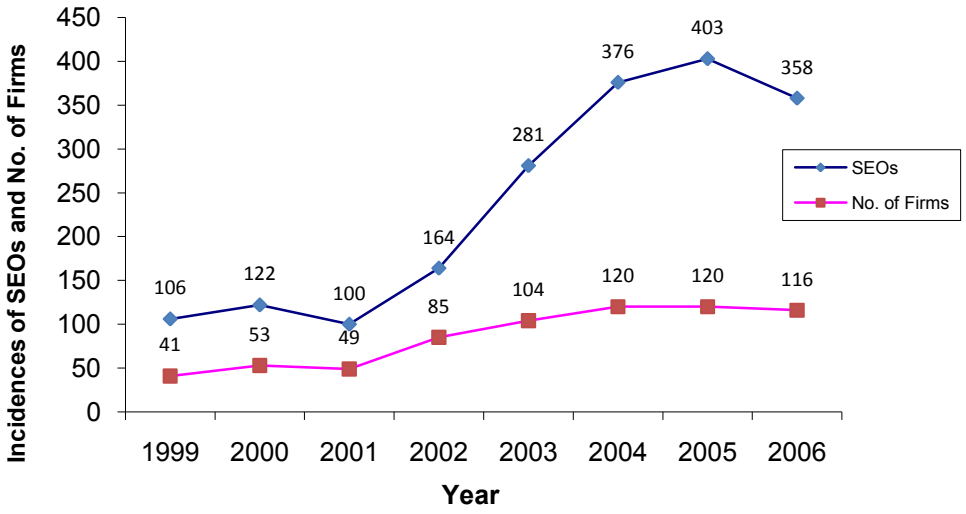
Mody (2004) refers the definition of emerging markets to online searches,[29] as markets with high growth expectation, high levels of risk, extreme volatility and a short history of substantial foreign investment. Thailand is selected for our study of emerging markets due to two main reasons. First, since the country was badly hit by the financial crisis in 1997, many listed companies were confronted with the difficulty of obtaining debt financing, because the financial institutions also suffered in the crisis. Since then, financing with equity has become more popular. This is confirmed by the gradual rise in SEOs during the period 1999 - 2006 (see Figure 3.1). Second, Thailand contains the main characteristics of emerging markets. For instance, there are few institutional investors, leading to high volatility in the Thai capital market. This is because the value of equities, from the foreign investors' point of view, appears to be low. In addition, the Thai market has a high level of risk, caused by the high volatility[30], and the economic and political conditions in Thailand have been highly volatile in recent years[31], which may be another characteristic of emerging markets (Mody, 2004)[32]. Moreover, there has been a great development of the Thai capital market, particularly after the financial crisis in 1997, showed by an increase in

[29] Some examples of these can be found by making a Google search with the words "Emerging + market" (Mody, 2004).
[30] According to the Stock Exchange of Thailand (SET)'s statistics based on the end of 2004, the ratio of return-risk in the SET index was 2.33.
[31] The political chaos originally began in 2005.
[32] Mody (2004, p.1) bases this type of characteristic on the online searches at www.schwab.com/SchwabNOW/ReDir/1.5348.%7C64%7c.00.html.

market capitalisation (see section 3.2.2.4) and daily trading volume[33]. This leads to the interesting aspect of the Thai capital market, that it is growing within its small size and there are a small number of listed firms.

Figure 3.1: Number of SEO firms and incidences of SEOs on the Stock Exchange of Thailand (SET)

The graph show the number of SEO firms and incidences of SEOs on the Stock Exchange of Thailand (SET) between 1999 and 2006



As a consequence, we feel it is suitable to take Thailand as a case study to represent emerging markets in our examination. Therefore in this chapter we provide a brief description of its institutional background, including general information on the Stock Exchange of Thailand (SET, hereafter). Some regulations relating to equity offerings in Thailand are also discussed, together with the selection of data for this paper. The organisation of this chapter is as follows: section 3.2 explains the institutional

[33] See Appendix 1 for a clarification by graph.

background, while section 3.3 describes the data selection for the paper. We summarise the chapter in section 3.4.

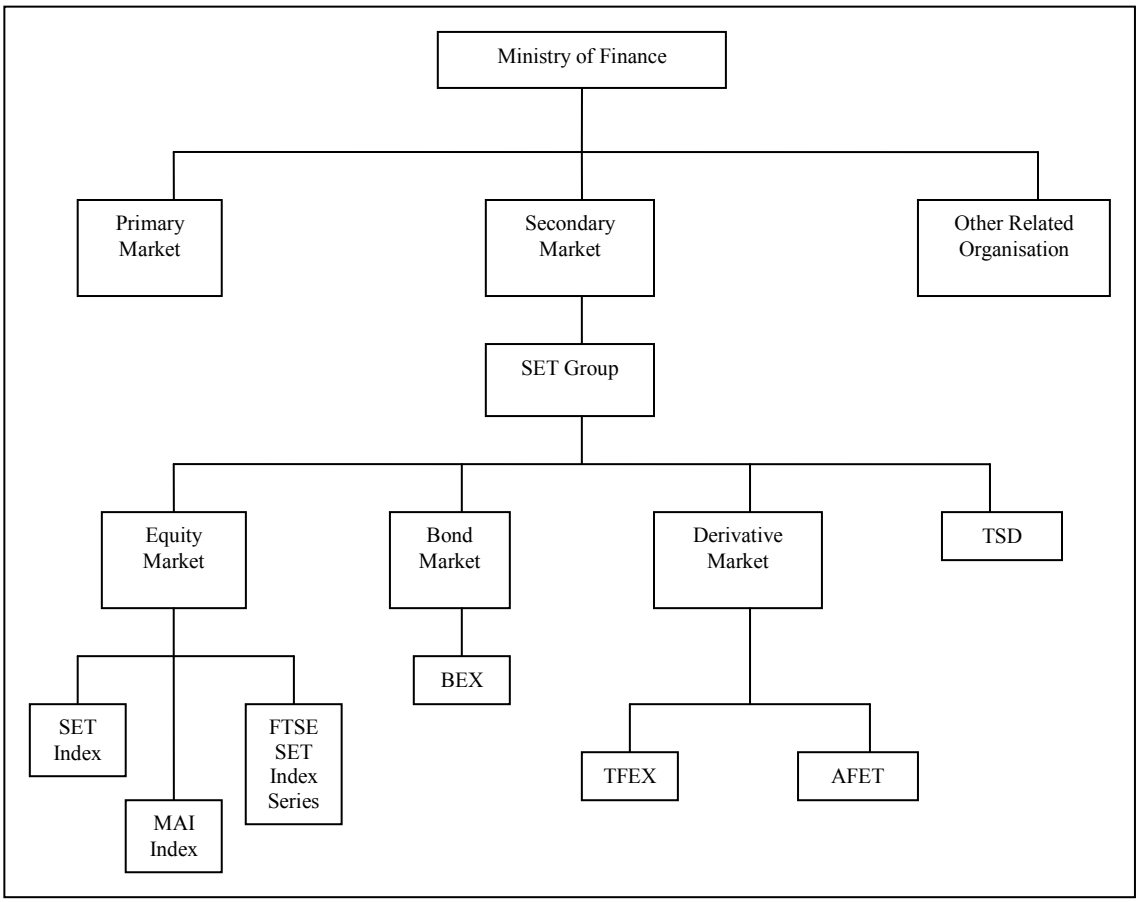
3.2 Institutional Background in Thailand

3.2.1 Institutions and Market Structure

The SET began trading on 30 April 1975 under the Open Auction method. In April 1991, about 16 years after its establishment, the SET began full operations with computerised trading, known as the "Automated System for the Stock Exchange of Thailand", or ASSET. This enabled trading to be more efficient, fluid and equitable[34]. SET's subsidiaries are basically of four kinds: the equity market, the bond market, the derivatives market and the Thailand securities depository company limited (TSD). Apart from the four subsidiaries of the SET (see Figure 3.2 for an overview diagram), there is securities trading elsewhere on the SET, mainly in the equity market. There are currently 11 mutual funds (unit trusts) and another 26 property funds listed in the SET[35]. Furthermore, the SET has Exchange-Traded Funds (ETF), preferred stocks, depository receipts and warrants as various alternative investment channels for investors.

[34] Further information regarding the history of the SET can be found on its website: http://www.set.or.th/en/about/overview/history [Accessed on 25 September 2008].
[35] The information is up to the end of the first quarter of 2010.

Figure 3.2: Structure of the Thai capital market



3.2.2 Characteristics of the Thai Capital Market

3.2.2.1 Trading Methods

Based on ASSET, investors are able to trade in securities by two principal methods:

(1) Automatic Order Matching (AOM): the submission of buy and sell orders is placed by traders in ASSET and the system automatically performs the order matching process[36] according first to price and then to time priority, without human intervention;

[36] In terms of the matching process, two methods are involved: (i) continuous order matching – matching trading orders in the queue and confirming of each executed transaction via the broker's terminal and (ii) call market matching – utilised as a calculation of opening and closing prices of a security at the opening and closing of trading hours

(2) Put Through (PT) Trading: traders may deal directly with each other after the brokers' announcement of bid or offer prices[37]. The results of negotiations must be submitted to ASSET for recording purposes.

3.2.2.2 Types of Order

A "Limit-Price" order is the main type of trading order on the SET. This order allows traders alternative types of order[38]: (1) Market Price Order (MP), (2) At the Open (ATO) / At the Close (ATC), (3) Immediate or Cancel (IOC), (4) Fill or Kill (FOK), (5) Publish Volume and (6) Basket Order.

3.2.2.3 Taxation

By law, investors who are trading in the Stock Exchange need to pay tax to the government. The SET has summarised guidelines of taxation for investors as follows: first, capital gains are exempt from tax for both Thai and foreign investors who carry out their business in Thailand but individual investors and juristic investors need to pay corporate income tax (no withholding tax). For other foreign investors, capital gains are also tax-free for individuals but juristic investors are required to pay 15% withholding tax. Second, dividends for domestic and foreign investors are taxed if they are received from a listed, limited company. Another 10% withholding tax has to be paid if the taxpayer receives income from a mutual fund and decides not to calculate such income with other income at the end of the year. However, these

[37] Nittayagasetwat and Withisuphakorn (1997, p.15) claim that in the Thai stock market, BROKERS are defined as stock exchange members who execute orders and buy or sell securities for their customers, who include individual investors, sub-brokers and institutional investors. This structure is different from other exchanges, e.g. the U.S.

[38] Note that under these six optional types of order, investors are allowed to trade their securities only on the main board and foreign board.

individual investors are exempted from tax if dividends are paid by any firms supported by BOI[39]. Juristic investors are generally required to pay 10% withholding tax, whereas dividends are tax free if the taxpayer is a listed firm and if those dividends are paid by Thai companies or mutual funds. The taxes on dividends are also exempted if the taxpayer is a company holding at least 25% of all the shares in the paying company and if such a company does not hold any share in the taxpayer's company, and also if any dividend payments come from companies supported by BOI.

Finally, interest incomes for individual and juristic investors are liable to 15% withholding tax, except for juristic investors who run businesses in Thailand. These investors pay only 1% withholding tax and pay nothing if the financial business, securities business or credit foncier business receives interest from a commercial bank. In addition, Thailand has double tax agreements with 52 countries[40], including the UK, U.S.A., and the EU. Only in 28 of the countries have institutional investors received exemption from capital gains taxes. Investors must also pay 7% VAT to a security company as a service fee and must buy stamps (1 Thai baht for every 1,000 Thai baht) for any transfer of share certificates and debenture certificates. Nevertheless, more than 60% of investors who run their businesses in Thailand[41]

[39] BOI, or the Board of Investment, is working to be a one-stop service for investors regarding their investments in Thailand. The BOI helps investors in three key categories: (1) a reduction of risks associated with investment, (2) a reduction of initial investment costs and the improvement of the overall rate of return on investment and (3) providing incentives for business-related investment at all times. Information obtained from the BOI website: http://www.boi.go.th; [Accessed on 9 August 2008].

[40] Last update was on 24 February 2009, according to the SET regulations website: http://www.set.or.th/en/regulations, [Accessed on 15 May 2009].

[41] This figure is based on the survey of the National Economic and Social Development Board (2006).

complain that these taxation regulations are confused and not flexible, and also very slow in actions. This is a drawback when competing in the business' sector.

3.2.2.4 Other Characteristics

There are several characteristics which are likely to be the main features in the Thai capital market.

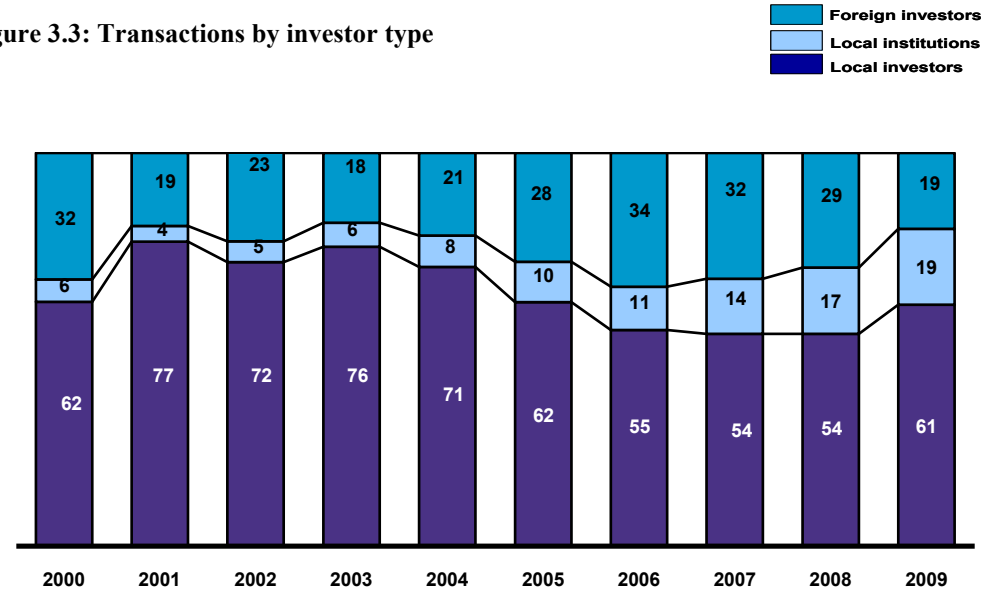
(1) Types of Investor

The main types of investor on the SET are: (1) individual investors, (2) local institutions and (3) foreign investors. Figure 3.3 shows that individual (local) investors have formed the largest group of investors on the SET since 2000[42] and it is clear from the figure that there is a lack of institutional investors. This causes high volatility in the market. The fact that the Thai capital market is highly volatile can also be explained by the behaviour of the individual investors. Since these investors have a lack of investment knowledge, they usually trade following rumours, leading to high volatility in the market. In addition, the market itself tends to be based on technical factors (refer as the external factors) rather than fundamental factors, which could be another interpretation of high volatility. These technical factors include GDP, interest rate, inflation, exchange rate and money in- and out-flow (foreign net buy). Furthermore, since the SET has marginal variety in its financial innovations, e.g. securitisation and structured products, which do not motivate investors to invest in the market, and since there is a low standard of financial literacy, the number of investors (institutional investors, in particular) in the market remains low. However, Figure 3.3

[42] According to SET's statistics (by the end of the second quarter 2009), individual investors accounted for more than 60% of the total number, while only 10% were institutional investors. The remaining 30% were foreign investors.

suggests that the number of institutional investors seems to have risen in the last 3 to 4 years.

Figure 3.3: Transactions by investor type



Source: SETMART as of 30 November 2009.
Note: The three columns from the top are foreign investors, local institutions and local investors, respectively.

(2) Market Capitalisation

The SET's market value increased by approximately 203% from 1999 to 2007[43]. By the end of 2007, the market capitalisation of the SET was up to about THB 6,636,069 million (or $198,092 million), the highest since 1995. However, the SET is relatively small in comparison with major developed markets, such as the S&P500 ($12,867,850 million by 31 December 2007) and the FTSE100 ($3,047,506 million by 31 December 2007)[44]. Although the market value of the SET is lower than that of neighbouring countries, such as Hong Kong, Singapore, Malaysia and Taiwan, a

[43] The number was obtained on 31 December 1999 from SET's website: http://www.set.or.th [Accessed on 10 August 2008]. The market capitalisation in 1999 on average was THB 1,782,718 million or $53,215.43 million.
[44] Information on both the S&P500 and the FTSE100 is taken from DataStream.

substantial increase in Thai market value becomes an interesting feature, in that the capital market is growing when the size is smaller than the other markets.

(3) Short Selling

According to the regulation of the SET (Bor.Sor./Khor.01-00)[45], a member may conduct a short sale only with securities specified by the Exchange. This applies except in the case of a short sale by a market maker. However, if the short sale of any security is more than the prescribed volume, it is prohibited by the Exchange on the business day after the day when the short sale exceeds the prescribed volume, until such volumes are reduced.

(4) Insider Trading

When insider trading occurs in Thailand, after the buy transaction, it appears that the stock earns abnormal returns for about 4 or 5 days, while stocks seem to level off after the sale transactions. It is managers and directors of firms who possibly influence people and have the ability to time the market. Nevertheless, there are currently no strict regulations regarding insider trading on the SET.

(5) Institutional Intermediaries

The structure of income in institutional intermediaries in the Thai capital market depends mainly on the commission fee for more than 84% of the overall income of those intermediaries[46]. This commission fee is based on the fundamental rate, undermining the institutional intermediaries' motivation to find other sources of income. As a result of this limitation, it is difficult to develop their ability to compete

[45] Bor.Sor./Khor.01-00 mentioned here focus on the section "Short Selling in the Exchange 2001" on pp.107 - 113.

[46] Information is taken from The Master Plan of Developing the Thai Capital Market # 2 (between 2006 and 2010) by The Federation of Thai Capital Market Organisations; released on 10 May 2006 (in Thai) available at http://www.fetco.or.th [Accessed on 22 May 2009].

with foreigners. Moreover, there is a lack of joint venture businesses which can lead naturally to international expansion, because the institutional intermediaries are normally individual companies.

(6) Ownership Structure[47]

In recent years, most companies listed on the SET are controlled and owned by families or large companies. These family-owned firms are small in size, leading to limitations in competing with foreign companies and difficulty in investing in sufficiently varied businesses.

(7) Regulations

Although the standard of the investment regulations has improved and has been continuously developed, they are not fully accepted as they still have drawbacks. This applies not only to taxation, as noted earlier in this section, but also to the protection of minority shareholders when there is an ineffective board of directors, another major weak point in the regulations. The judgements of illegal securities trading also appear to have many processes and to take a long period of time, leading to a slow reaction when someone breaks the regulations. We will discuss the regulations with regard to equity offerings later in this section 3.2.

3.2.3 The SET Index and Other SET Indices

According to the SET, it currently has 561 listed firms in the entire equity market[48]. These can be divided into three parts: (1) the main market, listed in the SET Index,

[47] Information in this section is based on Alba et al. (1998), Wiwattanakantang (1999) and The Master Plan of Developing the Thai Capital Market # 2 (between 2006 and 2010) by The Federation of Thai Capital Market Organisations; released on 10 May 2006 (in Thai).

[48] This figure is based on the number of listed companies on the SET available from its website: http://www.set.or.th/en/company. This information was updated on 21 February 2010.

which consists of 475 companies, (2) the MAI (Market for Alternative Investment) Index, which contains 60 companies and (3) another 26 property funds which are listed and traded in the SET Index[49]. Further details of the MAI Index will be briefly mentioned later in this section.

3.2.3.1 The Calculation

The SET has been calculated by composite index, known as the SET Index, by: (1) market capitalisation weight, (2) all the common stocks listed in the SET, including the unit trust of mutual funds, (3) none of those exceeding a 1-year suspension of stock[50], (4) the base index as 100 and (5) using the base date on 30 April 1975 (the establishment date).

3.2.3.2 Industries and Sectors in the SET

There are 25 sectors listed under 8 industries in the SET at present, set out in Table 3.1 below:

[49] This is based on information from the SET, updated on 21 February 2010.
[50] This is due to there being no reflection of stock current fundamental factors and a constant in share prices. The movement of the index does not consequently fully reflect the market's condition, as the calculation is still weighted by these securities (The SET website: http://www.set.or.th, accessed on 3 March 2008).

Table 3.1: Industries and sectors on the SET up to February 2010

INDUSTRY GROUP	CODE	NUMBER OF FIRMS[51]
1. Agro and Food Industry	**AGRO**	**41**
• Agribusiness	AGRI	18
• Food and Beverages	FOOD	23
2. Consumer Products	**CONSUMP**	**41**
• Fashion	FASHION	24
• Home and Office Products	HOME	11
• Personal Products and Pharmaceuticals	PERSON	6
3. Financials	**FINCIAL**	**61**
• Banking	BANK	12
• Finance and Securities	FIN	32
• Insurance	INSUR	17
4. Industrials	**INDUS**	**70**
• Automotive	AUTO	20
• Industrial Materials and Machinery	IMM	23
• Paper and Printing Materials	PAPER	2
• Petrochemicals and Chemicals	PETRO	12
• Packaging	PKG	13
5. Property and Construction	**PROPCON**	**92**
• Construction Materials	CONMAT	31
• Property Development	PROP	61
6. Resources	**RESOURC**	**27**
• Energy and Utilities	ENERG	25
• Mining	MINE	2
7. Services	**SERVICE**	**83**
• Commerce	COMM	14
• Health Care Services	HEALTH	13
• Media and Publishing	MEDIA	24
• Professional Services	PROF	3
• Tourism and Leisure	TOURISM	14
• Transportation and Logistics	TRANS	15
8. Technology	**TECH**	**38**
• Electronic Components	ETRON	11
• Information and Communication Technology	ICT	27
9. Non-Performing Group	**NPG**	**22**

Note: The Non-Performing group is a special one which is not brought into the calculation of either the SET Index or the Industry Indices. This is because these companies are subject to plans for restructuring in order to reduce their level of debt when facing financial distress.

Having re-organised all the industrial groups on the SET which was established in 1991, the calculation of these Industrial Indices began on the first trading day in 2004.

[51] Information was updated on 21 February 2010 and obtained from the SET website: http://www.set.or.th/en/company/companylists [Accessed on 22 February 2010].

According to the SET, these Industrial Indices reflect the movement of security prices in that industry and are computed by: (1) taking the last trading day in December 2003 as a base date for the calculation, with the base index at 100, (2) reckoning no historical calculation of Industrial Indices, (3) calculating the base on the same structure as the SET Index, i.e. using market capitalisation weight and (4) reckoning no calculations for the Non-Performing (rehabilitation) group. However, any movement of prices in rehabilitation firms is still included in the calculation of the SET Index, if they are still trading.

3.2.3.3 Other Indices in the SET

On the side of the equity market, not only is the SET Index traded in the Stock Exchange, but the SET has also established another four indices in three categories in order to perform the measurement of returns, risk and performance of firms more easily and to have greater international scope.

(1) The SET 50 Index and SET 100 Index

With the SET Index is our Market Indicator Index; it established the SET 50 Index in August 1995 and the SET 100 Index in April 2005. The SET 50 Index consists of 50 of the largest listed companies by their market capitalisation; the SET 100 Index is, correspondingly, the 100 largest listed firms. The SET 50 Index can be stated as the Performance Benchmark for the portfolio management of mutual funds. Moreover, the SET 50 Index is used as the underlying index for derivatives. The SET 100 Index, which contains medium-sized firms, scatters the investment in the companies on the

SET 50 Index more widely and increases their liquidity. In addition, the calculation of these two indices is strictly by the market capitalisation weight method[52].

(2) The Market for Alternative Investment (MAI) Index

The MAI was established on 21 June 1999 as an alternative market for long-term allocation. Companies listed on the MAI must have authorised capital of less than 200 million baht (around USD 5.97 million). The MAI Index is calculated in a similar way to the SET Index[53].

(3) The FTSE SET Index Series[54]

This is the newest Index series with a partnership between the SET and the FTSE Group Investors, providing a comprehensive new suite of indices; it enables the performance of the major capital segments in Thai markets to be measured more easily. In these series, there are six separate indices segmented by market capitalisation: (1) the FTSE SET Large Cap Index, (2) the FTSE SET Mid Cap Index, (3) the FTSE SET Small Cap Index, (4) the FTSE SET All-Share Index, (5) the FTSE SET Mid Small Cap Index and (6) the FTSE SET Fledging Index.

With a representative of the top 30 listed companies by market capitalisation on the SET main board, the FTSE SET Large Cap Index is the main headline index of the FTSE SET Index Series. Furthermore, stocks under the FTSE SET Index Series are free-float weighted to ensure that only the investable opportunity set is included

[52] For further information regarding the characteristics of the firms selected for the SET 50 Index and SET 100 Index, together with some relevant statistics, see the SET website: http://www.set.or.th/en/products/index [Accessed on 24 September 2008].
[53] The calculations of the MAI Index are (1) using market capitalisation weight and bringing all the listed firms into the calculation, (2) adjusting the index when firms transfer to SET, (3) taking the base Index as 100 and (4) taking the base date as 2 September 2002.
[54] Information in this section is derived from the SET website: http://www.set.or.th/en/products/index, [Accessed on 28 September 2008].

within the index. This free-float must be greater than 15% for eligible stocks. Other key features of the FTSE SET Index are briefly summarised in Table 3.2:

Table 3.2: Summary of the FTSE SET Index Series

Liquidity Criteria	Turnover of at least 0.05% of their shares in an issue based on their median daily trade per month.
Base Date	29 February 2008
Base Value	1,000 with 2 decimal points
Index Currency	Thai Baht
Index Review Period	Twice yearly: 1. In June (for use during the period July – December) and 2. In December (for use during the period January – June)

3.2.4 Equity Offerings in Thailand

Since the capital market in Thailand generally has four categories of SET subsidiaries (equities, bonds, derivatives and TSD), the equity market seems to be the most important of these subsidiaries in financing the companies' capital, apart from debt financing. Due to a lack of financial innovation in the SET, companies may prefer to finance their capital via the equity market, although the SET has another three optional markets, which are not popular. As can be seen, the bond market and also the derivative market have been firmly established for the past decade, but many investors (together with the firms themselves) are still unfamiliar with them and know very little about them.

Companies issuing bonds and derivatives offer these mostly to their directors and employees. In other words, even though these two types of security are being traded,

the transactions are limited to a particular group of people inside the firms. This is possibly one of the reasons why the companies issuing warrants and convertible bonds offer them to either their management section or their employees, rather than to the general public. Additionally, there is no evidence of a minimum period for the follow-on offering (SEOs) after the initial public offering (IPO) of each firm. Consequently, it can sometimes be observed that the firm makes an SEO within a month of its first trading as a public company.

3.2.4.1 Regulations: Common Stock Offerings

The Securities and Exchange Commission (SEC) of Thailand announced the Notification of the Application for and Approval of Offer for Sale of Newly Issue Shares (KorChor.12/2543), which is a modification of the notification in 1992, that listed companies need to request the permission of the SEC and must fulfil the SEC's requirements in either the case of an SEO, or an IPO. The main objective of the notification, KorChor.12/2543, is to protect or reduce the risk of investors who purchase securities in this offering. However, SEO firms do not need to have their financial statements examined, as they are required to clearly publish their figures under the SEC regulations. The main conditions for the SEC to give permission to listed companies to offer their equities to the public are as follows.

First, the SEC has the right to revoke its permission before the securities are offered if the SEC seems that licensees (SEO listed firms) do not have the right qualities and are unable to reach the requirement in the given period. Second, the licensee cannot arrange any shareholder meetings with regard to the effect of investors' rights before

issuing equities. Third, listed companies which plan to issue new shares, known in this case as “applicants”, have to submit two specific forms issued by the SEC (called Form 35-1 and Form 69-1, which can be called the filing forms) together with a draft of their prospectus and other supporting documents; namely, a copy of the memorandum, a copy of the certificate issued by the Ministry of Commerce, a copy of the company’s regulations and the certificate of investment bank (I.B) and a list of independent directors or audit committees. Having received the acceptance letter from the SEC regarding the submission of these forms, the information on securities offerings can be published to investors. The minimum period for this is 15 working days after the SEC receives the forms and the draft of the prospectus. In addition, according to the SEC’s notification KorChor.12/2543, the licensee has to complete the selling of its securities (or shares or other equities) within six months from the date when the filing form came into force. If it cannot do this and requires an extension period, the request needs to reach the SEC at least 30 days before the end of the period, together with a justification. As a consequence, it is possible for companies to issue equities more than once per year. Finally, concerning the previous regulation, the information on Form 69-1 and the draft of the prospectus must state that a 30-day waiting period is allowed for investors to study the prospectus before they invest.

Figure 3.4: Time line of the steps in obtaining permission to make an equity offering

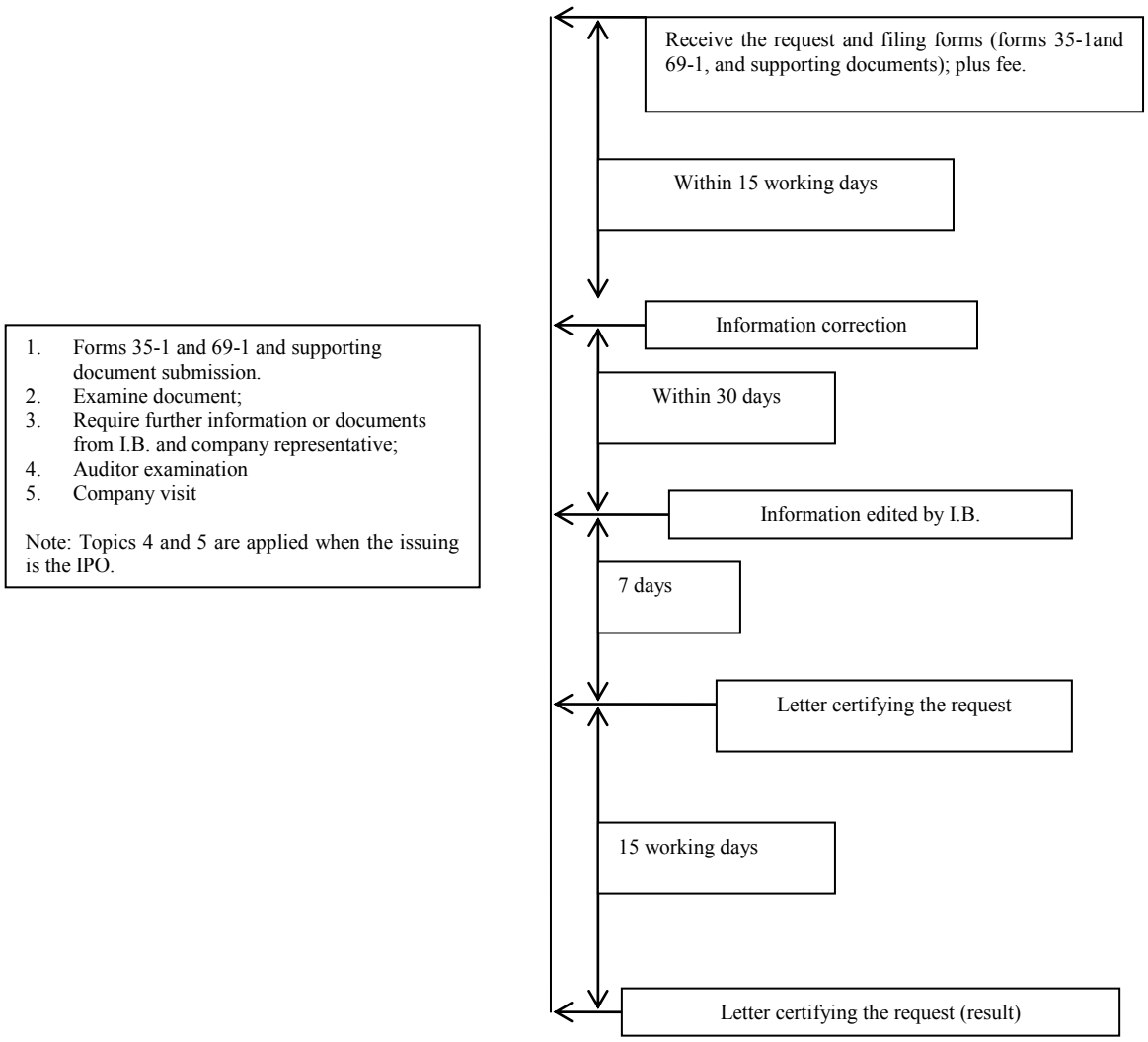
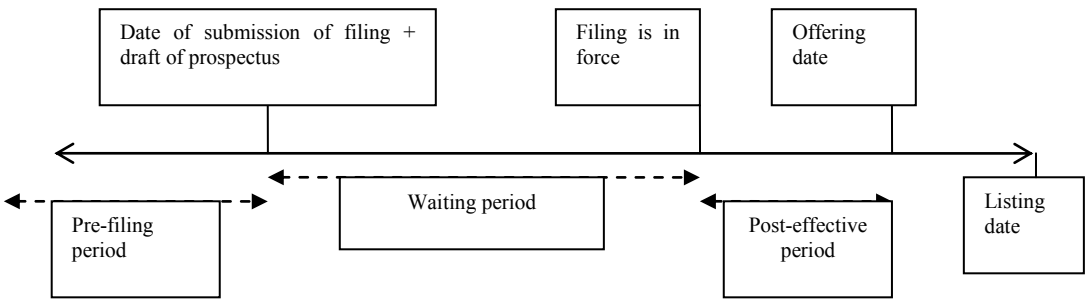


Figure 3.5: Time line of disclosure of information for equity offerings



Notes from Figures 3.4 and 3.5:

- The pre-filing period is the period in which there is no information available nor is any advertising published regarding the amount and prices of securities which include any persuasion to offer and buy securities.
- The waiting period is the period in which most of the information is allowed to be published, except information with regard to prices, offerings, reservation, allocation and underwriting.
- The post-effective period is the period in which companies are allowed to give their prospectus or publish advertisements to the investors to buy their securities (under the Act of regulating securities).
- In a real transaction, there are generally 3-5 days before the SET allows the offered securities to be traded in the market. Therefore, most brokers in Thailand assume the offering date and listing date to be the same.

According to Figures 3.4 and 3.5 above, it is theoretically assumed that the announcement date is at least 45 working days before the listing date. Nevertheless, in practice, these announcement dates are sometimes not published, vary widely and conflict with the time-lines shown in the above figures. For instance, the company may develop a plan to increase capital by equity offering to the public, existing shareholders or institutional investors, either as a short-term or a long-term plan. Since the SET and SEC in Thailand do not have a specific period of time between the announcement of a company's SEOs and the listing of the newly issued shares, it is possible that the company may announce this plan and then be unable to complete the process of offering for any one of three possible reasons: a market reason, a financial reason or a strategic reason (a change in the strategy of the investment)[55]. Therefore, the most approved official date to ensure that firms have successfully issued their equities is said to be either the offering dates, payment dates or listing dates.

[55] These three reasons can be briefly explained in turn. First, the situation of the market may not be as first expected. Thus, in order to avoid the company's responsibility to buy those shares, it is worth their while to cancel them. Second, the SEOs of the firm are based on finding other sources of financing to complete them, i.e. on the debt side. If the loan is not given, the project cannot be run and the SEOs need to be cancelled. This may also be due to some conflict between the issuer and the investment bank (I.B.) regarding the set up for the offering prices. Lastly, the project is immediately cancelled. Therefore, there is no need for further financing from the SEOs.

As a result, in November 2006, the SEC finally issued another notification concerning the application for and approval of offers for sale of newly issued shares (KorChor.32/2549). This notification revised the previous one, KorChor.12/2543, specifying that the waiting period was exactly 15 days (no minimum requirement) in the case of securities issued by listed companies. This implied that the announcement could be made to the public on the fifteenth day after the filing form and draft of the prospectus are submitted to the SEC. Combined with the 30 days for investors to study the information about securities offerings before the offer date, in total 45 days are allocated between the announcement date and the offering date (listing date). This regulation came into force on 1 January 2007.

Nevertheless, this notification (KorChor.12/2543) gives rise to some interesting considerations. The followings brief illustrations give some idea of these.

(1) Limitation

There are several limitations in the SEC notification; first, concerning the rights issue of listed companies. According to Act no. 33 of the Securities and Stock Exchange 1992, such an issue can be offered for sale without the permission of the SEC. However, this rights issue refers to the issuance to the existing shareholders according to their proportion of shares held. Second, if security offerings are issued by limited companies, they are not allowed to sell any securities to the public (according to Thai civil and commercial law). Third, this also applies to security offerings issued by existing shareholders and the offerings by a juristic person set up under a specific law, i.e. The Industrial Finance Corporation of Thailand (IFCT) and the Government

Housing Bank. Finally, it applies to security offerings of listed companies, in cases which have a specific notification.

(2) Type of Permission

There are generally two categories of approval of offers for the sale of newly issued shares. First, private placement (PP) is the general approval and acceptance of the decision not to publish the information required in the regulation. This is because of (1) a low valuation of the offer or a small number of investors, which should not affect to the vast majority of other investors and (2) the fact that it is an offering to investors who might have a good deal of knowledge regarding the investment in the capital market and might also be powerful negotiators in requesting as much information as they require from the companies. Second, a public offering (PO) is a general offering and must receive the permission of the SEC, as stated in this notification. All the information with regard to security offering and the prospectus needs to be published before that security is offered. According to notification KorChor.12/2543, the PO is divided into two cases: (1) an IPO must be approved by the SEC as usual and (2) newly issue shares (SEOs) require the submission of an application and approval of any offer for sale of newly issued shares, as in the case of an IPO. Although these were not previously a demand, the SEC requires the firms to be approved in order to indirectly ensure the issuing companies pay close attention to their corporate governance. In both cases, there is no obligation for the companies to finance with equities after their IPOs. In other words, no minimum period is required for issuing new shares after the IPO period.

3.2.4.2 Regulations: Warrant Offerings

Besides the common stock offering, there is a non-common stock offering, namely warrants, which have become popular with the Thai listed companies for their equity financing in the last decade. Not only are the warrants used as sweeteners attached to the common stock offering, they are also issued as dividends in Thailand. These types of warrants will be listed and traded in the market for general speculations. Any profits from selling the warrants are stated to be the income from the capital gain, which is tax free. In other words, issuing warrants in Thailand can be referred to as one of the issuing methods that the companies choose to delay the dilution which occurs when issuing new equities (delay earning dilution). We will discuss whether there are any warrants attached to SEOs as sweeteners in our sample (unit warrants) later in section 3.3: Data Selection.

Since the warrant holders will exercise their rights when the exercise price is lower than the market prices, issuing warrants is an obligation of the issuing firms. This is because they will lose the opportunity to issue other securities (i.e. common stocks) with higher prices than the exercise prices. In Thailand, warrants are mainly issued: (1) to persuade the firm's employees, (2) as dividends, so shareholders can sell these warrants (right warrants) to receive capital gain and (3) for restructuring their leverage. The SEC of Thailand amended its rules and procedures concerning applications for and approval of offering warrants to buy newly issued shares and newly issued shares for warrants. This is known as the SEC notification KorChor.13/2547[56], the previous one being originally on 30 October 1992. The main

[56] This notification came into force on 16 March 2004.

explanations of the rule of warrant issuance and offering (edited) are briefly as follows.

For public offerings (POs), the approval of the regulation will be announced to applicants within 45 days. These applicants must be a public company limited under Thai law and have fulfilled all the conditions stated in the SEC notification concerning the issue of new shares. The applicants must have a financial advisor (who needs to be reported to the SEC) alongside the process of warrant issuing and need to have clear explanations and information on the warrants to be issued, e.g. exercise price, exercise period and dilution effect. In addition, the warrants to be issued must have a certain period of maturity (normally up to 10 years) and contain a number of shares up to 50% of the total sold shares (firms with financial problems are excluded for this 50% number of shares). Table 3.3 below summarises the conditions for the publication of information.

Table 3.3: The publication of information on public offerings on warrants

	Filing form	**Period for information to be available**
1. PO	Form 69-1 with I.B in corporation	• 30 days for non-listed firms • 15 days for listed firms
2. Right warrant	• No-restriction for a particular form and the corporation of the I.B. • Required suitable information which can confirm the general characteristics and risk of warrants.	3 days after the submission of filing form.

For private placements (PP), institutional investors[57] have to be offered the sale of warrant offerings or up to 35 warrant holders in any period of time. The approval of regulations in PP cases will be announced to the applicant within 7 days. The other requirements regarding the applicants are similar to those in the PO case and they also have to set up the limitation of transfer for the warrants which will be offered. The warrants to be issued must have a definite maturity period and up to 50% of all the sold shares and certain exercise prices. Furthermore, there are no restrictions on publishing information.

3.2.4.3 Regulations: Comparison with the other Asian-Pacific markets

The regulations concerning equity offering (SEOs for our case) in Thailand provide differences in comparison with those used in another four Asian-Pacific markets, namely Hong Kong, Singapore, Malaysia and Taiwan. These differences are in particular the period and number of days in which the SEOs become listed in the market, the consideration for the approval of issuing firm by the SEC and when the next follow-on offering can be issued. We interpret some categories as follows and the summaries of these comparisons are shown in Table 3.4. Firstly, since we claim that there is no minimum period between the SEO and IPO of each company in Thailand, we notice from our survey (in Table 3.4) that the Malaysian and Taiwanese markets also use this rule. This would give the motivation to the companies to apply equity financing whenever they require, with no need to wait for a specific time period after the IPOs. Interestingly, the developed markets, namely Hong Kong and

[57] According to the notification, there are 17 different types of institutional investors. For further details, see the Appendix 2.

Singapore[58], do have a restriction on this. For example, a period of six months is required to issue other new shares after the IPOs in Hong Kong and Singapore.

Secondly, we realise that the process of consideration for approval of issuing firms by the SEC in Thailand appears to be longer (slower) than other markets. This is clearly seen in that the issuing firms need to wait 45 days for the SEC to approve their requirements of issuing new shares in Thailand, while other markets demand markedly less than 45 days. For instance, it is only 25 business days in Hong Kong and 24 days in Taiwan for this approval by the SEC, while a maximum of 30 (on average) is applied in the regulations of equity offering in the rest of the markets. Furthermore, the SEC in Thailand allows the issuing firms to issue new shares via rights issuing without any permission (KorChor.12/2543) if they issue to the existing shareholders in the same proportion to their current holding of shares. In Hong Kong, rights issuing also no longer requires the permission of the SEC, while it is compulsory to be approved by the SEC in Singapore, Malaysia and Taiwan.

In addition, the other regulations in Thailand, such as the regulation on commission fees, are different when compared with other Asian-Pacific markets – and are still subject to fixed rates (up to December 2011). Consequently, since the SEO regulations in Thailand (particularly in term of the periods, the condition of the issuing method and the commission fee) are different from the other Asian-Pacific markets, these are some of the reasons which lead to the differences in institutional

[58] We claim the fact that Hong Kong and Singapore are developed markets following the statement of MSCI Barra as of May 2010. Available at: http://en.wikipedia.org/wiki/Developed_market [Accessed on 23 May 2011].

background in Thailand. The process of the SEC to approve the issuing of new shares (public offering) appears to be slow compared with the other markets, while the SEC has relaxed the restrictions on some issuing methods (namely rights issuing). As a result, the issuing firms prefer to use this relaxation to shorter the waiting period from the SEC in order to issue new shares.

Table 3.4 The regulation of equity offering between Thailand and Asian-Pacific countries

The table shows the regulation on equity offering in comparison between Thailand and another four Asian-Pacific markets, namely Hong Kong, Singapore, Malaysia and Taiwan. SEC refers to the Securities Exchange Commission. THB refers to the local currency in Thailand (Thai Baht, THB33.50: USD1.00). HK$ refers to the local currency in Hong Kong (Hong Kong dollar, HK$7.77: USD1.00). SGD refers to the local currency in Singapore (Singapore dollar, SGD1.24: USD1.00). RM refers to the local currency in Malaysia (Ringgit Malaysia, RM3.03: USD1.00). TWD refers to the local currency in Taiwan (Taiwan dollar, TWD28.927: USD1.00). USD refers to US dollar. All exchange rates are taken from: http://www.fxstreet.com/rates-carts/currency-rates [Accessed on 19 May 2011].

Categories	Thailand	Hong Kong	Singapore	Malaysia	Taiwan
Minimum period between the SEOs and IPOs	N/A	6 months	Not clearly mentioned, but assumed at 6 months	N/A	N/A
The period between the announcement dates and listed dates, e.g. is there any minimum or fixed number of days?	45 days	35 days	Maximum 28 days	Within 45 working days	45 days
Period for the new shares to be listed on the market	3-5 days	4 days	2-3 days	Maximum 2 days	3 days
How long the SEC needs to consider the approval of issuing firms	45 days	25 clear business days	Maximum 28 days	No longer than 30 days	24 days
Issuing with rights issuing, do they need to have any permission from the SEC?	No, if issued at the same proportion to the currently held shares of each existing shareholder	No, in all cases.	Yes, in all cases.	Yes, compulsory for all cases	Yes, compulsory for all cases
Is there any fixed rate or no regulations on commission fees?	At 0.25% fixed rate, after 2012, depending on the negotiations between the brokers and the issuers.	In terms of listing fee (minimum at HK$100,000). Commission fee at a non-fixed rate.	From SGD15,000 to SGD50,000, plus the administration fee of SGD1,000	Varies, but maximum of 0.7% of contract value	In terms of listing fee (for common stock offerings) with maximum of TWD450,000. No rule for commission fee.

Categories	Thailand	Hong Kong	Singapore	Malaysia	Taiwan
Other main criteria for listing in the market	Minimum total shareholder equity is THB300 million. If issuing via PP, minimum value of issue of new shares is THB20 million.	Minimum cash flow = HK$20 million. Mkt cap. is required of at least HK$30 million	No maximum value of listing. Mkt cap is required of at least SGD80 million.	At least 25% of total number of shares for which listing is sought (not less than RM20 million)	Amount of capital stock required is minimum of TWD600 million (except state-owned or privatised public enterprises).

Sources:

Hong Kong Stock Exchange [Accessed on 17 May 2011]:
http://www.hkex.com.hk/eng/listing/listreq_pro/listreq/equities.htm
http://www.hkex.com.hk/eng/listing/listreq_pro
http://www.hkex.com.hk/eng/rulesreg/regulatory.htm

Singapore Stock Exchange [Accessed on 17 May 2011]:
http://www.singaporesetup.com/singapore-company-registration/
http://www.sgxcatalist.com/listing/Admission_Criteria.shtml
http://www.sgxcatalist.com/listing/Listing_Fees.shtml

Malaysia Stock Exchange [Accessed on 15 May 2011]:
http://www.bursamalaysia.com/website/bm/regulation/rules/listing_requirements
http://www.bursamalaysia.com/website/bm/bursa_basics/investing_basics/types_stocks.html

Taiwan Stock Exchange [Accessed on 22 May 2011]:
http://eng.selaw.com.tw/FnLaw.asp?a1=org&a2=0302000000&a3=TSE Rules &a4=Listing Regulation &a5=&a6=
http://www.twse.com.tw/en/products/market_rules.php
http://eng.selaw.com.tw/FLAWDAT0202.asp

3.2.4.4 Method of Issuing

According to our data obtained from the SET's fact books, we find that there are generally five issuing methods: (1) rights issuing: XR – the right is normally given to the existing shareholders and the group of directors and employees, (2) private placement: PP – normally for a particular group of investors, i.e. management teams or institutional investors[59], (3) stock dividend: SD, (4) public offering: PO and (5) warrant issuing: W – mostly issued to directors and employees of the issuing firm.

3.2.4.5 Other Characteristics of Equity Offerings in Thailand

In Thai SEO companies, several of them show at least two instances of SEOs during the last decade. One possible explanation which may clarify why these firms have, for instance, 10 SEOs over 7 years is that it depends on whether the subscribers exercise the rights when companies issue either warrants or rights offerings. In other words, supposing the company develops a plan of equity issuing by warrants with 5 years' maturity, which can be exercised by the end of every quarter each year, when the right is exercised it needs to be reported to the SET and SEC and the securities are listed in the market[60]. If the subscribers decide to exercise the rights every quarter in the first year, there will be four SEOs during the first year of this company. However, as previously mentioned, the plan of issuing equity may not be followed after the announcement for certain reasons (see section 3.2.4.1) and those equities are not listed and traded in the market.

[59] The SEC of Thailand divides institutional investors into 17 categories, as stated in the notification KorChor.12/2543 (discussion), p.4. Some examples are commercial banks, financing companies, insurance companies, Bank of Thailand, mutual funds, pension funds and partnership limited.

[60] This plan is normally known as Employees Stock Option Plan (ESOP). It mainly gives the rights to exercise the securities to the directors and employees of companies.

In addition, another possible reason for firms appearing to have frequent SEOs is based on the regulations for the SEC in Thailand. Concerning the SEC's notification KorChor.12/2543 (for common stock offerings), the licensee (the company issuing new shares) must complete its selling of the shares within 6 months after obtaining the permission of the SEC. This period can be extended by another 6 months, but the total period must not exceed 12 months. As a consequence of this regulation, a company might consider submitting a second request to the SEC in order to issue the remaining shares as another SEO if it cannot complete the equity offering the first time (being unable to complete within 12 months). It is possible that the company may repeat this process more than once until their shares are totally sold out. This also implies that the announcement should occur every time the company submits the filing form to the SEC.

As with the notification of warrant issuing (KorChor.13/2547) the licensees (firms issuing warrants) are allowed to extend the period of exercise and change the exercise price after the warrants are first sold. Therefore, if there is nobody to exercise the right, because the exercise price is lower than the market price, the companies are not allowed to extend the exercise period or change the exercise price. Instead, they need to issue another new set of warrants in order to adjust the prices or the time period, leading to frequent SEOs for the same firm. This regulation, according to the SEC, is better than allowing the companies to edit the existing conditions of the warrant, as this can reduce the risk to the investors of unequal rights. Moreover, the SEO companies sometimes use the offering of equities in order to return the loan to the creditors (conversion of debt to equities). Such companies usually fall into the

rehabilitation group, which are allowed by either the Bank of Thailand or the bankruptcy court to implement a restructuring plan. Nevertheless, since only the first SEO during our study period is employed, so as to avoid any overlapping caused by frequent SEOs for each company, there are no firms issuing new equities to creditors (companies in the rehabilitation group). Consequently, no exclusion is applied[61].

In the following section, we will discuss the collection of data, including data sources, sample size and limitations.

3.3 Data Selection

3.3.1 Data Sources

The data obtained come from three main sources: (1) the fact books of the SET, (2) SETSMART[62] and (3) Thomson One Banker. A summary of data sources is shown in Table 3.5 below:

[61] In the calculation of the SET index (the main composite index), suspension securities exceeding 1 year are also excluded when stocks are undergoing a capital restructuring process either on the orders of the Bank of Thailand or through bankruptcy court filings, until their restructuring is completed. Source: SET website: http://www.set.or.th/en/products/index/setindex [Accessed on 12 May 2009].

[62] SETSMART stands for SET Market Analysis and Reporting Tools. It is mainly the SET's database from which the data from the stock exchange is provided online for general investors and other interested persons. SETSMART covers the five fundamental areas which are usually considered by analysts and investors: (1) Company Information, (2) Historical Trading Prices, (3) Company News, (4) Key Statistical Data and (5) Key Financial Data and Financial Ratios. However, SETSMART (the principal version) is limited to a maximum of only 5 years' historical data, based on a rolling period of the first access into the system. The data for the year when the SET was established (in 1975) is obtained via SETSMART in its intranet version for brokers, available in the SET's library and from any broker.

Table 3.5: Summary of the data sources

Sources	Areas obtained
Fact books of the SET	SEO information (on the SEOs which take place each year)
SETSMART	Daily trading information, e.g. closed prices, market capitalisation, turnover ratios and other events
Thomson One Banker	Financial ratios and financial statements

In the SETSMART, we calculate the daily return from closed prices using the equation below:

$$R_{i\ t} = \ln\left(\frac{P_t}{P_{t-1}}\right) \qquad (3.1)$$

where

$R_{i\,t}$ = Compound returns of each company i at day t

P_t = Closed price of company i at day t

P_{t-1} = Closed price of company i at day t-1 (or the previous day)

3.3.2 Sample Size

Having established the study period around the last financial crisis, we chose the years between 1999 and 2006. This period may be identified as the most suitable period to examine after the crisis of 1997. The reason is that in 1999 the Thai economy passed its weakest point and has remained steady ever since, making a slow recovery. After 2006, however, Thailand experienced political chaos and violence in the country, leading to uncertainty and a slowdown of the economy.

Among the data of SEOs from the SET's fact books, our initial sample reveals 251 non-financial companies listed on the SET index, with 1,910 SEOs at different times. Although another three composite indices (SET50, SET100 and FTSE SET), which could be benchmarks, have recently made their appearance, we chose the SET index, not only because it is the main composite index, but for other reasons too. First, SET50 and SET100 contain the largest companies (measured by market capitalisation): 50 and 100 companies, respectively. Most of the companies on these two indices are commercial banks and financial institutions, which we at first excluded from our sample, due to the difference in their asset structures. As a result, when the sample is organised we may have a relatively small sample size after dropping the financial firms. The second reason is that SET50 and SET100 are both identified and represented in the SET Index. According to the SET's information, the SET50 and SET100 Indices can stand as representatives at around 72% and 81% respectively of the SET's market capitalisation. In addition, the correlations with the SET Index show at 0.9856 for the SET50 index and 0.9965 for the SET100 index[63], implying that these three indices are closely correlated. No matter which indices are used, they can all represent each other.

Another reason concerns the FTSE SET index. This index is a new composite index, coming into use only two years ago (in 2008). There was no FTSE SET in the year when our examination begins. Consequently, we took the SET index as a benchmark in our study of SEOs in Thailand.

[63] The figures are based on the main statistics of SET50 and SET100, provided by the SET on 9 March 2005. Information is cited via http://www.set.or.th/en/products/index/files/documentSET100_SET50.pdf., [Accessed on 17 February 2010].

Among these 251 firms, there are many companies which made SEOs more than once (repeating SEOs)[64]. In order to avoid any overlapping, we use only the first SEO of each firm. Moreover, we follow the same data organisation as Seiler (2004), who set the event window as 15 days before and after the event[65]. For the estimation period, Seiler (2004) considers 100 days before the event. Since our study also considers the post-issuing period, we therefore include in our estimation period 100 days after the event. Consequently, the event study period in our case is 115 days before and 115 days after the event. Having set up the event study period, any SEO firms meeting the following conditions will be excluded from the sample: (1) if they contain SP or suspension signs and (2) if their data of trading information are unavailable (i.e. if they have no closed prices or are in the rehabilitation group).

The final sample contains 173 SEO companies. Between them they have five different methods for issuing their SEOs: (1) rights issuing (XR) with 53 firms, (2) private placement (PP) with 52 firms, (3) stock dividend (SD) with 22 firms, (4) public offering (PO) with two companies and (5) warrant issuing (W) with 47 companies. The first four issuing methods are taken to involve the issuing of new shares via common stocks (126 firms in total)[66]. In addition, there are other events than the SEO announcement, including the announcements of financial statements and company performance, dividend payment dates and the submission of any document required by either the SET or the SEC. These events could influence the stock price reaction

[64] In section 3.2.4.5, above, we explain why some companies had several SEOs during our study period.
[65] In our case, we refer to the event as the announcement of SEOs, defined as day 0.
[66] There are three companies, ITD, KTP and SORKON (for their names in full, see Appendix 3), which use two different issuing methods at the same time. ITD and KTP use XR and PP, while SORKON applies PP and SD. For this reason, the total numbers of firms with common stock offerings for each issuing method does not equal exactly 126 firms.

and performance of firms during our study period. We finalise these events and have 70 companies with events around SEOs and 103 without such events. The descriptive statistics of our sample are presented in Tables 3.6 and 3.7.

Regarding our sample size, although the sample of 173 companies is far smaller than the samples in the literature on developed countries (by such writers as Altinkilic and Hansen, 2005 (3,782 samples), Lyandres et al., 2005 (8,126 samples) and Walker and Yost, 2007 (438 samples), it is a reasonable sample to have obtained when we compare it with other studies on Thailand and on other emerging markets. For instance, Jirasetthakulchai (2000) draws on 92 firms in Thailand, Limpaphayom and Ngamwutikul (2004) on 62 firms in Thailand, Vithessonthi (2008) on 156 Thai firms and Lin and Tsai (2010) on 93 firms in Taiwan. Nonetheless, our sample size remains different from that of other studies (based mainly outside Thailand). We notice from SEO authors in general that they tend to assume that public offering (PO) is the form of issuing, unless otherwise stated.

Table 3.6: Summary of sample size and five different issuing methods

The table below presents the following information: **Panel A** shows the summary of sample size and five different issuing methods available during our study period of 1999 to 2006. The total sample refers to the final sample size of 173 SEO firms. XR is defined as firms using rights issuing as their issuing method. PP denotes firms issuing new shares via private placement. SD is defined as firms issuing by stock dividend. PO refers to the firms using public offering as the issuing method. W is firms issuing new shares via warrants. The average size is measured by average market capitalisation in millions of Thai Baht (THB33.50: USD1.00) during the study period 1999 to 2006. The companies represented in each category are shown in parentheses, with their full names shown in Appendix 3. The age of each firm is calculated as the number of months since the company first traded in the market until the offering month. The average daily returns are the average of daily returns during the study period (1999 – 2006) obtained from the SETSMART. The average ownership is measured by the average top five major shareholders in the offering year. The average turnover ratio is taken directly from the SETSMART during the study period. **Panel B** shows the results from the mean difference of size (measured by market capitalisation) estimation in the total sample and each issuing method by using the two-sample t-test. The null hypothesis under this estimation indicates that there is no difference in the mean between the two samples. The degree of freedom is shown in parentheses and calculated by: $\frac{\left(S_1^2/n_1 + S_2^2/n_2\right)^2}{\frac{\left(S_1^2/n_1\right)^2}{n_1-1} + \frac{\left(S_2^2/n_2\right)^2}{n_2-1}}$; where S_1^2, S_2^2 are the variance of sample 1 and 2, and n_1, n_2 refer to the sample size of samples 1 and 2.

PANEL A

Statistics	Total Sample	XR	PP	SD	PO	W
Average Size	**10,447.82**	7,608.75	10,627.94	2,227.51	32,880.78	16,113.51
Maximum Size	**396,590.47 (PTT)**	93,552.06 (PTTCH)	176,237.72 (ADVANC)	23,488.28 (CPF)	64,416.73 (THAI)	396,590.47 (PTT)
Minimum Size	**71.07 (NEW)**	71.07 (NEW)	122.35 (SORKON)	122.35 (SORKON)	1,344.84 (S&P)	182.88 (SUN)
Average Age (months)	**95**	101	94	109	146	81
Average Daily Returns	**0.00423**	-0.00030	-0.00018	-0.00082	0.00033	0.01644
Average Ownership	**10.95858**	10.86675	10.46116	12.42480	11.82200	11.01354
Average Turnover Ratio	**0.00590**	0.00462	0.00742	0.00427	0.00080	0.00655
TOTAL	**173**	**53**	**52**	**22**	**2**	**47**

PANEL B

	Total	XR	PP	SD	PO	W
Total	**1.0000**					
XR	-0.7788 (187)	**1.0000**				
PP	0.0389 (114)	0.6867 (87)	**1.0000**			
SD	-2.7785*** (193)	-2.0839** (68)	-2.1842** (59)	**1.0000**		
PO	0.7086 (2)	0.7991 (2)	0.7008 (2)	0.9715 (1)	**1.0000**	
W	0.6094 (56)	0.9259 (53)	0.5704 (62)	1.5542 (48)	0.5118 (2)	**1.0000**

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

Note: Three firms (namely, ITD, KTP and SORKON) use two different issuing methods at the same time. ITD and KTP use XR and PP; SORKON applies PP and SD for its issuing method. Therefore, the total sample will not equal 173 firms if we combine all the issuing methods. The full names of the companies are shown in Appendix 3. The market capitalisations were in the local currency (Thai baht: THB) and the appropriate exchange rate to US dollars is THB33.50: USD1.00 (which will be used for any cases referring to US dollars). We excluded the sample of PO in the two-sample t-test since there are only two firms.

Table 3.7: Number of SEO firms in the sample for each year

The table below presents the number of SEO firms in the final sample (173 SEO firms) for each year, including the industrial groups whose firms are in the SET and issuing methods. The five issuing methods comprise: rights issuing (XR), private placement (PP), stock dividend (SD), public offering (PO) and warrant issuing (W). Their industrial groups are the groups shown in the SET Index and contain (apart from financial ones) the Agro and Food Industry (AGRO), Consumer Products (CONSUMP), Industrials (INDUS), Property and Construction (PROPCON), Resources (RESOURC), Services (SERVICE) and Technology (TECH).

Year	Total	Industrial Groups							Issuing Methods				
		AGRO	CONSUMP	INDUS	PROPCON	RESOURC	SERVICE	TECH	XR	PP	SD	PO	W
1999	37	7	1	5	7	1	6	10	9	16	1	-	11
2000	23	6	-	3	6	2	4	2	14	8	1	-	1
2001	14	1	5	1	1	2	2	2	4	6	-	-	4
2002	22	7	3	2	7	-	2	1	7	3	6	1	6
2003	26	1	-	5	4	2	10	3	2	8	5	1	10
2004	13	-	2	1	3	2	3	2	4	2	3	-	4
2005	22	1	3	4	5	2	3	4	7	4	4	-	7
2006	16	3	1	6	2	1	3	-	6	5	2	-	4
TOTAL	**173**	**26**	**15**	**27**	**35**	**12**	**33**	**24**	**53**	**52**	**22**	**2**	**47**

Note: There are three companies: ITD, KTP and SORKON, using two different issuing methods at the same time (rights issuing and private placement for the first two, and private placement and stock dividend for SORKON). Therefore, the total sample will not equal 173 firms if: (1) we combine all the firms in each issuing method and (2) we combine all the firms in Industrial Groups because there is one firm (USC, see the full name in Appendix 3) whose industrial group information is unavailable.

Our sample clearly demonstrates that it contains only two companies which issued via PO between 1999 and 2006[67]. The reason in this case can be one of two things. First, issuing via PO entails higher costs than the other methods, such as XR or PP. Companies themselves would prefer to save their costs for issuing because they were either recovering from the financial crisis or they wanted to maintain their cash flow. Second, several companies in the SET (as well as in our sample of 173) are likely to issue new shares to the existing shareholders and/or their directors and employees according to their plan. This is known as the employees' stock option plan (ESOP), as earlier mentioned. Using ESOP could motivate the employees to work hard for the company. In other words, issuing new shares to existing shareholders (e.g. via XR or PP) should be easy to do because they are issued to the people who already own the companies (another reason could be the desire to retain talented employees). The companies will be more certain to receive the incomes for financing, while issuing via PO gives a chance that the equities will not be exercised by outside investors.

Another interesting point to address regarding sample size arises when a company issues new shares via SD in Thailand. Although issuing with SD is reported, as there is equity financing in the firm, the main reason appears to be concerned with dividend payment (the indirect issue of new equities). This is because when a firm issues via SD, it brings no incoming cash flow to the company, whereas the number of shares outstanding increases. The small firms, or the firms which have less capital and would prefer to retain capital in the company, are likely to issue new shares using this method. When SD is applied, it is similar to the case where a company announces the

[67] Initially, three firms issued via PO. However, organising the data along the same lines as Seiler (2004) called for one firm to be dropped.

payment of a dividend, a good sign to the market which shows the company is still performing well. In addition, according to Thai law, the investors and/or the existing shareholders can sell the stocks (from the dividend) to get their capital gain, from which no tax is deducted due to the income from the dividend. However, as previously stated, we still report this method as our SEO sample since the companies at least do the financing, thus increasing their capital[68].

According to Table 3.6 – panel B, our results show additionally that small firms in Thailand are likely to issue via SD because of the lowest average size. Although this leads to the endogenetic problem, it would not be a case to which more attention should be paid. The reason is that the maximum size of SD firms is the smallest within our sample, at THB23,488.28 million (see Table 3.6 – panel A). If the above assumption was true (small firms tend to issue new shares via SD), the minimum size of the entire sample would be THB122.35 million for SORKON, instead of THB71.07 million for NEW[69]. Issuing new shares in Thailand does not depend on the firm size, according to the evidence in Table 3.6 – panel B. It depends mostly on how well the companies perform during the period they require equity financing. This is because in Thailand SD appears to be the issuing method which is mostly applied by the firms that would prefer to maintain the level of cash flow. Hence, these firms use the dividend announcements to signal to the market that they are able to pay dividend to shareholders, but in the form of common stocks. If the small firms perform well, issuing new shares via SD should not be the case because there is no incoming cash flow. They will move to the other issuing methods, which can raise their number of

[68] This is also reported in SETSMART when we collect the data.
[69] See Appendix 3 for the names in full.

shares outstanding, together with having the incoming cash flow to their companies (see the cases of SORKON and NEW, as previously mentioned). With the above explanations and the results in Table 3.6 – panel B, we can claim that it is unnecessary for small firms to issue new equities via SD.

Although large firms appear to issue new equities with warrants in our statistical evidence (see Table 3.6 – panel A: case of PTT), it is not always the case in Thailand. This confirms our results from the two-sample t-test, that there are no differences between warrants and other issuing methods (e.g. XR and PP). Furthermore, it was previously claimed that issuing warrants in Thailand was unfair and risky for investors. These means the shareholders (who might have the benefit in those warrants) can extend the maturity period or reduce the exercise prices in order to increase the value of the warrants. These shareholders could utilise their inside information to trade in these warrants before the other investors. Thus, investors could be at risk of greater information asymmetry. However, with the SEC's notification KorChor.13/2547, the issuers are not allowed to extend the maturity period or amend the exercise prices after the warrants have been issued. Instead, they can re-issue new warrants to match the market prices if nobody exercises them. This leads to the fact that the warrant issuing companies in our sample (47 firms) can have multiple SEOs because they re-issue the warrants (which are referred to as the SEOs in Thailand; see Appendix 3 for examples of firms in this case).

In our study, we will focus on the companies issuing new shares with the common stocks. This is because although the warrant issuing companies are likely to be a large

sample (with 47 companies), they should be considered separately due to having a different aspect from the other issuing methods. For instance, warrants are issued as sweeteners to other securities in order to motivate the investors, even though they are one of the issuing methods in Thailand. In addition, warrants have slightly different regulations compared to the common stock offerings (see section 3.2.4.2): e.g. the extension of exercise period and offering period – common stock offerings are allowed within 6 months, while warrants offerings are not allowed.

Examining warrants would have many points of comparison with the existing literature in this area (i.e. convertible bonds and underpricing with warrants). Some examples of these studies are Ng and Smith (1996), Lewis et al. (1998), Ederington and Goh (2001) and Korkeamaki and Moore (2004). This should be done separately to the common stock offering case because we could have the evidence in more detail. The sample size of warrant firms (47 companies) is also less than the sample of common stock offering firms in total (126 firms), although it is larger than some issuing methods (i.e. SD). However, there are no unit warrants (those attached to the SEOs) among our 47 warrant offerings (first SEOs of each company). This could be the case in the second or third SEOs of those firms, which we do not cover in collecting our data. Thus, we leave warrants to be a subject for future research in Thailand (see section 7.3 in Chapter 7).

3.3.3 Limitations

In collecting data, we also considered another database, not the SETSMART alone. The Thomson One Banker: Deal Equity (TOBDE, hereafter)[70] was considered. Interestingly, we initially found 147 SEO companies (non-financial) with only 266 observations of SEOs during the same study period, 1999 to 2006 (see Table 3.8). These figures are much lower than those taken from the SET database (1,910 times with 251 firms). In addition, some firms appear to have SEOs during the study period according to the TOBDE, whereas they are displayed as non-SEO firms by the SETSMART[71]. Moreover, only two issuing methods are provided in the TOBDE and these are only for common stock offerings: XR and PP. No warrant issuing firms are shown or available in this database. This is because the TOBDE considers warrants as non-SEOs, whereas warrants are one type of SEOs in Thailand. Thus, the availability of these warrant firms in the TOBDE can be pointed out as a limitation to obtaining the data from this database. Nonetheless, even though there are other issuing methods (i.e. Third Party Allotment, Auction, Block Trade, Negotiated Sale, Offer for Sale and Open Offer)[72], they are less related to issuing methods in Thailand during our study period than the case of XR and PP.

In Table 3.8, we notice that the figures do not appear to correspond with those reported under the total sample. The main reason is that there are some companies which apply for more than one issuing method at the same time. Furthermore, the

[70] The Thomson One Banker: Deal Equity obtained in our data collection is the trial version. We are grateful to our supervisor, Professor Ranko Jelic, who received this trial version and allowed us to share his account in order to check our data.
[71] This includes some firms which were placed in the wrong sector as presented in the data from the SET (real-time trading), e.g. they are in the financial sector, instead of Tourism and Leisure.
[72] All definitions refer to the Thomson One Banker: Deal Equity. See Appendix 4 for the full definitions.

figures reveal no correspondence among them, even though they have been directly obtained from the TOBDE. This can be claimed to be one of the limitations to employing the TOBDE. Although the TOBDE provides much information (such as transaction details, after market performance and financial data), no filing forms are available from any SEO companies. Therefore, this shows that the data obtained from the TOBDE do not fully reflect the real time trading published by the SET. This is particularly with regard to the unavailability of warrant issuing for SEOs in Thailand and lack of correspondence with the sample (see Table 3.8). As a consequence, the TOBDE may be consulted to obtain data for estimating the most relevant outcomes reflecting Thai SEOs.

Table 3.8: Descriptive statistics for SEOs in Thailand via Thomson One Banker (Deal Equity)
The table shows descriptive statistics for SEOs in Thailand obtained via the Thomson One Banker (Deal Equity). Rights mean rights issuing, while Placement refers to private placement. Other issuing methods refer to the remaining issuing methods available in the Thomson One Banker (Deal Equity), aside from rights issuing and private placement.

Issue Date	Total Sample		Rights		Placement		Other Issuing Methods	
	No.of SEOs	*No. of Firms*	*No. of SEOs*	*No. of Firms*	*No. of SEOs*	*No. of Firms*	*No. of SEOs*	*No. of Firms*
01.05.1975 To 31.12.2008	447	250	193	158	281	178	107	82
01.01.1999 To 31.12.2006 (study period)	266	147	102	85	171	102	53	37

Note: The SEOs in each category include the firms which use more than one issuing method at the same time. No figures seem to correspond with each other as we obtained them directly from the Thomson One Banker (Deal Equity). Also, the number of firms require close consideration if they are going to be obtained in the study because some firms are reported under different names. However, all figures have excluded the financial companies and the firms which are not listed in the main composite index (SET index).

Furthermore, the MSCI World Index[73] can be another alternative benchmark to consider when examining post-issuing performance. However, in order to obtain this index for use in our study we had to accept some limitations. A fuller account of these will be given in more detail later in the chapter on post-issuing performance (Chapter 6). Therefore, it would be better if the SET's database were used for collecting all the data on SEOs in Thailand. This would be reflected better in the findings from our study. In addition, we can provide comparisons for each issuing method according to the real-time trading in the market.

3.4 Conclusions

With several similarities between the main characteristics of emerging markets, such as high level of risk and volatility, Thailand was chosen in this thesis to be the case study of an emerging market. Not only these characteristics, but also the fact that there was a substantial recovery of the economy (from the Asian financial crisis in 1997) and some differences in the institutional background, are among the reasons for making Thailand the typical emerging market to study in the period following the financial crisis. These reasons are supported by the information published by the SET. For instance, the Thai capital market is small compared with the markets in the surrounding countries (e.g. Singapore, Hong Kong and Malaysia), it has a low number of institutional investors, which causes the market to be highly volatile, and many

[73] The MSCI refers to The Morgan Stanley Capital Investment Index, also known as the World Index. Further information is to be found in Chapter 6.

Thai firms are owned by one group of people or members of the same family – all these factors influence the company's investment decisions and lack of institutional intermediaries.

The regulations on equity offering in Thailand can be relatively slow to enact (in terms of the period that it takes for the submitted document to be approved by the SEC, i.e. it takes too long) and uncertain (i.e. using the term of the minimum period of 15 days, so it can take 20 days or more) when issuing via public offering. This leads to a lack of using public offering in SEO firms in Thailand. Alternatively, we could identify that some notification (KorChor.12/2549) was recently enforced (in 2007) to specify a waiting period of 15 days. This implies that before such enforcement (during our study period 1999 to 2006), the process of equity offering in Thailand appears to have depended on individual companies and the analysis period of the SEC on documents submitted. This refers to the fact that there is no particular time period exactly specified. Thus, it increases the time for new equity to be listed and traded in the market, helping the issuers receive their financing faster. Furthermore, some specific regulations in Thailand lead to the differences in characteristics of the Thai capital market, compared with the developed and other emerging markets. These regulations include no minimum period of SEOs after the IPOs of each firm, the preference of issuing new shares to existing shareholders rather than via public offerings (beside the reasons mentioned above) and the commission fee regulations.

With these characteristics of the Thai capital market and such regulations as were pointed out earlier, we can claim two main contributions based on the institutional

background from our study of the data from Thailand. The first institutional contribution concerns the characteristics of the Thai capital market. With the high number of individual investors causing high volatility in the market, the market itself seems to be relatively sensitive to technical (external) factors from the listed companies. Moreover, these individual investors are generally short of investment knowledge. They normally follow those rumours which they believe in order to gain maximum profit from them. Examining these features of Thailand's investment behaviour could provide newer evidence than in previous studies, which survey less volatile markets than Thailand's. In particular, we focus on the post-financial crisis period on which few studies in Thailand have given more details (based on our survey of the literature on SEOs in Thailand in Chapter 2). The second institutional contribution concerns the size of our sample. The number of firms issuing via public offering is relatively small, while the general studies of SEO tend to assume public offering as the method unless otherwise stated. This leads to the view that we most need to consider rights issuing and private placement. Furthermore, methods such as stock dividend could give us a new issue in the SEO area since it contains a specific reason in Thailand.

To examine such issues, we investigated 173 Thai SEO firms between 1999 and 2006. This final sample can be divided into 126 companies with common stock offerings and 47 firms with warrant offerings. In addition to these 47 warrant offerings, they are free from the case of SEO attachment (unit warrants) when only the first SEOs of each company are obtained. Even though warrants are one of the SEO issuing methods in Thailand, we choose to focus on the non-warrant sample in our empirical

study. This is due to: (1) the difference in aspects compared with the common stock offering, such as the convertible bond and (2) a slight difference in regulations in Thailand (i.e. the extension of exercise period and offering period), as previously explained. The 126 firms issuing via common stocks used four different issuing methods, namely rights issuing, private placement, stock dividend and public offering. Although our sample size appears to be small compared with those in the SEO literature on developed markets, they are consistent with the research in Thailand and some Asian-Pacific countries (e.g. Soucik and Allen, 1999b; Jirasetthakulchai, 2000; Anderson and Rose, 2006; Vithessonthi, 2008).

In the following chapters, we begin our empirical study of our three aspects. The next chapter examines the stock price reaction to SEOs in Thailand.

CHAPTER 4

STOCK PRICE REACTION TO SEOs

Abstract

This chapter examines the stock price reaction to Seasoned Equity Offering (SEO) announcements in Thailand. A standard event study framework is brought into our examination in three main categories: (1) stock price reaction to SEO and offering dilution, (2) the determinants of SEO stock price reaction and (3) the long-term stock price reaction. The evidence shows a negative price reaction to SEO announcements in both the short and long term. The issuing methods can reduce the offering dilution caused by the SEO announcement. In addition, our findings report significance in size, market-to-book and ownership, including when issuing methods are individually considered. Moreover, there are no relationships between the short- and long-term stock price reactions, supporting the aspect that long-term stock prices react to the current situations at that time. However, our robustness evidence suggests that EBITDA would be the suitable proxy of operating performance since the entire regression fits the data better when it is applied.

4.1 Introduction

Companies generally conduct SEOs for three main potential reasons, according to Barclay et al. (2009, p.16): (1) raising investment capital, (2) reducing firms' leverage and (3) the need to take the advantage from the temporary overvaluation. Eckbo et al. (2006) point out that there are several flotation costs associated with SEOs with which companies should be concerned. These are issue announcement effect, underpricing, underwriters' spread and any short-term incremental costs or benefits of moving away or towards a firm's target leverage ratio (Eckbo et al., 2006, p. 22). The underwriter fee is the direct flotation cost, while indirect flotation costs are concerned with issue underpricing and stock price reaction to the announcement of SEOs, offering delay or cancellations (Eckbo et al., 2006, pp.23-24)[74].

Eckbo et al. (2006, p.22) suggest that security is announced with reference to expected flotation costs. Some accept this idea because it causes direct and indirect effects when raising new equity capital, while others disagree and believe that it does not represent an issue cost, due to the existence of insider trading. Consequently, the evidence that a security announcement is an expected flotation cost remains inconclusive, referring to the survey of Eckbo et al. (2006). The survey also indicates that although there is no resolution on this issue, a decline in the issue price may be the outcome of a typical negative announcement effect. As a result, it would be possible to find a similar consequence regarding the inconclusive discussion of

[74] According to Eckbo et al. (2006), there is another type of indirect flotation cost: stock price reaction to Initial Public Offering (IPO).

expected flotation costs when we examine different markets. Since indirect flotation costs (represented mainly by stock price reaction and underpricing) play an important part in the arguments of several researchers (e.g. Asquith and Mullins, 1986; Denis, 1994; Corwin, 2003; Walker and Yost, 2007), we propose to investigate whether the suggestion in Eckbo et al. (2006) of expected flotation costs carries over to different markets, i.e. Asian ones. There also appears to be a paucity of literature on SEOs in these markets. Some examples of these studies include those of Salamudin et al. (1999), Jirasetthakulchai (2000) and Vithessonthi (2008). Their findings report both positive (Salamudin et al., 1999) and negative (Vithessonthi, 2008) stock price reaction to SEO announcements, and also present the relationship between SEO and dividend announcements (Jirasetthakulchai, 2000).

The main purpose of this empirical examination is to expand the examination of indirect flotation cost in emerging markets by using Thailand as the case study. To be more specific, we aim to examine how SEO companies perform when there is the announcement of SEO in both the short term and long term (481 day event window) with different issuing methods. This clarifies how issuing methods individually influence the stock price reaction caused by SEOs in both the short and long term, including a reduction of the offering dilution (discounting prices). Having reviewed several studies in emerging markets, Thailand in particular, we rarely find the research on SEOs obtained from recent data, e.g. the data after the financial crisis in 1997. This is because both debt and equity financing could remain influenced by the crisis. Thus, there would be less interest, e.g. a small number of firms doing SEOs, or companies having to restructure their financing plans and wait until the economy

recovers. Although the economy of Thailand has been slowly recovering since 1999, the market itself appears to be more volatile (due to the high number of individual investors) and depends mostly on technical (external) factors, rather than focusing on fundamental factors[75]. Since we have noticed that Thai investors have a lack of investment knowledge, this means that they invest following the rumours and the situations at the time, instead of considering their options in more detail. For illustration, the study will consider firm performance and which factors impact on the stock price reactions with the link between fundamental and technical (external) factors. Expanding the research of SEOs with a more recent data set will equip investors with the necessary evidence and the knowledge of SEOs in order to understand the aspect of stock price reaction to a specific event, such as SEOs.

In addition, we earlier found in previous literature (e.g. Nittayagasetwat and Withisuphakorn, 1997 and Mody, 2004) that the capital market in Thailand (stated as one of the emerging markets) exhibits a difference in characteristics to those of the U.S.; for instance, high volatility, small size and fewer listed companies. Therefore, if the existing evidence carries over to the Thai market, we should still have the same outcomes and aspects. We also attempt to determine the factors which impact upon the SEO announcement. These factors (i.e. size, leverage and firm annual sales)[76] are claimed to be an important issue which should be considered regarding the securities risk and control variables.

[75] See for example, Kasikorn Research Centre (2002). **SET Index and the Risk of Recession (**in Thai). Vol. 8 Issue 1345, available from the CD-Rom of Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/K-Econ%20Analysis/Pages/ViewSummary.aspx?docid=3663 [Accessed 15 March 2011].

[76] These examples of factors are described by Eckbo et al. (2006).

Within this chapter, we identify 126 SEO companies issued with common stock in the Stock Exchange of Thailand (SET, hereafter) from 1999 – 2006, including four of the different issuing methods available, namely rights issuing, private placement, stock dividend and public offering. We found among our three categories that the stock prices react negatively to the SEO announcement in the short term (around SEOs) in every case. Although the findings show the existence of shareholder dilution from the SEO (defined in all cases as the discounting of stock prices after being issued, measured by market capitalisation)[77], different issuing methods in our case, interestingly, reduce this offering dilution. In the determinant investigation, the results are significant in the same variables (namely size, market-to-book and ownership), including when issuing methods are individually concerned. This leads to the interpretation that the SEO stock price reaction is influenced by these three factors. Furthermore, the evidence in the long-term stock price reaction suggests that there is no relationship to the short-term stock price reaction. Consequently, any reactions in the long-term depend on the current situations at that time, rather than being caused by events in the short-term (i.e. SEO announcements).

The rest of the chapter is organised as follows: section 4.2 will present the relevant literature, relating in particular to developing countries and Thailand, together with motivations and the hypotheses. Section 4.3 will outline the data and methodology. We display the empirical results in section 4.4 and provide a conclusion in section 4.5.

[77] For more details, see section 4.3.2.1.

4.2 Literature Review and Hypotheses

4.2.1 Literature on Stock Price Reaction in Developed Markets

Among several studies concerning SEO stock price reaction, we find that the most basic and frequent estimate is to apply the event study framework to examine the market reaction to announcements of SEOs. In addition, dilution could be claimed as another area which many authors consider in parallel with the SEO stock price reaction. The papers in this particular area are widespread, ranging from Brown and Warner (1985), to Asquith and Mullins (1986), Mikkelson and Partch (1986), Loderer and Mauer (1992), Conrad and Kaul (1993), Denis (1994), D'Mello et al. (2003), Eckbo et al. (2006) and Walker and Yost (2007), including such developed Asian markets as Japan and Singapore in Ong et al. (2008). Most of the outcomes indicate that stock prices tend to decline after an SEO. However, we find some different evidence of the factor effect on the SEO market reaction. For example, Asquith and Mullins (1986) report that a firm's leverage should be an important aspect of the market reaction to SEO announcements, while some studies, i.e. Denis (1994) and Walker and Yost (2007), report no impact between the level of leverage (as well as the liquidity) and market reaction to the announcement of SEOs. Moreover, based on the above studies, most evidence has no particular identification of the direction of the relationship between SEO market reaction and the effect factors (e.g. positive or negative).

Therefore, even though the same market and types of data are obtained, the findings are different. As a result, we cannot indicate exactly whether the factor (such as

leverage) will influence an SEO announcement. Nonetheless, the differences would explain that there could be a difference in the period of study, in which the change in regulations and sample size could be the points of focus. Thus, we should have inconclusive results of which factor(s) impact exactly upon SEO stock price reaction in developed markets. In other words, sometimes we cannot point out that these factors have a positive or negative influence on SEO announcements. Moreover, some of the research is concerned with the dilution of shareholders caused by equity offerings (discounting in stock prices after their issue). This is because we know that shareholders are diluted when new equities are issued. Consequently, no one appears to have concentrated on this particular area. This also makes it possible to introduce a further examination of different markets, e.g. emerging markets, for a comparison with the previous studies of dilutions in developed markets.

4.2.2 Literature on Stock Price Reaction in Emerging Markets

4.2.2.1 Stock Price Reaction

An early study in Korea by Kang (1990) was based on 89 firms with rights issuing between 1983 and 1987. His findings reveal that an increase in stock price with rights issues announcements is higher than the average change of the market portfolio. With 109 events of rights offerings and stock dividend announcements in Turkish companies between 1988 and 1993, Aydoğan and Muradoğlu (1998) find a positive stock price reaction during the initial phase of the market (between 1988 and 1990). When the market becomes more mature (referring to the period of 1991 to 1993), their results reveal no significant price reactions caused by board meetings and the actual implementation of stock dividend-right offering announcements (Aydoğan and

Muradoğlu, 1998, p.48). In a study of 72 Malaysian firms from 1980-1995, Salamudin et al. (1999) find a positive stock price reaction to SEO announcements. Nevertheless, this positive response depends on economic conditions characterised by periods of falling term premiums, namely lower issue costs, lower dilution of shareholding and higher funds being raised (Salamudin et al., 1999, p.425). Another recent paper on rights issuing, by Marisetty et al. (2008), examines 67 Indian rights issues between 1997 and 2005. Their findings confirm a positive price reaction to the rights issue announcements in retail share ownership, while a negative reaction is reported in family owned firms. Recently, in India, Mishra (2007) and Dhar and Chhaochharia (2008) show a contrasting consequence in the relationship between stock splits and market reaction. While Mishra (2007, p.251) finds a negative effect on price and return of stock splits, driving down the wealth of the shareholders, Dhar and Chhapchharia (2008) report a positive relation of stock splits announcement and security return. From an examination of the Greek Stock Market, Dasilas (2009) finds a similar outcome, that market reaction is statistically significant on the day of dividend announcement.

With the review of studies in the emerging markets listed above, it is possible to suggest that the results from the stock price reaction provide different conclusions. This supports the two papers which obtained the Indian data and reveal the opposite outcomes from the stock splits, although the sample size was collected from the same market and databases. This leads to an uncertain result when the announcements of stock splits are concerned, whether they cause the stock prices to be changed. Although this event (stock splits) is not directly related to our concern with SEO

announcements, it would be important for companies when deciding whether any further financings, especially in equities, are required. We will describe some additional and specific reasons later in more detail. Consequently, the evidence from the stock price reaction to particular events (such as stock splits) could remain inconclusive. Our study aims to investigate whether a different event, i.e. SEO announcements, provided similar consequences in the earlier events in emerging markets. In other words, it would be useful to consider whether announcements such as SEOs could convey some information to the market which would lead to the reaction of stock prices (Vithessonthi, 2008).

4.2.2.2 Determinants of SEO Stock Price Reaction

In emerging markets, previous studies have applied various factors (explanatory variables), such as size, market-to-book ratio and operating performance, relating to the stock returns and firm performance. With reference first to the paper by Demirgüc-Kunt (1992), his empirical analysis during the period 1983 – 1987 discloses an incorporation of the impacts on stock market development in emerging markets, including Korea, Malaysia and Thailand. These refer to the relationship between many factors, such as size, growth, profitability, change in profitability and stock market valuation of firms (Demirgüc-Kunt, 1992, p.19). The findings of Claessens et al. (1995) on 20 emerging markets, including Indonesia, Korea, Malaysia, Taiwan and Thailand, show that there is no relationship between beta (β) and returns when size, earning-price ratio and book-to-market value of equity ratio are included as explanatory variables in the regression. Fama and French (1998) examine whether there is a value premium in the markets outside the U.S. and confirm a risk

model. Their results reveal that the higher the book-to-market equity, earning-to-price and cash flow-to-price, the higher the average returns. In addition, the evidence suggests that size effect possibly impacts upon emerging market returns.

La Porta et al. (1999) indicate that ownership structure plays an important role in corporate finance for emerging market countries in their lists (i.e. Argentina, Korea and Mexico), and these firms are controlled by the controlling shareholders, who usually come from the same family. With an investigation of the sources of return variation in emerging markets (e.g. Indonesia, India, Malaysia, the Philippines, Taiwan and Thailand), Rouwenhost (1999) suggests that size (by market capitalisation) and book-to-market ratio interpret the change in expected returns. However, there is no evidence of a relation between expected returns and turnover in emerging markets, implying that a compensation for illiquidity is not reflected by the return premium (Rouwenhost, 1999, p.1462).

Claessens et al. (2000) show that the majority of inside shareholders have a huge influence on more than two-thirds of firms in East Asian countries[78], and are able to exert a powerful right in order to control those companies. Applying the cross-sectional regression to examine the robustness of size and book-to-market effects, Barry et al. (2002, p.27) disclose evidence from 35 emerging markets (e.g. Taiwan, Indonesia, Malaysia, the Philippines and Thailand) that the motivation for using relative size is made by considering whether the emerging markets are fully integrated with global capital markets. In China, Chen (2004) suggests that there are six

[78] East Asian consists of nine capital markets: (1) Hong Kong, (2) Indonesia, (3) Japan, (4) South Korea, (5) Malaysia, (6) the Philippines, (7) Singapore, (8) Taiwan and (9) Thailand.

determinants of capital structure: (1) profitability, (2) size, (3) growth opportunity, (4) asset structure, (5) cost of financial distress, and (6) tax shield effects. His evidence also shows that the profitability of Chinese listed companies is negatively related to debt (*ibid*, p.1346). Brown et al. (2008) employ book-to-price, earning-to-price, cash flow-to-price and dividend-to-price as the independent variables in order to analyse the impact of the returns to value and momentum in four Asian markets: Hong Kong, Korea, Singapore and Taiwan.

To summarise the literature on SEO stock price reaction in emerging markets, we provide the main findings of these studies in Table 4.1. We found that the existing studies regarding the stock price reaction reveal different outcomes in the same area of specific events. The examples of these can be identified by the difference in the relationship between stock price reaction and stock splits announcements in India. Although these two specific events have no direct relation to SEO announcements, we may learn from them how the evidence of stock price reaction in emerging markets will be reported when considering each particular event. Therefore, we aim to re-examine the study of stock price reaction to specific events. For the events, our surveys of the literature found no studies applying SEO announcements to the recent data (during the 2000s) from emerging markets in Asia, as far as we are aware. Since equity financing has been becoming more popular in Asian markets (particularly in Thailand, supported by a marked rise in the number of SEOs between 1999 and 2006 – see Figure 3.1) during the last decade, SEOs should be an interesting issue to focus on. Regarding the stock price reaction as short-term performance, existing studies on both developed and emerging markets (e.g. Brown and Warner, 1985; Denis, 1994;

Salamudin et al., 1999; D'Mello et al., 2003; Mishra, 2007) demonstrate that SEO is more appropriate than the case of IPO. In other words, the sample of SEOs is applied in the literature on stock price reaction, in comparison to the IPO sample (focusing mostly on underpricing and the long-term performance, e.g. Rock, 1986; Loughran and Ritter, 1995, 2004; Eckbo and Norli, 2005). Moreover, the evidence of Chen (2004) assumes that firms in China should avoid debt financing due to a decline in profitability. Consequently, SEOs are starting to focus on the study of short-term performance in terms of the stock price reaction. Moving to the determinants of SEO stock price reaction, the previous literature reports that factors (such as size, profitability, leverage and growth rate) are possibly the main factors which affect a company's capital structure (e.g. Demirgüc-Kunt, 1992; Claessens et al., 1995; La Porta et al., 1999; Barry et al., 2002). This includes the valuation, performance and financing of the firm. These factors reveal similar outcomes as estimated in developed markets; for example, there is a relationship between market-to-book ratio and security returns[79]. Thus, we can assume, according to the literature that the evidence from developed markets carries over to emerging markets. We will describe the Thai literature in more detail in the following section.

[Insert Table 4.1 here]

[79] See Rangan (1998) and Fama and French (1998) for the comparison of this relationship between developed markets and emerging markets.

4.2.3 Literature on Stock Price Reaction in Thailand

4.2.3.1 Stock Price Reaction

Jirasetthakulchai (2000) examines the effect of dividend announcements on public offerings of equity for listed companies in Thailand between 1977 and 1997. As pointed out earlier, although dividend announcements show no direct relationship to SEO announcements, they are likely to be important for SEOs. She also claims from previous works (such as Cooney and Kalay, 1993: cited by Jirasetthakulchai, 2000, pp.13-14) that issuing dividends could be an interesting effect caused by SEOs. This is because the issuing companies can avoid a decline in the value of a firm after the SEOs by using financial innovations, e.g. dividend announcements, earning announcements and the investment announcements of the company, in order to allow the release of internal information reports to the public. This leads to a reduction in information asymmetry between the company and the market. As a result, the stock prices after SEOs could react positively. Consequently, the firm's managers may use dividend announcements as a signal to both market and investors that the companies are performing well and are likely to acquire finance to expand their businesses. Applying the concept of the capital asset pricing model (CAPM) for calculating expected returns, her results indicate that Thai firms issue new shares when there is an over-value in prices. This leads to a decline in stock prices after the SEOs and the suggestion that the companies should issue new equities (do SEOs) immediately after the announcement of dividends.

In addition, Jirasetthakuchai suggests that the abnormal returns would not be the results from the issuing of new equities via public offering. This is because issuing via

public offering in Thailand is very rare and most cases also include other issuing methods, such as rights issuing or private placement. As a result, separate considerations among issuing methods available during the study period should make it possible to obtain better explanations in this particular area. Lertsupongkit (2002) investigates the stock price reaction during the post-SEO announcement between 1994 and 2001 in Thailand. His results pursue the aspects of previous studies, that there is a negative stock price reaction after the announcement of SEOs. Although this study is similar to the literature relating to developed markets (such as Brown and Warner, 1985; Conrad and Kaul, 1993; Denis, 1994), his evidence shows no factors which impacted on the SEO stock price reaction in Thailand during his study period. This is possibly because his sample size is relatively small (59 firms).

Another relevant study of SEO stock price reaction in Thailand is provided by Vithessonthi (2008), who examines the impact of public announcements of the proposal to increase authorised common stocks (PIAC) on the stock return behaviour of publicly listed firms. With a similar study period to ours of between 1997 and 2006, he finds that stock prices decrease around the announcement of the PIAC, implying no leakage of information before the announcement (*ibid*, p.31). Nonetheless, the differences between our study and the study of Vithessonthi are that his paper is concerned with the PIAC, while our focus is on the announcement of SEOs in general. In other words, the PIAC is the announcement of the number of shares which are going to be issued over the number of shares outstanding, while the SEO announcements in our case (also the meaning in general of issuing new shares on which previous research focuses) are those issuances within the number of shares

outstanding[80]. Thus, the PIAC is a different aspect to our case. He also applies both financial and non-financial companies as his total sample (although the sub-sample of non-financial firms is separately estimated), whereas we obtain only the non-financial ones. However, consideration of the financial crisis period (between 1997 and 1998) should cause some bias. This is because the debt-to-asset ratios for the sample firms could reveal a somewhat high level (shown as 68.1%, according to Vithessonthi). This leads to one of our reasons to exclude this period from our study and to focus our examinations on the period from 1999 to 2006. In addition, during the period 1997 to 1998, many companies were still in the rehabilitation and/or reorganisation process. Hence, it would be difficult for the estimations to reflect the real valuation of firms.

4.2.3.2 Determinants of SEO Stock Price Reaction

With regard to the transaction costs in Thailand, Nittayagasetwat and Withisuphakorn (1997, p.5) point out that these costs lead to investment transactions being discouraged. A discussion of the characteristics of the Thai capital market by the Stability-Structure-Challenge (SSC) model suggests that market liquidity deteriorates as a measure of turnover ratio. Alba et al. (1998, p.26), who obtain the quarterly data of financial statements for all firms listed in the SET from 1994 – 1997, report that ownership may influence firm performance in Thailand. Their findings confirm that the more profitable the firms, the higher the concentration of ownership. Wiwattanakantang (1999) suggests that there are six factors (explanatory variables)

[80] For illustration in Thailand, there are 1 million authorised shares and 100,000 outstanding shares. A firm is required to issue new shares up to a maximum of 900,000 (i.e. from 1 share to 900,000 shares), which refers to the announcement of equity offering in general (as in previous studies and our case). However, if the firm is required to issue more than 900,000 new shares (which exceed 1 million shares in combination), it is the case of the PIAC.

which possibly impact upon Thai firms' capital structure under 270 non-financial samples: (1) non-debt tax shields, (2) tangibility, (3) profitability, (4) business risk, (5) size of firms and (6) agency variables. With reference to the results in Thailand, De Groot and Verschoor (2002) find that there is no size effect when controlling market-to-book equity in their cross-sectional models between 1984 and 2000, while the outcomes are reversed when size is under control. Concerning the examination of post-issue operating performance of SEO companies in Thailand from 1991 to 1994, Limpaphayom and Ngamwutikul (2004) confirm the change in operating performance between the issuers and non-issuers by comparing characteristics of SEO firms among total asset, total liabilities, age (years), market capitalisation and ownership (in percentage). The consequences from this comparison lead to the interpretation that a reaction of investors in Thailand is negative against the announcement of SEO information[81].

The studies related to SEOs in Thailand having been considered, the main drawback, which is easily claimed, is the lack of literature in this area with Thai data. As with the other emerging markets, we have been unable to identify the areas from which we do have conclusive or inconclusive results, i.e. in the area of market reaction and dilution. For the determinants' part, size, profitability and market-to-book ratio (proxy for growth opportunity or tangibility[82]) remain the main factors, as indicated, similar to those in other emerging markets and developed markets. In Thailand, turnover ratio is brought to attention to proxy the liquidity. Many studies (e.g Alba et al., 1998 and

[81] This result is consistent with that of several studies on developed markets: Loughran and Ritter (1997), Rangan (1998) and Teoh et al. (1998b): cited by Limpaphayom and Ngamwutikul (2004).
[82] For tangibility, market-to-book ratio is used to proxy this factor (Wiwatthanakantang, 1999).

Limpaphayom and Ngamwutikul, 2004) also consider company ownership structure, since this factor is believed to impact on firm performance. Another interesting point from the evidence of SEOs in Thailand suggests that the study periods of previous literature do not appear to be up to date and the sample size is small. In other words, they mostly apply the period either before or during the financial crisis in 1997, when debt financing was still the first choice of financing in most companies in Thailand. We question in this case whether the outcomes will be the same if the recent data (e.g. post-crisis) are obtained. To confirm this, we calculated the percentage of sample coverage compared with the existing Thai SEO literature, given in Table 4.2. Furthermore, we realise that we have no evidence of determinants of SEO stock price reaction in Thailand, in particular. Most studies we reviewed are based on the application of each variable (factors) in areas such as valuations and leverage with the data from Thailand.

[Insert Table 4.2 here]

Therefore, we expect to fill these gaps in the SEO literature in Thailand by providing a study of Thai SEOs in order to increase the amount of research in this area. Our study also obtains more updated data and will cover more ground than previous Thai studies did, relating to the current regulations in the market and investors' behaviour. Furthermore, considering the determinants of SEO stock price reaction in particular, offering dilution and individually focusing on different issuing methods provide new evidence from the relevant SEO literature in Thailand.

4.2.4 Motivations and Hypotheses

We have been motivated to examine the SEO stock price reactions and their determinants for three interesting reasons. First, a lack of studies on SEOs in emerging markets is the main gap from our literature review. The existing Thai research mostly focuses on dividend announcements. Secondly, the results of the literature on emerging markets are inconclusive (e.g. the evidence of Mishra, 2007 and Dhar and Chhapchharia, 2008). Finally, we employ a different database, leading to the difference in institutional background. We also expand our study into an area which we believe has not been examined in the case of Thailand with the recent data between 1999 and 2006, namely the relationship between short- and long-term stock price reactions.

4.2.4.1 SEO Stock Price Reaction

According to our literature review, the studies of SEOs in Thailand remain lacking. These are supported by the existing studies we earlier mentioned that are not specifically focused on the SEO announcement (i.e. Jirasetthakulchai, 2000). In addition, when the SEO literature is available in Thailand, it does not cover the recent dataset (i.e. Lertsupongkit, 2002) and does not refer to the same aspect as our case (i.e. Vithessonthi, 2008). Since the number of SEOs rose markedly between 1999 and 2006 (which is our study period), it is interesting to examine the SEO stock price reaction in order to establish whether the outcome remains conclusive in Thailand with the recent dataset (reacting negatively to the announcements). Moreover, since our sample of SEOs mostly refers to the issuing of new shares to the existing shareholders, we would have a different SEO sample compared to the previous

studies (e.g. Denis, 1994; D'Mello, 2003; Walker and Yost, 2007). This is because SEOs in other studies normally issue new shares via public offering, unless particularly stated, such as rights issuing or private placement.

In Thailand, we find no research concerned with the offering dilution in the country, which is one of the important issues to be considered when new equities are issued. Our examination of the separate consideration of different issuing methods in the offering dilution would confirm the Securities Exchange Commission's (SEC) regulation whether it helps to reduce the dilution for the companies issuing via rights issuing (XR). This implies that the notification KorChor.12/2543 of the SEC would be exempted for the firms issuing new shares via XR if they issue new shares to the existing shareholders in the same proportion of holding shares. In other words, there is no need to receive any permission from the SEC to issue new shares, giving a more flexible process to those companies. Thus, issuing new shares to particular shareholders will be considered and examined by the SEC in order to have as little dilution as possible before allowing companies to issue XR.

Furthermore, considering individually different issuing methods available in our sample would extend the evidence further from the study by Jirasetthakulchai (2000). Since the issuing via public offering in Thailand may combine with other issuing methods, the evidence should not reflect the real abnormal returns which have occurred. Consequently, investigating all available issuing methods would have been a new issue in Thailand in recent years (e.g. our study period of 1999 to 2006). Meanwhile, the larger sample size in our study and the consideration of SEO

announcements (in general cases) are additional to the study of Lertsupongkit (2002) and Vithessonthi (2008).

In order to develop the hypotheses, our study will be based on the existing literature review which we discussed earlier (see section 4.2). Although Thailand contains different institutional backgrounds compared with other markets (e.g. small size, dependent on technical (external) factors and with a high number of retail investors), its differences should not lead to an expectation of any specific outcomes in the area of SEO stock price reaction and the offering dilution. For instance, stock prices react positively or there is no reaction of stock price to the announcement of SEOs. Therefore, we will estimate our study in the section of SEO stock price reaction using the following hypotheses:

$H_{0,1}$: There is a negative impact of security price on the SEO announcement.

$H_{0,2}$: There is a negative sign of the percentage of average offering dilution[83].

4.2.4.2 Determinants of SEO Stock Price Reaction

According to the review of literature in Thailand, we find that in previous studies (e.g. De Groot and Verschoor, 2002 and Limpaphayom and Ngamwutikul, 2004) the factors, i.e. size, market-to-book, leverage and operating performance, influence the performance of companies. These factors (variables) have also been applied in the research to both the developed and emerging markets. Some examples of these are considered in the early works of researchers such as Hess and Frost (1982) and

[83] This hypothesis was originally developed based on the study of Asquith and Mullins (1986).

Asquith and Mullins (1986), as well as Denis (1994), Eckbo and Masulis (1995), Ng and Smith (1996), Jindra (2000), Hertzel et al. (2002) and Brown et al. (2008). Not only have these factors been obtained to estimate the firm performance by prior researches, but we also discover that they are interesting and appear to be relevant to the case of Thailand. Moreover, we propose to make a thorough study of the determinants of SEO stock price reaction in Thailand, since the existing works have concentrated only on the capital structure, performance, earning management and dividend announcements of the firms.

We begin by choosing size and operating performance as the first two factors which affect SEO stock price reaction. Although they have been previously examined in Thailand by Wiwattanakantang (1999), De Groot and Verschoor (2002) and Limpaphayom and Ngamwutikul (2004), our study may provide different evidence. This is because those studies applied the data before and during the financial crisis in 1997, while our test covers more recent data, e.g. the post-financial crisis. We have currently more companies in the market, with a variety of size. This confirms our comparison with those existing studies: for instance, the 363 non-financial companies in the market in 1996 in Wiwattanakantang (1999) compared with the 414 non-financial companies in our study during 1999 to 2006, around 700 listed firms between 1984 and 2000 in De Groot and Verchoor (2002) and around 475 listed firms in the market in the first quarter of 2010 and 62 SEO firms in Limpaphayom and Ngamwutikul (2004) between 1991 and 1994, compared with 126 SEO firms (with common stock offering) in our study from 1999 to 2006.

The operating performance is also chosen as a subsequent factor which affects SEO stock price reaction. This is because it should be different if we compare our examination (having obtained the recent data, i.e. the period of 1999 to 2006) with the existing Thai studies that focus on the data before and during the financial crisis in 1997 (i.e. Jirasetthakulchai, 2000; Lersupongkit, 2002; Pranthawat, 2002). We realise that companies could have performed better after the crisis since the economy was gradually recovering. This is supported by a substantial rise in the SET Index between 2002 and 2007[84]. During this period, the index rose from around 350 to approximately 800 by the end of 2003, and then continued to rise to around 950 in 2007 (one year after our study period). Furthermore, the average earnings[85] of listed companies increased markedly from around THB80 billion in the third quarter of 1999 to approximately THB600 billion by the end of 2007[86]. Consequently, the operating performance of Thai listed firms confirms the difference between our study period (1999 to 2006) and the period obtained in the previous Thai literature, including the improvement of this operating performance in recent years.

In parallel, good operating performance could also refer to a better growth in the firm's business. Our statement is confirmed by the percentage of GDP growth that

[84] The movement of the security index (SET Index in this case) is the leading indicator of the economic situation. The information was taken from Kasikorn Research Centre (2002). **The Thai stock index and the risk of the economic recession** (in Thai). Vol. 8 Issue 1345, available from the CD-Rom of Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/KEcon%20Analysis/Pages/ViewSummary.aspx?docid=3663 [Access on 16 March 2011].
[85] Earnings are calculated by 12 months' accumulated EBIT (earning before interest and tax) shown in billions of Thai Baht (THB): THB33.50: USD1.00.
[86] Source: SETSMART as of 31 March 2008.

increased significantly from -11% in 1998 to 6.1% in 2006[87]. In addition, choosing growth as one of the factors impacting stock price reaction is not only due to a marked rise in the percentage of GDP growth, but is also indicated by the reason that growth is examined in the Fama-French 3-factor model. Hence, since the factor of growth has been previously tested in existing research with the data from Thailand (i.e. Claessens et al., 1995; De Groot and Verchoor, 2002)[88] and is included in well-known models (such as Fama-French 3-factor), it could be argued that growth relatively influences the expected returns. Thus, with a more recent dataset in Thailand, we will include growth (proxy with the market-to-book ratio) as one of our factors which influences the SEO stock price reaction.

We focus on leverage, liquidity and ownership in our impact factors, owing mainly to the characteristics and institutional background of the Thai capital market. To illustrate this in more detail, we begin with leverage. Not only new listed firms that finance with debt in parallel with equity, but several existing listed companies also apply debt to finance their businesses. According to the statistics provided by the Bank of Thailand (BOT) and the SET, bank loans remain the highest percentage of financing sources for companies in Thailand. This figure is 77%, followed by equities at 67% and bonds at 46%, in 2005. As a result of these percentages, the Federation of Thai Capital Market Organisations (hereafter, FETCO, which provides the Master Plan of Developing the Thai Capital Market) aims to develop and improve the stability of the capital market in order to have better availability of economic

[87] Source: Office of The National Economic and Social Development Board (NESDB), GDP [online]. Available from: http://www.nesdb.go.th/Portals/0/eco_datas/account/hqgdp/data2_09/AlltableQ2_2009.xls [Accessed on 20 August 2009].
[88] Their results show significant signs in market-to-book ratio, which is the proxy for growth.

competition. Furthermore, leverage has been included as one of the factors related to expected returns in the Fama-MacBeth model[89]. Since this model is widely applied in existing research (e.g. Shivakumar, 2000; McLean et al., 2007), it is possible to follow those works, which suggest that leverage should have an important role in average expected returns. We also suspect that leverage should affect the SEO stock price reaction in Thailand, as the model was applied in previous studies of emerging markets (i.e. Barry et al., 2002).

A subsequent factor to be illustrated is liquidity, which can be defined in terms of trading and the ability to pay the debt of firms. With regard to the definition in terms of trading, the Thai capital market does not appear to be fully liquid. The main reason could be that there are a small number of local institutional investors in the market. In 2006, the statistics show around 10% of local institutional investors in the Thai capital market, which could be a low level in comparison with other markets (e.g. Hong Kong, Singapore or Malaysia)[90]. This percentage is claimed by the FETCO to be an unbalanced level of liquidity and stability valuation. It also refers to the fact that the individual investors are the majority of the investors in the market and are mostly short-term investors, who are likely to trade following rumours from speculators[91]. Although the total average daily turnover (which is a representative of liquidity in the

[89] According to Fama and French (1992), leverage is one of the factors included in the Fama-MacBeth model. The remaining factors are size, P/E ratio, book-to-market ratio and the beta (β).
[90] The information was obtained from the Master Plan of Developing the Thai Capital Market # 2 (year: 2006 – 2010; Thai version) by the Federation of Thai Capital Market Organisations, published via its website: http://www.fetco.or.th [Accessed on 22 May 2009].
[91] This supports a recent example of a significant fall in the SET Index on 14 October 2009 of 8.28%. According to the regulations, if there is a decline in the index of more than 10% within one trading day, known as the Serkit Breaker. The SET claims that the main reason for this fall was a rumour from Bloomberg news regarding the health of King Bhummitpol. Source: The article of ASTV Manager Newspaper on 15 October 2009 [online] at http://www.manager.co.th/StockMarket/ViewNews.aspx?NewsID=9520000122562 [Accessed on 17 March 2011].

Thai market) has increased substantially since 2003 (i.e. from THB3,740 million in 2000 to THB19,030 million in 2003, followed by THB20,647 million in 2004)[92], the average daily turnover of foreign investors remains low. This supports our prior claims that the Thai market is only partly liquid. In addition, liquidity would become more important since the SET issued the new regulations on turnover risk in June 2008[93]. However, liquidity in terms of the ability to return the loans of the companies would also be brought to the attention, since in this meaning liquidity could influence the decision of SEOs. In this case, it relates to leverage, which we have previously considered as one factor which impacts on SEO stock price reaction.

Lastly, concerning ownership structure, many listed companies in the SET are family-owned, whose investment decisions could possibly depend on only one person and lead to some extent of bias. A good example of a family-owned company during our study period is the "Shin Corporation Group", which is owned mainly by the Shinnawatra family. Under this group, there are several companies which are mainly in the industrial sector, called "Information and Communication Technology (ICT, as the local code)", e.g. SHIN, ADVANC, ITV and THCOM (see Appendix 3 for the name in full). For instance, a member of the Shinnawatra family held at 36.88% of the total shares in SHIN in 1999 and around 38% of the total shares in 2003[94].

[92] Source: SETSMART as of 31 March 2008.

[93] This regulation concerns whether there is an increase in turnover ratio (as a proxy of liquidity) of over 50% on each trading day; it could be stated as a possibility of turnover risk. The investors will be required to trade by using only cash balance (trade with cash only); implying that trading with a loan will be refused. When this regulation was enforced, the investors had to be careful about what they traded. This would influence the stock price reaction in other ways.

[94] In 2006, there was a significant change in the major shareholders, since the Shinnawatra family were no longer the major shareholders. Dr Thaksin Shinnawatra, as a major shareholder during the period and also the prime minister of Thailand, sold the shares to local and foreign juristic persons. This was one of the reasons that led to political chaos in Thailand.

Furthermore, SHIN was also the major shareholder of ADVANC (a mobile phone business), at more than 40% between 1999 and 2004. This may led to a huge network of communication and monopolies in this business in Thailand. As a result, it should have provided a substantial impact when the company's decisions were made and would be have been when Dr Thaksin Shinnawatra was the prime minister of Thailand between 2001 and 2006. . Consequently, consideration of these three factors (leverage, liquidity and ownership) should provide the evidence with a close relation to Thai SEO firms.

In addition, since the SET considers price-earning (P/E) ratio in the daily statistic values report, P/E ratio could become important for investment decisions. The evidence from Claessens et al. (1995) reveals that P/E ratio was an insignificant factor when the authors focused on the data from Thailand. In recent years (i.e. during the 2000s), to our knowledge, the studies of Thailand included the P/E ratio in determinants of SEO stock price reaction. To illustrate this in further detail[95], we claim from the SET research that P/E ratio becomes another factor (aside from market capitalisation) in order to expand the size of the capital market in Thailand. This is confirmed by the fact that a more than 45% increase in market capitalisation between 2002 and 2005 was caused by an increase in P/E ratio. Since the market capitalisation of Thailand's capital market is lower than the neighbouring markets (such as Singapore, Malaysia and Taiwan), expanding the size of the capital market by increasing market capitalisation is one of the missions for developing the Thai capital

[95] The information provided here is based on the article by the SET (SET Note): "How Market Capitalisation and P/E Ratio Increase (Thai version)", issue 3/2006: available from http://www.set.or.th/th/products_services/research/setnote_p1.html [Accessed on 2 June 2010]

market[96]. Due to a small number of large listed companies (which have a high level of market capitalisation), the SET considers improving the P/E ratio in the existing companies. Although the P/E ratio provides no direct influence on SEO stock price reaction, it is likely to be a motivation factor for the investors. For instance, a low P/E ratio during the time of SEO would motivate the investors or the existing shareholders (if issued via rights issuing or private placement) to buy or exercise the new shares, leading to the reaction of stock prices. Therefore, we will estimate P/E ratio as a control variable in the regression as we have found it could indirectly influence the SEO stock price reaction in Thailand.

Moreover, when considering different issuing methods separately, the evidence should provide more comprehensive and new findings in this area[97]. In order to concentrate on SEO announcements only, we will assume that the other events (i.e. dividend announcements, earning announcements and policies announcements from the government or related institutions) have a small impact on stock price reaction.

We are aiming to provide an empirical investigation into the determinants of SEO stock price reaction, similar to what has been done in previous studies (i.e. Asquith and Mullins, 1986; Lertsupongkit, 2002; Walker and Yost, 2007). However, our study

[96] This information was obtained from the Master Plan of Developing the Thai Capital Market#2 (year: 2006 – 2010: Thai version) by the Federation of Thai Capital Market Organisations (FETCO), published via its website: http://www.fetco.or.th [Accessed on 22 May 2009].

[97] Due to the availability of the data and information regarding the issue types of SEOs in Thailand, we are unable to specify exactly which issue types are used in each issuing (i.e. book building, fixed prices or floating prices). In the secondary data sources (such as SETSMART and the prospectuses) we obtained, they state the fixed prices. If we need to know the obvious type, primary data need to be collected. However, it is generally assumed in Thailand that companies need to survey and inform the SEC and the SET regarding the purpose of the issuing, implying that they have to know the demand of new financing via equities.

will be conducted by obtaining the data from emerging markets, since they are rarely found in the existing literature. We capture the SEO stock price reaction with a two-day announcement abnormal return. This is because when the board of directors of companies agree to issue new equities, they are required to submit the report to the market (the SET). The market will normally accept and respond on the following day, despite the late agreement from the meeting boards. As a result, if there is any reaction, it should be on the next day that the stock goes public (day +1). Furthermore, we introduce some new factors, e.g. P/E ratio, ownership and issuing methods, which could be more related to the characteristics of Thai companies and the Thai capital market. We summarise the findings regarding this area in Table 4.3, together with our initial expectations. Finally, the hypotheses to be estimated are given as follows:

$H_{0,3}$: Size affects the two-day announcement abnormal return.

$H_{0,4}$:Market-to-book impacts on the two-day announcement abnormal return

$H_{0,5}$:There is an impact between leverage and the two-day announcement abnormal return

$H_{0,6}$:There is an effect between operating performance and the two-day announcement abnormal return

$H_{0,7}$:Liquidity affects the two-day announcement abnormal return

$H_{0,8}$:Insider ownership influences the two-day announcement abnormal return.

[Insert Table 4.3 here]

4.2.4.3 Long-Term SEO Stock Price Reaction

Having examined the SEO stock price reaction in the short-term, we briefly extend our investigation to cover the overview of how stock prices move in a longer event window, e.g. 240 days before and after the event[98]. The evidence from this longer event window could lead to the discussion on whether there is a timing of equity sales during the post-issuing period (Asquith and Mullins, 1986). We would expect to have a negative movement of stock prices during a longer event window (240 days before and after the event). This is because in Thailand investors (mostly individual investors, who are the largest proportion in the market, see Figure 3.3) normally trade in the short-term. The Thai market is also highly volatile and varies according to situations. Examples of these are the dramatic fall in stock prices after the announcement of the Bank of Thailand (BOT) on capital reserve in 2006, or political chaos and violence[99]. As a consequence, investors would sell the stocks and move to invest in other equities or securities. We consider the hypothesis as below:

$H_{0,9}$: Stock prices respond with negative movement in a longer event window after an SEO announcement.

Furthermore, it would be useful to pay a little more attention to the relationship between the short-term and the long-term stock price reaction. When we have a short-term reaction, we are not totally sure whether it will be an over or under reaction, or whether this reaction is correct as it is. In other words, since we expect (and know from the existing literature, e.g. Conrad and Kaul, 1993; Lertsupongkit, 2002; Walker

[98] The reasons are given in more detail in section 4.3.2.3.
[99] Source: The Thai news station on 17 May 2010, MCOT Public Company Limited, available at http://www.mcot.co.th [Accessed on 17 March 2011].

and Yost, 2007) stock prices to react negatively to SEO announcements, these SEO announcements are specifically made in order to adjust the stock prices back to the level that they should be (correcting of misprice). This is described by Daniel et al. (1998, cited by Balachandran et al., 2010) as selective events[100]. If there is a relationship between short- and long-term stock price reactions, it implies that we will find the degree of mispricing that corrects the stock prices in the long-term. Consequently, issuing new shares (i.e. via rights issuing, private placement or stock dividend) could be referred to as selective events in order to adjust the stock prices to the level that they should be at. In Thailand, we expect to have no relationship between short- and long-term stock price reactions. This is because the stock prices in practice should depend on current situations and events (i.e. external factors – GDP, interest rate and inflation) rather than related to events in the short-term (SEO announcement in our case). Therefore, the hypothesis to be estimated regarding the relationship between short-and long-term stock price reaction is:

$H_{0,1\ 0}$: The long-term stock price reaction has no correlation to the two-day announcement abnormal returns

[100] In their paper, they explain with the case of rights issuing that "if rights issues occur in response to an overvaluation of the stock, then clearly such issues constitute selective public events with a negative announcement effect and a negative post-announcement drift (Balachandran et al., 2010, p.7)."

4.3 Data and Methodology

4.3.1 Data and Definition of Variables

We have obtained our SEOs data mainly from the SET fact books and SET database (SETSMART) during the period 1999 to 2006. The financial statements and financial ratios were obtained via Thomson One Banker. The initial sample from these sources displays 251 non-financial firms with 1,910 SEOs. We take the exclusion of financial companies (including banks and insurance firms) because of the difference in their asset structures. Among these 251 firms, we follow the data organisation in Seiler (2004), who utilised the event window to 15 days before and after the event – the SEO announcement date referred to day 0. For the estimation period, Seiler (2004) employs 100 days before the event window. In order to arrange our initial data to cover more around the event date, we extend the 100 days of the estimation period after the event window. Consequently, we have 115 days regarding our focused event study period.

Any firms that contain the SP or suspension signs and unavailable data for trading information (i.e. closed prices) are also excluded from our sample. To avoid any overlapping among our sample, we used the first SEO of each company. As a result, we have a final sample consisting of 173 companies. In this paper, we utilised the sample of common stock offering companies of 126 firms during our study period 1999 to 2006. Among these, four issuing methods (rights issuing: XR; private placement: PP; stock dividend; SD and public offering: PO) have been applied and the number of firms using each method is displayed in Table 4.4.

[Insert Table 4.4 here]

Regarding our sample of 126 common stock offering firms, it is absolutely less than the sample obtained in developed markets. Some examples of this are shown as 531 samples in Asquith and Mullins (1986), 435 samples in Denis (1994), 863 firms in D'Mello et al. (2003) and 438 samples in Walker and Yost (2007). However, our sample is consistent with those applied in Thailand[101] and other emerging markets. To illustrate some examples from the emerging markets, we notice some studies, i.e. 89 firms in Korea by Kang (1990), 109 firms in Turkey by Aydoğan and Muradoğlu (1998), 72 firms in Malaysia by Salamudin et al. (1999) and 67 firms in India by Marisetty et al. (2008). Having identified seven explanatory variables in the previous section, we define those variables, together with sources of data in Table 4.5. The definitions in Table 4.5 are mostly concerned with the change of those variables between their value on the issuing year and the average 3 years prior to the issuing. This is because we focus on the difference of those variables in the issuing year and prior to the issuing. The average 3 years before the offering year is chosen in order to increase number of firms into our estimation. Further explanations in more detail are given in section 4.3.2.2.

[Insert Table 4.5 here]

[101] For Thailand, see the examples of the existing studies in section 4.2.4.2 and Table 4.2.

In addition, we tested the differences between the three subsamples of different issuing methods[102]. Our results indicate that small firms in Thailand are likely to issue new shares via SD (reported with the significant t-statistics in the two-sample t-test) because the average size under this method is revealed as the lowest among the other samples (see Table 4.7 – panel A). This leads to similar interpretations in our previous chapter (section 3.3.2 in Chapter 3), so it could be assumed that there is no difference between the sample of SD and other subsamples, even though the results should refer to the endogenetic problem. This is because if all small firms in Thailand tend to issue new shares via SD, the minimum size for the total sample should be SORKON (at THB122.35 million – see the full name in Appendix 3); instead of NEW at THB71.07 million (which is the smallest size in our sample). In addition, although issuing via SD is likely to be used by the firms which need to maintain their cash flow, it is not always the case for a small company which has a good performance and no need to retain capital in the company. Consequently, we can point out that there are no significant differences between the total sample and the three subsamples of different issuing methods in our estimation.

[Insert Table 4.7 – panel A here]

4.3.2 Methodology

The review of the literature has led to the realisation that the calculation of abnormal return by market model and event study concept remains the key methodology for

[102] The significant differences between the total sample and the three subsamples can also be seen in the same statistic table (see Table 4.7 – panel A).

much of the literature in more recent years. This is demonstrated in, for instance, Errunza and Miller (2003), Aktas et al. (2007), Balachandran et al. (2008a), and Yermack and Chenyang (2009). Not only are the market model and standard event study frequently applied to SEO studies, but other methodologies: e.g. a normal student t-test, ordinary least square (OLS), multiple regression, as well as cross-sectional analysis, Tobin-Q technique and even the CAPM, are also employed in the literature. Some examples of the studies which used these types of methodologies, including the examination of long-term performance, are Teoh et al. (1998b), Gajewski and Ginglinger (2002), Fu (2006), Balachandran et al. (2008b) and Brown et al. (2009).

In emerging markets and in Thailand, we find some studies of SEOs obtaining the event-study framework and market model, such as Bartholdy et al. (2005), Vithessonthi (2007) and Diacogiannis and Makri (2008). Consequently, it is noted that the studies apply key methodologies, e.g. event-study, the market model, the standard OLS or a cross-sectional approach, in emerging markets (including Thailand) where there are different characteristics from the developed markets. Moreover, these methodologies appear to be easily understood. As a result, we decided to follow the wide use of these methodologies in our investigation.

The methodology to be employed in this chapter is concerned with three areas: (1) the stock price reaction to SEO announcements and offering dilution, (2) the determinants of SEO stock price reaction and (3) the long-term stock price reaction. We consider

first applying abnormal returns (ARs, hereafter) because the ARs are adjusted with beta of each security. Therefore, the calculation of ARs for any securities is given by:

$$AR_{i\ t} = R_{i\ t} - E(\widetilde{R}_{i\ t}) \qquad (4.1)$$

where t = day measured relative to the event,

AR_{it} = abnormal return to security i for day t,

R_{it} = return on security i during day t and

$E(\widetilde{R}_{i\ t})$ = expected rate of return on security i for day t

$E(\widetilde{R}_{i\ t})$ is estimated by the market model as suggested by MacKinlay (1997). As a consequence, equation 4.1 can be re-written as:

$$AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt}) \qquad (4.2)$$

where R_{mt} = market return on day t (in our case defined as return on the SET index, which is the main composite index in the SET),

α_i = intercept and

β_i = the OLS estimators of the market model parameters, calculated in the estimation period.

Since equation 4.1 is defined, it leads to the measurement of cumulative abnormal return (CAR, hereafter), displayed as:

$$CAR_{i(t_1,t_2)} = \sum_{t=t_1}^{t_2} AR_{it} \qquad (4.3)^{103}$$

where t_1 and t_2 are the days between the event window.

In addition, another possible explanation for employing ARs (as well as CARs) is that since excess returns are only different by one type of benchmark, i.e. risk free rate (r_f) or average returns from the portfolios, there might be other risk factors which have an influenced. Much of the basic literature regarding the event-studies (for instance, Cambell et al., 1997; MacKinlay, 1997; and Kothari and Warner, 2006) also suggest CAR in order to capture the impact from the event (our case refers to SEOs), as well as some studies of event study in emerging markets (e.g. Aydoğan and Muradoğlu, 1998; Jirasetthakulchai, 2000; Lertsupongkit, 2002; Prangthawat, 2002; Diacogiannis et al., 2005). Since the number of firms in each methodology of issuing is below 30 and when every variable is available in all the firms in each issuing method, these could be a small sample, since all of the companies have been chosen. We need to employ a further method of increasing the available quantities of data, by utilising a pooled sample, or the panel data concept (Brooks, 2008, p.174). Furthermore, we will bring the other events - apart from SEOs - to our attention as the control variable, although we assume that there are no other events.

4.3.2.1 Stock Price Reaction to the SEO Announcement and Offering Dilution

We used the event window to 15 days before and after the event, employing day 0 as an event date. Seiler (2004) suggests that, with extremely certain events with little

[103] The calculation of CAR is referred to by MacKinlay (1997, p.21).

possibility of leakage information, as little as a plus and minus event window, e.g. ± 10 days, can be used. Since there are many speculators and the characteristics of the market in Thailand are helpful for insider trading, a leakage of information might occur. Consequently, it could be worth covering this leakage. In order to pursue this, we extended the event window up to 15 days, as indicated. Furthermore, our evidence from Table 4.7 – panel C suggests that there are no significant differences between the average two-day announcement abnormal returns and the complete subsamples (including the total sample) in our study. This is confirmed by the two sample t-tests (see Table 4.7 – panel C), which are insignificant.

[Insert Table 4.7 – panel C here]

We define the offering dilution as the discounting of stock prices after the issuing, in terms of market capitalisation, calculated on the basis of a suggestion by Asquith and Mullins (1986):

$$Offering\ Dilution\ (\%) = \left(\frac{Mkt\ Cap_0 - Mkt\ Cap_{+1}}{Mkt\ Cap_{+1}} \right) \times 100 \qquad (4.4)$$

Where $MktCap_0$ = Market capitalisation on the announcement date.

$MktCap_{+1}$ = Market capitalisation on day after the announcement date.

In our review of the literature, we have encountered no studies, in emerging markets and Thailand in particular, which examine offering dilution. Nevertheless, the previous studies normally focus on the discounting of stock prices in terms of offer

and closed prices (i.e. Mola and Loughran, 2004; Intintoli and Kahle, 2009). As pointed out above, our study is one of the first in Thailand to investigation offering dilution and it should be reliable so long as we use the same definition as the existing literature (Asquith and Mullins, 1986). This could allow us to compare whether our evidence from Thailand provides the same aspects as reported on the basis of the developed markets.

4.3.2.2 The Determinants of SEO Stock Price Reaction

The consideration of ARs in the event study's methodology with regard to the examination of event and the movement of share prices or the performance of the market is widely obtained in much of the literature (i.e. MacKinlay, 1997; Burton et al., 1999, Kothari and Warner, 2006; Walker and Yost, 2007). Using ARs could be better than using excess returns, as the returns are adjusted with the beta of each security under, for example, either market model or CAPM. There is also some evidence that excess returns are applied in the calculation and measurement of short-sale activities (Kim and Hyun-Han, 2004) and insiders' aggregate activities (SET research paper, 2004), even though the procedure is similar to the methodology of the event study. Therefore, our dependent variable, "two-day announcement abnormal return", is defined thus:

$$CAR_{i,0,1} = AR_{i,0} + AR_{i,1} \qquad (4.5)$$

Where, $CAR_{i,0,1}$ is two-day announcement abnormal return for firm i,

$AR_{i,+1}$ is abnormal return to security i on day after a published announcement and

$AR_{i,0}$ is abnormal return to security i on day of announcement.

We clarify the seven explanatory variables pointed out in the previous section. These variables will be considered as the change in values before the SEOs and when the SEO is announced. This should let us know how the difference between those explanatory variables is impacted upon by the SEO announcement. Moreover, we employed methods of issuing into our consideration, because we noticed that the outcomes may be different from the previous studies made of the Thai market. This is supported by the findings of Burton et al. (1999), as firms would prefer rights issuing when there is an opportunity to gain ARs. In addition, as mentioned earlier concerning the characteristics of Thai SEOs, companies rarely issue via public offering without combining other issuing methods with it (see Jirasetthakulchai, 2000). Consequently, considering each issuing method separately could lead to proper results for Thai SEOs.

Regarding our explanatory variables, we provide the proxies for variables based mainly on the existing literature in that area as follows. Beginning with the firm size, we will capture this via market capitalisation. This is preferable as our examination is based on the market (where its size is captured by market value), while other proxies (such as sales and total asset do not appear to be linked to the market (i.e. stock price reaction). This proxy is used and supported in several studies, e.g. Asquith and Mullins (1986), Barber and Lyon (1997b), De Groot and Verchoor (2002) and Limpaphayom and Ngamwutikul (2004). We capture the growth of the firm following how it was measured in the Fama-French model via market-to-book ratio, as

previously mentioned (see section 4.2.4.2)[104]. For leverage, debt-equity ratio is chosen as the proxy suggested in Eckbo and Masulis (1995). The operating performance is proxy with the return on asset (ROA, hereafter). This proxy is widely used to capture the operating performance in much of the literature (e.g. Cooney and Kalay, 1993; Rangan, 1998; Hertzel et al., 2002; Fu, 2006). Nonetheless, there are various other proxies for operating performance. These proxies are, for instance, return on equity (ROE), earning per share (EPS), EBITDA (earnings before interest, tax, depreciation and amortisation) and ratio of EBIT (earnings before interest and tax)-to-total asset (e.g. Rajan and Zingales, 1995; Wald, 1999; Elashker and Wattanasuwanne, 2000; Glen and Singh, 2004).

We capture liquidity by the turnover ratio, because it has been applied in some of the existing literature, such as Nittayagasetwat and Withisuphakorn (1997) and Fama and French (1998). Liquidity will also be our control variable since it is partly related to the leverage, as discussed earlier (see section 4.2.4.2). Lastly, insider ownership is proxy following the study of operating performance of Thai SEOs by Limpaphayom and Ngamwutikul (2004). Concerning the other events and the issuing methods, they are estimated as the dummy variables in the regression (see Table 4.5 for all definitions of variables).

In order to measure the determinants of SEO stock price reaction, we employed a standard OLS regression in our consideration. Many previous authors (see Rajan and Zingales, 1995; Krishnan and Moyer, 1997; Frank and Goyal, 2004; Vaaler et al.,

[104] We employ the reverse ratio from the Fama-French 3-factor model to follow the statistical values reported by the SET.

2006) applied this basic model to some extent (sometimes based on adverse selection and pecking order theory) to determine the level of leverage in the firm's capital structure,. In our case, we intend to measure which factors could influence two-day announcement abnormal return, and a standard OLS regression should be worth studying to begin with. For other events apart from SEOs, we will consider this as a dummy variable in our regression (also a control variable). In order to have more samples in our estimation, we select the average three years prior to the issuing year in our explanatory variables. This is because if we obtain the five-year average (i.e. similar to the study by Asquith and Mullins, 1986), several companies have not even been listed in the market, such as those making their SEOs in 1999. Thus, we have no data available during that period in order to estimate explanatory variables with the balanced panel (all variables need to be available to every firm). As a result, we choose the period of three years to define our explanatory variables. The regression is revealed as follows:

$$TwoDayAbnormal\,\mathrm{Re}turn = \alpha + \beta_1(size) + \beta_2(MB) + \beta_3(Leverage) + \beta_4(ROA)$$

$$+ \beta_5(P/E) + \beta_6(TURN) + \beta_7(OWN) + \beta_8(EVENTS) + \beta_9(DXR) + \beta_{10}(DPP) + \beta_{11}(DSD) \quad (4.6)$$

, where DXR, DPP, DSD and DPO are represented as dummy variables equal to 1 when the company issues are by rights issuing (XR), private placement (PP), stock dividend (SD) and public offering (PO), respectively, and equal to zero otherwise. We define the other variables with reference to Table 4.5.

Concerning sample size, we use the concept of balanced panel to obtain our explanatory variables under our final sample of 126 companies. This means that the

companies need to have the entire data for every explanatory variable (see Table 4.6 for number of firms to be estimated and those available in each explanatory variable). For instance, since we have seven independent variables in our regression, a company may have its data available for five variables, because there is unavailability of data for the remaining variables (balanced panel). This unavailability can indicate, for example, that the firm has not been listed in the market during the previous three years from the issuing year when we obtained the data for the market-to-book ratio or the ownership, as earlier mentioned. The firm would also be under rehabilitation or have had the SP (suspension) sign during the three years prior to the issuing year. This leads to no trading information (i.e. closed prices, market capitalisation and turnover ratio) during that period. Subsequently, there is no data available for turnover ratio in this case. Therefore, we have to exclude these firms from our final sample of 126 companies, following the concept of balanced panel. As a result, our sample size for estimation in the OLS regression (equation 4.6) is reduced to 68 companies (see Table 4.6 – panel B). This sample size is consistent and reasonable in relation to other studies in Thailand, as previously discussed (see section 4.3.1). Furthermore, since our sample appears to be small for each issuing method when examined separately, we need to pool the data for the sample of companies issuing new shares by common stock via each issuing method (see Table 4.6 – panel A) in order to increase our sample.

[Insert Table 4.6 here]

In Table 4.6 – panel A, only three issuing methods will be considered in our analysis: rights issuing, private placement and stock dividend. This is because the fourth issuing method, public offering, refers to two companies, which are excluded from our 68 estimated firms, due to unavailable data of ownership. Our estimation would be different from the existing literature, apart from Thailand. The explanation is that public offering is normally examined in most studies regarding equity offerings, while public offering is not a popular method in Thailand. Issuing new equities to the existing shareholders, e.g. via rights issuing, private placement or even stock dividends, can guarantee them the possibility to exercise their rights rather than issuing to the public, according to the trading aspect in the Thai capital market. One reason is that the process of issuing via rights is faster than issuing via public offering because it is unnecessary to receive the permission of the SEC as long as the company issues new shares in the same proportion to all existing shareholders in the firm (see notification KorChor.12/2543, section 3.2.4.1). In addition, since we have a limited amount of literature relating to SEO stock price reaction in Thailand (as well as in other emerging markets) and less variety compared with the studies in developed markets, we sometimes need to depend to some extent on the research in developed markets, which is mostly relevant to SEO stock price reaction rather than the emerging markets.

Moreover, we provide the two-sample t-test of whether there are any significant differences between the three subsamples in the regression sample (68 firms in total, Table 4.7 – panel B). The results show again that there are significant differences between the XR sample and the SD sample. The similar explanations remain true here

(see section 4.3.1), that if small firms tend to issue new shares via SD, the smallest firm size should be reported as SORKON (at THB122.35 million), instead of NEW at THB71.07 million (see Appendix 3 for their names in full). Based on our prior interpretations (see section 3.3.2 in Chapter 3 and section 4.3.1), it is identified that there are no significant differences among our sample size for estimating the regression of determinants of SEO stock price reaction.

[Insert Table 4.7 – panel B here]

4.3.2.3 The Long-Term Stock Price Reaction

In order to capture the movement of security prices over a longer period, we expanded our event window to 240 days before and after the announcement date. Although it can be claimed that the period of 240 days may not be enough to analyse the announcement effect as a long-term event, there are two main reasons in this case. First, during the 240 day period, the companies which have unavailable data and SP (suspension) signs are smaller in number than those in the longer period, i.e. 480 days. Additionally, the SET is not as old as exchanges in developed markets[105]. Consequently, if we use a longer period, our sample will be substantially reduced, as those companies do not cover the entire period. Lastly, having re-arranged the sample, we obtained 49 rights issuing firms, 47 firms with private placement, 20 firms for stock dividend and 2 firms remained for public offering[106]. The sample size is reduced because the companies: (1) are delisted or not listed yet, (2) are showing the SP sign

[105] The SET was originally established in April 1975.
[106] Three firms of public offering are excluded from our investigation for the determinant of stock price reaction section. Therefore, we would rather apply the same category in our overall examination.

and (3) have no trading information during the period of 481 days around the event. The calculation of ARs remains the same as in the previous section, via the market model (equation 4.2). We also compare this movement with the cumulative average market return (CARs Mkt), where market returns are measured by the SET composite index returns (SET Index returns).

If we recall the explanatory variables estimated in equation 4.6, we will consider those variables in terms of the control variables to examine the correlation between the long-term stock return (as the short-term price reaction). We then define the relationship of this examination thus:

$$LR\_AR = f[Control\ Variables]\ as\ Two\ Day\ Abnormal\ Return \qquad (4.7)$$

where LR_AR refers to CAR [+16, +240].

To illustrate this in more detail, we point out the reason for using CARs from day +16, which is the post-issuing period outside our event window which we have already examined in an earlier section. This range (from day +16 to day +240) will cover us up to 240 days after the announcement of SEOs. Furthermore, we consider the factors we previously estimated as the control variables, since we need to focus only on the relationship of short- and long-term stock price reaction. Alternatively, we could indicate that we are going to make estimations similar to equation 4.6, with different dependent variables (LR_AR) and an extra explanatory variable (two-day announcement abnormal return). The sample size is reduced to 67 companies, since one firm (LL) had to be dropped owing to unavailable data up to 240 days after the event date. To be more specific, this firm contains the SP sign and no trading data

within our post-issuing period of 240 days after the event. Hence, we excluded it following our sample conditions (see section 4.3.1).

4.4 Empirical Results

4.4.1 CARs by Total Sample

CARs during the event period (15 days prior and after the event date) decline gradually. There is also a substantial drop of CARs around the announcement date (day 0), as demonstrated in Figure 4.1 – panel A.

[Insert Figure 4.1 – panel A here]

The two-day announcement abnormal returns are statistically significant with t-statistic at -2.97211 on day 0 and -2.76114 on day +1 (see Table 4.8). These imply that the change in stock prices is caused by the announcement of SEOs, which are consistent with our hypothesis (Hypothesis 1) that there is a negative impact of security price on SEO announcements (see Figure 4.1 – panel A). In addition, our evidence shows aspects similar to those of previous studies in both developed and emerging markets, including Thailand. These are revealed in, for instance, Denis (1994), Jirasetthakulchai (2000), Lertsupongkit (2002), Mishra (2007) and Walker and Yost (2007). Although some of these studies (e.g. Jirasetthakulchai, 2000 and Mishra, 2007) have not been made in the area of SEOs, they examine the other

published events (namely, dividend announcements and stock splits) and reveal similar outcomes of stock price reactions to the published information. This should imply that our finding has the same result as shown in the research into emerging and Thai markets because we still have a negative effect of stock price, similar to published information (SEO in our case and dividend and stock splits in the others). Therefore, in terms of stock price reaction to SEOs, we can claim that our results in Thailand are consistent with those of previous studies.

[Insert Table 4.8 and 4.9 here]

Concerning the offering dilution, all of the common stock offering firms show approximately 0.36% of change in the value of the firm on announcement day (see Table 4.9). This means that we have an increase of 0.36% in the equity value of firms on this day. Moreover, it can clearly be seen from Table 4.9 that more than one third of our total sample firms have not suffered from the loss of firm value, indicated with a positive percentage of dilution. As a consequence, our result is inconsistent and shows a contrasting explanation to our hypothesis (Hypothesis 2) that there is a negative offering dilution. In comparison with the previous research in this area, we can only refer to a work on the developed market, Asquith and Mullins (1986), where the offering dilution was especially focused on. Our evidence from Thailand displays a contrasting finding in offering dilution compared with their findings. The possible reasons could first be the difference in study period and database. Based on the results, this indicates that an emerging market would be better able to protect the shareholders from dilution than developed markets. This also implies that our SEO

sample is mainly concerned with the issue of new shares to the existing shareholders (i.e. rights issuing and private placement), while their SEO sample refers to public offering. Furthermore, with the regulations of issuing via rights issuing in Thailand, the issuers need to issue the same proportion of new shares that each shareholder currently holds in the firm, otherwise they may be refused permission by the SEC to have new shares listed and traded (see KorChor.12/2543, section 3.2.4.1). Second, it can also be assumed from our results that the emerging markets' performance at present would be equivalent to the developed markets' performance in the past.

In parallel with the stock price reaction, our evidence in Table 4.8 can imply that there is a leakage of information before the SEO announcement (i.e. on day -12) due to a significant t-stat at -1.80345 (see Table 4.8). As a result, investors can use this leakage information to gain their ARs (insider trading). Trading on this leakage information is expected to start earlier, which may consequently reduce ARs during the event window. This is also supported by a gradual decrease in CARs from the beginning of our event window (day -15). In addition, we notice that our results are partly consistent with the previous research in Thailand by Lertsupongkit (2002) and Vithessonthi (2008), that there is no evidence of leakage information during the event window of SEO announcements. For illustration, our findings are consistent with the study of Lertsupongkit (2002) regarding the negative stock price reaction to SEO announcements, while we report no leakage of information up to 10 days before the event date (day 0), which is consistent with the study of Vithessonthi (2008). This is because we have different study periods (Lertsupongkit, 2002) and a different definition of SEOs (issuing new shares for raising capital) and the proposal to

increase the authorised common stock (PIAC, Vithessonthi, 2008 – see section 4.2.3.1). Thus, the concept of Efficient Market Hypothesis (EMH) would not be applied to SEO announcements in Thailand (no ARs before the announcement).

4.4.2 CARs by Issuing Methods

4.4.2.1 Rights Issuing (XR)

CARs of the XR firms during an event period fall gradually from the beginning of our event window (see Figure 4.1 – panel B). The value of t-statistic for the two-day announcement abnormal return is 1.80224 on announcement day (day 0) and -1.85543 on the following day (day +1) (see Table 4.10 – panel A), which are significant at a 10% level of confidence. Consequently, the stock prices react negatively to the SEO announcements when the companies issue new shares via XR. This is again consistent with our hypothesis (Hypothesis 1) and provides the same outcome as the total sample case. Our negative reaction in XR firms can be supported by a sharp fall in ARs between day -1 and day +1 (see Figure 4.1 – panel B). Furthermore, our evidence from XR firms contrasts to the research of Kang (1990), Dhatt et al. (1996) and Salamudin et al. (1999), where stock prices react positively to rights issuing announcements. Nonetheless, our findings on negative stock price reaction in XR firms are consistent with the study of Marisetty et al. (2008) on Indian firms. In addition, our results are also consistent with the studies in developed markets, such as Armitage (1998) and Balachandran et al. (2008b).

[Insert Figure 4.1 – panel B here]

[Insert Table 4.10 – panel A here]

Concerning the offering dilution, there is around 0.90% of change in the value of the firm on announcement day, with the minimum percentage of offering dilution at -13.60% (see Table 4.11 – panel A). This means that the shareholders of XR companies could lose a maximum of 13.60% in current market value. Thus, we have to reject our hypothesis of negative average offering dilution (Hypothesis 2). Since our results show a positive average offering dilution, it implies that the post-announcement equity value is greater than the equity value when the issue is announced. This is consistent with the study of Dhatt et al. (1996), who reported no effect from rights issues in Korean shareholder's wealth. In addition, the SEC's regulation (KorChor.12/2543), as previously mentioned, can be a confirmation that it helps the shareholders to have less dilution when companies issue new shares via XR. Consequently, we can claim that XR can protect the shareholders from dilution.

[Insert Table 4.11 – panel A here]

4.4.2.2 Private Placement (PP)

The movement of CARs during the event period for the companies issuing new shares by PP is similar to what was mentioned in the total sample. Although there is a substantial rise of CARs around 5 days before the announcement date, CARs continued to drop markedly until the end of the period (see Figure 4.1 – panel C). This suggests that the average two-day announcement abnormal return is negatively affected by the announcement of equity offering and is consistent with our assumption

(Hypothesis 1). This is confirmed by the significant t-statistics at -5.14867 at 1% on the announcement day and -1.69341 on the following day (see Table 4.10 – panel B). Previous studies supporting our findings on PP are rare, although some research has focused on long-term performance (i.e. Herizel et al., 2002; Krishnamurthy et al., 2005)[107]. Furthermore, in Figure 4.1 – panel C, a sharp fall in ARs around 3 days before the announcement could mean that investors can gain ARs by trading with inside information. Hence, the leakage of information remains in the PP firms. This is confirmed by a significant t-statistic at 10% on day -3 (see Table 4.10 – panel B).

[Insert Figure 4.1 – panel C here]

[Insert Table 4.10 – panel B here]

With regard to offering dilution, the 0.064% on average is shown as the loss in equity value of PP firms after the issue. This indicates that the value of firms falls by around 0.06% of the funds raised in the issuing of new shares via PP[108]. Issuing with this method (PP), the shareholders would be confronted by a maximum loss of 22.83% in current market value, which is also the maximum loss of equity value of firms in our study (among 126 firms). Moreover, issuing via PP, the post-announcement equity value of firms is the lowest among our sample size compared with the equity value on the announcement day. Consequently, with a negative average offering dilution, we are unable to claim that issuing via PP can protect the shareholders from dilutions. In addition, the regulation (KorChor.12/2543) only considers the XR case for dilution.

[107] These two studies will be explained in further detail in the "Post-Issuing Performance" chapter (Chapter 6) later in this thesis.
[108] This explanation is based on Asquith and Mullins (1986).

Issuing with PP is similar to having new investors who become new shareholders, generally causing dilution for the existing shareholders. Therefore, our hypothesis (Hypothesis 2) is consistent with our findings in this section.

[Insert Table 4.11 – panel B here]

4.4.2.3 Stock Dividend (SD)

The results from the effect of the category announcement show that the trend of CARs during the event period is similar to that shown in the total sample and XR, with a substantial decline from the beginning until the end of the period (see Figure 4.1 – panel D). Statistically, the two-day announcement abnormal returns (revealed at -0.02759) are significant with the t-statistic at -2.33303 on the announcement day and -2.46389 on the following day (see Table 4.10 – panel C). These suggest that the stock prices of the firms issuing via SD are negatively affected by the announcement. This is consistent with our hypothesis, as a negative effect of the stock price on the SEO announcement (Hypothesis 1). Moreover, if we closely consider the graph in Figure 4.1 – panel D, it is clearly seen that the average ARs in SD firms appear to have the lowest value within the event window in comparison with those shown in the total sample of XR and PP companies. The AR graph also highly fluctuates prior to the announcement, including a sharp drop in ARs around day +1. However, our findings are slightly different to the study of Aydoğan and Muradoğlu (1998), which reports no significant price reactions to the implementation of stock dividend and rights offering when the market is mature (i.e. in the more recent period of 1991 to 1993).

[Insert Figure 4.1 – panel D here]

[Insert Table 4.10 – panel C here]

Regarding the offering dilution, the companies issuing new shares with SD reveal 0.06% of change in the equity value of the firm on announcement day. The maximum offering dilution that impact on the shareholders is 8.69%, meaning that they will lose THB8.69 if the firm raises THB100 in new equities (Asquith and Mullins, 1986). According to the results provided in Table 4.11 – panel C, issuing with SD provides a greater equity value in the post-announcement than the announcement value. This is shown by a positive average offering dilution, which is inconsistent with our hypothesis (Hypothesis 2). Consequently, issuing via SD can help the shareholders to have less dilution. Nevertheless, with 0.06% of average offering dilution, there appears to be a marginal change in the equity value after the SEO announcements in the SD firms.

[Insert Table 4.11 – panel C here]

4.4.2.4 Public Offering (PO)

Issuing new shares via PO is applied less in Thailand, especially during our study period of 1999 to 2006. We have only two companies in our sample size (126 firms) and therefore we will omit these in our statistic tables (Table 4.10 and 4.11). CARs fall gradually during our event window, while there is a small reaction of ARs between day -1 and day +1 (see Figure 4.1 – panel E). The t-statistic is 0.90186,

which is insignificant on the day of announcement[109]. Thus, according to this finding, we claim that there is no abnormal return on the announcement day of SEO, which is inconsistent with our hypothesis (Hypothesis 1). In addition, our results from PO firms are different to our previous issuing methods (namely, XR, PP and SD), including the existing literature (e.g. Denis, 1994; D'Mello et al., 2003). Nonetheless, our results provided here may not be reflected in practice for the PO firms in Thailand, since we have only two companies. Therefore, the PO firms in our case are mainly for comparison with the other issuing methods in our sample size. Depending only on the performance of these two companies, around 0.45% is shown to be the average offering dilution for PO firms. This means the shareholders can lose, on average, 0.45% of current market value. As a result, it is consistent with our hypothesis (Hypothesis 2 – no rejection).

[Insert Figure 4.1 – panel E here]

4.4.3 Robustness of CARs

Omitting the case of PO, we noticed from the evidence provided in sections 4.4.1 and 4.4.2 that there were some information leaks before the SEO announcements. These are confirmed by the significant t-statistics at all cases (namely, total sample, XR, PP and SD – see Tables 4.10 and 4.11). In order to consider this leakage more, Elton et al. (2003) and Seiler (2004) suggest expanding the event window to cover this leakage period in the event study framework. Hence, we consider extending our event window

[109] The two-day announcement abnormal return is 0.00585 and the t-statistic on the day following announcement is -0.03022.

for another 15 days in order to cover the leakage period in our study. As a consequence, we have a new event window for the robustness of CARs of 30 days before and after the event date (61-day event window).

[Insert Figure 4.2 here]

[Insert Table 4.12 here]

The evidence on the announcement day reveals that when the total sample and three subsamples are considered separately, we have significant t-statistics at 1% (for the total sample and PP) and 10% (for the XR and SD) – see Table 4.12. These imply that the leakage of information remains in these three subsamples, leading to the consistency of Hypothesis 1. In other words, the ARs are not equal to zero in the two-day announcement period, allowing the investors to gain the ARs. The graphs of CARs decline gradually in the total sample case, while showing a marked fall in all cases for our 61-day event window (see Figure 4.2 – panel A to D). Thus, our evidence from the 61-day event window is consistent with our earlier examination, since investors were able to use insider information to invest when the companies issued new shares between 1999 and 2006 in Thailand.

In addition, the results in our robustness 61-day event window confirm our prior findings (with the 31-day event window), that there is leakage of information when we consider a larger event window (i.e. ±30 days). These cause t-statistics around day -20 to be highly significant (see Table 4.12). Since the investors can gain abnormal

returns before the SEO announcements (i.e. between day -22 and day -19 in most cases of our study), we could give two reasons: (1) information is leaked prior to the announcement and (2) there are other external factors which impact on stock prices. These external factors are, for instance: the current situation at that time (i.e. the political situation), interest rate, exchange rates, the economic figures (i.e. GDP and growth rate announced by the Bank of Thailand) and the global situation. Supporting this, the Kasikorn Research Centre (2002)[110] indicates that although the correlation between the SET Index and the Dow Jones Index (DJIA) is lower than 1.00 and lower than other markets in the region (except the Korean and the Japanese), the movements of DJIA cause an impact on the Thai stock market. This is because if the DJIA increases, the SET Index can increase slightly in comparison with the markets with which they have a close correlation to the DJIA. In contrast, if the DJIA decreases, the investors can transfer their investments to the Thai stock market in order to diversify them. This is because the SET Index may not decline as much as the DJIA. As a consequence, in order to have considered more closely the SEO announcements and the examination of information leakage in Thailand, a small event window is preferable, i.e. ±15 days and ±10 days.

4.4.4 Determinants of CARs

4.4.4.1 Total Sample

In order to consider whether those three issuing methods have any influence on the two-day announcement abnormal return, we include dummy variables of the three

[110] Kasikorn Research Centre (2002). **SET Index and the Risk of Recession (**in Thai). Vol. 8 Issue 1345, available from the CD-Rom of Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/K-Econ%20Analysis/Pages/ViewSummary.aspx?docid=3663 [Accessed 15 March 2011].

issuing methods in the regression of total sample. The outcomes are displayed in Table 4.13.

[Insert Table 4.13 here]

According to the statistical results, size, market-to-book and ownership are those variables that are significant. This means that they influence the SEO stock price reaction, confirming that our Hypotheses 3, 4 and 8 remain unchanged (no rejection). These findings are also consistent with the previous studies of emerging markets, that size and market-to-book (as a growth of firms) and ownership can interpret the expected returns (e.g. Demirgüc-Kunt, 1992; Claessens et al., 1995; La Porta et al., 1999; Barry et al., 2002). In addition, our evidence in Table 4.13 shows that issuing methods, such as rights issuing (XR) and stock dividend (SD), affect the SEO stock price reaction. This is confirmed by the significant coefficients in both XR and SD and they are negatively related to the two-day announcement abnormal returns. Subsequently, the regression as a whole appears to fit well with our data (reported with R-square (R^2) at 0.336364 and adjusted R^2 at 0.206006). Although the standard error of TURNOVER is slightly higher than the other variables (at 1.424725), it should not be a major concern based on the suggestion of multicollinearity in Brooks (2008)[111]. One reason is that our explanatory variables are still significant.

[111] Brooks (2008) claims that the multicollinearity in the regression can remain but we ignore it for two reasons: (1) regression looks good as a whole but individual variables are insignificant and there is a high standard error and (2) the regression becomes very sensitive to a small change.

Concerning the variance-covariance matrix for the total sample, most of the variables are not closely correlated. We make the assumption that if any variables are correlated greater than 0.5 (or 50%), they could have a problem of near multicollinearity in the regression. However, the percentage of correlation between LEVERAGE and ROA (as a proxy of operating performance) has fallen into our assumption of multicollinearity at approximately -54.60% (see Table 4.13 – panel A). According to Brooks (2008, pp.173-174), several suggestions have been offered in order to cope with this multicollinearity problem: e.g. drop one variable which closely correlates or increase the sample size. The latter solution is impossible in our case, because we have already collected all of the data relating to SEOs with common stock issuing companies from 1999 to 2006. Turning to the suggestion of dropping one variable, the question arises as to whether it is possible to follow this. If one of these two variables is excluded from our regression, we will lose our intention to estimate the determinants of SEO stock price reaction. This is because we have realised from our literature survey (e.g. Glen and Singh, 2004; Lyandres et al., 2005; Bulter and Wan, 2006) that both leverage and operating performance (measured by ROA in this case) might impact significantly upon security prices. Some studies in Thailand (i.e. Limpaphayom and Ngamwutikul, 2004) have also made the analysis with regard to the operating performance of SEO firms.

[Insert Table 4.14 – panel A here]

As already noted, operating performance refers not only to proxies by ROA, but also to other proxies used to capture the operating performance, such as return on equity

(ROE), earnings before interest, tax, depreciation and amortisation (EBITDA) and the ratio of earnings before interest and tax (EBIT) to total asset[112]. Some existing works which applied ROE, EBITDA or EBIT as a proxy of operating performance have been discussed in our earlier literature survey chapter, such as Rajan and Zingales (1995), Wald (1999), Elashker and Wattanasuwannee (2000) and Glen and Singh (2004). Thus, in order to keep these two explanatory variables in our estimation, we consider changing the proxy of operating performance. The main reason is to avoid a high correlation between ROA and LEVERAGE. Since the other variables (i.e. size, market-to-book and turnover ratio) are not highly correlated (the percentages are lower than 50%), there is no need to change the proxy for other variables. Nevertheless, we will consider the case of changing the proxy of operating performance as the robustness. This is because the percentage of correlation between ROA and LEVERAGE only exceeds the assumption by 5%. Hence, there should not be much difference in the outcomes, compared with the case where the percentage is, say, 80%. As a result, we found that ROE has similar correlations to other variables when ROA is employed. When EBITDA is applied, all percentages of correlations are below 50%, meaning that there is no multicollinearity in our regression.

Moreover, we will make a further examination of whether the market is sensitive to a small change, e.g. by changing the proxy of operating performance. If the results are the same, we can state that they are robust, even if the proxy is changed. We can also suggest that EBITDA would be a better proxy for operating performance in Thailand.

[112] EBITDA is stated to be an indicator of a company's financial performance. It is also a good metric to evaluate profitability but not cash flow. ROE is useful for comparing the profitability of one company with that of other firms in the same industry. This information refers to: http://www.investpedia.com/terms, [Accessed on 18 November 2009].

This is because it is clearly free from multicollinearity and provides our regression best fit with the data.

4.4.4.2 Rights Issuing (XR)

Having excluded some companies in pursuing the concept of a balanced panel, there are 28 firms left that use XR as their issuing method. With the variance-covariance matrix of all our variables under 28 sample sizes, we realise that high correlation remains in leverage ratio and ROA at -0.56752 (see Table 4.14 – panel B). As a consequence, there is a possibility of multicollinearity in the regression. However, we will examine this with the different proxy for operating performance (instead of ROA) in our robustness section. We claim the same reason as indicated in the total sample case (see section 4.4.4.1); roughly, it is not as high as 80%. Following the suggestion of Brooks (2008), we use the concept of simple pooling data in order to expand the sample size[113]. Moreover, pooled data were obtained not only to eliminate the multicollinearity problem; we need to increase our sample size as 28 firms can be seen as a small sample according to statistical theory (sample size is less than 30). Having pooled the data, the variance-covariance matrix with DXR as the only dummy variable is reported in Table 4.14 – panel A. The outcomes, which were controlled for the heteroscedasticity problem by using White Heteroscedasticity-Consistent Standard Errors and Covariance, are shown in Table 4.15 – panel A.

[Insert Table 4.14 – panel B and Table 4.15 – panel A here]

[113] The complete sample of companies issuing with XR cannot be expanded as this is the only sample size available.

The evidence in Table 4.15 – panel A reveals that size, market-to-book and ownership have significant coefficients. This implies that these three factors affect the SEO stock price reaction, the same factors as we found in the total sample. Our Hypotheses 3, 4 and 8 are also consistent. Alternatively, we can confirm that our preliminary expectations (see Table 4.3) were correct for these three factors in the case of SEO in Thailand. Nonetheless, we could have a contrasting explanation of those variables, which shows no impact on SEO stock price reaction, compared with the characteristic of the Thai capital market in practice. For instance, in the case of liquidity (proxy by TURNOVER), issuing via XR, it should be more certain that their new issued shares would be exercised. This is because they issue to existing shareholders, who are part of the firms. Consequently, rights should be easily exercised and the incomes used to finance the companies. In other words, XR should have high liquidity. As a result, liquidity would be a major part of issuing new shares with XR.

4.4.4.3 Private Placement (PP)

Pursuing the concept of balance panel, we need to exclude some firms, leaving only 26 companies issuing new shares with PP. The outcomes are displayed in Table 4.15 – panel B with a control of the heteroscedasticity problem. We pooled the entire sample of 68 companies into the regression and included the dummy variable of the PP method because of a small sample of PP after collecting the data of independent variables, based on a basic statistical theory[114]. The correlation between leverage ratio and ROA seems to be free from multicollinearity at approximately -0.4823, lower than 0.50 as per our assumption (see panel C of Table 4.14), while the correlations

[114] It is assumed that if the number of sample (n) is less than 30, it is said to be a small sample.

after pooled data are shown in Table 4.14 – panel A, with DPP as the only dummy variable. The consequences reveal that size; market-to-book and ownership are again significant, implying that they do affect two-day announcement abnormal return. In other words, Hypotheses 3, 4 and 8 remain. The R^2 and adjusted R^2 are slightly higher than in the case of XR at 0.3294 and 0.2254, respectively.

[Insert Table 4.14 – panel C and Table 4.15 – panel B here]

Nevertheless, the remaining insignificant factors (e.g. LEVERAGE, ROA and TURNOVER) should also influence SEO stock price reaction when issuing new shares via PP in practice. For the PP method, there is more than the certainty of newly issued equities to be exercised in comparison with XR. Some institutional investors who have been given the rights to exercise the securities via PP would be eligible for "co-equal benefit". This means that they may have some deals or agreements with the firm's management team in order to be a part of the company. Companies themselves also need those institutional investors to help in driving their businesses and performance[115]. Thus, the factors which relate to the firm performance (i.e. LEVERAGE, ROA, TURNOVER and P/E) should also impact on the SEO stock price reaction. As a result, when those institutional investors are willing to exercise

[115] This can also link to political reasons. For example, the institutional investors may have connections with the political parties who are in the coalition government. Subsequently, any projects which need to be approved by the government could be easier and faster.

and the companies are willing to have them, newly issued equities easily turn to income for financing the firms[116].

4.4.4.4 Stock Dividend (SD)

The sample size of 16 firms is admittedly a small sample. We use the concept of pooled sample with a dummy variable of SD issuing method. Having pooled the sample, we also reduce the possibility of multicollinearity in the regression (see Table 4.14 – panel A, with only DSD as dummy variable) since there are high correlations among LEVERAGE, ROA and P/E (see Table 4.14 – panel D). We include the White Heteroscedasticity-Consistent Standard Errors and Covariance estimation to control the heteroscedasticity problem (see Table 4.15 – panel C).

[Insert Table 4.14 – panel D and Table 4.15 – panel C here]

Our findings show that the same factors (namely size, market-to-book and ownership) are significant at 1% (for size) and 5% (for the last two). This implies that these three factors influence the SEO stock price reaction, causing our Hypotheses 3, 4 and 8 to remain unchanged (no rejection). Moreover, our outcomes are consistent with all the cases examined earlier (total sample, XR and PP) and the existing literature on emerging markets, as previously pointed out in section 4.4.4.1 (e.g. Claessens et al., 1995; La Porta et al., 1999; Rouwenhost, 1999; Claessens et al., 2000). Nevertheless, although there are some variables that are insignificant (i.e. TURNOVER and P/E),

[116] In practice, with real trading in the SET, there are some interesting features regarding the PP in Thailand. The study in this particular area (in depth) is beyond our scope and will be specified in Chapter 7 as a subject for future research.

this evidence is also consistent with previous studies; for instance, no relationship between expected returns and turnover (Rouwenhost, 1999) and a positive relationship between average return and P/E ratio (Fama and French, 1998).

4.4.4.5 Robustness

We chose to conduct the robustness tests in several ways in order to support our evidence in a previous section on the determinants. We investigate two tests of robustness: (1) using different proxies to measure the operating performance and (2) applying the logarithm to transform some explanatory variables. First, having realised that operating performance can be captured by other proxies rather than ROA, we expanded our study to make it slightly more comprehensive by attempting to obtain those other proxies as our robustness. With the different proxies, we could have a lower percentage of correlation between LEVERAGE and ROA (as a proxy of operating performance). This leads to a 100% free multicollinearity in the regression. Therefore, when we considered using ROE and EBITDA instead of ROA, the sample size for the estimation in the regression fell from 68 to 63 and 62 companies, respectively, according to the concept of balanced panel. The results in which ROE and EBITDA were used separately are shown in Table 4.16.

[Insert Table 4.16 here]

For ROE, the correlations between variables are similar to those presented in the case of ROA. The percentage of correlations between LEVERAGE and ROE (as a proxy

of operating performance) remains greater than 0.5, referring to a high correlation, identical to our previous case of ROA. With only 4% of the percentage of correlations that exceed the limitation (at 0.5), instead of a very high percentage (say 80%) as previously explained[117], our results report with more significant variables. Besides size, market-to-book and ownership, LEVERAGE and ROE are another two factors which are significant in the total sample (see Table 4.16 – panel A). These refer to the fact that our Hypotheses 5 and 7 are correct. Furthermore, the significance results vary slightly when issuing methods are individually considered. LEVERAGE will influence SEO stock price reaction when the firms issue new shares via PP and SD, while it shows no impact on the two-day announcement abnormal return (the dependent variable) when issuing via XR (see Table 4.16 – panel B, C and D). Although P/E is our control variable, it starts to have an effect on SEO stock price reaction in the PP firms (see Table 4.16 – panel C). The significance of ROE in our case is also consistent with the study of Denis (1994), who reports on ROE influence on the SEO stock price reaction. Although the evidence of using ROE as the proxy of operating performance provides many significant results (particularly in PP firms, similar to our initial expectation – see Table 4.3), the regression is not 100% free from multicollinearity.

For EBITDA, the variance-covariance matrix demonstrates the correlations among the variables without a sign of multicollinearity. In other words, all the percentages of correlations among the variables are lower than 50% (at 0.5), as mentioned. According to our findings with EBITDA, there are three significant variables in all

[117] The actual figure of variance-covariance matrix in the case of ROE is -0.532883.

cases, regardless of the intercept. These are size; market-to-book and ownership (see Table 4.16). Thus, our Hypotheses 3, 4 and 8 are on hold (no rejection). In comparison with the results when ROA is obtained as the proxy of operating performance, we notice that the same variables influence the SEO stock price reaction. Moreover, the values of R^2 are higher than those reported in the case of ROA (e.g. see Tables 4.10 and 4.11) in all cases. Consequently, using EBITDA as a proxy of operating performance could lead to better results in our examination of the determinants of SEO stock price reaction.

Nevertheless, we notice one interesting finding by changing the proxy of operating performance in our regression. This can be seen when we apply ROE, instead of ROA, as a proxy of operating performance. Our results become significant in several variables (namely size, market-to-book, leverage, ROE, P/E and ownership) although the correlation between ROE and LEVERAGE is high (greater than 0.5), identical to the case of ROA. In other words, since either ROA or ROE is highly correlated to LEVERAGE (which will lead to multicollinearity), the results are differently reported, in terms of the number of variables that are significant. Subsequently, when EBITDA is applied, the results are the same as when ROA is used. As a result, we suggest that the Thai capital market appears to be sensitive to small changes.

Our second robustness test transforms the explanatory variables by adding a logarithm to them. We claim the reason for transferring these variables is to adjust some variables to have elasticity in their coefficients. The variables to be examined are: size (ln(size): LSIZE), turnover ratio (ln(TURN): LTURN) and ownership (ln(1+OWN):

LOWN). The definitions before their transformation still refer to those in Table 4.5. Transforming these explanatory variables (namely size, turnover and ownership) by applying the logarithm is similarly used in the research of others, such as Eckbo and Masulis (1992), Wiwattanakantang (1999), De Groot and Verschoor (2002), Chen (2004) and Limpaphayom and Ngamwutikul (2004). These studies obtain the logarithm function at the beginning, when they estimate the variables in their regression, while we initially consider the variables without any transformation. Since our explanatory variables are measured with the change in their values from before the SEO to when the SEO is announced, some variables contain negative values. Regarding the concept of balanced panel, we need to reduce our sample size of the determinants section from 68 firms to 50 firms for our estimation.

The outcomes in Table 4.17 reveal that market-to-book (MB) is the only variable to be significant in the total sample and other issuing methods (when individually examined). This implies that only Hypothesis 4 requires no rejection. In PP firms, P/E is also significant, at 10%. The values of R^2 and adjusted R^2 are reduced substantially, compared with the non-transformation case (showing approximately 0.0963 for R^2 and -0.1001 for adjusted R^2, on average). Although in the variance-covariance matrix the figures report no signal of multicollinearity (confirmed by all correlations being lower than 0.5), the regression as a whole appears to have poorer outcomes than when we obtain variables without transformation. These can be supported by the lower numbers of significant variables and very low values of R^2 and adjusted R^2. Therefore, transforming the variables to have more elasticity in their coefficients does not provide any improvements in the outcomes of our study. In

contrast, it causes our findings as a whole to fit less well with the data. As a result, our evidence of transforming the variables is not robust with our previous examination (no transformation). Estimating without transformation of variables is also more preferable.

[Insert Table 4.17 here]

Aside from the above two robustness tests, there are some robustness estimations which could be applied in our study. These are: (1) controlling for the market condition around the SEO announcements and (2) taking account of inflation and the exchange rate to measure the issuing size, i.e. using a different currency – the US dollar – instead of the local currency. According to the first case, by adding another control variable in the regression, we roughly find no difference between the results in this case and those reported previously in section 4.4.4.1. With the second alternative robustness test, our issuing size (SIZE) has been measured as the ratio of market capitalisation before and after the SEOs. Therefore, adjusting the market capitalisation to the US dollar provides no change in the values we obtained for the estimation. As a result, all the outcomes remain unchanged.

4.4.4.6 Summary of the Determinants of CARs

Having examined all cases in the determinants of CARs, our evidence shows significant results in three factors, namely, size, market-to-book and ownership. Hence, these three factors demonstrate the impacts on SEO stock price reaction.

Furthermore, our findings are partly consistent with the existing literature in emerging markets, which examines the relationship between all the factors we tested and stock price reaction (see Table 4.3). These studies are, for instance, Demirgüc-Kunt (1992), Wiwattanakantang (1999) and Barry et al. (2002) for size and market-to-book, while our results on ownership are consistent with Alba et al. (1998) and Wiwattanakantang (1999). The remaining factors (i.e. leverage, ROA, P/E and turnover ratio) are suggested to have no impact on SEO stock price reactions, according to our outcomes. Nevertheless, the evidence of no influence on SEO stock price reactions is consistent with some prior studies, such as Claessens et al. (1995) for P/E and Rouwenhost (1999) for turnover ratio. Although our findings are supported by several studies (as mentioned above), we cannot confirm that our regression is 100% free from the problem of multicollinearity. Since the percentage of correlation between leverage and ROA is slightly higher than the limited level (greater than 0.5 or 50%), we could have multicollinearity in our regression.

However, when we applied some robustness tests, we found some interesting evidence. Changing the proxy of operating performance to ROE leads to several significant variables in the regression, while the percentage of correlation remains slightly higher than the limited level (50%) between ROE and LEVERAGE. This implies that multicollinearity still exists. When we change the proxy to EBITDA, we found the same results as the previous case (using ROA as the proxy of operating performance), including higher values of R^2 and adjusted R^2. In addition, there is no sign of multicollinearity in the variance-covariance matrix. Therefore, we could claim that EBITDA would be the appropriate proxy of operating performance for our

sample size. Moreover, the results from the transformation of variables report contrasting outcomes compared with the initial cases. Only market-to-book appears to be significant, with a very low value of R^2.

4.4.5 The Long-Term Stock Price Reaction

For the firm and stock market performance in the long term, we examine the period of 1 year or 240 days before and after the event (for a 481-day event, see the supporting reasons in section 4.3.2.3). Figure 4.3 – panel A reveals that CARs fell markedly during the 60 days before the announcement date, and then continued to decrease gradually. In contrast, the cumulative average market returns performed with positive values for most of the period. In other words, firms' stock return and stock market return as a whole performed totally differently from 60 days before the announcement. Our results are consistent with the hypothesis (Hypothesis 9) that stock prices responded negatively in the longer period after the SEO announcement. Nevertheless, a gradual fall in CARs after the announcement day could be impacted by other events in Thailand. Consequently, investors are unlikely to hold their equities in the long-term. Instead, they sell the stocks following a period in which the stock underperforms the market, implying that they hold the stocks for a short-term (Asquith and Mullins, 1986).

[Insert Figure 4.3 here]

When issuing methods are individually concerned, there is clearly a marked decline in CARs during the post-issuing period in the firms issuing via XR and PP (see Figure 4.3 – panel B and C). This is consistent with our initial hypothesis, that CARs move negatively in the longer event window (Hypothesis 9), similar to the total sample. Investors are likely to invest, if they wish, in the short-term rather than hold the equities for a longer period. Therefore, we have no timing pattern for the investors to sell the shares since they are trading within a short period. However, we would have a timing pattern for the SD firm. In Figure 4.3 – panel D, we could claim that investors may sell their stocks about 45 days before the announcement since CARs of firms drop sharply. This implies that the SD firms underperform the market. Investors will sell their shares and move to invest in other securities. For the PO firms (see Figure 4.3 – panel E), the results show a bias because the CARs of firms are based only on two companies. Thus, the evidence would not reflect the effect of the SEO announcement.

Regarding the examination of the relationship between short- and long-term stock price reactions, our findings are shown in Table 4.18 – panels A.1 to D.1. The results are insignificant in the total sample and when issuing methods are individually considered. This means that there is no relationship between long-term and short-term (referred to as the two-day announcement abnormal return) stock price reaction. In addition, since we noticed from the previous section that EBITDA would be the appropriate proxy of operating performance, we estimate the relationship between short-run and long-run reaction with EBITDA, instead of ROA (see Table 4.18 – panels A.2 to D.2). The outcomes remain insignificant in all cases (total sample and

different issuing methods). Therefore, our evidence is consistent with the characteristics of the Thai capital market and implies that the shorter the examination period, the better the reflection of real time market trading in Thailand.

[Insert Table 4.18 here]

4.5 Conclusions

Our evidence reveals that stock prices react negatively to SEO announcements in Thailand. This is reported in all cases of our examinations, total sample and different issuing methods. Nonetheless, our evidence demonstrates that the information is leaked before the announcement date, especially when the different issuing methods are separately examined. In the total sample case, we noticed that this leakage of information occurred in the longer period before the announcement. For instance, there is no leakage of information around 10 days prior to the announcement, while we reported this leakage around day 12 before the announcement. This can confirm our robustness findings, which consider an event window of up to ±30 days. The results show that investors can gain abnormal returns from day -19 or day -20 prior to the announcement. Furthermore, regarding the offering dilution, the firms in our sample size do not appear to suffer from the discounting in prices (or loss in equity value of firms). This is because the equity value in the post-announcement is greater than the announcement one, indicating the positive percentage of offering dilution.

Having employed a total of seven explanatory variables suggested in studies of emerging markets, together with a two-day announcement abnormal return, our findings reveal significance in size, market-to-book and ownership. This implies that these three factors affect SEO stock price reaction. The dummy variables of rights issuing and stock dividend show the impact on SEO stock price reaction when included in the regression of the total sample. With an individual examination of different issuing methods, the same variables (size, market-to-book and ownership) are significant, meaning that they influence SEO stock price reaction. These results are partly consistent with our expectations (see Table 4.3), while they are consistent with the existing literature on emerging markets (e.g. Demirgüc-Kunt, 1992; Alba et al., 1998; Rouwenhost, 1999; Barry et al., 2002). However, changing the proxy of operating performance to EBITDA as our robustness test has better consequences in terms of no sign of multicollinearity in the regression. Although we still show the significance of size, market-to-book and ownership, none of the variables are closely correlated, contrasting to the case between leverage and ROA at the beginning.

The CARs in the longer event window decline after the announcement date. This implies that investors rarely hold their equities in the long-term when the stocks underperform the market. Nevertheless, this decrease in CARs could be influenced by other events during that period. We support this with our evidence that there is no relationship between the short- and long-term stock price reactions. With an insignificant coefficient of short-term stock price reaction, this indicates that there are no degrees of mispricing that correct the stock prices to the level that they should be at in the long-run. In other words, the long-run stock price reaction would depend

mainly on the current situations or events at that time, rather than influencing the event in the short-term (which are SEO announcements in our case). This is stated to be consistent with the characteristics of the Thai capital market in practice.

Moreover, this empirical study provides various practical implications from our findings to investors and firm managers in Thailand. First, managers will realise from our evidence that they should use a suitable issuing method for their next SEOs. Since we examined each issuing method separately, the managers could establish which issuing methods have the least impact on offering dilution. Second, those investors who have access to our results relating to SEO announcements will put the stock prices into decline, no matter which issuing methods are applied. This would be significant information for the investors when making decisions about investments. Furthermore, with the determinant of SEO stock price reaction, the managers could use our findings to concentrate closely on those factors which affect the movement of security prices during SEO announcements. This could be linked to the performance of the management sector; for instance, if leverage or ROA play a substantial part in the stock price movement. In addition, financial analysts could also benefit if they use our evidence in their analysis when making suggestions to investors.

In the following chapter, we will consider another point of indirect flotation cost, known as the “underpricing” of SEOs in Thailand.

Table 4.1: Summary of existing literature on stock price reaction in emerging markets
The table presents summaries of the existing literature on stock price reaction. **Panel A** shows the previous studies of stock price reaction within the Asian-Pacific Region. **Panel B** shows the previous research into stock price reaction in other emerging markets around the world.

AUTHORS	MARKETS	PERIOD	SAMPLE	OBJECTIVE	FINDINGS
Panel A: Literature in Asian-Pacific Region					
Kang (1990)	Korea	1983 – 1987	89	To examine the existence of ARs over the period of announcing rights issues and to analyse possible determinants of ARs if they exist.	An increase of stock price with rights issues announcements is higher than the average change of the market portfolio.
Demirgüc-Kunt (1992)	Korea Malaysia Thailand	1983 – 1987	669 282 214	To investigate the impact of emerging stock markets on the financing patterns of developing country corporations.	Stock market development relates to many factors, e.g. size, growth, profitability and valuation.
Claessens et al. (1995)	20 emerging mkts, e.g. Indonesia Korea Malaysia Taiwan Thailand	1986 – 1993	96 monthly observations for each country	To examine the cross-sectional patterns of returns and the effect of a number of risk factors on asset returns.	No relationship between beta (β) and returns when size, P/E ratio and market-to-book are included in cross-sectional regression.
Fama & French (1998)	Mkts outside the U.S.: Japan Hong Kong Singapore	1974 – 1994	 325 39 50	To present out-of-sample evidence on the value premium.	The higher the book-to-market equity, earning-to-price and cash flow-to-price, the higher the average returns.
Rouwenhost (1999)	20 emerging mkts, e.g. Indonesia Malaysia The Philippines Taiwan Thailand	1982 – 1997	 114 184 58 119 120	To examine the source of return variation in emerging stock markets.	The explanation of change in expected returns could be driven by size and book-to-market ratio.

AUTHORS	MARKETS	PERIOD	SAMPLE	OBJECTIVE	FINDINGS
Salamudin et al. (1999)	Malaysia	1980 – 1995	72	To measure average ARs around the event dates of rights issues and to investigate possible reasons to explain why a positive announcement effect is found.	Economic conditions influence the SEO announcement effects with rights issues, e.g. lower issue costs, lower dilution of shareholding and higher funds being raised.
Barry et al. (2002)	35 emerging mkts, incl. Taiwan Indonesia Malaysia The Philippines Thailand	1985 – 2000	N/A	To examine the robustness of size and book-to-market effect in 35 merging equity markets.	The motivation of using relative size is done by considering whether the emerging markets are fully integrated with global capital markets.
Claessens et al. (2000)	Hong Kong Indonesia South Korea Malaysia The Philippines Singapore Taiwan Thailand	1996	2,980	To examine the separation of ownership and control in nine East Asian countries.	Inside shareholders are able to have a powerful right to control the sample companies.
Brown et al. (2008)	Hong Kong Korea Singapore Taiwan	1990 – 2005	N/A	(1)To analyse both value strategies and momentum strategies in combination and (2) to evaluate the respective returns to value and momentum investment strategies at the regional level.	There is a possibility to focus on low capital, low liquidity, low price stocks and retain a sufficiently large number of stocks.
Panel B: Literature in other emerging markets					
Aydoğan & Muradoğlu (1998)	Turkey	1988 – 1993	109	To make an empirical analysis of the amount and implementation of rights issues and stock dividends in Turkey, including examining the efficiency of the Turkish market with regard to this information set.	Positive reactions in the initial phase (1988-1990), while no significant reaction during the second phase of the market (1991-1993).

AUTHORS	MARKETS	PERIOD	SAMPLE	OBJECTIVE	FINDINGS
La Porta et al. (1999)	27 emerging mkts, e.g. Argentina Greece Portugal	1995	N/A	To find more evidence on the ownership patterns of large publicly traded firms in different countries.	Ownership structure plays an important role in corporate finance and these firms are controlled by the controlling shareholders, who usually come from the same family.
Chen (2004)	China	1995 – 2000	77	To develop some preliminary groundwork on which a more detailed evaluation could be based.	The profitability of Chinese listed firms is negatively related to the debt (leverage).
Mishra (2007)	India	1999 – 2005	180	To examine the market effect of stock splits on stock price, return, volatility and trading volume around the split ex-dates.	A negative effect on price and return of stock splits drives down the wealth of the shareholders.
Dhar & Chhaochharia (2008)	India	Apr. 2001 – Mar. 2007	90 splits 82 bonus issues	To examine the effects of stock splits and bonus issues.	There is a positive relation of stock splits announcement and security return.
Dasilas (2009)	Greece	2000 – 2004	216	To investigate the stock price and trading volume response to dividend distribution announcements.	Market reaction is statistically significant on the dividend announcement day.

Table 4.2: Summary of the percentage of sample coverage compared to existing Thai SEO literature
The table presents summaries of existing studies of Thai SEOs and the calculation of sample coverage as a percentage of the relevant sample obtained in previous research in Thailand during the same study period (1999 to 2006).

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Jirasetthakulchai (2000)	Thailand	1977 – 1997	65	N/A	To examine the effect of dividend announcements on public offering of equity.	The larger the firm size, the more negative ARs from equity offering.
Prangthawat (2002)	Thailand	1996 – 2000	115	Sample comprises 60 firms between 1996 and 2000, coverage at 52.17%.	To investigate whether earning management and the timing of SEOs can explain subsequent poor performance	Negative relationship between discretionary accruals and operating performance of firms after SEOs.
Lertsupongkit (2002)	Thailand	1994 – 2001	59	Sample comprises 74 firms between 1994 and 2001, coverage at 100.00%.	To examine the stock price reaction to the announcement of SEOs.	Negative stock price reaction after the SEO announcements.
Ngamwutikul (2002)	Thailand	1991 – 1994	62	N/A	To examine operating performance in SEO firms during the pre- and post-offering periods.	Poor operating performance after the SEOs of sample firms, measured by three proxies: ROA, ROE and Tobin's q / The asymmetric information in Thailand remains the major impact on operating performance.
Limpaphayom & Ngamwutikul (2004)	Thailand	1991 – 1994	62	N/A	To examine the post-issue operating performance.	More shares are offered when the expectation of operating performance is worse / Future prospects of issuing firms are signalled by using issue proceeds.
Vithessonthi (2008)	Thailand	1997 – 2006	115 (only non-financial firms)	Sample includes 173 firms between 1997 and 2006, coverage at 100.00%.	To examine the changes in the authorised common stock (PIAC) and how it can affect stock prices.	PIAC, on average, conveys information to the market / The larger the firm that announces a PIAC, the lower the CAR around the announcement.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
This study	**Thailand**	**1999-2006**	**126**	**N/A**	**To examine the stock price reactions to SEOs and the determinants of SEO stock price reaction.**	**Expecting a negative stock price reaction to SEO announcement and the factors under review to influence the SEO stock price reaction.**

Table 4.3: Previous evidence of the relationship between stock price reaction and factor influence in emerging markets
The table shows previous evidence of the relationship between stock price reaction and factor influence in emerging markets, particularly Thailand, and the expectations from the authors of each factor. (0) indicates no relationship between stock price reaction and factors tested. (-) signifies a negative relationship. (*) identifies the factors estimated in the study, but refers only to the relationship between stock price reaction and each factor – no specific sign.

Authors	Factors Estimated in Thailand						
	Size	Market-to-Book	Leverage	Operating Performance	Price-Earnings Ratio	Ownership	Liquidity
Demirgüc-Kunt (1992)	*	*		*			
Claessens et al. (1995)	0	0			0		
Nittayagasetwat & Withisuphakorn (1997)							*
Alba et al. (1998)						*	
Rouwenhost (1999)							0
Wiwattanakantang (1999)	*						
Claessens et al. (2000)						*	
Barry et al. (2002)	*	*					
De Groot & Verschoor (2002)	0	0					
Limpaphayom & Ngamwutikul (2004)			-	-		-	
Our Expectations	*	*	*	*	*	*	

Table 4.4: Descriptive statistics for SEOs in Thailand during the study period 1999 to 2006

The table shows descriptive statistics for SEOs in Thailand in two panels. **Panel A** shows the summary of the number of firms in each category. 'Events' concern other events of interest besides the SEO announcement, i.e. dividend announcements, announcements of financial statement and the submission of required forms to the Stock Exchange or Securities Exchange Commission (SEC) to fulfil the regulations. **Panel B** shows the descriptive statistics of the companies' newly issued shares by common stock via each issuing method, namely rights issuing (XR), private placement (PP), stock dividend (SD) and public offering (PO), during the study period. The companies represented in each category are shown in parentheses, with their full names shown in Appendix 3. The firm size is defined as the market capitalisation in millions of Thai Baht (the exchange rate at THB33.50:USD1.00). The age of each firm is obtained from the number of months since the company first traded in the market until the offering month. The average daily returns are the average of daily returns during the study period (1999 – 2006) obtained from the SETSMART. The average ownership is measured by the average of the top five major shareholders in the offering year. The average turnover ratio is taken directly from SETSMART during the study period (1999 – 2006). Industrial groups are the groups shown in the SET Index, containing (apart from financial ones) the Agro and Food Industry (AGRO), Consumer Products (CONSUMP), Industrials (INDUS), Property and Construction (PROPCON), Resources (RESOURC), Services (SERVICE) and Technology (TECH).

PANEL A

Descriptions	Common Stock Issuing				
	XR	**PP**	**SD**	**PO**	**TOTAL**
Number of firms to be used for estimation	53	52	22	2	**126**
Firms with events around SEOs	20	20	16	1	**56**
Firms without events around SEOs	33	32	6	1	**70**

Note: The total sample includes the companies which have issued new shares via warrants.

PANEL B	Total Sample	XR	PP	SD	PO
Average Size	8,334.42	7,608.75	10,627.94	2,227.51	32,880.78
Maximum Size	176,237.72 (ADVANC)	93,552.06 (PTTCH)	176,237.72 (ADVANC)	23,488.28 (CPF)	64,416.73 (THAI)
Minimum Size	71.07 (NEW)	71.07 (NEW)	122.35 (SORKON)	122.35 (SORKON)	1,344.84 (S&P)
Average Age (months)	100	101	94	109	146
Average Daily Returns	0.00606	-0.00030	-0.00018	-0.00082	0.00033
Average Ownership	10.93945	10.86675	10.46116	12.42480	11.82200
Average Turnover Ratio	0.00523	0.00462	0.00742	0.00427	0.00080
Number of Firms in each Industrial Group:					
AGRO	20	6	6	8	1
CONSUMP	13	7	4	2	-
INDUS	21	9	7	5	-
PROPCON	26	12	14	1	-
RESOURC	8	2	5	1	-
SERVICE	24	11	8	4	1
TECH	14	6	7	1	-
TOTAL	**126**	**53**	**52**	**22**	**2**

Note: There are three companies, ITD, KTP and SORKON, utilising two different issuing methods at the same time (XR and PP for the first two, and PP and SD for SORKON). Thus, the total sample will not equal 126 firms exactly.

Table 4.5: Lists of variables, definitions and data sources of each variable

The table shows the lists of explanatory and control variables with their definitions, as used in our examination. Data sources of each variable are also mentioned. SETSMART refers to the SET's Market Analysis and Reporting Tool (the database of the SET).

Explanatory Variables	Definitions	Sources
Issuing Size (SIZE)	The ratio of market capitalisation (million Thai Baht – THB33.50:USD1.00) on day +1 and day 0	SETSMART
Market-to-Book (MB)	The change in market-to-book ratio is defined as the difference in the market-to-book ratio in the year of issuing and the average 3 years of this ratio before the year of offering	Thomson One Banker
Leverage Ratio (LEVERAGE)	The calculation of this ratio after obtaining total debt (total liability) and total asset from the companies' financial statements (Eckbo and Masulis, 1995). Change in leverage ratio is defined as the difference between leverage ratio in the year of issuing and average leverage ratio 3 years before the issue year.	Thomson One Banker
Operating Performance (ROA, ROE or EBITDA)	The difference between ROA, ROE or EBITDA in the offering year and average ROA, ROE or EBITDA for 3 years before the year of offering.	Thomson One Banker
Price-Earning Ratio (P/E)	The change in P/E ratio is defined as P/E ratio in the issued year minus average P/E ratio 3 years before the issuing year.	Thomson One Banker
Turnover Ratio (Liquidity) – (TURN or TURNOVER)	Our turnover ratio is defined as a ratio that measures trading volume in comparison to the number of shares outstanding. It is calculated by 11 months, ending one month before the offering month.	SETSMART
Inside Ownership (OWN)	This is measured in percentage, following Limpaphayom and Ngamwutikul (2004). It is also calculated as the difference between the top five largest shareholders in the year of offering and the average of the top five largest shareholders 3 years before the issuing year.	SETSMART
Other events (EVENTS)	'Events' refer to events other than SEOs during the period of 115 days before and after the SEO announcement (day 0). These events include dividend announcements, financial statements or financial performance announcements, and the submission of forms to either the Stock Exchange or Securities Exchange Commission (SEC), according to the regulations.	SETSMART

Note: SETSMART is basically the SET's database which provides the data from the stock exchange online for general investors and other interested parties. SETSMART covers five fundamental areas which are usually considered by analysts and investors: (1) Company Information, (2) Historical Trading Prices, (3) Company News, (4) Key Statistical Data and (5) Key Financial Data and Financial Ratios. However, SETSMART (principal version) is limited to historical data for a maximum of only 5 years, based on the rolling period of the first access into the system. We had to make a special and private request directly to people in the SET and the brokers in order to obtain the data since the establishment of SET in 1975 via their SETSMART (intranet version – for brokers).

Table 4.6: Summary of number of firms available for the regression

The summary of the number of firms available for the regression part, together with those which are available in each explanatory variable are obtained in the regression. **Panel A** shows the number of firms available for the regression analysis. **Panel B** shows the number of firms available in each explanatory variable and the data sources taken. SIZE refers to the ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). Market-to-Book (MB) is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. Leverage ratio (LEVERAGE) is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. Return on Asset (ROA) refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. Return on Equity (ROE) is measured as the change in ROE calculated by the change between ROE in the offering year and average ROE for 3 years before the year of issuing. EBITDA is earning before interest, tax, depreciation and amortisation, and is implied as the change in EBITDA: the difference between EBITDA in the issuing year and the average of EBITDA 3 years before the offering year. Price-Earnings Ratio (P/E or P_E) is defined as the change in this ratio: P/E ratio in offering year minus average 3 years P/E ratio before the issuing year. Turnover ratio(TURNOVER) is based on the daily trading volume and number of shares outstanding calculated by an average of 11 months ending one month before the issuing month. Insider Ownership (OWN) is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. EVENTS refer to the dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date, and equal to zero otherwise. SETSMART refers to the Stock Exchange of Thailand (SET)'s database, representing SET's Market Analysis and Reporting Tool.

PANEL A

Descriptions	Common Stock Issuing				
	XR	PP	SD	PO	**TOTAL**
Number of firms to be used for estimation	28	26	16	-	**68**
Firms with events around SEOs	11	11	11	-	**32**
Firms without events around SEOs	17	15	5	-	**36**

Note: We are concerned with only three methods of issuing: rights issuing, private placement and stock dividend, in the regression analysis. However, the fourth issuing method, public offering, refers to two companies which were excluded from our 68 firms when estimating the regressions, owing to unavailable data of ownership.

PANEL B

Explanatory Variables	Number of Firms	Sources
Size	126	SETSMART
Market-to-Book	79	Thomson One Banker
Leverage Ratio	83	Thomson One Banker
Return on Asset (ROA)	73	Thomson One Banker
Price-Earning Ratio (P/E)	79	Thomson One Banker
Return on Equity (ROE)	68	Thomson One Banker
EBITDA	72	Thomson One Banker
Turnover Ratio	115	SETSMART
Insider Ownership	111	SETSMART
Events (1)	70	SETSMART
Events (0)	103	SETSMART
TOTAL	**68**	

Note: The 68 firms are the total number of firms which had available data during the period mentioned for every explanatory variable in our case. In addition, we obtained only ROA as the operating performance and excluded ROE and EBITDA.

Table 4.7: The two-sample t-test of sample size and average two-day announcement abnormal returns
The table shows whether there are: (1) significance differences between the total sample and three subsamples and (2) any significant differences between the average two-day announcement abnormal returns. **Panel A** shows the test between the total sample of 126 firms and the different issuing methods, namely rights issuing (XR: 53 firms), private placement (PP: 52 firms) and stock dividend (SD: 22 firms). **Panel B** shows the tests between the total sample applied in the estimation of determinants between the total sample of 68 firms and three different issuing methods concerning the concept of balanced panel (XR: 28 firms, PP: 26 firms and SD: 16 firms). **Panel C** shows the test significant difference between the two-day announcement abnormal returns in total sample (126 firms) and in three issuing methods, namely rights issuing (XR: 53 firms), private placement (PP: 52 firms) and stock dividend (SD: 22 firms). The two-day announcement abnormal returns are calculated on the day of the announcement (day 0) and the following day after the announcement (day +1): $CAR_{i,0,+1} = AR_{i,0} + AR_{i,+1}$; where $CAR_{i,0,+1}$ is the two-day return for firm i , $AR_{i,0}$ is the abnormal return to security i on the day of announcement published and $AR_{i,+1}$ is the abnormal return to security i on the following day of the announcement. Using the two-sample t-test, the null hypothesis under this estimation indicates that there is no difference in the mean between two samples. The degree of freedom is shown in parentheses and calculated by: $\frac{\left(S_1^2/n_1 + S_2^2/n_2\right)^2}{\frac{\left(S_1^2/n_1\right)^2}{n_1 - 1} + \frac{\left(S_2^2/n_2\right)^2}{n_2 - 1}}$; where S_1^2, S_2^2 are the variance of sample 1 and 2, and n_1, n_2 refer to the sample size of sample 1 and 2.

PANEL A

	Total	XR	PP	SD
Total	**1.0000**			
XR	-0.2395 (120)	**1.0000**		
PP	0.5513 (79)	0.6867 (87)	**1.0000**	
SD	-2.8331*** (138)	-2.0839** (68)	-2.1842** (59)	**1.0000**

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

Note: There are only two firms issuing via PO (public offering), which are not worth reporting in this table.

PANEL B

	Total	XR	PP	SD
Total	**1.0000**			
XR	-0.1472 (75)	**1.0000**		
PP	0.6184 (35)	0.6979 (35)	**1.0000**	
SD	-1.9407* (82)	-1.7066* (37)	-1.5581 (28)	**1.0000**

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

Note: There are only two firms issuing via PO (public offering), which are excluded from the 68 samples following the concept of balanced panel.

PANEL C

	Total	XR	PP	SD
Total	**1.0000**			
XR	-0.2772 (108)	**1.0000**		
PP	-0.0654 (81)	0.1415 (94)	**1.0000**	
SD	0.0269 (41)	0.2495 (54)	0.0772 (68)	**1.0000**

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

Note: There are only two firms issuing via PO (public offering), which are not worth reporting in this table.

Table 4.8: Mean abnormal return surrounding the SEO announcement for the total sample
The table shows the mean abnormal returns during the event window 15 days before and after the announcement for the total sample of 126 firms. Day 0 refers to the announcement date. The abnormal return (AR) is calculated via the market model: $AR_{i\,t} = R_{i\,t} - \alpha_{i\,t} - \beta_{i\,k}(R_{mt})$, where R_{it} is return on security i for day t, α_{it} is intercept, β_{it} is the OLS estimators of the market model parameter and R_{mt} is market return on day t (SET index in our case). The t-statistics (t-ratio) are calculated as: $t = \frac{AR_{it}}{S_{AR}/\sqrt{n}}$, where n=sample size, and S_{AR}= standard deviation of AR_{it} .

Event Days	ARs	t-statistics	CARs	Sample Size
-15	-0.01953	-1.34614	-0.01953	126
-14	-0.01012	-0.97094	-0.02965	126
-13	-0.00444	-0.77422	-0.03409	126
-12	-0.03981	-1.80345*	-0.07390	126
-11	-0.00474	-0.75158	-0.07864	126
-10	-0.00277	-0.71009	-0.08142	126
-9	-0.02526	-1.31231	-0.10667	126
-8	0.00092	0.18179	-0.10575	126
-7	-0.01179	-0.62531	-0.11754	126
-6	-0.00169	-0.51616	-0.11923	126
-5	-0.00371	-1.05142	-0.12294	126
-4	-0.01646	-1.25925	-0.13940	126
-3	0.00246	0.49876	-0.13694	126
-2	0.00184	0.42626	-0.13510	126
-1	0.00341	0.18334	-0.13169	126
0	-0.01069	-2.97211***	-0.14238	126
1	-0.01288	-2.76114***	-0.15526	126
2	-0.02669	-1.38846	-0.18195	126
3	-0.00398	-0.96014	-0.18593	126
4	-0.00189	-0.41642	-0.18782	126
5	-0.00386	-1.35656	-0.19168	126
6	0.00138	0.43216	-0.19030	126
7	0.00140	0.57019	-0.18889	126
8	-0.00787	-1.59762	-0.19676	126
9	0.00115	0.31925	-0.19562	126
10	0.00355	1.30915	-0.19207	126
11	-0.00288	-0.80634	-0.19495	126
12	-0.00461	-0.76453	-0.19956	126
13	-0.00193	-0.71663	-0.20149	126
14	0.00180	0.50430	-0.19968	126
15	0.00062	0.15294	-0.19906	126

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

Table 4.9: Offering dilution of total sample

The table shows the offering dilution of common stock offering (total sample) during the event window. The percentage of the dilution column is defined as the ratio of the change in equity value (market capitalisation) on the day the announcement (day 0) to equity value on day +1. The parentheses in the maximum and minimum percentage show the common stock offerings, which fall into their categories (see Appendix 3 for the names in full).

Dilution (%)	Number of Firms	Average Dilution in the Range	Cumulative (%)
0 <	54	3.69	3.69
(-10) < ≤ 0	69	-1.55	2.14
(-20) < ≤ (-10)	2	-12.09	-9.95
(-30) < ≤ (-20)	1	-22.83	-32.78
(-40) < ≤ (-30)	0	0.00	-32.78
(-50) < ≤ (-40)	0	0.00	-32.78
(-60) < ≤ (-50)	0	0.00	-32.78
(-70) < ≤ (-60)	0	0.00	-32.78
(-80) < ≤ (-70)	0	0.00	-32.78
(-90) < ≤ (-80)	0	0.00	-32.78
(-100) < ≤ (-90)	0	0.00	-32.78
TOTAL	**126**		
Average Offering Dilution	0.00359 (0.35900%)		
Median (%)	0.00		
Maximum (%)	25.00 (IRPC)		
Minimum (%)	-22.83 (SF)		

Table 4.10: Mean abnormal return surrounding the SEO announcements for different issuing methods

The table shows the mean abnormal returns during the event window 15 days before and after the announcement day for different issuing methods, namely rights issuing (XR: 53 firms, Panel A), private placement (PP: 52 firms, Panel B) and stock dividend (SD: 22 firms, Panel C). Day 0 refers to the announcement date. The abnormal return (AR) is calculated via the market model: $AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt})$, where R_{it} is return on security i for day t, α_{it} is intercept, β_{it} is the OLS estimators of the market model parameter and R_{mt} is market return on day t (SET index in our case). The t-statistics (t-ratio) are calculated as: $t = \frac{AR_{it}}{S_{AR}/\sqrt{n}}$, where $n =$ sample size, and $S_{AR} =$ standard deviation of AR_{it} . (*) Significant at 10% level, (**) Significant at 5% level, (***) Significant at 1% level

Event days	Panel A: XR				Panel B: PP				Panel C: SD			
	ARs	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*
-15	-0.03969	-1.18439	-0.03969	53	-0.00855	-1.05673	-0.00855	52	0.00550	1.15060	0.00550	22
-14	-0.02359	-1.63939	-0.06328	53	0.00843	1.24400	-0.00012	52	-0.05184	-1.14153	-0.04634	22
-13	-0.01730	-1.54230	-0.08058	53	0.00006	0.00819	-0.00006	52	0.00289	0.40301	-0.04345	22
-12	-0.02347	-1.33790	-0.10405	53	-0.00610	-0.78886	-0.00616	52	-0.16971	-1.45922	-0.21316	22
-11	-0.02004	-1.62336	-0.12409	53	0.01306	1.64942	0.00690	52	-0.00023	-0.03613	-0.21339	22
-10	-0.00691	-1.14123	-0.13100	53	-0.00057	-0.07989	0.00633	52	0.00494	1.32668	-0.20846	22
-9	0.01001	1.61158	-0.12099	53	-0.01569	-1.61439	-0.00936	52	-0.12476	-1.17668	-0.33321	22
-8	-0.00187	-0.43937	-0.12287	53	0.00864	0.99193	-0.00072	52	-0.00942	-0.53071	-0.34263	22
-7	0.00464	0.81349	-0.11823	53	0.01432	1.52011	0.01360	52	-0.09888	-0.93951	-0.44151	22
-6	-0.00192	-0.38269	-0.12015	53	-0.00454	-0.84440	0.00906	52	0.00155	0.21707	-0.43996	22
-5	-0.01011	-1.97017*	-0.13026	53	-0.00655	-1.03231	0.00251	52	0.00924	1.04431	-0.43072	22
-4	-0.00593	-1.22504	-0.13620	53	0.00145	0.28549	0.00396	52	-0.08106	-1.11438	-0.51178	22
-3	-0.00697	-0.91142	-0.14317	53	0.01449	1.71865*	0.01845	52	0.01341	0.96144	-0.49837	22
-2	0.00319	0.64681	-0.13998	53	0.00689	0.85934	0.02534	52	-0.00234	-0.19390	-0.50071	22
-1	0.00043	0.09671	-0.13955	53	-0.02709	-0.60801	-0.00175	52	0.00478	0.66423	-0.49593	22
0	0.01102	1.80224*	-0.12853	53	-0.03021	-5.14867***	-0.03196	52	-0.01196	-2.33303**	-0.50789	22
1	-0.01056	-1.85543*	-0.13909	53	-0.01587	-1.69341*	-0.04783	52	-0.01563	-2.46389**	-0.52352	22
2	-0.00426	-1.06579	-0.14336	53	-0.00067	-0.10164	-0.04850	52	-0.13742	-1.27851	-0.66094	22
3	-0.00734	-0.91113	-0.15070	53	-0.00257	-0.48942	-0.05107	52	-0.00470	-0.72159	-0.66563	22
4	0.00587	0.97374	-0.14483	53	-0.01197	-1.36832	-0.06303	52	-0.00803	-1.56947	-0.67367	22
5	-0.00082	-0.19674	-0.14565	53	-0.00983	-1.91500	-0.07286	52	0.00029	0.08481	-0.67338	22
6	0.00628	1.66742	-0.13937	53	-0.00602	-0.93016	-0.07888	52	0.00310	0.90828	-0.67028	22

Event days	Panel A: XR				Panel B: PP				Panel C: SD			
	ARs	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*
7	0.00554	1.60518	-0.13383	53	0.00073	0.19174	-0.07815	52	-0.00565	-0.77934	-0.67593	22
8	-0.00861	-1.07475	-0.14244	53	-0.01358	-1.60512	-0.09173	52	-0.00149	-0.31444	-0.67742	22
9	0.00567	1.05924	-0.13678	53	-0.00138	-0.19929	-0.09312	52	0.00234	0.42568	-0.67508	22
10	0.00449	1.23152	-0.13229	53	0.00704	1.43476	-0.08607	52	-0.00437	-0.79324	-0.67945	22
11	-0.00357	-0.72159	-0.13586	53	-0.00777	-1.45012	-0.09384	52	0.01721	1.70775	-0.66224	22
12	-0.00607	-1.36011	-0.14192	53	-0.00598	-0.44426	-0.09983	52	0.00464	0.53226	-0.65759	22
13	-0.00085	-0.20092	-0.14277	53	-0.00064	-0.12213	-0.10046	52	0.00122	0.25560	-0.65638	22
14	-0.00138	-0.23583	-0.14415	53	0.00608	0.97467	-0.09439	52	-0.00259	-0.70819	-0.65897	22
15	0.00268	0.56352	-0.14147	53	-0.00348	-0.42074	-0.09787	52	0.00400	0.70146	-0.65497	22

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

Table 4.11: Offering dilution of issuing methods

The table shows offering dilution of common stock offering firms during the event window, with different issuing methods. Panel A shows the offering dilution of companies which issued new shares via rights issuing (XR). Panel B shows the offering dilution for the firms using private placement (PP). Panel C shows the offering dilution of companies issuing via stock dividend (SD). Panel D shows the offering dilution of firms issuing with public offering (PO). The percentage of dilution column is defined as the ratio of the change in equity value (market capitalisation) on the day of the announcement (day 0) to equity value on day +1. The parentheses in the maximum and minimum percentage show the common stock offerings which fall into their categories (see Appendix 3 for the names in full).

Dilution (%)	**PANEL A: XR**			**PANEL B: PP**			**PANEL C: SD**		
	Number of Firms	*Average in the Range*	*Cumulative (%)*	*Number of Firms*	*Average in the Range*	*Cumulative (%)*	*Number of Firms*	*Average in the Range*	*Cumulative (%)*
0 <	22	4.06	4.06	22	3.70	3.70	10	2.80	2.80
(-10) < ≤ 0	30	-0.94	3.12	28	-1.84	1.87	12	-2.23	0.58
(-20) < ≤ (-10)	1	-13.60	-10.48	1	-10.58	-8.71	0	0.00	0.58
(-30) < ≤ (-20)	0	0.00	-10.48	1	-22.83	-31.54	0	0.00	0.58
(-40) < ≤ (-30)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-50) < ≤ (-40)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-60) < ≤ (-50)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-70) < ≤ (-60)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-80) < ≤ (-70)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-90) < ≤ (-80)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
(-100) < ≤ (-90)	0	0.00	-10.48	0	0.00	-31.54	0	0.00	0.58
TOTAL	**53**			**52**			**22**		
Average Offering Dilution	0.00897 (0.89700%)			-0.00064 (-0.06400%)			0.00060 (0.0600%)		
Median (%)	0.0000			0.0000			0.0000		
Maximum (%)	16.00 (NEW)			25.00 (IRPC)			5.84 (KWH)		
Minimum (%)	-13.60 (LPN)			-22.83 (SF)			-8.69 (VARO)		

Table 4.12: Robustness results of 61 days event window

The table shows the mean abnormal returns (mean ARs) during the event window 30 days before and after the announcement (61 days event window) for total sample and the issuing methods. **Panel A** shows the mean ARs in the total sample of 126 firms. **Panel B** shows the mean ARs in the firms issuing new shares via rights issuing (XR: 53 firms). **Panel C** shows the mean ARs in the firms issuing new shares via private placement (PP: 52 firms). **Panel D** shows the mean ARs in the firms issuing new shares with stock dividend (SD: 22 firms). Day 0 refers to the announcement date. The abnormal return (AR) is calculated via the market model: $AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt})$, where R_{it} is return on security i for day t, α_{it} is intercept, β_{it} is the OLS estimators of the market model parameter and R_{mt} is market return on day t (SET index in our case). The t-statistics (t-ratio) are calculated as: $t = \frac{AR_{it}}{S_{AR}/\sqrt{n}}$, where n = sample size, and S_{AR} = standard deviation of AR_{it}. (*) Significant at 10% level, (**) Significant at 5% level, (***) Significant at 1% level

Event days	Panel A: Total sample				Panel B: XR				Panel C: PP				Panel D: SD			
	ARs	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*
-30	-0.00567	-0.59356	-0.00567	126	-0.00171	-0.25407	-0.00171	53	0.00844	0.79799	0.00844	52	-0.04733	-1.04040	-0.04733	22
-29	-0.00803	-1.31093	-0.01370	126	-0.01644	-1.89020*	-0.01815	53	0.00539	0.79960	0.01383	52	-0.02301	-0.99825	-0.07034	22
-28	-0.00286	-0.42649	-0.01656	126	-0.01007	-0.88224	-0.02822	53	0.00715	0.74759	0.02098	52	-0.01037	-0.72560	-0.08071	22
-27	-0.00140	-0.26648	-0.01796	126	-0.00285	-0.36104	-0.03107	53	0.00043	0.04274	0.02141	52	-0.00091	-0.35742	-0.08162	22
-26	0.00152	0.32682	-0.01644	126	-0.00460	-0.80754	-0.03567	53	0.00841	0.87607	0.02982	52	0.00027	0.06872	-0.08135	22
-25	0.00001	0.00126	-0.01643	126	0.00162	0.46643	-0.03405	53	0.01122	1.42808	0.04104	52	-0.03495	-0.94991	-0.11630	22
-24	0.00088	0.18005	-0.01555	126	-0.00317	-0.63053	-0.03722	53	0.00850	1.01659	0.04954	52	-0.00425	-0.25942	-0.12056	22
-23	0.00457	1.04115	-0.01098	126	0.00312	0.61487	-0.03410	53	0.00653	0.73166	0.05607	52	0.00767	1.02727	-0.11288	22
-22	0.01194	2.65337***	0.00096	126	0.00861	1.10021	-0.02549	53	0.01725	2.38094**	0.07332	52	0.00907	2.01447*	-0.10382	22
-21	-0.00635	-1.60604	-0.00539	126	-0.01170	-2.67049**	-0.03719	53	-0.00263	-0.31833	0.07069	52	-0.00041	-0.07616	-0.10422	22
-20	-0.00633	-1.30223	-0.01171	126	-0.00778	-0.82051	-0.04497	53	-0.01091	-1.76475*	0.05978	52	0.00533	0.86762	-0.09889	22
-19	-0.01194	-3.46236***	-0.02365	126	-0.01305	-2.61432**	-0.05802	53	-0.01005	-1.63594	0.04973	52	-0.00164	-0.26661	-0.10053	22
-18	-0.00203	-0.28189	-0.02568	126	-0.00159	-0.19343	-0.05960	53	0.00460	0.72818	0.05434	52	-0.02551	-0.75155	-0.12604	22
-17	0.00572	1.39806	-0.01997	126	0.01016	1.56810	-0.04945	53	0.00657	0.90549	0.06091	52	-0.00275	-0.51642	-0.12879	22
-16	-0.01632	-1.18723	-0.03628	126	-0.01274	-1.65740	-0.06219	53	0.00634	0.89459	0.06725	52	-0.06693	-0.90004	-0.19573	22
-15	-0.01944	-1.34100	-0.05572	126	-0.04122	-1.23254	-0.10341	53	-0.00498	-0.72666	0.06227	52	0.00207	0.40978	-0.19366	22
-14	-0.01692	-1.60990	-0.07264	126	-0.02193	-1.52554	-0.12534	53	0.01132	1.65015	0.07359	52	-0.05747	-1.27269	-0.25113	22
-13	-0.00459	-0.79253	-0.07723	126	-0.01824	-1.63880	-0.14358	53	0.00222	0.29226	0.07581	52	-0.00083	-0.10897	-0.25196	22
-12	-0.03910	-1.75537*	-0.11633	126	-0.02359	-1.33340	-0.16717	53	-0.00174	-0.21123	0.07408	52	-0.17272	-1.49029	-0.42468	22
-11	-0.00530	-0.82576	-0.12163	126	-0.02011	-1.64407	-0.18728	53	0.01400	1.67025	0.08808	52	-0.00500	-0.71717	-0.42969	22
-10	-0.00346	-0.88214	-0.12509	126	-0.00787	-1.31805	-0.19515	53	-0.00157	-0.21857	0.08651	52	0.00547	1.35348	-0.42422	22
-9	-0.02734	-1.40787	-0.15242	126	0.00997	1.58503	-0.18518	53	-0.01620	-1.66905	0.07031	52	-0.13379	-1.26476	-0.55801	22
-8	0.00340	0.71689	-0.14902	126	-0.00250	-0.59673	-0.18768	53	0.01170	1.59654	0.08201	52	-0.00866	-0.48114	-0.56667	22
-7	-0.01477	-0.78144	-0.16379	126	0.00337	0.60070	-0.18431	53	0.00903	0.96599	0.09104	52	-0.09849	-0.93837	-0.66516	22
-6	-0.00248	-0.77367	-0.16627	126	-0.00281	-0.58532	-0.18711	53	-0.00402	-0.73980	0.08701	52	-0.00292	-0.41915	-0.66807	22
-5	-0.00403	-1.14055	-0.17030	126	-0.01101	-2.12498**	-0.19813	53	-0.00616	-0.94337	0.08085	52	0.00811	0.98580	-0.65996	22

Event days	Panel A: Total sample				Panel B: XR				Panel C: PP				Panel D: SD			
	ARs	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*	*ARs*	*t-statistics*	*CARs*	*Sample size*
-4	-0.01803	-1.35887	-0.18833	126	-0.00673	-1.40292	-0.20485	53	0.00194	0.35299	0.08279	52	-0.08800	-1.20681	-0.74796	22
-3	0.00258	0.51986	-0.18575	126	-0.00754	-0.96474	-0.21239	53	0.01643	1.95445*	0.09923	52	0.01164	0.83240	-0.73633	22
-2	0.00306	0.66122	-0.18269	126	0.00226	0.45123	-0.21013	53	0.00725	0.89170	0.10647	52	0.00570	0.37911	-0.73063	22
-1	0.00256	0.09901	-0.18013	126	-0.00045	-0.10097	-0.21058	53	-0.06778	-1.08263	0.03869	52	-0.00056	-0.06757	-0.73119	22
0	-0.01046	-2.78949***	-0.19059	126	0.01055	1.70178*	-0.20003	53	-0.04424	-7.38340***	-0.00555	52	-0.01337	-1.85093*	-0.74456	22
1	-0.01105	-2.59227**	-0.20164	126	-0.01159	-2.00079*	-0.21162	53	-0.01841	-2.24882**	-0.02396	52	-0.01882	-3.09341***	-0.76338	22
2	-0.03035	-1.57441	-0.23200	126	-0.00501	-1.24715	-0.21664	53	-0.00665	-1.45050	-0.03061	52	-0.14074	-1.30919	-0.90412	22
3	-0.00335	-0.82196	-0.23534	126	-0.00805	-1.00183	-0.22469	53	-0.00060	-0.12904	-0.03121	52	-0.00383	-0.53283	-0.90795	22
4	-0.00037	-0.10035	-0.23571	126	0.00485	0.80340	-0.21984	53	-0.00415	-0.75664	-0.03537	52	-0.00397	-0.48872	-0.91192	22
5	-0.00362	-1.12619	-0.23934	126	-0.00242	-0.55496	-0.22226	53	-0.00685	-1.11713	-0.04221	52	0.00163	0.36229	-0.91029	22
6	0.00037	0.11605	-0.23897	126	0.00597	1.59104	-0.21629	53	-0.00889	-1.40685	-0.05110	52	0.00361	0.85660	-0.90668	22
7	0.00182	0.71127	-0.23715	126	0.00469	1.33102	-0.21160	53	0.00375	0.94201	-0.04735	52	-0.00925	-1.26236	-0.91593	22
8	-0.00812	-1.65877	-0.24527	126	-0.00832	-1.03935	-0.21992	53	-0.01396	-1.66761	-0.06131	52	-0.00349	-0.77975	-0.91942	22
9	0.00165	0.45937	-0.24362	126	0.00405	0.76885	-0.21587	53	0.00180	0.25495	-0.05951	52	0.00092	0.17024	-0.91850	22
10	0.00285	1.06608	-0.24077	126	0.00301	0.79580	-0.21285	53	0.00681	1.42262	-0.05270	52	-0.00464	-0.91967	-0.92314	22
11	-0.00433	-1.23675	-0.24510	126	-0.00465	-0.98302	-0.21750	53	-0.00857	-1.65380	-0.06127	52	0.01675	1.57803	-0.90640	22
12	-0.00548	-0.93754	-0.25059	126	-0.00597	-1.31314	-0.22347	53	-0.00783	-0.59509	-0.06910	52	0.00290	0.36163	-0.90349	22
13	-0.00346	-1.42908	-0.25404	126	-0.00175	-0.42302	-0.22522	53	-0.00255	-0.57583	-0.07165	52	-0.00095	-0.18998	-0.90444	22
14	0.00222	0.55784	-0.25183	126	-0.00206	-0.35199	-0.22728	53	0.00831	1.10696	-0.06334	52	-0.00371	-0.97535	-0.90815	22
15	0.00333	0.95579	-0.24849	126	0.00203	0.42901	-0.22526	53	0.00378	0.57383	-0.05956	52	0.00350	0.58891	-0.90465	22
16	-0.00138	-0.35421	-0.24987	126	-0.00677	-1.28955	-0.23202	53	0.00240	0.31558	-0.05716	52	-0.00225	-0.40131	-0.90690	22
17	0.00248	0.51388	-0.24739	126	0.00264	0.30353	-0.22939	53	0.00235	0.31325	-0.05482	52	0.00802	1.43837	-0.89888	22
18	-0.00080	-0.21212	-0.24818	126	0.00238	0.32295	-0.22700	53	-0.00295	-0.60031	-0.05777	52	-0.00295	-0.58004	-0.90182	22
19	-0.00428	-1.40790	-0.25246	126	-0.00272	-0.68686	-0.22973	53	-0.00507	-0.82301	-0.06283	52	-0.00197	-0.52285	-0.90379	22
20	-0.00142	-0.50597	-0.25388	126	-0.00002	-0.00454	-0.22975	53	-0.00571	-1.28533	-0.06854	52	0.00849	1.36835	-0.89530	22
21	-0.00982	-1.64847	-0.26370	126	-0.01379	-1.03832	-0.24353	53	-0.00498	-1.23127	-0.07352	52	0.00066	0.11217	-0.89464	22
22	-0.00242	-0.62829	-0.26611	126	-0.00855	-1.50317	-0.25208	53	0.00359	0.54022	-0.06994	52	-0.00330	-0.45311	-0.89794	22
23	-0.00253	-0.81622	-0.26865	126	0.00282	0.66404	-0.24926	53	-0.00863	-1.52525	-0.07857	52	-0.00051	-0.09869	-0.89845	22
24	-0.00361	-1.63193	-0.27225	126	-0.00442	-1.33888	-0.25368	53	-0.00359	-0.87679	-0.08216	52	-0.00631	-1.48625	-0.90476	22
25	-0.00438	-1.25310	-0.27663	126	-0.00838	-1.34467	-0.26206	53	-0.00054	-0.10330	-0.08270	52	-0.00106	-0.23752	-0.90582	22
26	-0.00020	-0.05499	-0.27683	126	0.00135	0.23972	-0.26071	53	-0.00046	-0.06941	-0.08316	52	0.00051	0.08840	-0.90531	22
27	0.00231	0.80799	-0.27453	126	0.00682	1.65149	-0.25389	53	0.00000	0.00015	-0.08316	52	0.00107	0.16469	-0.90424	22
28	-0.00143	-0.34393	-0.27596	126	-0.00620	-0.81161	-0.26009	53	0.00366	0.60115	-0.07950	52	-0.00019	-0.04049	-0.90443	22
29	-0.00194	-0.69555	-0.27790	126	-0.00593	-1.30953	-0.26602	53	0.00146	0.32574	-0.07804	52	-0.00442	-0.77759	-0.90885	22
30	0.00039	0.10280	-0.27750	126	0.00690	1.01825	-0.25912	53	-0.00806	-1.44428	-0.08610	52	0.00491	0.62090	-0.90394	22

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

Table 4.13: Results of the regression in the total sample

The table gives the results of the regression from the total sample with dummy variables of each issuing method in order to examine whether the differences in those issuing methods might impact on the explanatory variables. This reveals the results from the regression when controlled for Heteroscedasticity using White Heteroscedasticity-Consistent Standard Errors and Covariance. *SIZE* refers to the ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). *Market-to-Book (MB)* is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. *Leverage ratio (LEVERAGE)* is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. *Return on Asset (ROA)* refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. *Price-Earnings Ratio (P/E)* is defined as the change in this ratio: P/E ratio on offering year minus average 3 years P/E ratio before the issuing year. *Turnover ratio(TURNOVER)* is a control variable based on the daily trading volume and number of shares outstanding calculated by an average of 11 months ending one month before the issuing month. *Insider Ownership (OWN)* is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. *Two-day announcement abnormal return (TWO_DAY_AR)* refers to the abnormal return to security on the day before the announcement plus the abnormal return to security on the day of announcement. *EVENTS* is a control variable in terms of dummy variable equal to 1 if the firm has events other than SEOs during 115 days before and after the event date, and zero otherwise. The dummy variables of rights issuing (*DXR)*, private placement *(DPP)* and stock dividend *(DSD)* are equal to 1 if the firms use each issuing method, and zero otherwise. The definition of $\overline{R}^2$ is referred to as the adjusted R^2. The regression is estimated as:

$$TwoDayAbnormal\ \text{Re}turn = \alpha + \beta_1(size) + \beta_2(MB) + \beta_3(Leverage) + \beta_4(ROA)$$
$$+ \beta_5(P/E) + \beta_6(TURN) + \beta_7(OWN) + \beta_8(EVENTS) + \beta_9(DXR) + \beta_{10}(DPP) + \beta_{11}(DSD)$$

Explanatory Variables	Statistic Values				
	Coefficient	***P-Values***	***Std Error***	R^2	$\overline{R}^2$
SIZE	0.670342***	0.0001	0.152672		
MB	-0.002329*	0.0547	0.001187		
LEVERAGE	0.037938	0.1725	0.027454		
ROA	0.072140	0.2009	0.055735		
P/E	2.09E-05	0.2348	1.74E-05		
TURNOVER	-0.389383	0.7856	1.424725	0.336364	0.206006
OWN	0.009220**	0.0370	0.004314		
EVENTS	0.011793	0.3552	0.012650		
DXR	-0.027992*	0.0668	0.014974		
DPP	-0.023705	0.1243	0.015192		
DSD	-0.031537**	0.0195	0.013110		
Sample Size			**68**		

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

Table 4.14: The variance-covariance matrix by total sample and issuing methods

The variance-covariance matrix for the dependent variable, two-day announcement abnormal returns (TWO_DAY_AR) and the other explanatory variables are shown here. **Panel A** shows the results regardless of the issuing methods with a sample size of 68 firms. **Panel B** shows the outcomes from the companies which issued via rights issuing (XR) with a sample size of 28 firms. **Panel C** shows the findings from the companies which issued via private placement (PP) with a sample size of 26 firms. **Panel D** shows the consequences from the companies which issued via stock dividend (SD) with a sample size of 16 firms. SIZE refers to the ratio of market capitalisation on the day following the announcement (day +1) and day of the announcement (day 0). Market-to-Book (MB) is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. Leverage ratio (LEVERAGE) is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. Return on Asset (ROA) refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. Price-Earnings Ratio (P/E) is defined as the change in this ratio: P/E ratio in offering year minus average 3 years P/E ratio before the issuing year. Turnover ratio (TURNOVER) is based on the daily trading volume and number of shares outstanding calculated by an average of 11 months, ending one month before the issuing month. Insider Ownership (OWN) is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. Two-day announcement abnormal return (TWO_DAY_AR) refers to the abnormal return to security on the day before the announcement plus the abnormal return to security on the day of announcement. EVENTS is a dummy variable equal to 1 if the firm has events other than SEOs during 115 days before and after the event date, and zero otherwise. The dummy variables of rights issuing (DXR), private placement (DPP) and stock dividend (DSD) are equal to 1 if the firms use each issuing method, and zero otherwise.

PANEL A	TWO_DAY_AR	TURNOVER	SIZE	ROA	P/E	OWN	MB	LEVERAGE	EVENTS	DXR	DSD	DPP
TWO_DAY_AR	**1.000000**											
TURNOVER	-0.032845	**1.000000**										
SIZE	0.425133	-0.088521	**1.000000**									
ROA	0.055905	0.273157	0.030081	**1.000000**								
P/E	-0.067435	-0.074461	-0.058373	-0.083377	**1.000000**							
OWN	0.351392	-0.002161	0.151401	-0.046671	-0.146118	**1.000000**						
MB	-0.200328	-0.023912	0.035114	0.014399	0.101215	-0.019281	**1.000000**					
LEVERAGE	0.073982	-0.027011	0.067797	-0.546019	0.037139	0.057597	0.041042	**1.000000**				
EVENTS	0.005540	-0.059050	-0.222276	0.020809	-0.080476	0.049929	0.050805	0.010507	**1.000000**			
DXR	-0.062683	-0.047699	-0.134535	0.018379	0.115526	-0.025786	-0.088209	-0.039611	-0.130295	**1.000000**		
DSD	0.002717	-0.237573	0.124090	-0.299060	-0.021361	0.007779	0.076814	0.199486	0.241059	-0.464095	**1.000000**	
DPP	0.019679	0.295165	0.022451	0.325623	-0.095319	-0.039117	0.040080	-0.164924	-0.074893	-0.596793	-0.365095	**1.000000**

PANEL B	TWO_DAY_AR	TURNOVER	SIZE	ROA	P/E	OWN	MB	LEVERAGE	EVENTS_XR
TWO_DAY_AR	**1.000000**								
TURNOVER	0.075898	**1.000000**							
SIZE	0.607305	0.068623	**1.000000**						
ROA	0.049961	0.201055	0.255596	**1.000000**					
P/E	-0.077474	-0.116143	-0.041556	-0.122830	**1.000000**				
OWN	0.212500	-0.174328	0.203753	-0.077225	-0.189463	**1.000000**			
MB	-0.515321	-0.004552	-0.046162	-0.011884	0.141766	-0.051786	**1.000000**		
LEVERAGE	0.079137	0.038460	0.090464	-0.567515	0.020040	-0.069066	0.186348	**1.000000**	
EVENTS_XR	-0.230181	-0.066325	-0.176841	0.045406	-0.156726	-0.022694	0.001790	0.052497	**1.000000**

PANEL C	TWO_DAY_AR	TURNOVER	SIZE	ROA	P/E	OWN	MB	LEVERAGE	EVENTS_PP
TWO_DAY_AR	**1.000000**								
TURNOVER	-0.136001	**1.000000**							
SIZE	0.219194	-0.175109	**1.000000**						
ROA	0.072887	0.305893	0.083547	**1.000000**					
P/E	-0.307529	0.321128	-0.360113	0.307763	**1.000000**				
OWN	0.527655	0.116952	0.140682	-0.135076	-0.285676	**1.000000**			
MB	0.028693	-0.009601	0.138919	0.108907	-0.068933	0.005781	**1.000000**		
LEVERAGE	0.073116	-0.020202	-0.006208	-0.482310	0.099775	0.223617	-0.194563	**1.000000**	
EVENTS_PP	0.107651	-0.076434	-0.472658	0.128520	0.247506	0.119113	0.104631	-0.123343	**1.000000**

PANEL D	TWO_DAY_AR	TURNOVER	SIZE	ROA	P/E	OWN	MB	LEVERAGE	EVENTS_SD
TWO_DAY_AR	**1.000000**								
TURNOVER	0.077548	**1.000000**							
SIZE	0.629551	-0.125534	**1.000000**						
ROA	-0.202689	0.049084	-0.312194	**1.000000**					
P/E	-0.073243	0.101227	0.001817	-0.753990	**1.000000**				
OWN	0.088554	-0.180011	-0.013822	0.126986	-0.264109	**1.000000**			
MB	0.129972	-0.137608	0.145291	0.170404	0.073333	-0.206021	**1.000000**		
LEVERAGE	0.132308	-0.081525	-0.004618	-0.667931	0.579029	-0.085851	0.232785	**1.000000**	
EVENTS_SD	0.126513	0.314260	-0.179652	-0.183564	0.311130	0.084347	-0.351640	0.110933	**1.000000**

Table 4.15: Results of regression by issuing methods

The results of the regression when using the concept of pooling sample for the companies issued new shares are given here. **Panel A** shows the method of rights issuing (XR). **Panel B** shows the case of using private placement (PP). **Panel C** shows when the firms utilise stock dividend (SD) as their issuing method. Overall model control for the problem of heteroscedasticity is also achieved by applying White's Heteroscedasticity-Consistent Standard Error and Covariance. SIZE refers to the ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). Market-to-Book (MB) is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. Leverage ratio (LEVERAGE) is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. Return on Asset (ROA) refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. Price-Earnings Ratio (P/E) is defined as the change in this ratio: P/E ratio in offering year minus average 3 years P/E ratio before the issuing year. Turnover ratio (TURNOVER) is a control variable based on the daily trading volume and number of shares outstanding calculated by an average of 11 months, ending one month before the issuing month. Insider Ownership (OWN) is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. Two-day announcement abnormal return (TWO_DAY_AR) refers to the abnormal return to security on the day before the announcement plus the abnormal return to security on the day of announcement. EVENTS is a control variable in terms of dummy variable equal to 1 if the firm has events other than SEOs during 115 days before and after the event date, and zero otherwise. C refers to the constant term in the regression. The definition of $\overline{R}^2$ is referred to as the adjusted R^2. The dummy variables of right issuing (DXR), private placement (DPP) and stock dividend (DSD) are equal to 1 if the firms use XR, PP and SD, respectively; and zero otherwise. The regression is estimated as:

$$TwoDayAbnormal\ \text{Re}turn = \alpha + \beta_1(size) + \beta_2(MB) + \beta_3(Leverage) + \beta_4(ROA) + \beta_5(P/E) + \beta_6(TURN) + \beta_7(OWN) + \beta_8(EVENTS) + \beta_9(DXR, DPP, DSD)$$

Explanatory Variables	Statistic Values				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
PANEL A: Rights Issuing (XR)					
SIZE	0.659271***	0.0002	0.168148		
MB	-0.002374**	0.0403	0.001132		
LEVERAGE	0.035861	0.1988	0.027587		
ROA	0.070099	0.1832	0.052039		
P/E	2.05E-05	0.2561	1.79E-05	0.328895	0.224758
TURNOVER	-0.319736	0.8074	1.305636		
OWN	0.009660**	0.0296	0.004331		
EVENTS	0.010263	0.3955	0.011990		
DXR	-0.001701	0.8958	0.012924		
PANEL B: Private Placement (PP)					
SIZE	0.662386***	0.0001	0.160001		
MB	-0.002377**	0.0434	0.001151	0.329441	0.225389
LEVERAGE	0.036071	0.1884	0.027103		
ROA	0.065619	0.2220	0.053155	0.329441	0.225389

Explanatory Variables	Statistic Values				
	Coefficient	***P-Values***	***Std Error***	R^2	$\overline{R}^2$
P/E	2.09E-05	0.2053	1.63E-05		
TURNOVER	-0.381663	0.7844	1.388395		
OWN	0.009683**	0.0306	0.004369		
EVENTS	0.010782	0.3699	0.011931		
DPP	0.003626	0.8327	0.017088		
PANEL C: Stock Dividend (SD)					
SIZE	0.679493***	0.0000	0.141922		
MB	-0.002328**	0.0427	0.001124		
LEVERAGE	0.036605	0.1962	0.027994		
ROA	0.062115	0.2331	0.051545		
P/E	1.85E-05	0.2813	1.70E-05	0.330936	0.227116
TURNOVER	-0.389249	0.7750	1.355689		
OWN	0.009555**	0.0268	0.004206		
EVENTS	0.012284	0.3293	0.012485		
DSD	-0.007462	0.5924	0.013861		
Sample Size			**68**		

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

Table 4.16: Robustness results of regression by using different proxies

This table shows the results of the regression when using different proxies for operating performance for the companies which issued new shares. **Panel A** shows the total sample. **Panel B** shows the method of rights issuing (XR). **Panel C** shows the case of using private placement (PP). **Panel D** shows when the firms utilise stock dividend (SD) as their issuing method. Overall model control for the problem of heteroscedasticity is also achieved by applying White's Heteroscedasticity-Consistent Standard Error and Covariance. SIZE refers to the ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). Market-to-Book (MB) is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. Leverage ratio (LEVERAGE) is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. Return on Equity (ROE) refers to the change in ROE computed by the change between ROE in the offering year and average ROE for 3 years, ending one year before the issuing year. Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) refer to the change in EBITDA computed by the change between EBITDA in the offering year and average EBITDA for 3 years ending one year before the issuing year. Price-Earnings Ratio (P/E) is defined as the change in this ratio: P/E ratio in offering year minus average 3 years P/E ratio before the issuing year. Turnover ratio (TURNOVER) is a control variable based on the daily trading volume and number of shares outstanding calculated by an average of 11 months ending one month before the issuing month. Insider Ownership (OWN) is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. Two-day announcement abnormal return (TWO_DAY_AR) refers to the abnormal return to security on the day before the announcement plus the abnormal return to security on the day of announcement. EVENTS is a control variable in terms of dummy variable equal to 1 if the firm has events other than SEOs during 115 days before and after the event date, and zero otherwise. C refers to the constant term in the regression. The definition of $\overline{R}^2$ is referred to as the adjusted R^2. The dummy variables of right issuing (DXR), private placement (DPP) and stock dividend (DSD) are equal to 1 if the firms use XR, PP and SD, respectively; and zero otherwise. The regression is estimated as:

$$TwoDayAbnormal\ \text{Re}turn = \alpha + \beta_1(size) + \beta_2(MB) + \beta_3(Leverage) + \beta_4(ROE, EBITDA) + \beta_5(P/E) + \beta_6(TURN) + \beta_7(OWN) + \beta_8(EVENTS) + \beta_9(DXR, DPP, DSD)$$

(*) Significant at 10% level, (**) Significant at 5% level and (***) Significant at 1% level.

Explanatory Variables	Statistic Values of ROE					Statistic Values of EBITDA				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$	*Coefficient*	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
Panel A: Total Sample										
SIZE	0.679188***	0.0001	0.157818			0.803871***	0.0000	0.153875		
MB	-0.003838***	0.0000	0.000413			-0.005054**	0.0178	0.002063		
LEVERAGE	0.049459*	0.0648	0.026204			0.014415	0.4338	0.018270	0.400642	0.268783
ROE/EBITDA	0.008778**	0.0351	0.004054	0.380815	0.247265	0.000179	0.2216	0.000144		
P/E	2.60E-05	0.1213	1.65E-05			0.000360	0.1304	0.000234		

Explanatory Variables	Statistic Values of ROE					Statistic Values of EBITDA				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$	*Coefficient*	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
TURNOVER	-1.254760	0.5327	1.997293			0.732090	0.5602	1.248342		
OWN	0.010450**	0.0308	0.004705			0.007469**	0.0213	0.003142		
EVENTS	0.013241	0.3643	0.014465			0.005571	0.6387	0.011793	0.400642	0.268783
DXR	-0.028460*	0.0685	0.015291	0.380815	0.247265	-0.014703	0.3737	0.016379		
DPP	-0.014676	0.3734	0.016342			-0.012008	0.3322	0.012264		
DSD	-0.036575**	0.0328	0.016670			-0.017931	0.1848	0.013335		
Panel B: Rights Issuing (XR)										
SIZE	0.657883***	0.0003	0.172080			0.792280***	0.0000	0.156667		
MB	-0.003688***	0.0000	0.000359			-0.005079**	0.0165	0.002050		
LEVERAGE	0.035595	0.1555	0.024704			0.013052	0.4566	0.017400		
ROE/EBITDA	0.006982*	0.0663	0.003723			0.000217	0.1280	0.000140		
P/E	2.33E-05	0.1616	1.64E-05	0.363699	0.255648	0.000318	0.2097	0.000251	0.397315	0.293004
TURNOVER	-0.661904	0.6822	1.607761			0.819906	0.5083	1.230806		
OWN	0.010656**	0.0272	0.004691			0.007501**	0.0196	0.003114		
EVENTS	0.008579	0.5065	0.012825			0.004680	0.7011	0.012124		
DXR	-0.004501	0.7426	0.013633			-0.000658	0.9543	0.011429		
Panel C: Private Placement (PP)										
SIZE	0.662103***	0.0002	0.164233			0.790560***	0.0000	0.160346		
MB	-0.003900***	0.0000	0.000418			-0.005081**	0.0136	0.001990		
LEVERAGE	0.041969*	0.0671	0.022447			0.014180	0.4103	0.017082		
ROE/EBITDA	0.007018**	0.0418	0.003365			0.000220	0.1172	0.000138		
P/E	2.74E-05*	0.0775	1.52E-05	0.371260	0.264492	0.000323	0.1819	0.000238	0.397780	0.293550
TURNOVER	-1.177262	0.5447	1.931130			0.748552	0.5218	1.160777		
OWN	0.010867**	0.0278	0.004803			0.007560**	0.0185	0.003110		
EVENTS	0.010763	0.4236	0.013347			0.005000	0.6546	0.011113		
DPP	0.013903	0.5047	0.020696			0.002623	0.8265	0.011911		

Explanatory Variables	Statistic Values of ROE					Statistic Values of EBITDA				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$	*Coefficient*	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
Panel D: Stock Dividend (SD)										
SIZE	0.692101	0.0000	0.144803			0.805915***	0.0000	0.146452		
MB	-0.003576***	0.0000	0.000378			-0.005023**	0.0141	0.001978		
LEVERAGE	0.046598*	0.0828	0.026354			0.014740	0.4348	0.018728		
ROE/EBITDA	0.008110**	0.0357	0.003764	0.370317	0.263390	0.000212	0.1402	0.000141	0.398590	0.294500
P/E	1.92E-05	0.2444	1.63E-05			0.000348	0.1314	0.000227		
TURNOVER	-0.913901	0.6064	1.763296			0.723949	0.5792	1.297195		
OWN	0.010670**	0.0255	0.004643			0.007499**	0.0179	0.003067		
EVENTS	0.012640	0.3719	0.014035			0.005760	0.6211	0.011583		
DSD	-0.014029	0.3703	0.015527			-0.004842	0.6752	0.011490		
Sample Size			**63**					**62**		

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

Table 4.17: Robustness results of regression by transforming variables

The results of the regression when transforming variables to the function of logarithm for the companies which issued new shares are given here. The concept of a pooled sample is applied here, with a total sample of 50 companies. **Panel A** shows the total sample. **Panel B** shows the method of rights issuing (XR). **Panel C** shows the case when using private placement (PP). **Panel D** shows when the firms use stock dividend (SD) as their issuing method. The overall model is also controlled for the problem of heteroscedasticity by applying White's Heteroscedasticity-Consistent Standard Error and Covariance. *LSIZE* refers to the natural logarithm of issuing size measured by the logarithm of ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). *Market-to-Book (MB)* is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. *Leverage ratio (LEVERAGE)* is the ratio of total debt and total asset, and change in leverage ratio is the leverage ratio in the year of issuing minus the average leverage ratio for 3 years before the year of offering. *Return on Asset (ROA)* refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. *Price-Earnings Ratio (P/E)* is defined as the change in this ratio: P/E ratio in the offering year minus the average of 3 years P/E ratio before the issuing year. *Logarithm of turnover ratio(LTURN)* is a control variable based on the daily trading volume and number of shares outstanding calculated by an average of 11 months ending one month before the issuing month. *Logarithm of insider Ownership (LOWN)* is defined as the logarithm function of the difference between the top five largest shareholders in the year of offering and the top five largest shareholders 3 years before the issuing year. *Two-day announcement abnormal return (TWO_DAY_AR)* refers to the abnormal return to security on the day before the announcement plus the abnormal return to security on the day of announcement. *EVENTS* is a control variable in terms of a dummy variable equal to 1 if the firm has events other than SEOs within the 115 days before and after the event date, and zero otherwise. C refers to the constant term in the regression. The definition of $\overline{R}^2$ is referred to as the adjusted R^2. The dummy variables of right issuing (DXR), private placement (DPP) and stock dividend (DSD) equal 1 if the firms use XR, PP and SD, respectively; and zero otherwise. The regression is estimated:

$$TwoDayAbnormal\ \mathrm{Re}\ turn = \alpha + \beta_1(LSIZE) + \beta_2(MB) + \beta_3(Leverage) + \beta_4(ROA) + \beta_5(P/E) + \beta_6(LTURN) + \beta_7(LOWN) + \beta_8(EVENTS) + \beta_9(DXR, DPP, DSD)$$

Explanatory Variables	Statistic Values				
	Coefficient	***P-Values***	***Std Error***	R^2	$\overline{R}^2$
PANEL A: Total Sample					
LSIZE	0.117356	0.7621	0.385015		
MB	-0.003009*	0.0660	0.001593		
LEVERAGE	-0.036483	0.4874	0.052054		
ROA	-0.019568	0.8599	0.110204		
P/E	0.001141	0.1035	0.000685	0.074070	-0.106599
LTURN	-0.002361	0.7556	0.007535		
LOWN	-0.005519	0.7877	0.020356		
EVENTS	-0.001508	0.9423	0.020716		
PANEL B: Rights Issuing (XR)					
LSIZE	0.215777	0.6301	0.444586	0.100463	-0.101933
MB	-0.002923**	0.0459	0.001419		

Explanatory Variables	Statistic Values				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
LEVERAGE	-0.036748	0.5279	0.057708		
ROA	-0.036871	0.7684	0.124388		
P/E	0.001277	0.1012	0.000761		
LTURN	0.000784	0.9283	0.008659		
LOWN	-0.009215	0.6843	0.022501	0.100463	-0.101933
EVENTS	0.006451	0.7595	0.020932		
DXR	0.029717	0.3341	0.030397		
PANEL C: Private Placement (PP)					
LSIZE	0.112311	0.7578	0.361670		
MB	-0.002710**	0.0263	0.001174		
LEVERAGE	-0.021849	0.7244	0.061539		
ROA	0.020180	0.8636	0.116713		
P/E	0.001078*	0.0752	0.000590	0.129544	-0.066308
LTURN	0.002697	0.7768	0.009446		
LOWN	-0.003934	0.8369	0.018978		
EVENTS	-0.003654	0.8566	0.020089		
DPP	-0.043847	0.2215	0.035309		
PANEL D: Stock Dividend (SD)					
LSIZE	0.054194	0.8852	0.372974		
MB	-0.002937*	0.0648	0.001547		
LEVERAGE	-0.030167	0.5742	0.053250		
ROA	0.007872	0.9457	0.114750		
P/E	0.001030	0.1312	0.000668	0.081020	-0.125751
LTURN	-0.002186	0.7773	0.007676		
LOWN	-0.002560	0.9008	0.020411		
EVENTS	-0.007347	0.7244	0.020688		
DSD	0.018431	0.3654	0.020130		
Sample Size			**50**		

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

Table 4.18: Results of the correlation between short- and long-term stock price reactions

The table presents the results from the regression, in which the long-term abnormal return is defined as the dependent variable and two-day announcement abnormal return (*TWO_DAY_AR*) is the explanatory variable. Control of the problem of heteroscedasticity in the model is also achieved by applying White's Heteroscedasticity-Consistent Standard Error and Covariance. The total sample is 67 firms with a pooling sample in each issuing method. **Panel A** shows the total sample. **Panel B** shows the method of rights issuing (XR). **Panel C** shows the case of using private placement (PP). **Panel D** shows when the firms utilise stock dividend (SD) as their issuing method. The control variables are the variables previously estimated. *SIZE* refers to the ratio of market capitalisation on the day following the announcement (day +1) and the day of the announcement (day 0). *Market-to-Book (MB)* is defined as the change in market-to-book ratio calculated by the difference between market-to-book ratio in the offering year and the average 3 years before the issuing year of this ratio. *Leverage ratio (LEVERAGE)* is the ratio of total debt and total asset, and change in leverage ratio is leverage ratio in the year of issuing minus average leverage ratio for 3 years before the year of offering. *Return on Asset (ROA)* refers to the change in ROA computed by the change between ROA in the offering year and average ROA for 3 years ending one year before the issuing year. *Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA)* refer to the change in EBITDA computed by the change between EBITDA in the offering year and average EBITDA for 3 years ending one year before the issuing year. *Price-Earnings Ratio (P/E)* is defined as the change in this ratio: P/E ratio in offering year minus average 3 years P/E ratio before the issuing year. *Turnover ratio(TURNOVER)* is a control variable based on the daily trading volume and number of shares outstanding calculated by an average of 11 months ending one month before the issuing month. *Insider Ownership (OWN)* is defined as the difference between the top five largest major shareholders in the year of offering and the top five largest major shareholders 3 years before the issuing year. The definition of $\overline{R}^2$ is referred to as the adjusted R^2. The regression is estimated via the function: $LR\_AR = f[ControlVariables] + \rho TwoDayAbnormal\ \mathrm{Re}turn$ (*) Significant at 10% level, (**) Significant at 5% level, (***) Significant at 1% level. The sample size for estimation is 67 firms. The sample size for estimation with EBITDA is 61 firms.

Explanatory Variables	Statistic Values					Statistic Values of Estimation with EBITDA				
	Coefficient	***P-Values***	***Std Error***	R^2	$\overline{R}^2$	***Coefficient***	***P-Values***	***Std Error***	R^2	$\overline{R}^2$
Panel A.1: Total Sample						**Panel A.2: Total Sample**				
SIZE	0.000220	0.9864	0.012850			0.001439	0.9227	0.014752		
MB	3.98E-07	0.9950	6.30E-05			-0.000256	0.1329	0.000168		
LEVERAGE	0.007234*	0.0947	0.004257			0.002771	0.5259	0.004340		
ROA/EBITDA	0.009135	0.1281	0.005916			-1.45E-05	0.1367	9.62E-06		
P/E	4.36E-06***	0.0016	1.31E-06	0.216649	0.092962	3.04E-05	0.2447	2.58E-05	0.206365	0.066312
TURNOVER	-0.171923*	0.0537	0.087251			-0.103994	0.3389	0.107729		
OWN	0.000748***	0.0083	0.000274			0.000824**	0.0162	0.000331		
TWO_DAY_AR	-0.006867	0.4682	0.009403			0.006029	0.5173	0.009247		
EVENTS	0.000402	0.6766	0.000958			1.39E-05	0.9889	0.000998		

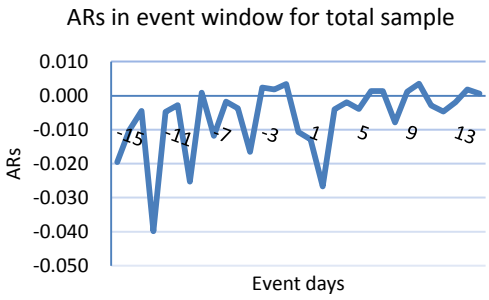
Explanatory Variables	Statistic Values					Statistic Values of Estimation with EBITDA				
	Coefficient	*P-Values*	*Std Error*	R^2	$\overline{R}^2$	*Coefficient*	*P-Values*	*Std Error*	R^2	$\overline{R}^2$
Panel B.1: Rights Issuing (XR)						**Panel B.2: Rights Issuing (XR)**				
SIZE	-0.000852	0.9515	0.013945			0.000592	0.9717	0.016590		
MB	-2.75E-06	0.9639	6.03E-05			-0.000259	0.1484	0.000177		
LEVERAGE	0.007158*	0.0964	0.004233			0.002733	0.5307	0.004329		
ROA/EBITDA	0.009261	0.1243	0.005935			-1.46E-05	0.1411	9.77E-06		
P/E	4.60E-06***	0.0015	1.38E-06	0.219729	0.080395	2.96E-05	0.2802	2.71E-05	0.207235	0.048682
TURNOVER	-0.174956*	0.0557	0.089543			-0.104846	0.3391	0.108619		
OWN	0.000752***	0.0089	0.000277			0.000829**	0.0187	0.000341		
TWO_DAY_AR	-0.006895	0.4783	0.009660			0.006038	0.5235	0.009397		
EVENTS	0.000319	0.7641	0.001057			-2.10E-05	0.9846	0.001084		
DXR	-0.000450	0.6617	0.001022			-0.000244	0.8327	0.001150		
Panel C.1: Private Placement (PP)						**Panel C.2: Private Placement (PP)**				
SIZE	0.000305	0.9796	0.011905			0.002533	0.8672	0.015064		
MB	5.79E-06	0.9358	7.16E-05			-0.000251	0.1257	0.000161		
LEVERAGE	0.007171	0.1096	0.004411			0.002391	0.6153	0.004729		
ROA/EBITDA	0.010268*	0.0926	0.006002			-1.56E-05*	0.0806	8.75E-06		
P/E	3.98E-06***	0.0036	1.31E-06	0.231841	0.094670	2.97E-05	0.2430	2.51E-05	0.216133	0.059360
TURNOVER	-0.150041*	0.0726	0.081992			-0.079898	0.4388	0.102379		
OWN	0.000735**	0.0102	0.000276			0.000799**	0.0234	0.000342		
TWO_DAY_AR	-0.006561	0.4486	0.008597			0.006303	0.4781	0.008818		
EVENTS	0.000330	0.7267	0.000940			-6.64E-05	0.9452	0.000960		
DPP	-0.001049	0.2954	0.000993			-0.000859	0.4637	0.001163		
Panel D.1: Stock Dividend (SD)						**Panel D.2: Stock Dividend (SD)**				
SIZE	-0.005414	0.6601	0.012247			-0.002956	0.8418	0.014731		
MB	-5.00E-06	0.9408	6.71E-05	0.263853	0.132399	-0.000263	0.1437	0.000177	0.230748	0.076898
LEVERAGE	0.006587	0.1360	0.004355			0.001931	0.6780	0.004623		
ROA/EBITDA	0.011266*	0.0600	0.005868			-1.29E-05	0.1662	9.17E-06		

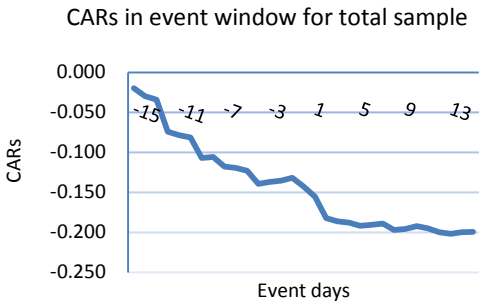
Explanatory Variables	Statistic Values					Statistic Values of Estimation with EBITDA				
	Coefficient	***P-Values***	***Std Error***	R^2	$\overline{R}^2$	***Coefficient***	***P-Values***	***Std Error***	R^2	$\overline{R}^2$
P/E	4.71E-06***	0.0002	1.18E-06			2.17E-05	0.4218	2.68E-05		
TURNOVER	-0.143882	0.1033	0.086886			-0.070920	0.5331	0.112997		
OWN	0.000766***	0.0044	0.000258	0.263853	0.132399	0.000817**	0.0151	0.000325	0.230748	0.076898
TWO_DAY_AR	-0.005676	0.5129	0.008620			0.006934	0.4304	0.008722		
EVENTS	-0.000182	0.8592	0.001019			-0.000351	0.7305	0.001012		
DSD	0.002235**	0.0406	0.001066			0.001586	0.1376	0.001051		
Sample Size			**67**					**61**		

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

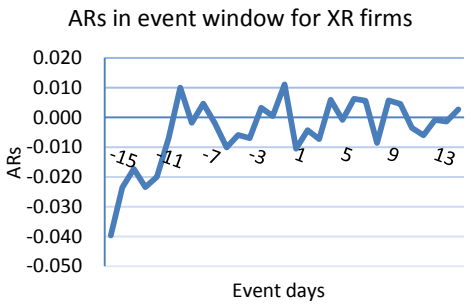
Figure 4.1: Graphs of abnormal returns and cumulative abnormal returns in event windows
The line graphs show abnormal returns (ARs) and Cumulative Abnormal Returns (CARs) for each relative day during the event window. **Panel A** shows the total sample. **Panel B** shows the method of rights issuing (XR). **Panel C** shows the case of using private placement (PP). **Panel D** shows when the firms utilise stock dividend (SD) as their issuing method. **Panel E** shows the firms which issued new shares via public offering (PO). ARs are calculated via market model: $AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt})$; where R_{it} is the return on security i for day t, and R_{mt} is the return on market. The CARs are calculated as the equation: $CAR_{i,K,L} = \sum_{t=K}^{L} AR_{it}$; where AR_{it} refers to abnormal return to security i for day t, and CAR is for period t = day K until t = day L.

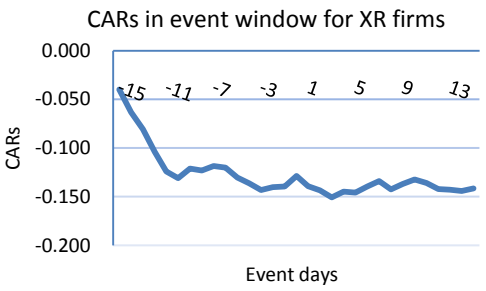
PANEL A



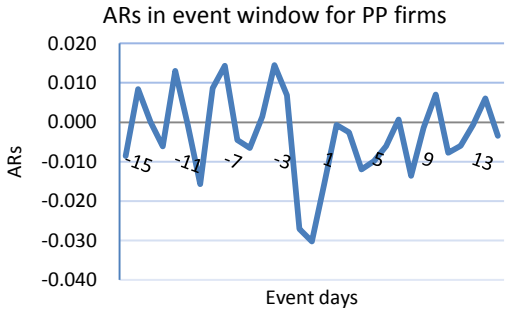


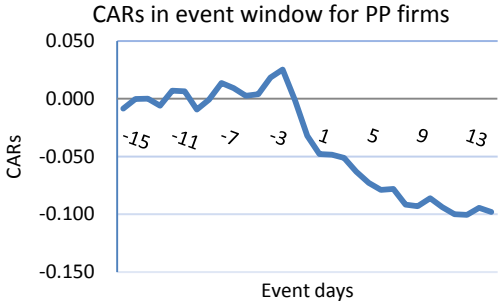
PANEL B





PANEL C





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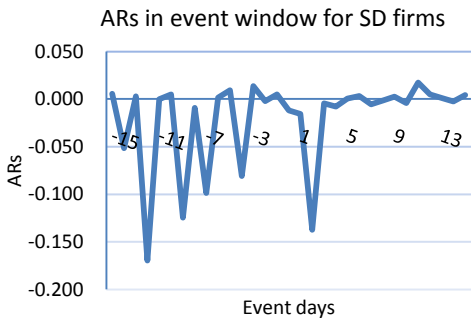

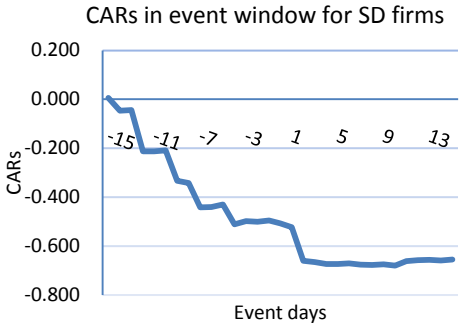

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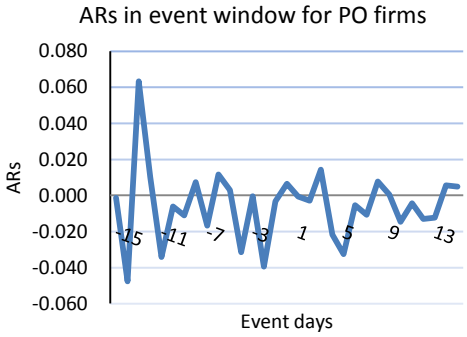


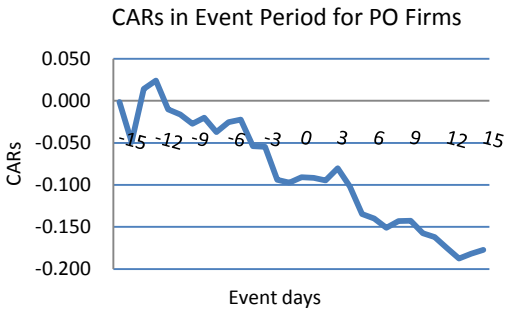
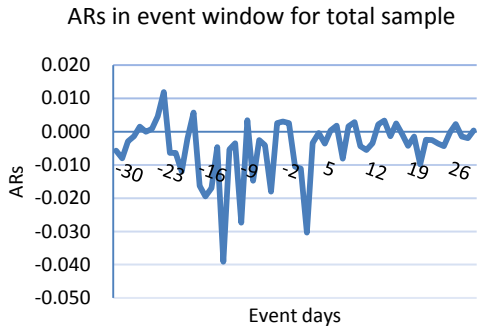
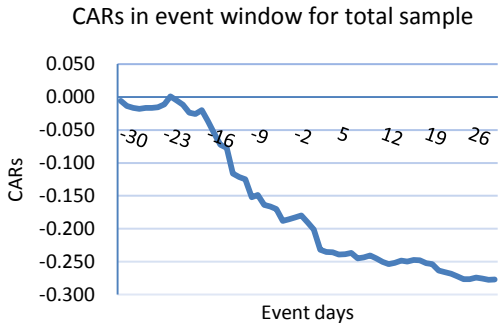


Figure 4.2: Graphs of abnormal returns and cumulative abnormal returns in robustness event window by issuing methods and total sample

The line graphs show abnormal returns (ARs) and Cumulative Abnormal Returns (CARs) for each relative day during the event window in each issuing method. The event window is defined as 30 days before and after the event date. **Panel A** shows average CARs in the total sample. **Panel B** shows average CARs in the companies which issued new shares via rights issuing (XR). **Panel C** lists the firms using private placement (PP) as their issuing method. **Panel D** shows the companies which issued with stock dividend (SD). **Panel E** lists the firms which issued new shares via public offering (PO). ARs are calculated via the market model: $AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt})$; where R_{it} is the return on security i for day t, and R_{mt} is the return on market The CARs are calculated as the equation: $CAR_{i,K,L} = \sum_{t=K}^{L} AR_{it}$; where AR_{it} refers to abnormal return to security i for day t, and CAR is for period t = day K until t = day L.

PANEL A





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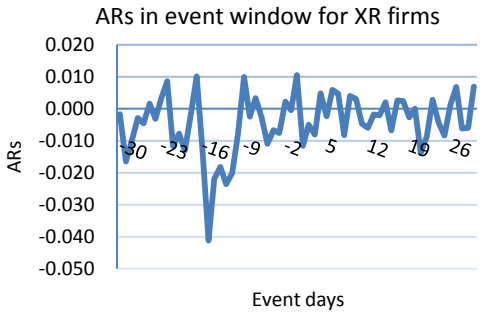
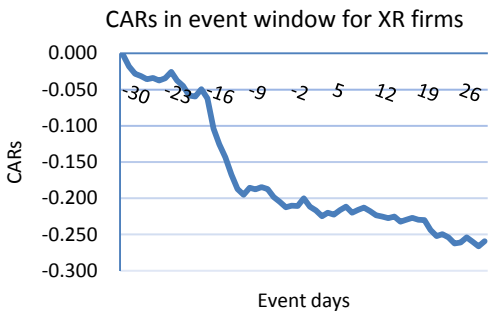
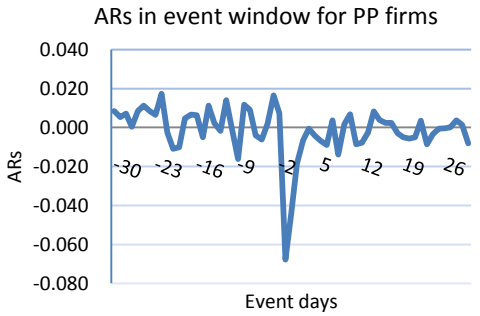
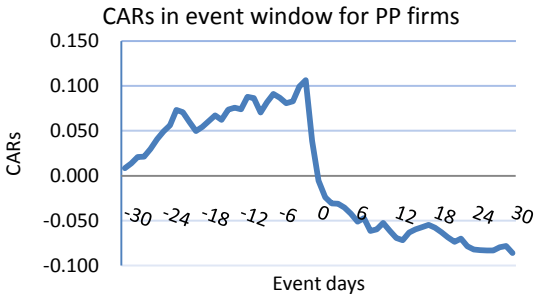


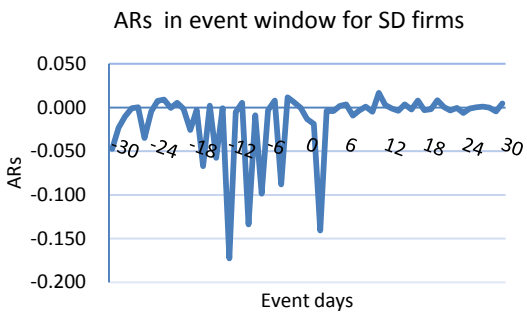


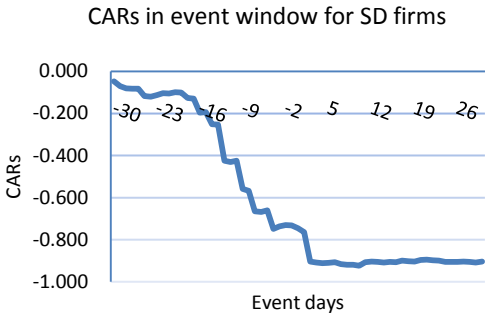
PANEL C



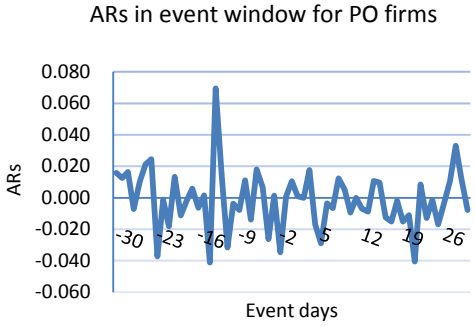


PANEL D





PANEL E



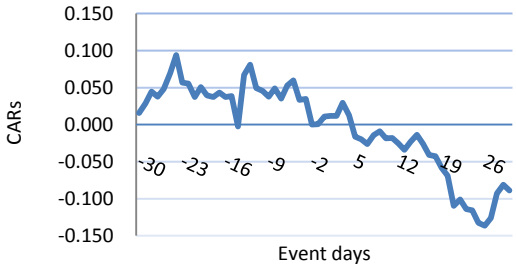
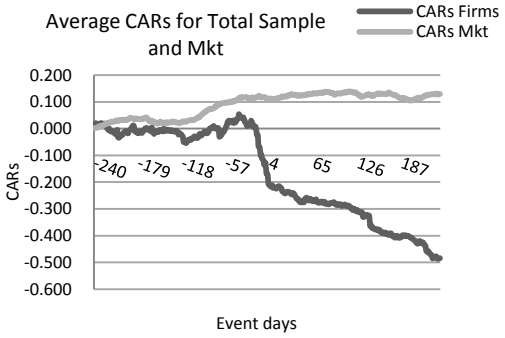
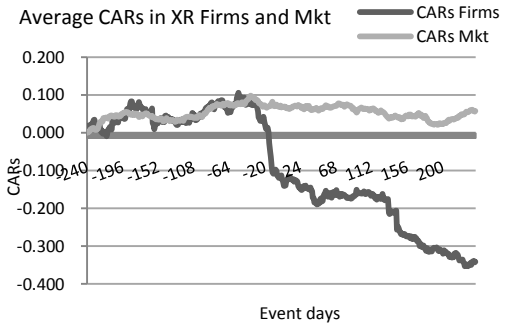


Figure 4.3: Graphs of average cumulative abnormal returns in a longer event window
The line graphs show the comparison between Average Cumulative Abnormal Returns (CARs) in firms which issued new shares via different issuing methods and Cumulative Average Market Returns (CARs Mkt). **Panel A** shows the total sample. **Panel B** shows the method of rights issuing (XR). **Panel C** shows the case of using private placement (PP). **Panel D** shows when the firms utilise stock dividend (SD) as their issuing method. Panel E shows the firms which issued new shares via public offering (PO). The CARs are calculated as the equation: $CAR_{i,K,L} = \sum_{t=K}^{L} AR_{it}$; where AR_{it} refers to abnormal return to security i for day t, and CAR is for period t = day K until t = day L. Market returns are measured by the Stock Exchange of Thailand composite index returns (SET index returns).

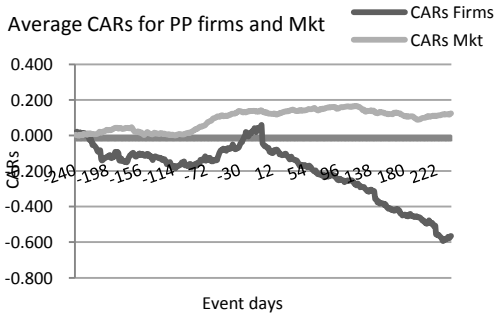
PANEL A



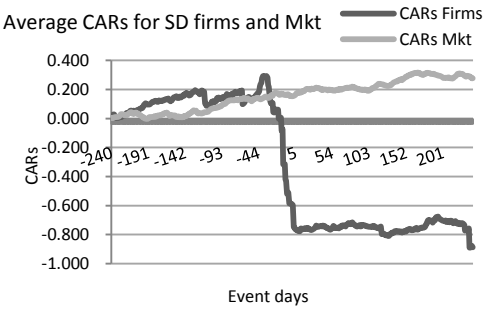
PANEL B



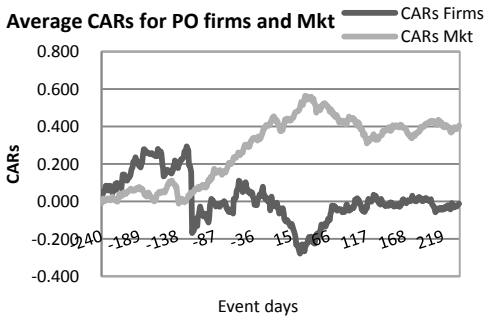
PANEL C



PANEL D



PANEL E



CHAPTER 5

THE DETERMINANTS OF THAI SEO UNDERPRICING

Abstract

This chapter examines the determinants of SEO underpricing in Thailand as another type of indirect flotation cost. A standard OLS regression is applied in our examination, with three categories of determinants: (1) information asymmetry and uncertainty, (2) price pressure and (3) manipulative trading. Our results indicate that firm size relates negatively to SEO underpricing, following this aspect of asymmetric information theory, while shares offering size as a proxy of price pressure show a positive relationship to SEO underpricing. Nonetheless, the evidence under the category of uncertainty and manipulative trading (as the control variable) show no relationship to SEO underpricing in some cases. There could be a contrasting explanation to the characteristics of the Thai capital market, where there are manipulations and high volatilities. In addition, our robustness tests provide different and varied outcomes, implying that the Thai capital market appears to be sensitive to changes in the estimations.

5.1 Introduction

Eckbo et al. (2006) point out that underpricing is perceived as the most important indirect flotation cost of issuing securities. Underwriters use underpricing to allocate equity issues to specific customers and their affiliates. Underpricing can be measured by relating the offer prices to the bid-ask midpoint or closing price on the day before the Seasoned Equity Offerings (SEOs hereafter) or offering date. The main objective in this chapter on underpricing is to determine which factors influenced SEO underpricing in Thailand during the study period of 1999 to 2006, using the basic framework provided in Intintoli and Kahle (2009). Nevertheless, our study in this chapter provides several contributions to the existing studies in this area.

First, although we use the general framework of Intintoli and Kahle (2009), our hypotheses are developed based on the characteristics of the Thai capital market. For example, we indicate the positive relationship between underpricing and size in the area of information asymmetry, which is a different aspect to the previous literature (such as Bharath et al., 2006). Second, since there are four different issuing methods in our SEO sample size (126 firms), we individually examine different issuing methods with their sample sizes. This would give us additional evidence of how factors influence SEO underpricing in the different sample of issuing methods. Third, concerning the SEO underpricing that refers to the relationship between offered prices and closed prices (discounting in prices), our study claims to be the first study of Thailand, particularly considering the recent data set (i.e. during the post-financial crisis of 1997: between 1999 and 2006). This is unlikely to be linked with the

previous chapter, which is concerned mainly with market reaction (the movements of stock prices). Lastly, we apply two different calculations of underpricing in our study (one is as the main estimation, while the other is as robustness). In addition, the firms' managers will benefit from this study in terms of the information on which factors influence SEO underpricing, while investors will be able to use our evidence in their investment decisions.

Alternatively, we could point out that underwriters need to consider this underpricing when the issue of equity is allocated to the preferred customers (normally, in our case, to the existing shareholders). Since Thai firms became substantially financed via equities after the financial crisis in 1997, underpricing should be more important to consider as part of the flotation costs for the companies. Thus, with a significant increase in the number of firms making SEOs in Thailand during our period of concern[118], the question of underpricing is perceived as meriting more attention. Underpricing in this chapter focuses considerably more on the issue of discounting in prices, while our previous chapter on stock price reaction was mostly concerned with the announcement effects of stock prices (in term of market reaction).

For our total estimation, we consider 126 SEO companies on the Stock Exchange of Thailand (hereafter, SET), which were the companies issued via common stocks during the period 1999 to 2006. Applying a standard OLS (Ordinary Least Square) regression, we control for other events besides the SEO by including dummy

[118] We support this with some figures which show that there has been a marked rise in the number of times that firms are making SEOs: from approximately 100 times in 1999 to around 400 times in 2005 (see Figure 3.1 in Chapter 3 for more illustrations of this trend).

variables in the regression. Our evidence reveals that there is a difference between the theoretical discussions and the findings, from which we developed the hypotheses from the characteristics of the Thai capital market. For instance, we found a positive relationship between size and underpricing, instead of a negative relationship following the concept of information asymmetry (see, for example, Corwin, 2003). In addition, issuing methods (i.e. rights issuing and stock dividend) show an impact on SEO underpricing. Nonetheless, our robustness findings via a different calculation of underpricing and transforming variables into a logarithm function report that there may be a possibility of misspecification in the regression due to multicollinearity. This is shown by high standard errors in the regression and some insignificant variables (e.g. ownership and trading volume).

The organisation of this chapter is as follows: section 5.2 will briefly review some studies of underpricing, including possible motivations and hypotheses. In section 5.3, we consider the data and methodology. Section 5.4 will report the empirical results and discussion of the outcomes. We finally summarise this investigation in section 5.5.

5.2 Literature Review and Hypotheses

5.2.1 Literature on SEO Underpricing in Developed Markets

Most studies cover the question of whether underpricing exists in new issuing and what the movements of underpricing are: for example, Loderer et al. (1991), Safieddine and Wilhelm (1996), Altinkilic and Hansen (2003), Corwin (2003), Mola and Loughran (2004), Shaorong (2005), Yongtae and Myung Seok (2005) and Intintoli and Kahle (2009). Eckbo et al. (2006, pp.33-36) claim that a full explanation of increased SEO underpricing is yet to be offered. They indicate that the findings of underpricing are significantly related to three main characteristics: (1) the company itself, (2) security and (3) the offering. Since the change in the economy or in the capital market may cause SEO underpricing to increase (see Kim and Hyun-Han, 2004), we could claim that the situation in the Thai capital market during our study period (1999 – 2006) displays a similarity to these conditions. This is because the Thai economy was still recovering from the financial crisis of 1997 and the capital market began showing signs of good recovery for the complete period of our concern (revealed by a substantial rise in the SET Index, in particular between the years 2002 and 2004). Therefore, it would be an interesting opportunity to expand the study in this area by using an out-of-sample market, e.g. emerging markets (Thailand, in our case). Nonetheless, the literature on underpricing in developed markets is also concerned with IPOs, focusing more on the related theories (e.g. Rock, 1986; Habib and Ljungqvist, 2001; Ljungqvist, 2004; Loughran and Ritter, 2004).

5.2.2 Literature on SEO Underpricing in Emerging Markets

There are no studies available based on data from emerging markets. We could claim that studies of underpricing in emerging markets are disproportionately scarce. Consequently, more papers on emerging markets would be welcome, so that we could compare them with those in developed markets and see how far they resemble one another. In Thailand, we have found only one recent essay on the subject; IPOs have attracted more attention[119]. Chorruk and Worthington (2009) analyse 145 IPOs listed on the SET between February 1997 and November 2007. Their results reveal that underpricing is found to be higher in financial service IPOs than in those of industrial companies.

With a lack of underpricing literature on emerging markets, we attempt to provide the studies covering this area in an emerging market, Thailand. This leads to an investigation into whether our results carry over from the studies on developed markets. Since equity financing became popular after the financial crisis in 1997, it would be interesting to focus on this area. Having found one study on IPO in Thailand (Chorruk and Worthington, 2009), we turn over attention to obtaining the sample of SEOs. This is because the samples of IPOs are likely to be examined in many markets (both developed and emerging, as mentioned in the previous section). We exclude all financial companies (unlike Chorruk and Worthington, 2009, who in their paper cited companies offering financial services) because they are different in capital structure to non-financial ones. Furthermore, we still had some difficulties in finding relevant

[119] More than one study may be focused on underpricing in Thailand in practice, but owing to the limited availability and difficulty of access to the related literature, only one piece of work relating to underpricing seems to be available.

studies on SEO underpricing in other markets. Although we found some papers using Australian data (such as that of Balachandran et al., 2008b), they do not particularly consider SEO underpricing. Therefore, there is a small amount of literature on SEO underpricing in order to compare our evidence with Thailand in particular and other emerging markets. In Thailand, there are two possible explanations why studies of SEO underpricing are scarce.

First, the number of listed companies is small (even though there has been a gradual increase in the number of listed firms every year, according to the SET). Thailand has various non-listed companies and most of them are interested in being listed on the stock exchange when they are ready. In other words, these non-listed firms have had difficulties with debt financing since the financial crisis in 1997. Subsequently, they have turned to financing via equities, meaning that they need to be listed on the stock market (and become an IPO firm). This can be seen by a marked rise in the number of IPO firms in the last decade (between 2000 and 2010), as has been the case with SEO firms[120]. In addition, those IPO firms are the companies which are engaged in well-known businesses (e.g. the state enterprises that were previously non-listed) in Thailand and start to influence the stock market (i.e. increasing the SET's market capitalisation) when they are listed. These are, for instance, energy and utilities businesses (PTT in 2001)[121], media and publishing businesses (MCOT: MCOT Public Company Limited in 2004) and transportation and logistics businesses (AOT: Airports of Thailand Public Company Limited in 2004). As a result, the existing

[120] This is shown by the more than 150 companies which were listed on the stock exchange during the period 2000 to 2010. Source: the SET website: http://www.set.or.th/setresearch/files/20090831_A_graph_SET_statistics.pdf [Accessed on 22 September 2009].
[121] See full name in Appendix 3.

studies on Thailand (e.g. Chorruk and Worthington, 2009) turn their attention to the samples of IPOs rather than SEOs, although data are available for the examination of SEO underpricing in Thailand.

Second, even though the data are available as previously mentioned, another possible reason might be that there are limitations to the data to be accessed. The researchers may need to have some connections inside the firms in order to obtain more information than they provide to the public. We support these limitations of data in section 3.3.3., when the Thomson One Banker (Deal Equity: TOBDE) is obtained for cross-checking the data. For example, we may use private connections to have the historical copies which are not available from older years and the hard copies in the Securities Exchange Commission (hereafter, SEC) which are missing. Consequently, this leads to difficulties in examining SEO underpricing in more detail. As a result, we have discovered very little regarding this area with the sample of SEOs in Thailand.

5.2.3 Literature on the Determinants of SEO Underpricing

The literature on the determinants of SEO underpricing is sparse. For example, Corwin (2003) considers a cross-section analysis for SEO underpricing in the U.S. between 1980 and 1998. His evidence indicates that the higher the price uncertainty, the greater the increase in possibility that the firms will be underpriced. Kim and Hyun-Han (2004) and Shaorong (2005) both examine U.S. firms for the relationship between underpricing and some related factors, such as insider selling, short-selling and other market activities. Their results explain the positive relationship between underpricing and insider selling, including market conditions. In addition, Intintoli

and Kahle (2009) investigate the determinants of underpricing in various categories of firm in the U.S.: e.g. price pressure, managerial wealth, uncertainty and information asymmetry and manipulative trading. As discussed earlier, applying the Thai market as the condition of change in the economy (Kim and Hyun-Han, 2004) is perhaps our initial concern when choosing Thailand in our study of SEO underpricing. Nevertheless, with little evidence of SEO underpricing in the Thai market, we will consider examining the determinants of SEO underpricing in three areas, together with the motivations which lead to testable hypotheses, as follows.

5.2.3.1 Asymmetric Information and Uncertainty

Information asymmetry and uncertainty could be important in the decisions on a company's capital structure. Yongtae and Myung Seok (2005, p.455) point out from their discussions of a U.S. sample, that "underpricing is a function of information asymmetry. The amount of underpricing reflects investors' uncertainty. Therefore, the higher the information asymmetry, the more SEOs are underpriced". Bharath et al. (2006), using U.S. data between 1972 and 2002, also demonstrate that the level of a firm's information asymmetry relates positively to debt financing. With the institutional characteristics in Thailand (e.g. highly volatile and small market size), it is possible to indicate that the features of asymmetric information and uncertainty suggested in previous studies (although they are concerned with developed markets) are consistent with those of Thai companies.

As noted, there are several examples of insider trading and speculation in the Thai capital market. This is supported by our evidence in the previous chapter on the stock

price reaction that the graphs of cumulative abnormal returns (CARs) display signs of information being leaked before the event window of SEO announcements, implying that investors may learn the news before its publication. Similarly, on the uncertainty of investors (Yongtae and Myung Seok, 2005), the Thai capital market appears to have a high number of individual investors. These investors usually follow rumours and external factors, causing the high volatility in the market[122]. Since the U.S. and other developed markets have been investigated in previous research, we aim to use a different market, i.e. Thailand, to examine whether the evidence based on academic and theoretical aspects confirms the general characteristics in practice. In this regard, information asymmetry and uncertainty of the market and investors seem to be the important issues driving stock prices in Thailand.

In general, size is a measurement of information asymmetry because the larger the company, the less asymmetric information there will be, as in theory it manages the announcement of its information better (see for instance Intintoli and Kahle, 2009). However, in the Thai capital market, due to a high level of insider trading, larger firms may offer more chances of the information being leaked before the announcement. This is because it may be hard in larger firms to control whether, for example, the content of the SEO announcement will be spread to other members in the company by the people who attend the board meetings. This should be because of the high number of shareholders and employees present at the meeting. In contrast,

[122] See for example: Kasikorn Research Centre (2003). **The SET Index: Volatility from Selling to Making a Profit** (in Thai). Vol. 9 Issue 1438, available from the CD-Rom from the Kasikorn Research Centre or the summaries via: http://www.kasikornresearch.com/TH/K-Econ%20Analysis/Pages/ViewSummary.aspx?docid=3972 [Accessed on 5 March 2011]

smaller firms might be owned by a small group of people, making it easier to control the leakage of new information to outside investors by the inside employees.

Supporting the leakage evidence, our findings on the stock price reaction to SEO announcements also report that the information is leaking prior to the announcements of SEOs. In particular, this is when we consider different issuing methods individually (see section 4.4 in Chapter 4). Furthermore, although the existing literature reports a negative relationship between firm size and SEO underpricing (see for example Intintoli and Kahle, 2009), the data were obtained from U.S. companies or other developed markets. These markets are larger in size than the Thai market and the number of firms listed in those markets would also be larger than Thai firms. We provide some examples here: since we measure size via market capitalisation, the Thai stock market is listed in 31st position among the world's markets. This is 67 times smaller than the NYSE, and 14 times and 3 times smaller than the Hong Kong and Singapore markets respectively (World Federation of Exchange as of 31 July 2009). Therefore, with the difference of size between developed markets and the Thai market, we may not be able to have the same relationship of firm size and SEO underpricing when we consider the characteristics of the market closely. Since the smaller companies could control the leakage of information better than the larger companies in Thailand (as previously pointed out), we subsequently expect a positive relationship to the underpricing. If this is correct, we can claim that the evidence closely reflects the characteristics of the Thai capital market. This is in contrast with the existing literature, such as Yongtae and Myung Seok (2005) and Intintoli and Kahle (2009).

Regarding the uncertainty, we can justify it by the volatility in the market. With the high volatility in the Thai capital market, it may be more difficult than in the lower volatility of the developed markets to point out the nature of the relationship between underpricing and volatility (whether positive or negative). This refers to the fact that the number of individual investors in the Thai markets is high. According to SET statistics (see Figure 3.3 in Chapter 3), the number of individual investors in the SET between 2000 and 2009 was around 64.4% on average. These individual investors are basically short-term investors, who usually come to trade in the stock exchange on the basis of rumours and daily events (e.g. the announcement of policies by the SEC, the political situation or even natural disasters). Examples of these are supported by an instantaneous fall in the SET Index (particularly the energy sector and commercial banking sector) of around 3% after the market was opened on 17 May 2010[123]. This was due to the political riot in the capital of Thailand. Moreover, more than 8% of the SET Index fell gradually, following the rumours from Bloomberg News regarding the situation of King Bhumibol Adulyadej's health[124]. Consequently, the volatility easily spreads through the entire market, causing the composite index (SET Index) to be relatively sensitive to most situations occurring in the country.

However, the area of uncertainty has been considered in research before, for example by Altinkilic and Hansen (2003), Corwin (2003) and Intintoli and Kahle (2009). We follow this existing literature to examine this area, since the Thai capital market is

[123] Source: The Thai News Station (online) by The MCOT Public Company Limited. Available at: http://www.mcot.co.th [Accessed on 17 March 2011].
[124] Source: Manager Online: **SET is ready to use the Serkit Breaker for the marked fall in stocks, following the rumours from Bloomberg.** On 15 October 2009 (in Thai), available at: http://www.manager.co.th/StockMkt/ViewNews.aspx?NewsID=9520000122562. [Accessed on 17 March 2011].

highly volatile. Moreover, investing in capital markets always contains risk and uncertainty as to whether the investors will make a gain or loss in their trading. Thus, this uncertainty in the capital market should be an important factor in the impact on underpricing. As a result, we produce two hypotheses for information asymmetry and uncertainty:

$H_{0,1}$: Firm size positively affects SEO underpricing.

$H_{0,2}$: Volatility influences SEO underpricing.

5.2.3.2 Price Pressure

Meidan (2005) obtained 6,768 common stock offerings from the NYSE, AMEX and NASDAQ from 1982 to 2002 and found a rise in volume on the day before the offer, in response to the price pressure surrounding SEOs. Moreover, an explanation of price pressure can reveal a disruption of the offering in the flow of buying and selling. Altinkilic and Hansen (2005, pp.1-2) suggest, on the basis of 3,782 offers in the U.S. database, that price pressure can be used to interpret only the due portion of the decline in price around the equity offering. In addition, the suggestion of Intintoli and Kahle (2009, p.13) concerning price pressure on 7,720 SEOs in the U.S. is that underpricing is likely to be most pronounced for the largest offers, reflecting the market's ability to absorb the new shares. Referring to our previous examination of SEO stock price reaction in Thailand, the evidence shows that the stock prices respond negatively during the event window (offering period). These findings refer to the suggestion by Intintoli and Kahle that price pressure can be explained by this

decline in stock price at the time of the SEO announcement, although they imply no clearer sense of whether this decrease affects a due portion.

Consequently, according to Altinkilic and Hansen (2005), we can consider price pressure in our examination. The reason is that we noticed from our previous evidence (see section 4.4 of Chapter 4) that there is a decline in stock prices following the SEO announcements. Since we have obtained the data from Thailand, we may have different explanations compared to the previous literature (e.g. Altinkilic and Hansen, 2005; Median, 2005; Intintoli and Kahle, 2009), which employs data from developed markets, such as the U.S. This also allows our investigations to consider whether the results of price pressure carry over to Thailand. At first, we expected the price pressure to be an important part of SEO underpricing in Thailand. The current situations or events (including the announcements of the related institutions – e.g. the Bank of Thailand: BOT) can impact easily on the stock prices either positively or negatively. This causes the Thai capital market to be sensitive to events. If they react negatively, we can interpret their reactions and underpricing with the price pressure (Altinkilic and Hansen, 2005). One example of this suggests that there was a dramatic fall (almost 15%) in the SET Index on 19 December 2006 after the BOT announced its policy to reserve foreign capital investment. On the following day, the BOT relaxed its policy on foreign capital due to the effect on direct investment and the investment in the SET following this significant fall. This caused the SET Index to recover instantaneously, rising around 11.25% by the end of the day. Hence, this confirms that the Thai capital market is sensitive to any policies or information announced by the government and related institutions (such as the BOT). Besides,

most investors are likely to be irrational and they usually believe in rumours rather than relying on their investment knowledge, e.g. considering the fundamental factors of the firms. An example can be seen in the prior section (section 5.2.3.1) regarding a decline in the SET Index following the rumours of King Bhumibol Adulyadej's health[125].

Price pressure was previously a proxy of offer size, share offers to float and trading volume (e.g. Corwin, 2003 and Intintoli and Kahle, 2009). Although these proxies have been estimated in previous research, they were based on data from developed markets, in particular the U.S. If we obtain out-of-sample data (i.e. those of Thailand as an example of an emerging market), it would be worth investigating whether the outcomes are carried over to a market of a different kind. Furthermore, since the Thai capital market is stated to be illiquid, price pressure should be stronger, in order to make stock prices more attractive to the investors. Therefore, trading volume as a measurement of liquidity is likely to be important for inclusion in our examination. However, Intintoli and Kahle (2009) believe that "shares offered to float" could also represent insider ownership.

In Thailand, ownership appears as a rule to be fairly important to Thai companies because most firms are owned by members of the same family. Supporting this, we take an example of a well-known family firm from our sample size[126]: the Charoen

[125] Source: Manager Online: **SET is ready to use the Serkit Breaker for the marked fall in stocks, following the rumours from Bloomberg.** On 15 October 2009 (in Thai), available at: http://www.manager.co.th/StockMkt/ViewNews.aspx?NewsID=9520000122562 [Accessed on 17 March 2011].

[126] All firms with abbreviated names have the full version of their names shown in Appendix 3.

Pokphand (CP) group (e.g. CPF and CPALL). According to the statistics provided by SETSMART, the major shareholders are shown as the Chiaravanond family. Although they are not the top five shareholders, among all the shareholders in the company, such as CPF and CPALL, they combine to form the highest proportion of shareholders and the local juristic persons. This represents more than 35% of total shareholders[127]. Another example may be demonstrated by the Central group (e.g. CENTEL and CPN). The statistics reveal that the Jiratiwat family forms the majority of total shareholders, approximately 42%[128]. Moreover, there are many companies, both listed and non-listed, including financial companies, which are owned by family members and are mostly controlled by them. Some examples of these firms are BANPU[129] – the Wongkusonkit family; the Bangkok Bank Public Company Limited (BBL) – the Soponphanich family; the Kasikorn Bank Public Company Limited (KBANK) – the Lumsum family; and the Singha Corporation Company Limited – the Pirompakdee family (a non-listed firm). These owners may have a powerful influence on decisions about any action on the part of the company, although we cannot be sure of obvious supporting evidence to show how they use it. As a result, it cannot be specified whether the ownership will impact on the underpricing positively or negatively. Moreover, our previous findings confirmed that ownership affects the SEO stock price reaction (see section 4.4.4 of Chapter 4). Consequently, we should include "ownership" as a factor of concern. Nevertheless, since Intintoli and Kahle (2009) suggest that either "shares offered to float" or "ownership" should be

[127] This percentage is as at the end of year 2008. If we consider a more distant period, e.g. the year 1993, when they were listed in the market, this percentage was around 50% of total shareholders.
[128] This percentage is as at the end of year 2008.
[129] See Appendix 3 for the name in full.

considered, we may follow their suggestion if the result from the variance-covariance matrix shows a close correlation between these two proxies.

As pointed out above, it is claimed that price pressure in Thailand can be captured and measured via these four factors, on the grounds of the explanations proffered above. Nonetheless, although the proxies of price pressure are employed in previous research (e.g. Corwin, 2003; Altinkilic and Hansen, 2005; Median, 2005) where the data are obtained from developed markets, our study will apply a sample from an emerging market (Thailand) where the characteristics and behaviour of investors are totally different – the market is inefficient and investors seem to be irrational. We also estimate the additional factor, i.e. ownership, in order to make the study more relevant to the Thai market. In total, we consider four measurements of price pressure, namely the size of shares offered, shares offered to float, ownership structure and trading volume. Thus, the four hypotheses are set up as:

$H_{0,3}$: Underpricing increases when there is a larger offer size

$H_{0,4}$: Share offers to float influence SEO underpricing positively

$H_{0,5}$: Insider ownership influences SEO underpricing

$H_{0,6}$: The higher the trading volume, the less the underpricing

5.2.3.3 Manipulative Trading

Literature regarding manipulative trading can be found. The previous investigation of Gerard and Nanda (1993) indicates in its results from the U.S. that no manipulation takes place when the informed trader's information is perfectly disclosed by the

second market trading preceding the SEOs. With three sets of equilibria (pure manipulation, partial manipulation and non-manipulative), the relative sizes of the secondary market order flow and the issuance of new equity critically influence the prevalence of manipulation (Gerard and Nanda, 1993, p.222). Safieddine and Wilhelm (1996; cited by Chemmanur et al., 2007, p.8) examine the relationship between SEO underpricing and short-selling activity in order to establish any threat of manipulative trading around SEOs. Their results report that prior to the adoption of Rule 10b-21 SEO underpricing related positively to the short interest. Furthermore, Chemmanur et al. (2007) investigate the relationship between pre-offer institutional trading, institutional SEO share allocation and the SEO discount. Their findings reveal that pre-offer institutional net selling correlates positively to the SEO discount under the manipulative trading hypothesis. This can mean that manipulative trading could have a positive relationship to the SEO underpricing. Recently, Intintoli and Kahle (2009), in order to measure manipulative trading, have examined the US market-adjusted return before offers, together with a separation of the proxy into positive and negative. With these existing studies, we notice that they were conducted with data from developed markets, while our study concerns an emerging market (Thailand). A positive relationship between the manipulation and SEO underpricing may not be consistent by using the data from Thailand. This is due to the difference in characteristics of the capital market.

However, we have a little evidence of how this relates to the SEO underpricing. This is because in practice, the rise in stock prices (or the non-normal trading of securities) is not a result of manipulation. The daily information or the psychology of investors'

behaviour can cause this volatility in the stock prices (Sujaritkul, 2007)[130]. In addition, the Thai SEC rarely penalises the people and/or the companies (including the brokers) because there are difficulties in proving whether they are offenders. The research of Meechatt (2010)[131], who examines the development of manipulative investigation, suggests that there are eight main problems regarding the process of manipulative trading in Thailand. The key points are that there are relatively small penalties for manipulative trading and these penalties are mostly civil ones[132]. Alternatively, we could claim that even if there is a law of manipulative trading in Thailand, the practical outcomes contrast with the evidence of Safieddine and Wilhelm (1996). Their findings support the enforcement of Rule 10b-21, that it is successful due to a lack of relationship between SEO discounts and pre-offer short selling. Consequently, we will consider manipulative trading as our control variable in our examination. We point out the reason that there is no supporting evidence, in particular to identify whether SEO underpricing relates to manipulation in Thailand (although it remains in practice).

In order to concentrate only on the SEOs, it is possible to make the assumption that other events apart from SEOs have a minor impact on underpricing. This is because in practice, several kinds of event can influence the movement of stock prices, including underpricing. These events are, for instance, dividend announcements, earning

[130] Sujaritkul, R. (2007) "**An examination of manipulative trading" in the SEC's view (Securities Exchange Commission's Article)** – in Thai**.** Available from: http://www.sec.or.th/investor_edu/info_media/article/2550 [Accessed 9 April 2011].

[131] Meechart, W. (2010) **"The development and strategy of the investigation of the economic delinquent in the money market and capital market"** Newspaper article (in Thai) on 20 December 2010, available via: http://www.sec.or.th/investor_edu/info_media/article/2550/Content_0000000831.jsp?categoryID=CAT0000316 [Accessed on 9 April 2011].

[132] For further details, see The Act of Securities and Stock Exchange 1992, sections 2.4.3 and 2.4.4. Available via the SEC website: http://www.sec.or.th/laws_notification [Accessed on 9 April 2011].

announcements and the announcements of financial performance. In addition, we also note the issuing methods available in our sample. The firm's managers and investors may be equipped with necessary evidence on whether or not the issuing methods impact upon the SEO underpricing and whether the factors (in the previous three categories, see sections 5.2.3.1, 5.2.3.2 and 5.2.3.3) still affect the underpricing in each issuing method. Consequently, this should make our study slightly different from the others and it would be a new issue in Thailand with more recent data. As a consequence, the additional hypotheses can be stated thus:

$H_{0,7}$: Issuing methods, where applicable, influence SEO underpricing.

In the next section, we describe the data and methodology to be used in this chapter.

5.3 Data and Methodology

5.3.1 Data Sources and Definition of Variables

In this chapter we obtain data from two sources. These are the SET fact books and SETSMART. We applied the SEO firms from the SET, who issued common stocks during the period 1999 to 2006. Having organised the initial sample of 1,910 SEOs in 251 companies following Seiler (2004), the final sample consists of 126 companies issuing common stocks. From this final sample we have excluded three categories: (1) firms with an SP (suspension) sign, according to Seiler (2004), (2) firms with unavailable trading data, such as market capitalisation and closed prices and (3) financial companies, due to the differences in asset structures between them and non-

financial firms. The event dates are identified as the first SEO of each firm, in order to avoid any overlapping during the study period. We found four different issuing methods available among the 126 firms: (1) rights issuing- XR - for 53 firms, (2) private placement- PP - for 52 firms, (3) stock dividend- SD - for 22 companies and (4) public offering:- PO - for 2 companies[133].

In comparison with the existing literature in this area, our sample size is relatively low; for instance, Median (2005) has 6,768 samples, Altinkilic and Hansen (2005) 3,782 offers and Intintoli and Kahle (2009) 7,720 SEOs. The main reasons for this have perhaps become clear: the Thai capital market is small in size (measured by market capitalisation of around $146,000 million)[134] and small in the number of listed companies. Nevertheless, previous studies in Thailand or the neighbouring regions are rarely found in the area of SEO underpricing. We have one study of underpricing: the IPO sample by Chorruk and Worthington (2009). Their sample size of IPO uses around 149 companies between 1997 and 2007. Thus, our sample of SEOs for 126 firms (for common stock offerings) could be fair as a sample from Thailand, given this similarity. Furthermore, if we consider the SEO literature on Thailand, it confirms by the percentage of sample coverage for study that we have greater sample coverage than previous studies (see Table 5.1). According to the information from the SET (obtained from the World Federation of Exchange, WFE, as of 31 July 2009), the SET's number of listed firms is in 21st position in the rankings of global markets. This means that its total of firms is twice as small as that on the Hong Kong Stock

[133] Note that there are three companies, ITD, KTP and SORKON (for full names refer to Appendix 3), which use two different issuing methods at the same time.
[134] This figure is based on the statistic of the SET, taken from the World Federation of Exchange (WFE) as of 31 July 2009.

Exchange (HKSE) and also smaller than that in other Asian markets, such as the Tokyo Stock Exchange, Korea Exchange, Singapore Exchange and Taiwan Stock Exchange[135]. In addition, our sample of 126 common stock offering companies is approximately 50.20% of the total initial sample of SEOs before the organisation of data. We have summarised the lists of variables, including their definitions and sources, in Table 5.2.

[Insert Table 5.1 and 5.2 here]

We employ "underpricing" as our dependent variable in the examination, defined as:

$$Underpricing = (-1)\frac{(Offer\,Price - Price\,TheDayBeforeTheOffer)}{Price\,TheDayBeforeTheOffer} \qquad (5.1)$$

Equation 5.1 is the same as that calculated in Corwin (2003) and Intintoli and Kahle (2009, p.12) and also the same procedure as used in the existing literature. For instance, Kim and Hyun-Han (2004) call this procedure for calculating SEO underpricing "close-to-offer", while Soucik and Allen (1999b) and Mola and Loughran (2004) measure via the "offer-to-close". It should be noted that Altinkilic and Hansen (2003) define underpricing as the relationship between discounting and offer-day return, which is slightly different from the definition in Corwin (2003), Kim and Hyun-Han (2004) and Intintoli and Kahle (2009).

[135] See the SET website: http://www.set.or.th/setresearch (accessed on 19 September 2009) for further details.

However, Eckbo et al. (2006) identify that there are many ways to capture the underpricing, including the comparison of offer price to closing price, mid-point, bid-ask prices, closing price at day -1 or day +1 (taking the SEO day as day 0). Thus, we could have various options in defining underpricing. In our case, we follow the suggestion of Corwin (2003) and Intintoli and Kahle (2009) because we are concerned with paying more attention to the SEO announcement day than the day before it. To be more specific, we focus on whether underpricing occurs on the SEO day, compared with the preceding day. Alternatively, we measure underpricing in this chapter following the concept of "close-to-offer", suggested in Kim and Hyun-Han (2004)[136].

Moving to the sample size, we still use the concept of balanced panel in our regression. This means all variables need to be available in every firm we estimate. Thus, with our final sample of 126 firms, there are some explanatory variables (presented in Table 5.2) which are unavailable in some firms among the 126 samples. These variables are shown as ownership and shared-offer-to float. We can notice from Table 5.3 that these two variables are unavailable in some firms. This is because since we define ownership as having been measured in the year prior to the offering; some companies issued new shares within the year that they were listed in the market. Therefore, there was no trading nor other information in the prior year. We can indicate additionally that these results are from the SET regulation that allows no minimum period of follow-on offerings (see section 3.2.4 in Chapter 3). As a consequence of the balanced panel, we have to exclude some companies and end up

[136] We provide the results from the robustness check of underpricing via "offer-to-close" (Soucik and Allen, 1999b; Kim and Hyun-Han, 2004; Mola and Loughran, 2004) later in section 5.4.5.

with the total sample for estimating the regression at 110 firms issuing via common stocks. This can be divided into 48 firms with XR, 44 firms with PP and 20 firms with SD[137]. We summarise these samples in Table 5.3.

[Insert Table 5.3 here]

Furthermore, we notice that in our sample size there are no differences between the total sample and the three subsamples (the three different issuing methods). The evidence of Table 5.4 reveals the same aspects as the previous chapter, that although there are significant results in the SD firms, the endogenetic problem should not be the case in our study of SEO underpricing. This similarly illustrates what is mentioned in Chapter 3 (section 3.3.2) and 4 (section 4.3.1), that small firms in our sample size should be SORKON, instead of NEW (see Table 5.3 – panel B and the full names are in Appendix 3). This is because it is unnecessary for small companies which have good performance to issue new shares with SD, since this method has no incoming cash flow. In other words, it depends on the firms whether they issue new shares via SD. If they are performing well, there appears to be no reason why they have to still issue with SD, since it offers less incentive to their shareholders (e.g. the case of NEW and SORKON in our sample size). Therefore, we can assume from these reasons that there are no significant differences among the sample size and the three subsamples in our study. We will explain in more detail the interesting feature of SD later in this section.

[137] Note that those three firms (ITD, KTP and SORKON, see full names in Appendix 3) that use two different issuing methods at the same time remain in the total sample. Therefore, our total sample does not correspond to the combination of different issuing methods.

[Insert Table 5.4 here]

We do not consider the method of "public offering (PO)" separately, as only one firm fell into this category. With this exclusion of PO, our study provides a different examination from that in previous works on developed markets in general (e.g. Denis, 1994; Corwin, 2003; Eckbo et al., 2006; Walker and Yost, 2007), or, to some extent, even in some emerging markets (e.g. La Porta et al., 1999). This is because those studies normally obtain SEOs which they refer to as PO, while our sample from the Thai market has only two companies in total issuing via PO and one firm was excluded when adjusted with the variables. In our case, we cannot apply any further sample for PO, since most SEO companies during our study period issue via other methods, such as rights issuing, private placement and stock dividend. Although some studies in Thailand (i.e. Prangthawat, 2002) have included "PO" firms in their investigation, they obtain the data in a totally different period of study – between 1996 and 2000. In addition, the sample of PO firms in Prangthawat (2002) comprises only 11 firms, which may still be considered a relatively small sample. Nonetheless, those 11 companies were studied and their data collected during the financial crisis period, while our sample clearly focuses on the post-financial 1997 crisis period. Several businesses in Thailand suffered as a result of this crisis and they needed to be more certain that their equity offering would be exercised, turning these into income to finance their companies. The best way to suggest is to issue new shares to existing shareholders (particularly issuing via rights). Since rights issuing can proceed without any permission from the SEC (see KorChor.12/2543 in section 3.2.4.1 in Chapter

3)[138], the companies would prefer to reduce the approval period decision (via PO) from the SEC in order to secure a shorter period of financing for their companies. Therefore, the new shares issued would be easily exercised and used to finance the companies. As a result, we assume this PO method to have no impact on the others. These data led to the development of a hypothesis to be estimated in this part as the determinants of the factors which impact on SEO underpricing.

Issuing new equities via SD also provides us with an interesting detail. With this method, the underpricing will equal 1 in any case. This is because, according to equation 5.1, the offer price will be 0, since this issuing method is normally applied when the companies decide to maintain the level of cash flow. The companies could risk either poor operating performance or an unstable cash flow. Thus, a dividend announcement (in term of stocks) is used to signal to the market that the firms are in a position to pay dividends to their shareholders. In other words, the companies which have small capital (normally referring to firms which are small or medium in size) would prefer this method, because they can retain at will the cash flow from financing, while still being identified as dividend-paying firms. This method will have no incoming cash flow, but the number of shares outstanding will increase. Consequently, there is no offer price when companies pay this type of dividend. However, SD remains one of the issuing methods since the number of shares outstanding increases and this method could be claimed as the issuing of indirect equity.

[138] This exclusion of the SEC permission needs to meet the condition of issuing new shares to the existing shareholders at the same proportion to which shareholders already hold shares in the firm.

5.3.2 Methodology

Concerning our hypotheses in the above three categories, there are several possible proxies which we could apply in each of these. In the area of information asymmetry, the firm size is generally captured by the market capitalisation. For the uncertainty, we capture the volatility by the standard deviation of daily return of each SEO firm in our sample. As discussed earlier, we attempt to proxy the price pressure via four proxies: share offer to size, share offer to float, ownership structure and trading volume. All the definitions are presented in Table 5.2.

To proxy manipulative trading, we follow the suggestions of Corwin (2003) and Intintoli and Kahle (2009) of employing a market-adjusted return. This is because we have no evidence for measuring manipulation in Thailand, as previously pointed out (see section 5.2.3.3). Applying the same proxy as the existing literature can lead to the investigation of whether the evidence of manipulation carries over to our study on an emerging market. In addition, proxy via a market-adjusted return refers to the fact that we consider the relationship between the stock return and the market return. This is the main concern of when manipulation occurs in the market. Nonetheless, although the Thai market is seen to be highly volatile and is normally expected to exhibit manipulative trading in the market (due to minor punishments), we will examine manipulative trading as our control variable in the regression (see section 5.2.3.3). Concerning the variance-covariance matrix (see Table 5.5), we notice that OFFSIZE and OFFFLOAT demonstrate a high correlation[139] in all cases (with total sample and different issuing methods). For instance, in the total sample, the correlation between

[139] These high correlations are reported to be higher than 0.5, according to statistical theory.

OFFSIZE and OFFFLOAT is at -0.768423 (see Table 5.5 – panel A and the abbreviations refer to Table 5.2). This correlation is likely to lead to multicollinearity (Brooks, 2008, pp.70-71).

[Insert Table 5.5 here]

Among our close correlation of explanatory variables, we decided to exclude OFFFLOAT in order to prevent the problem of multicollinearity. This is because we agree with the suggestion of Intintoli and Kahle (2009) that OFFFLOAT could also represent insider ownership (see section 5.2.3.2). Although Intintoli and Kahle indicate that OFFFLOAT and "ownership" are similar factors, we check with the percentage of correlation between these two variables with the data of Thai SEOs. The figures show a good correlation in panel A of Table 5.5 (less than 0.5). Hence, it is possible to apply both OFFFLOAT and ownership, as they are free of multicollinearity. However, when OFFFLOAT is closely correlated with OFFSIZE, we should drop it because its calculation is already related to ownership (according to Intintoli and Kahle, 2009; see section 5.2.3.2) and retain OFFSIZE in the regression, since it shows more difference than OFFFLOAT. Once removed, there are no close correlations of our explanatory variables and we should not have any problem of multicollinearity (see Table 5.6). This also applies when the variance-covariance of issuing methods is individually considered. Furthermore, since the sample size of the SD method is below 30 (consisting of only 20 firms after obtaining the data for estimation), we apply the concept of pooling data to the regression and include a

dummy variable of the SD firms. Having pooled the data, we will estimate 110 firms in the regression.

[Insert Table 5.6 here]

We consider each of the issuing methods used by Thai SEOs. These issuing methods are examined as the dummy variables in the regression. The standard OLS regression is introduced here in order to estimate our hypotheses. This is because we note from the previous works in this area (e.g. Altinkilic and Hansen, 2003; Corwin, 2003; Intintoli and Kahle, 2009) that applying OLS could be the easiest to understand and the most reasonable in determining the factors in SEO underpricing. Thus our regression is estimated as follows:

$$\begin{aligned} Underpricing = {} & \alpha + \beta_1(MKTCAP) + \beta_2(S.D.) + \beta_3(OFFSIZE) + \beta_4(POSCMAR) \\ & + \beta_5(NEGCMAR) + \beta_6(OWN) + \beta_7(VOLUME) + \beta_8(EVENTS) + \beta_9(DUM\_XR) \\ & + \beta_{10}(DUM\_PP) + \beta_{11}(DUM\_SD) + \beta_{12}(DUM\_PO) \end{aligned} \tag{5.2}$$

, where DUM_XR, DUM_PP, DUM_SD and DUM_PO are represented as dummy variables equal to 1 when the company issues by rights issuing (XR), private placement (PP), stock dividend (SD) and public offering (PO), respectively, and equal to zero otherwise. For the other variables, please refer to the definitions in Table 5.2.

Equation 5.2 applies to the investigation of whether these different issuing methods influence underpricing, since dummy variables are included in the regression. We expect to receive an interesting result when the three different issuing methods are

considered separately. We will consider the three issuing methods individually, with the exception of PO. This is because there is only one company for which we obtained all the variables to be estimated in the regression, as earlier mentioned. Each method will be examined with the same hypotheses mentioned earlier (Hypotheses 1 to 7 in section 5.2.3) with different sample sizes for the different issuing methods. We have also adjusted the heteroscedasticity by using the White Heteroscedasticity-Consistent Standard Error and Covariance Estimation (White, 1980). Regarding the hypothesis of other events, we will not test it because, in practice, there are no way that the other events, such as the dividend announcements or earning announcements, could have a minor impact on SEO underpricing and so we eliminate them from the estimation. Nonetheless, we include this in our regression as a control variable, since we focus only on the SEO announcements.

In order to examine a different calculation of underpricing, we next apply the definition of "offer-to-close" suggested in Kim and Hyun-Han (2004, p.348) as our robustness check. Underpricing will then be defined as:

$$Underpricing = \left(\frac{P_t}{Offer\ Price} \right) - 1 \qquad (5.3)$$

, where P_t = closed price at day t (offer day). Furthermore, this concept of "offer-to-close" is also defined in the studies of IPO underpricing (e.g. Soucik and Allen, 1999b; Habib and Ljungqvist, 2001; Chorruk and Worthington, 2009).

5.4 Empirical Results

5.4.1 Total Sample

Regardless of the issuing methods, Table 5.7 – panel A shows that MKTCAP and S.D. are significant at 1% and OFFSIZE is significant at 5%. Alternatively, since MKTCAP and S.D. are the proxies of information asymmetry and uncertainty, it is seen that firm size has a positive relationship with SEO underpricing, while the volatility shows an influence on SEO underpricing. Our hypotheses (Hypotheses 1 and 2) have yet to be rejected. Hence our assumption of less controlling for the information in large firms should become valid with our evidence (see section 5.2.3.1). This leads to a high level of information asymmetry in large firms, although they should be well managed and well controlled in general (Intintoli and Kahle, 2009). For the significance of firm size, our evidence contrasts with some previous studies (e.g. Corwin, 2003), where firm size was concluded to have a negative relationship with underpricing. Hence, we can identify that the aspect of information asymmetry in Thailand could be different from the developed markets. Nonetheless, it can be concluded from our findings that since we hold Hypothesis 1, there is a positive relationship between asymmetric information and SEO underpricing. This is consistent with Yongtae and Myung Seok (2005). For the uncertainty of investors, our findings under this variable are consistent with those of previous work, such as Corwin (2003), Shaorong (2005) and Yongtae and Myung Seok (2005). They reveal the relationship between volatility (indicated with insider selling in Shaorong, 2005) and underpricing**.** However, the significance of S.D. at 1% is also consistent with the findings of Intintoli and Kahle (2009), which is shown to be highly significant with

the hypothesis of a positive relationship between volatility and underpricing (see Table 5.7 – panel A).

Turning to the area of price pressure, only OFFSIZE has an impact on underpricing, leading to the non-rejection of the hypothesis that a larger offer size can make underpricing in Thailand increase (Hypothesis 3). This is consistent with every model estimated in Corwin (2003). The remaining factors are entirely insignificant, leading to the rejection of our related hypotheses (Hypotheses 5 and 6) because there was no influence on SEO underpricing. It is interesting to note that we find no relationship between manipulative trading and SEO underpricing although we expect this impact in the Thai market.

[Insert Table 5.7 here]

When issuing methods are considered, their consequences reveal that MKTCAP and OFFSIZE remain highly significant at 1% (see Table 5.7 – panel B). DUM_XR and DUM_SD are also highly significant. This means that firm size and the relative offer size both impact on SEO underpricing. Furthermore, some issuing methods, namely rights issuing and stock dividend, play an important part in influencing SEO underpricing in Thailand. Moreover, since we find insignificance in CMAR_51, manipulative trading appears to have no relationship with underpricing when the issuing methods are considered. It is found to be inconsistent with most of the models estimated in Corwin (2003) and Intintoli and Kahle (2009). As a result, we claim that

the outcomes from manipulative trading reveal different aspects compared to those in the existing literature, although we estimate manipulation as the control variable. Another control variable, EVENTS, is also insignificant, leading to no relationship between SEO underpricing and other events aside from the SEOs. The results could also indicate that PP and PO are the two issuing methods which have no impact on underpricing in Thailand, due to the insignificant evidence. The values of R^2 and adjusted R^2 are high when the issuing methods are taken into account. This means that the regression currently best fits the data. Consequently, the issuing methods should be brought into the estimation of SEO underpricing.

5.4.2 Rights Issuing (XR)

With the rights issuing method, the results are demonstrated in panel A of Table 5.8.

[Insert Table 5.8 – panel A here]

The evidence shows that MKTCAP, S.D. and CMAR_51 are significant at 1% (for the first one) and 10% (for the remaining two). Therefore, information asymmetry and uncertainty have an impact on underpricing for the firms issuing via XR, supporting the same results in the total sample. Therefore, it is unnecessary to reject Hypotheses 1 and 2. This also implies that they are consistent with the findings of previous studies in the area of the uncertainty (e.g. Shaorong, 2005; Yongtae and Myung, 2005). Unlike the results in the total sample, those of OFFSIZE are insignificant in the firms issuing via XR, implying that a greater increase in underpricing does not make the

offer size larger. This is because there is no relationship between offer size and SEO underpricing (rejecting Hypothesis 3). This evidence also contrasts with the existing work by Corwin (2003). Chorruk and Worthington (2009), whose paper is the only one in this area which uses Thai IPO data, do not provide evidence related to the determinants of SEO underpricing. Instead, they suggest that Thai IPO firms, in particular the financial institutions, are underpriced. With the significance of the control variable (CMAR_51), we indicate that manipulations influence SEO underpricing. This supports our prior expectations (see section 5.2.3.3) and appears to be partly consistent with the previous literature (e.g. Gerard and Nanda, 1993; Chemmanur et al., 2007). However, although there are regulations for controlling the manipulations in Thailand (i.e. The Act of Securities and Stock Exchange 1992, sections 243 and 244), we still have the impact of manipulations on SEO underpricing. Consequently, the evidence can be contrasted to the existing literature because it reports no manipulative trading when such a regulation was enforced. In addition, the model seems to fit the data, because the values of R^2 and adjusted R^2 are high.

5.4.3 Private Placement (PP)

With 44 companies to be estimated, the results are presented in panel B of Table 5.8.

[Insert Table 5.8 – panel B here]

The outcomes display that all the variables, except MKTCAP and OFFSIZE, are insignificant. This is explained by the fact that when companies issue new equities via PP, firm size has a positive impact on underpricing (Hypothesis 1). A rise in underpricing also depends on a larger offer size (Hypothesis 3). Consequently, the hypotheses of information asymmetry and the number of shares offered are not rejected (Hypothesis 1 and 3). As in the two previous cases, our findings from PP firms are shown to be inconsistent with those of previous works. For instance, we find the contrasting feature in the developed market that there is a relationship between volatility and underpricing, as in Altinkilic and Hansen (2003), Corwin (2003) and Shaorong (2005), while we find no relationship between these two factors (see Table 5.8 – panel B). In other words, it is reasonable to suggest that volatility and manipulation (as a control variable) could provide the contrasting interpretations to the characteristics of the Thai capital market. This is because the market itself is highly volatile (supported by the high level of individual investors)[140] and subject to the possibility of manipulation (due to only minor penalties from the regulator)[141]. This leads to a rejection of Hypothesis 2. Furthermore, the dummy variable of EVENTS is also significant, explaining that other events influence SEO underpricing under the PP firms. Although we focus only on SEOs, other events could impact SEO

[140] This was claimed in the Master Plan of Developing the Thai Capital Market#2 (year: 2006-2010, in Thai) by The Federation of Thai Capital Market Organisations, published via its website: http://www.fetco.or.th [Accessed on 22 May 2009].

[141] Meechart, W. (2010) **The development and strategy of the investigation of the economic delinquent in the money market and capital market** Newspaper article (in Thai) on 20 December 2010. Available via: http://www.sec.or.th/investor_edu/info_media/article/2550/Content_0000000831.jsp?categoryID=CAT0000316 [Accessed on 9 April 2011].

underpricing via the co-equal benefit of the issuing firms (the inside relationship between the issuing firms and the institutional investors)[142].

For the other insignificant factors, insider ownership and the trading volume also provide no influence on SEO underpricing (Hypotheses 5 and 6). These insignificant results are inconsistent with those of Corwin (2003) and Intintoli and Kahle (2009). Although the variance-covariance matrix demonstrates no close correlations among all the variables, the regression may be detected by the multicollinearity. This is because there is a high standard error in S.D. (as a proxy of volatility, see Table 5.8 – panel B), in comparison with other variables in the regression. This is referred to in Brooks (2008) as the case of multicollinearity, but we ignore it; regression fits well as a whole and individual variables are insignificant, including being sensitive to a small change. We will confirm if the regression is sensitive to a small change in the robustness test later in this chapter (section 5.4.5) by changing the calculation of underpricing and carrying out the transformation of variables.

5.4.4 Stock Dividend (SD)

With regard to the calculation of underpricing as demonstrated in equation 5.1, all the companies under the SD issuing method equal 1 (see section 5.3.1). Therefore, the results of estimation with the firms issuing via SD are shown in Table 5.8 – panel C.

[142] This is claimed as one of the characteristics of issuing via PP in Thailand (source: executive interview with the management team in TCJ Asia Public Company Limited, undisclosed source, in January 2010). Further examples of the inside relationship between the issuing firms and the institutional investors will be clarified later in section 5.4.5, where we have similar outcomes.

[Insert Table 5.8 – panel C here]

The results reveal that MKTCAP and OFFSIZE are highly significant. This means that these two factors have an influence on underpricing, confirming our initial hypotheses (Hypotheses 1 and 3). Moreover, our significant factors under SD firms are the same pairs as shown in the case of PP. The results regarding uncertainty remain inconsistent with those of previous works (e.g. Altinkilic and Hansen, 2003; Corwin, 2003; Shaorong, 2005; Intintoli and Kahle, 2009). A larger offer size is driven by an increase in underpricing (the rejection of Hypothesis 3), echoing the findings of Corwin (2003), but from either Thailand or other emerging markets we find no work which concentrates on this issuing method – SD – in particular. Not only these two variables, but the dummy variable SD is also highly significant. This implies that issuing new shares via SD does impact on SEOs, making them discount their prices. Alternatively, the explanation of high significance in SD can point to the fact that underpricing is always constant at the value of 1 when there are no offer prices. Regarding the values of R^2 and adjusted R^2, both are revealed as relatively high, at 0.545999 and 0.510038, respectively. According to these two values, the model is stated to fit the data well when companies issue via SD.

5.4.5 Robustness

We obtained equation 5.3 to calculate underpricing in a different way (using the concept of offer-to-close) and to re-estimate with equation 5.2. According to equation 5.3, we realise that we cannot have the firms issuing via SD in this case. This is

because issuing new shares with SD has no offer prices (equal to zero). Thus, according to equation 5.3, we are unable to obtain the value of underpricing when the closed prices are divided by the offer prices. Based on the concept of balanced panel, all variables need to be available in every firm in our sample size of 126. Regarding the concept of offer-to-close, there are some PP firms that need to be additionally excluded due to the zero offer prices, besides the SD firms (as mentioned earlier). Therefore, the total sample for estimation via offer-to-close is reduced to 88 firms, 48 firms in XR and 41 firms in PP[143]. The results are shown in Table 5.9.

[Insert Table 5.9 here]

With our evidence, we have the same results and same significant variables when we disregard the issuing methods in the total sample (see Table 5.9 – panel A, compared with Table 5.7 – panel A)[144]. More specifically, MKTCAP, OFFSIZE and S.D. are significant at 1% (for the first two) and at 5% (for S.D.). This means that our hypotheses (Hypotheses 1, 2 and 3) hold entirely, implying that firm size positively affects SEO underpricing and volatility has an influence on SEO underpricing. Moreover, an increase in underpricing does always refer to the fact that the size of share offer needs to be large. In addition, our control variable (CMAR_51) of manipulation is insignificant. This means there is no relationship between

[143] Note that two firms (ITD and KTP; see full names in Appendix 3) apply two different issuing methods (XR and PP) at the same time. We have also excluded the PO firm, which contains only one firm (S&P), see full name in Appendix 3), from our individual estimation. However, S&P remains in our total sample. As a result, the total sample does not correspond to the combination of different issuing methods.

[144] In fact, including the dummy variables of each issuing method will provide us with a near singular matrix.

manipulative trading and SEO underpricing, leading to a slight contrast in the explanations of the characteristics of the Thai capital market that expects to have manipulations.

With an individual estimation of issuing methods, the results from the XR firms (see Table 5.9 – panel B) are different from the evidence calculated via close-to-offer (see section 5.4.2). MKTCAP as the proxy of firm size is the only significant factor, implying that firm size positively impacts on SEO underpricing. This means that Hypothesis 1 holds. Consequently, our evidence reveals contrasting explanations to the existing literature (e.g. Corwin, 2003; Intintoli and Kahle, 2009). Additionally, the outcomes are inconsistent in the area of uncertainty (proxy with S.D.) and price pressure (proxy with offer size – OFFSIZE) compared with the previous literature (e.g. Altinkilic and Hansen, 2003; Corwin, 2003; Shaorong, 2005; Yongtae and Myung Seok, 2005). In PP firms, VOLUME becomes significant, implying that trading volume is positively related to SEO underpricing (see Table 5.9 – panel C). Although liquidity (proxy by trading volume) influences SEO underpricing, it shows a contrasting relationship to our hypothesis (Hypothesis 6). This means our results show a positive relationship, instead of a negative one following the hypothesis. The contrast could be interpreted by the specific characteristics of PP firms in Thailand that would have some inside relationship between the issuing firms and the institutional investors. This is, for instance, the relationship with the political parties, who are in the coalition government, leading to more convenience for any investments that need to be approved by the government. Furthermore, the values of R^2 and adjusted R^2 rise markedly, in comparison with the use of offer-to-close in

underpricing calculation (see Table 5.8 – panel C). According to these values, we claim that our regression fits the data better for the firms issuing new shares via PP.

Interestingly, we notice from our robustness results that there are higher standard errors in the regression than our previous results via the offer-to-close calculation (see Table 5.7 and 5.8 for comparisons). These could be evidence that we may have a problem of multicollinearity in the regression (Brooks, 2008) although our variance-covariance matrix presents no close correlations between the explanatory variables. In addition, with the differences in results (particularly in the PP firms), they could indicate that the Thai capital market appears to be sensitive. This is because of the difference in the calculation of underpricing (such as OFFSIZE in XR firms, or VOLUME in PP firms). Consequently, multicollinearity could exist to some extent when underpricing is defined via the close-to-offer concept (especially in the PP firms). Therefore, capturing the underpricing with the concept of "close-to-offer" (equation 5.2) may give results which are clearly free from misspecification.

Furthermore, we also intend to extend our robustness test to cover more than the difference in the calculation of underpricing. We consider applying different explanatory variables by transforming our existing ones by logarithm function. These were done in OFFSIZE, OWN and VOLUME, while the underpricing was originally defined via the concept of close-to-offer. These three variables are chosen to be transformed based on the previous literature (e.g. Eckbo and Masulis, 1992; Wiwattanakantang, 1999; De Groot and Verchoor, 2002; Chen, 2004 – see section 4.4.4.5). The results are shown in Table 5.10.

[Insert Table 5.10 here]

Our evidence reveals that there are no substantial differences from the previous outcomes in Tables 5.6, 5.7 and 5.8. This suggests that, no matter how we transform the explanatory variables in the regression, the same findings and conclusions remain. In Table 5.10 – panel D, we may have a slight difference from our earlier discussion as the dummy variable of 'EVENTS' is insignificant, meaning that there is no relationship with the SEO underpricing. Nonetheless, since PP firms could have the co-equal benefit (insider relationship between the issuing firms and the institutional investors), the outcomes could vary and depend on this insider relationship.

5.4.6 Summary of Empirical Results

Having examined the determinants of SEO underpricing in the total sample and in every issuing method separately, we find that MKTCAP is the only variable which is significant in every case. Thus, information asymmetry influences SEO underpricing, shown by the positive relationship between firm size (as the proxy of information asymmetry) and underpricing. Although this evidence is in contrast with the previous literature (e.g. Corwin, 2003; Intintoli and Kahle, 2009), it appears to closely reflect the characteristics of the Thai capital market. This is because the information can easily leak before the announcements in the larger firms, where they cannot completely control the information spread to the attendees of the shareholder meetings. S.D. and offer size (OFFSIZE) are the two variables which become significant when different samples are examined. For instance, they are significant (influence on SEO underpricing) in the total sample and in the first issue of new

shares via XR, and vice versa in the PP and SD firms. This can indicate that uncertainty (proxy with S.D.) and offer size impact SEO underpricing, depending on which issuing methods are applied.

Furthermore, ownership and trading volume are the two insignificant variables in every case, causing no relationship with SEO underpricing. This evidence is in contrast to the existing research, such as Altinkilic and Hansen (2005) and Median (2005). In addition, since Thailand is one of the emerging market countries, ownership structure should be an important factor in corporate finance (La Porta et al., 1999; Claessens et al., 2000). Hence, ownership should have more impact on SEO underpricing in Thailand, instead of showing no relationship to the underpricing, as in our evidence. Our control variable of manipulative trading (CMAR_51) reveals the impact on SEO underpricing only when firms issue new shares via XR. This finding in manipulation refers to the contrasting interpretations to the previous literature (e.g. Gerard and Nanda, 1993; Chemmanur et al., 2007) because although regulations on manipulation in Thailand (see section 5.2.3.3) have been enforced, manipulative trading still influences SEO underpricing.

With the robustness outcomes, we find that all the results are mostly the same when we used a different calculation to define the underpricing (close-to-offer) and estimated the regression with the transforming variables. In other words, MKTCAP remains a significant factor in every case, while the factors such as S.D. and OFFSIZE are mostly significant, depending on which samples are estimated (total sample or each issuing methods). Moreover, there are slight (but clear) changes in the

outcomes in the XR and PP firms. These are revealed by only one significant variable (MKTCAP) in XR firms and VOLUME starts to affect SEO underpricing (to be significant) in PP firms. In addition, the value of R^2 in PP firms when applying the different calculation of underpricing is twice as high as that presented in our initial calculation (offer-to-close). Consequently, the Thai capital market would be sensitive to the small changes in our regression. Nonetheless, the standard errors in some variables (i.e. S.D. and CMAR_51), estimated via close-to-offer, are markedly higher than those demonstrated in the offer-to-close estimations. With some insignificant variables reported in the outcomes and these high in standard errors, multicollinearity may to some extent remain in the robustness regressions.

5.5 Conclusions

We have examined the determinants of SEO underpricing in Thailand between 1999 and 2006. We adjusted 12 explanatory variables (including dummy variables) in three different categories with the data from Thailand. The OLS regression is applied after the exclusion of the variables which have relatively close correlation, in order to prevent multicollinearity. This leaves a sample size of 110 companies for the estimation. Our results suggest that firm size influences SEO underpricing positively in every case, while volatility and offer size are related to the underpricing when different samples are employed (i.e. when estimating total sample and issuing methods individually). Nevertheless, the evidence of firm size (the area of

information asymmetry) is inconsistent with the previous literature (e.g. Corwin, 2003; Yongtae and Myung Seok, 2005; Intintoli and Kahle, 2009), where there is a negative relationship between firm size and information asymmetry. Moreover, our findings report a contrasting reflection of the Thai market's characteristics in practice. These are seen by the insignificance of volatility in the total sample (regardless of the issuing methods) in PP and SD firms, since volatility is known to be the main characteristic of the Thai market and it should affect SEO underpricing. Additionally, our control variable of manipulations shows mostly no relationship to SEO underpricing, even if the manipulations remain in the Thai market (although the regulations on manipulative trading are being enforced).

In our robustness estimations, the findings report slight changes in the factors affecting SEO underpricing, particularly in the XR and PP firms, when examined separately. These changes in the results are demonstrated when underpricing is calculated differently (using the concept of close-to-offer), while the evidence from transforming variables reveals similar outcomes to the initial estimations. Therefore, the Thai capital market appears to be sensitive to small changes. However, the standard errors in some variables (such as volatility and manipulative trading) are substantially higher in the estimation via close-to-offer (our robustness tests) than those defined via the offer-to-close. This could imply that the regression may to some extent be detected by the misspecification problem.

In addition, there are some practical implications of our study for firm managers and investors in Thailand. The main implication is that managers will notice and focus

more closely on which factors cause an impact on SEO underpricing in Thailand. Subsequently, they can use these findings as a pilot study to concentrate on the factors which are highly sensitive to underpricing in areas such as uncertainty and price pressure. With a separate examination of issuing method, managers will realise whether those factors affecting underpricing are different on the basis of different issuing methods. This could lead to information on whether the factors influence underpricing in a particular issuing method. In addition, investors could include our evidence in their investment decisions if they realise that there are some changes in the factors influencing SEO underpricing.

In the following chapter, we turn our attention to the post-issuing performance of SEO companies issuing common stocks in Thailand.

Table 5.1: Summary of the percentage of sample coverage compared to existing Thai SEO literature
The table presents the summaries of existing studies of Thai SEOs and the calculation of sample coverage as a percentage of the relevant sample obtained in previous research in Thailand during the same study period (1999 to 2006).

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Jirasettakulchai (2000)	Thailand	1977 – 1997	65	N/A	To examine the effect of dividend announcements on public offering of equity.	The larger the firm size, the more negative ARs from equity offering.
Prangthawat (2002)	Thailand	1996 – 2000	115	Sample includes 60 firms during 1996-2000, coverage at 52.17%.	To investigate whether earning management and the timing of SEOs can explain subsequent poor performance	Negative relationship between discretionary accruals and operating performance of firms after SEOs.
Lertsupongkit (2002)	Thailand	1994 – 2001	59	Sample includes 74 firms during 1994-2001, coverage at 100.00%.	To examine the stock price reaction to the announcement of SEOs.	Negative stock price reaction after the SEO announcements.
Ngamwutikul (2002)	Thailand	1991 – 1994	62	N/A	To examine operating performance in SEO firms during the pre- and post-offering periods.	Poor operating performance after the SEOs of sample firms, measured by three proxies: ROA, ROE and Tobin's q / The asymmetric information in Thailand remains the major impact on operating performance.
Limpaphayom & Ngamwutikul (2004)	Thailand	1991 – 1994	62	N/A	To examine the post-issue operating performance.	More shares are offered when the expectation of operating performance is worse / Future prospects of issuing firms are signalled by using issue proceeds.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Vithessonthi (2008)	Thailand	1997 – 2006	115 (only non-financial firms)	Sample includes 173 firms during 1997-2006, coverage at 100.00%.	To examine the changes in the authorised common stock (PIAC) and how it can affect stock prices.	PIAC, on average, convey information to the market / The larger the firm that announces a PIAC, the lower the CAR around the announcement.
This study	**Thailand**	**1999-2006**	**126**	**N/A**	**To examine the determinants of SEO underpricing.**	**Expecting the considered factors to influence the SEO underpricing.**

Table 5.2: Table of variables and definitions

The lists of explanatory and control variables, areas of determinants, definitions and data sources of each variable obtained in this examination are given here. SETSMART refers to SET's Market Analysis and Reporting Tool (the database of SET)

Areas of Determinants	Proxy (-ies)	Definitions	Sources
Information Asymmetry	Size *(MKTCAP)*	The logarithm of market capitalisation on day prior to the offer day (day -1)	SETSMART
Uncertainty	Volatility (Standard Deviation: *S.D.*)	The S.D. of the daily return of each SEO firms for 30 days ending 11 days before the offer date	
Price Pressure	Relative offer size *(OFFSIZE)*	The total number of shares offered divided by shares outstanding the day prior to the offer date (day -1)	
	Share offer to float *(OFFFLOAT)*	$\frac{Total\ Shares\ Issued}{(Shares\ Outstanding\ On\ Day\ -1)(1-Insider\ Ownership)}$	
	Insider Ownership *(OWN)*	The average of the top five major shareholders of each company in the year before the issuing (Limpaphayom and Ngamwutikul, 2004)	
	Trading volume *(VOLUME)*	The average daily trading volume calculated over the 250 trading days before the offer date	
Manipulative Trading	Cumulative Market-Adjusted Returns (day -5 to day -1: *CMAR_51*)	The market-adjusted return calculated as the difference between the stock return and the return on the market (SET index in our case). This is based on Intintoli and Kahle (2009).	
Others	Other Events *(EVENTS)*	A control and dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. These events include the dividend announcement, dividend payment, financial performance announcement and the submission of documents required by the SET and SEC in order to fulfil the regulations.	

Note: SETSMART is basically the SET database from which the data from the stock exchange is provided online for general investors and other interested persons. SETSMART covers the five fundamental areas which are usually considered by analysts and investors: (1) Company Information, (2) Historical Trading Prices, (3) Company News, (4) Key Statistical Data and (5) Key Financial Data and Financial Ratios. However, SETSMART (the principal version) is limited to a maximum of only 5 years' historical data, based on a rolling period of the first access into the system. The data for the year when the SET was established (in 1975) is obtained via SETSMART in its intranet version for brokers, available in the SET library and from any broker.

Table 5.3: Table of number of firms to be estimated in each issuing method and their descriptive statistics during the study period of 1999 to 2006

Panel A shows the summary of number of firms available in each explanatory variable and the data sources taken; *MKTCAP* is the logarithm of market capitalisation on day prior to the offer day (day -1). *S.D.* is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. *OFFSIZE* is the relative offer size which equals the total shares offered divided by shares outstanding on the day prior to the offer date (day -1). *CMAR_51* refers to cumulative market-adjusted returns over 5 days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET Index. *EVENTS* refer to the control and dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. *OWN* is insider ownership obtained from the average of the top five major shareholders of each company in the year before the offering year (Limpaphayom and Ngamwutikul, 2004). *VOLUME* represents the average daily trading volume calculated over the 250 trading days before the offer date. *OFFFLOAT* is share offer to float defined by: *Total Share Issued / (Share outstanding on day -1)(1-Insider ownership)*. The dependent variable, *UNDERPRICING*, is defined based on Intintoli and Kahle (2009, p.12) as: *Underpricing = (-1)[(Offer price-Price the day before the offer) / (Price the day before the offer)]*. SETSMART is the SET database and stands for SET Market Analysis and Reporting Tools. *TOTAL* represents the number of firms that will be estimated in the regression. **Panel B** shows the descriptive statistics of the companies' newly issued shares by common stock via each issuing method, namely rights issuing (XR), private placement (PP), stock dividend (SD) and public offering (PO), during the study period. The companies represented in each category are shown in parentheses, with their full names shown in Appendix 3. The firm size is defined as the market capitalisation in millions of Thai Baht (the exchange rate at THB33.50:USD1.00). The age of each firm is obtained from the number of months since the company first traded in the market until the offering month. The average daily returns are the average of daily returns during the study period (1999 – 2006) obtained from the SETSMART. The average ownership is measured by the average of the top five major shareholders in the offering year. The average turnover ratio is taken directly from SETSMART during the study period (1999 – 2006), measured by $TurnoverRatio = \left(\frac{TradingVolume}{AverageNumberOfShareOutstanding}\right) \times 100$. Industrial groups are the groups shown in the SET Index, containing (apart from financial ones) the Agro and Food Industry (AGRO), Consumer Products (CONSUMP), Industrials (INDUS), Property and Construction (PROPCON), Resources (RESOURC), Services (SERVICE) and Technology (TECH).

PANEL A

Explanatory Variables	Number of Firms				Sources
	Total Sample	*Rights Issuing*	*Private Placement*	*Stock Dividends*	
MKTCAP	126	53	52	22	
S.D.	126	53	52	22	SETSMART
OFFSIZE	126	53	52	22	
CMAR_51	126	53	52	22	

Explanatory Variables	Number of Firms				Sources
	Total Sample	*Rights Issuing*	*Private Placement*	*Stock Dividends*	
EVENTS	126	53	52	22	
OWN	111	48	45	20	
VOLUME	126	53	52	22	SETSMART
OFFFLOAT	111	47	43	20	
UNDERPRICING	126	53	52	22	
TOTAL	**110**	**48**	**44**	**20**	

Note: The total number of 110 firms is the number of firms that have available data during the period mentioned for every explanatory variable in our case. When each issuing method is considered separately, we exclude the firms using "public offering (PO)" as their issuing methods from our estimation. This is because there is only one company which has all the data for both explanatory variables and dependent variables.

PANEL B	Total Sample	XR	PP	SD
Average Size	6,823.93	7,148.71	8,478.38	2,958.35
Maximum Size	176,237.72 (ADVANC)	72,289.45 (SHIN)	176,237.72 (ADVANC)	23,488.28 (CPF)
Minimum Size	71.07 (NEW)	71.07 (NEW)	122.35 (SORKON)	122.35 (SORKON)
Average Age (months)	110	110	102	121
Average Daily Returns	-0.00027	-0.00027	-0.00013	-0.00060
Average Ownership	10.95264	10.86675	10.50465	12.36724
Average Turnover Ratio	0.00516	0.00430	0.00756	0.00235
Number of Firms in each Industrial Group:				
AGRO	20	6	6	8
CONSUMP	13	7	4	2
INDUS	15	6	4	5
PROPCON	22	11	12	1
RESOURC	7	2	4	1
SERVICE	20	10	8	2
TECH	13	6	6	1
TOTAL	**110**	**48**	**44**	**20**

Note: There are three companies, ITD, KTP and SORKON, utilising two different issuing methods at the same time (XR and PP for the first two, and PP and SD for SORKON). In addition, we excluded one firm issuing with PO as previously mentioned in panel A. Thus, the total sample will not equal 110 firms exactly.

Table 5.4: The two-sample t-test of the estimate sample size and the three subsamples of issuing methods
The table shows whether there are significance differences between the total sample and three subsamples and the test between the total sample of 110 firms and the different issuing methods, namely rights issuing (XR: 48 firms), private placement (PP: 44 firms) and stock dividend (SD: 20 firms). Using the two-sample t-test, the null hypothesis under this estimation indicates that there is no difference in the mean between two samples. The degree of freedom is shown in parentheses and calculated by: $\frac{\left(S_1^2/n_1 + S_2^2/n_2\right)^2}{\frac{\left(S_1^2/n_1\right)^2}{n_1-1} + \frac{\left(S_2^2/n_2\right)^2}{n_2-1}}$; where S_1^2, S_2^2 are the variance of samples 1 and 2, and n_1, n_2 refer to the sample size of samples 1 and 2.

	Total	**XR**	**PP**	**SD**
Total	**1.0000**			
XR	-0.2372 (131)	**1.0000**		
PP	0.6260 (62)	0.7629 (61)	**1.0000**	
SD	-2.0520** (115)	-1.7545* (66)	-1.7026* (50)	**1.0000**

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

Table 5.5: The variance-covariance matrix by total sample and issuing methods

The variance-covariance matrix of dependent variables (underpricing) and independent variables for the total sample of companies issuing new shares by common stock and other issuing methods is given here. *Underpricing* is defined as negative one times the return from the previous day's closing price to the offer price (Intintoli and Kahle, 2009). MKTCAP is the logarithm of market capitalisation on day prior to the offer day (day -1). S.D. is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. OFFSIZE is relative offer size which equals the total number of shares offered divided by shares outstanding the day prior to the offer date (day -1). CMAR_51 refers to cumulative market-adjusted returns over 5 days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET index. EVENTS refer to the control and dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. OWN is insider ownership obtained from the average of the top five major shareholders of each company in the year before the offering year (Limpaphayom and Ngamwutikul, 2004). VOLUME represents the average daily trading volume calculated over the 250 trading days before the offer date. OFFFLOAT is share offer to float defined by: Total Share Issued / (Share outstanding on day -1)(1-Insider ownership). DUM_SD is the dummy variable equal to 1 as the firm issuing via stock dividend and zero otherwise. **Panel A** shows the variance-covariance matrix for the total sample with the sample size 110 firms; **Panel B** the variance-covariance matrix for companies issuing via rights issuing (XR) at 48 firms and **Panel C** the variance-covariance matrix for companies issuing via private placement (PP) at 44 firms. **Panel D show** the variance-covariance matrix for companies issuing via stock dividend (SD) at 110 firms with the pooled sample concept.

PANEL A	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	OFFFLOAT	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**								
UNDERPRICING	-0.050076	**1.000000**							
S.D.	-0.055185	0.219055	**1.000000**						
OWN	-0.045753	0.111338	0.118408	**1.000000**					
OFFSIZE	-0.078699	0.079846	0.113976	0.109898	**1.000000**				
OFFFLOAT	0.023639	-0.099401	-0.061878	-0.038831	-0.768423	**1.000000**			
MKTCAP	0.184500	0.315102	-0.047526	-0.008050	-0.145582	0.002853	**1.000000**		
EVENTS	-0.120111	0.150468	0.117790	0.212197	-0.094438	0.101539	0.014842	**1.000000**	
CMAR_51	-0.009800	-0.107422	-0.196252	-0.124077	0.077960	-0.010543	-0.126744	-0.002875	**1.000000**

PANEL B	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	OFFFLOAT	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**								
UNDERPRICING	0.051495	**1.000000**							
S.D.	-0.028226	0.270585	**1.000000**						
OWN	0.250884	-0.187463	0.077918	**1.000000**					
OFFSIZE	-0.082671	-0.172779	-0.058101	0.200651	**1.000000**				
OFFFLOAT	-0.042864	-0.250665	0.002983	0.349541	0.579634	**1.000000**			
MKTCAP	0.237555	0.533486	0.121526	-0.013937	-0.156107	-0.266176	**1.000000**		
EVENTS	-0.092556	-0.116546	-0.089648	0.219771	-0.060497	0.122523	0.141006	**1.000000**	
CMAR_51	0.003212	-0.093564	-0.015727	-0.027115	0.121899	0.150404	0.199186	0.077175	**1.000000**

PANEL C	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	OFFFLOAT	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**								
UNDERPRICING	0.098903	**1.000000**							
S.D.	-0.051607	-0.151717	**1.000000**						
OWN	-0.115179	0.109175	-0.025060	**1.000000**					
OFFSIZE	-0.113397	0.270742	0.312511	0.098639	**1.000000**				
OFFFLOAT	0.060629	-0.216883	-0.262285	-0.159966	-0.914597	**1.000000**			
MKTCAP	0.215107	0.398777	-0.309891	0.029100	-0.137694	0.052647	**1.000000**		
EVENTS	0.010077	0.178534	-0.055898	-0.210987	-0.065021	0.125640	-0.073190	**1.000000**	
CMAR_51	-0.075812	-0.006617	-0.072538	0.083331	0.051566	-0.018525	-0.266784	0.270430	**1.000000**

PANEL D	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	OFFFLOAT	MKTCAP	EVENTS	DUM_SD	CMAR_51
VOLUME	**1.000000**									
UNDERPRICING	-0.050076	**1.000000**								
S.D.	-0.055185	0.219055	**1.000000**							
OWN	-0.045753	0.111338	0.118408	**1.000000**						
OFFSIZE	-0.078699	0.079846	0.113976	0.109898	**1.000000**					
OFFFLOAT	0.023639	-0.099401	-0.061878	-0.038831	-0.768423	**1.000000**				
MKTCAP	0.184500	0.315102	-0.047526	-0.008050	-0.145582	0.002853	**1.000000**			
EVENTS	-0.120111	0.150468	0.117790	0.212197	-0.094438	0.101539	0.014842	**1.000000**		
DUM_SD	-0.125791	0.637235	0.287037	0.218122	-0.068469	0.048240	-0.014373	0.298124	**1.000000**	
CMAR_51	-0.009800	-0.107422	-0.196252	-0.124077	0.077960	-0.010543	-0.126744	-0.002875	-0.113377	**1.000000**

Table 5.6: The variance-covariance matrix by total sample and issuing methods after dropping some variables

The variance-covariance matrix of dependent variable (underpricing) and independent variables for the total sample of companies issuing new shares by common stock and other issuing methods after dropping some variables to avoid the multicollinearity problem in the regression is given here. *Underpricing* is defined as negative one times the return from the previous day's closing price to the offer price (Intintoli and Kahle, 2009). MKTCAP is the logarithm of market capitalisation on the day prior to the offer day (day -1). S.D. is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. OFFSIZE is relative offer size which equals the total shares offered divided by shares outstanding the day prior to the offer date (day -1). CMAR_51 refers to cumulative market-adjusted returns over 5 days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET index. EVENTS refer to the control and dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. OWN is insider ownership, obtained from the average of the top five major shareholders of each company over 1 year before the offering year (Limpaphayom and Ngamwutikul, 2004). VOLUME represents the average daily trading volume calculated over the 250 trading days before the offer date. DUM_SD is the dummy variable equal to 1 as the firm issuing via stock dividend and zero otherwise. **Panel A** shows the variance-covariance matrix for the total sample with the sample size of 110 firms; **Panel B** the variance-covariance matrix for companies issuing via rights issuing (XR), 48 firms, and **Panel C** the variance-covariance matrix for companies issuing via private placement (PP), 44 firms. **Panel D** shows the variance-covariance matrix for companies issuing via stock dividend (SD), 110 firms, with the pooled sample concept.

PANEL A	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**							
UNDERPRICING	-0.050076	**1.000000**						
S.D.	-0.055185	0.219055	**1.000000**					
OWN	-0.045753	0.111338	0.118408	**1.000000**				
OFFSIZE	-0.078699	0.079846	0.113976	0.109898	**1.000000**			
MKTCAP	0.184500	0.315102	-0.047526	-0.008050	-0.145582	**1.000000**		
EVENTS	-0.120111	0.150468	0.117790	0.212197	-0.094438	0.014842	**1.000000**	
CMAR_51	-0.009800	-0.107422	-0.196252	-0.124077	0.077960	-0.126744	-0.002875	**1.000000**

PANEL B	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**							
UNDERPRICING	0.051495	**1.000000**						
S.D.	-0.028226	0.270585	**1.000000**					
OWN	0.250884	-0.187463	0.077918	**1.000000**				
OFFSIZE	-0.082671	-0.172779	-0.058101	0.200651	**1.000000**			
MKTCAP	0.237555	0.533486	0.121526	-0.013937	-0.156107	**1.000000**		
EVENTS	-0.092556	-0.116546	-0.089648	0.219771	-0.060497	0.141006	**1.000000**	
CMAR_51	0.003212	-0.093564	-0.015727	-0.027115	0.121899	0.199186	0.077175	**1.000000**

PANEL C	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	MKTCAP	EVENTS	CMAR_51
VOLUME	**1.000000**							
UNDERPRICING	0.098903	**1.000000**						
S.D.	-0.051607	-0.151717	**1.000000**					
OWN	-0.115179	0.109175	-0.025060	**1.000000**				
OFFSIZE	-0.113397	0.270742	0.312511	0.098639	**1.000000**			
MKTCAP	0.215107	0.398777	-0.309891	0.029100	-0.137694	**1.000000**		
EVENTS	0.010077	0.178534	-0.055898	-0.210987	-0.065021	-0.073190	**1.000000**	
CMAR_51	-0.075812	-0.006617	-0.072538	0.083331	0.051566	-0.266784	0.270430	**1.000000**

PANEL D	VOLUME	UNDERPRICING	S.D.	OWN	OFFSIZE	MKTCAP	EVENTS	DUM_SD	CMAR_51
VOLUME	**1.000000**								
UNDERPRICING	-0.050076	**1.000000**							
S.D.	-0.055185	0.219055	**1.000000**						
OWN	-0.045753	0.111338	0.118408	**1.000000**					
OFFSIZE	-0.078699	0.079846	0.113976	0.109898	**1.000000**				
MKTCAP	0.184500	0.315102	-0.047526	-0.008050	-0.145582	**1.000000**			
EVENTS	-0.120111	0.150468	0.117790	0.212197	-0.094438	0.014842	**1.000000**		
DUM_SD	-0.125791	0.637235	0.287037	0.218122	-0.068469	-0.014373	0.298124	**1.000000**	
CMAR_51	-0.009800	-0.107422	-0.196252	-0.124077	0.077960	-0.126744	-0.002875	-0.113377	**1.000000**

Table 5.7: Results of regression by total sample regardless of issuing method

The table shows the results of the regression for the determinant of SEO underpricing for the companies in the total sample of common stock offering. The regression is adjusted for heteroscedasticity by using White Heteroscedasticity-Consistent Standard Errors and Covariance, dropping some explanatory variables causing the form of near multicollinearity. **Panel A** shows the outcomes by total sample regardless of issuing method and **Panel B** the outcomes by total sample considering with the issuing methods (namely rights issuing, private placement, stock dividend and public offering). *Underpricing* is defined as negative one times the return from the previous day's closing price to the offer price (Intintoli and Kahle, 2009). *MKTCAP* is the logarithm of market capitalisation on the day prior to the offer day (day -1). *S.D.* is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. *OFFSIZE* is relative offer size, which equals the total number of shares offered divided by shares outstanding the day prior to the offer date (day -1). *CMAR_51* refers to cumulative market-adjusted returns over 5 days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET index. *EVENTS* refer to the control variable in terms of the dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. *OWN* is insider ownership obtained from the average of the top five major shareholders of each company over 1 year before the offering year (Limpaphayom and Ngamwutikul, 2004). *VOLUME* represents the average daily trading volume calculated over the 250 trading days before the offer date. Regarding the dummy variables of issuing methods: rights issuing (*DUM_XR)* is equal to 1 if firms use right issuing to issue new shares, zero otherwise. Private placement *(DUM_PP)* equals 1 if firms use private placement to issue new shares, zero otherwise. Stock dividend *(DUM_SD) is* equal to 1 if firms use stock dividend to issue new shares, zero otherwise. Public Offering (*DUM_PO)* equals 1 if firms use public offering to issue new shares, zero otherwise. $\overline{R}^2$ is implied as the adjusted R^2. The regression is estimated as below:

$$Underpricing = \alpha + \beta_1(MKTCAP) + \beta_2(S.D.) + \beta_3(OFFSIZE) + \beta_4(CMAR\_51) + \beta_5(OWN)$$
$$+ \beta_6(VOLUME) + \beta_7(EVENTS) + \beta_8(DUM\_XR) + \beta_9(DUM\_PP) + \beta_{10}(DUM\_SD) + \beta_{11}(DUM\_PO)$$

Explanatory Variables	Statistical Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
Panel A: Total sample without issuing methods					
MKTCAP	0.122476***	0.0008	0.035464		
S.D.	1.683585***	0.0031	0.555823		
OFFSIZE	0.034981**	0.0342	0.016298		
CMAR_51	-0.093398	0.6503	0.205389	0.191039	0.135522
OWN	0.008083	0.5877	0.014862		
VOLUME	-0.008125	0.1553	0.005676		
EVENTS	0.116120	0.2375	0.097723		
Panel B: Total sample with issuing methods					
MKTCAP	0.130714***	0.0000	0.028790		
S.D.	0.312465	0.3878	0.360188		
OFFSIZE	0.063803***	0.0015	0.019504		
CMAR_51	0.041498	0.7646	0.138172	0.626157	0.584195
OWN	-0.012057	0.3197	0.012056		
VOLUME	0.003704	0.3354	0.003826		
EVENTS	-0.012559	0.8559	0.068967		
DUM_XR	0.429321***	0.0003	0.113904		

Explanatory Variables	Statistical Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
DUM_PP	0.106185	0.2285	0.087633		
DUM_SD	1.163005***	0.0000	0.122129	0.626157	0.584195
DUM_PO	0.096406	0.4410	0.124622		
Sample Size			**110**		

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

Table 5.8: Results of regression by issuing methods

The results of the regression for the determinant of SEO underpricing for the companies issuing common stock via different issuing methods are shown here. The regression is adjusted for heteroscedasticity by using White Heteroscedasticity-Consistent Standard Errors and Covariance, dropping some explanatory variables causing the form of near multicollinearity and including the dummy variables of issuing methods where applicable. *Underpricing* is defined as negative one times the return from the previous day's closing price to the offer price (Intintoli and Kahle, 2009). *MKTCAP* is the logarithm of market capitalisation on the day prior to the offer day (day -1). *S.D.* is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. *OFFSIZE* is relative offer size, which equals the total number of shares offered divided by shares outstanding the day prior to the offer date (day -1). *CMAR_51* refers to cumulative market-adjusted returns over 5 days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET index. *EVENTS* refer to a control variable in terms of the dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. *OWN* is insider ownership obtained from the average of the top five major shareholders of each company over one year before the offering year (Limpaphayom and Ngamwutikul, 2004). *VOLUME* represents the average daily trading volume calculated over the 250 trading days before the offer date. *DUM_SD* refers to dummy variables equal to 1 if firms use stock dividend to issue new shares, zero otherwise. **Panel A** shows the outcomes from the 48 firms issuing with rights issuing (XR); **Panel B** the findings from the 44 firms issuing with private placement (PP) and **Panel C** the results from the companies issuing with stock dividend (SD), 110 firms using the pooled data concept. $\overline{R}^2$ is implied as the adjusted R^2. The regression is estimated as below where the dummy variables are applied when applicable:

$$Underpricing = \alpha + \beta_1(MKTCAP) + \beta_2(S.D.) + \beta_3(OFFSIZE) + \beta_4(CMAR\_51) + \beta_5(OWN) + \beta_6(VOLUME) + \beta_7(EVENTS) [+\beta_8(DUM\_SD)]$$

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
PANEL A: Rights Issuing (XR) 48 Firms					
MKTCAP	0.119164***	0.0001	0.028191		
S.D.	1.296193*	0.0693	0.694471		
OFFSIZE	-0.009547	0.6962	0.024278		
CMAR_51	-0.935279*	0.0860	0.531326	0.423854	0.323028
OWN	-0.013269	0.3300	0.013455		
VOLUME	-0.009003	0.6890	0.022331		
EVENTS	-0.089879	0.3514	0.095319		
PANEL B: Private Placement (PP) 44 Firms					
MKTCAP	0.134534**	0.0469	0.065384		
S.D.	-2.202023	0.4529	2.901915		
OFFSIZE	0.088278*	0.0010	0.024608		
CMAR_51	0.016504	0.9711	0.452988	0.349385	0.222876
OWN	0.021660	0.4715	0.029767		
VOLUME	0.004008	0.3311	0.004069		
EVENTS	0.268845*	0.0907	0.154662		

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
PANEL C: Stock Dividend (SD) 110 Firms					
MKTCAP	0.124420***	0.0001	0.030554		
S.D.	0.298620	0.5079	0.449381		
OFFSIZE	0.055141***	0.0006	0.015594		
CMAR_51	-0.000982	0.9954	0.169984		
OWN	-0.007987	0.5448	0.013145	0.545999	0.510038
VOLUME	-0.002345	0.5385	0.003799		
EVENTS	-0.033301	0.6475	0.072603		
DUM_SD	0.874526***	0.0000	0.065709		

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

Table 5.9: Results of robustness test with different calculations

The table shows the results of the robustness estimation of the underpricing, calculating via "offer-to-close" returns, as suggested in Kim and Hyun-Han (2004). The regression is controlled for heteroscedasticity by using White Heteroscedasticity-Consistent Standard Errors and Covariance, dropping some explanatory variables causing the form of near multicollinearity and including the dummy variables of issuing methods where applicable. *Underpricing* is defined as the ratio of closed issue price on the day of SEO to the issuing price minus one. *MKTCAP* is the logarithm of market capitalisation on the day prior to the offer day (day -1). *S.D.* is standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. *OFFSIZE* is relative offer size, which equals the total number of shares offered divided by shares outstanding the day prior to the offer date (day -1). *CMAR_51* refers to cumulative market-adjusted returns over five days before the offer date. The market-adjusted return is calculated as the firm's return minus market return from the SET index. *EVENTS* refer to a control variable in terms of the dummy variable equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. *OWN* is insider ownership obtained from the average of the top five major shareholders of each company over one year before the offering year (Limpaphayom and Ngamwutikul, 2004). *VOLUME* represents the average daily trading volume calculated over the 250 trading days before the offer date. **Panel A** shows the outcomes from the total sample of 88 firms; **Panel B** the findings from the 48 firms issuing with rights issuing (XR) and **Panel C** the results from the 41 companies issuing with private placement (PP). $\overline{R}^2$ is implied as the adjusted R^2. The regression is estimated as below where the dummy variables are applied when applicable:

$$Underpricing = \alpha + \beta_1(MKTCAP) + \beta_2(S.D.) + \beta_3(OFFSIZE) + \beta_4(CMAR\_51) + \beta_5(OWN) + \beta_6(VOLUME) + \beta_7(EVENTS)$$

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
PANEL A: Total Sample 88 Firms					
MKTCAP	0.342626***	0.0008	0.098560		
S.D.	10.96858**	0.0148	4.404904		
OFFSIZE	0.234717***	0.0001	0.057047		
CMAR_51	1.369988	0.2638	1.217445	0.169494	0.096825
OWN	-0.061632	0.2847	0.057225		
VOLUME	-0.028012	0.1157	0.017614		
EVENTS	0.232486	0.6541	0.516991		
PANEL B: Rights Issuing (XR) 48 Firms					
MKTCAP	0.470062***	0.0026	0.146398		
S.D.	11.89588	0.1447	7.996304		
OFFSIZE	0.031145	0.7494	0.096847		
CMAR_51	0.848714	0.8023	3.366898	0.182179	0.039060
OWN	-0.096306	0.3830	0.109174		
VOLUME	-0.101748	0.3129	0.099546		
EVENTS	0.461344	0.6707	1.076957		
PANEL C: Private Placement (PP) 41 Firms					
MKTCAP	0.138543**	0.0350	0.063014		
S.D.	1.099565	0.7292	3.149069	0.631862	0.553772

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
OFFSIZE	0.338879***	0.0000	0.039260		
CMAR_51	0.985734	0.3434	1.025337		
OWN	0.011712	0.7289	0.033510	0.631862	0.553772
VOLUME	0.008682*	0.0957	0.005063		
EVENTS	0.152780	0.5231	0.236681		

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

Table 5.10: Results of robustness tests with transformation variables

The results of the robustness regression for the determinant of SEO underpricing for the companies in the total sample **(Panel A)**, total sample with different issuing methods **(Panel B)** and individually different issuing methods: rights issuing (XR – **Panel C**), private placement (PP – **Panel D**) and stock dividend (SD – **Panel E**) are presented here. The regression is controlled for heteroscedasticity by using White's Heteroscedasticity-Consistent Standard Errors and Covariance, dropping some explanatory variables, causing the form of near multicollinearity and including the dummy variables of issuing methods, where applicable. *Underpricing* is defined as negative one times the return from the previous day's closing price to the offer price (Intintoli and Kahle, 2009). MKTCAP is the logarithm of market capitalisation on the day before the offer day (day -1). S.D. means the standard deviation captured by the S.D. of the daily return of each SEO firm for 30 days ending 11 days before the offer date. LOFFSIZE is the logarithm of the relative offer size, which equals the total of shares offered divided by the shares outstanding the day before the offer date (day -1). CMAR_51 refers to cumulative market-adjusted returns over five days before the offer date. The market-adjusted return is calculated as the firm's return minus the market return from the SET index. EVENTS refers to a control variable in terms of the dummy variable, being equal to 1 if the SEO firms have events other than SEOs during the event period of 115 days before and after the announcement date and equal to zero otherwise. LOWN is the logarithm of insider ownership obtained from the average of the top five major shareholders of each company over one year before the offering year (Limpaphayom and Ngamwutikul, 2004). LVOLUME represents the logarithm of the average daily trading volume calculated over the 250 trading days before the offer date. The dummy variables of issuing methods are: right issuing (DUM_XR), equal to 1 if firms use rights issuing to issue new shares, zero otherwise; Private placement (DUM_PP), equal to 1 if firms use private placement to issue new shares, zero otherwise; Stock dividend (DUM_SD), equal to 1 if firms use stock dividend to issue new shares, zero otherwise and Public Offering (DUM_PO), equal to 1 if firms use public offering to issue new shares, zero otherwise. $\overline{R}^2$ is implied to be the adjusted R^2. The regression is estimated as below, where the dummy variables are applied when applicable:

$$Underpricing = \alpha + \beta_1(MKTCAP) + \beta_2(S.D.) + \beta_3(LOFFSIZE) + \beta_4(CMAR\_51) + \beta_5(LOWN) + \beta_6(LVOLUME) + \beta_7(EVENTS) + \beta_8(DUM\_XR) + \beta_9(DUM\_PP) + \beta_{10}(DUM\_SD) + \beta_{11}(DUM\_PO)$$

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
PANEL A: Total Sample 110 Firms					
MKTCAP	0.141723***	0.0004	0.038564		
S.D.	1.506105***	0.0067	0.543982		
LOFFSIZE	0.043453	0.1989	0.033601		
CMAR_51	-0.127254	0.5346	0.204228	0.210063	0.155852
LOWN	0.117646	0.4296	0.148358		
LVOLUME	-0.033500**	0.0442	0.016441		
EVENTS	0.101843	0.2863	0.095006		
PANEL B: Total Sample 110 Firms with issuing methods					
MKTCAP	0.133565***	0.0000	0.029767		
S.D.	0.209657	0.5876	0.385305		
LOFFSIZE	0.055905	0.0790	0.031499	0.603458	0.558948
CMAR_51	0.029351	0.8360	0.141392		
LOWN	-0.053861	0.6682	0.125289		

Explanatory Variables	Statistic Values				
	Coefficient	*p-values*	*Std Error*	R^2	$\overline{R}^2$
LVOLUME	-0.003725	0.8104	0.015482		
EVENTS	-0.034217	0.6220	0.069184		
DUM_XR	0.381509***	0.0010	0.112121		
DUM_PP	0.110417	0.1058	0.067642	0.603458	0.558948
DUM_SD	1.120850***	0.0000	0.117823		
DUM_PO	0.068702	0.5521	0.115128		
PANEL C: Rights Issuing (XR) 48 Firms					
MKTCAP	0.124157***	0.0000	0.025613		
S.D.	1.478708**	0.0223	0.621916		
LOFFSIZE	0.023195	0.5405	0.037570		
CMAR_51	-1.048875*	0.0881	0.599930	0.410325	0.307131
LOWN	-0.135076	0.1549	0.093175		
LVOLUME	-0.010051	0.6008	0.019058		
EVENTS	-0.034048	0.7016	0.088235		
PANEL D: Private Placement (PP) 44 Firms					
MKTCAP	0.153317**	0.0397	0.071827		
S.D.	-2.996883	0.4025	3.537366		
LOFFSIZE	0.128656**	0.0213	0.053449		
CMAR_51	0.250249	0.6210	0.501762	0.289936	0.151867
LOWN	0.119019	0.6727	0.279443		
LVOLUME	-0.008306	0.8016	0.032808		
EVENTS	0.108570	0.5057	0.161479		
PANEL E: Stock Dividend (SD) 110 Firms					
MKTCAP	0.136565***	0.0000	0.032179		
S.D.	0.067926	0.8876	0.479206		
LOFFSIZE	0.071974***	0.0085	0.026795		
CMAR_51	-0.044405	0.7973	0.172421	0.547552	0.511714
LOWN	-0.044292	0.7483	0.137640		
LVOLUME	-0.015866	0.2378	0.013360		
EVENTS	-0.043291	0.5365	0.069803		
DUM_SD	0.861985***	0.0000	0.070566		

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

CHAPTER 6

THE POST-ISSUING PERFORMANCE OF SEOs

Abstract

This chapter focuses on an investigation into the performance of SEO firms during the post-issuing period. We examined 125 common stock offering companies from the Stock Exchange of Thailand (SET) between 1999 and 2006. The Buy-and-Hold Return (BHR) approach was chosen as the measurement of post-issuing performance in SEO companies. Individual estimations are also applied for the four different samples of issuing methods in order to discover how the firms perform in each sample. Our evidence reveals that firms underperform during the post-issuing period. These consequences are consistent with the existing studies, particularly in the Asia-Pacific region. With the estimation of different benchmarks in the BHR approach, the results are unchanged, while a different approach (cumulative abnormal return, the CAR approach) provides slightly different outcomes. Firms who issue new shares via rights issuing and stock dividends do not underperform during the post-issuing period.

6.1 Introduction

Eckbo et al. (2006, p.96) suggest that the explanation for the low long-term returns (subject to a holding period of 2-5 years) following equity offerings is under debate. Having considered the short-term performance of firms making a seasoned equity offering (hereafter, SEO) in the previous two chapters, we now turn to a post-issuing study (in terms of a long-term study) during the SEO period. Previous studies (e.g. Teoh et al., 1998b; Jegadeesh and Karceski, 2004; Lyandres et al., 2005) report that SEO companies underperform in the period after the issue of equity. We use this as our main objective in this chapter to examine the post-issuing performance in the context of different issuing methods. To be more specific, we investigate the post-issuing performance of SEO companies and consider how the companies perform in different samples of issuing methods.

Our contributions to the existing studies on long-term performance (post-issuing performance) of SEOs are demonstrated in several ways. First, we provide an out-of-sample examination by obtaining the data from an emerging market, Thailand. As a result, we will notice whether the evidence from Thailand carries over from the developed markets, on which most existing literature focuses. The findings would also assist the firms' managers and investors with their investment decisions concerning the performance of SEO firms during the post-issuing period. Second, our study is among the first to consider the post-issuing performance of SEOs in Thailand with recent data (obtained from the post-financial crisis of 1997 period). As a result, our evidence will present new outcomes in the area of SEOs in Thailand. Third, we

investigate the post-issuing performance of SEOs with different samples of issuing methods available during our study period. The outcomes could be different to the previous studies in developed and other emerging markets because SEOs in Thailand are concerned with issuing new shares to the existing shareholders instead of issuing to the public (as a public offering). Thus, we consider the methods such as rights issuing, private placement and stock dividend. Lastly, this study employs the sector index to confirm whether the results are robust with the benchmark that closely represents each firm. This could be better than using the market index because the sector index contains the firms which are doing similar business and may have some specific characteristics, e.g. higher market capital than the other sectors. The consequences of using the sector index will be new information on the post-issuing performance of SEO firms in the recent period (between 1999 and 2006), helping investors to invest more in the long run.

As a whole estimation, we obtained data from the 125 companies issuing via common stock from the SET between 1999 and 2006. Applying the Buy-and-Hold Return (hereafter, BHR) approach, we investigated whether the SEO firms are underperforming in the post-issuing period. The outcomes show that there is underperformance, which appears to have occurred after the issuing of new shares of our SEO firms in Thailand. In addition, there was no difference in the results on underperforming in the post-issuing period when we focused on each issuing method separately.

This chapter is organised as follows: section 6.2 will briefly review some studies of the long-term performance of SEOs firms, including possible motivations and hypotheses. In section 6.3, we describe the data and methodology. Section 6.4 will reveal the empirical results and present a discussion of the findings. Section 6.5 will draw the final conclusions.

6.2 Literature Review and Hypotheses

Among the previous SEO studies, researchers have also examined how well SEO companies perform during the post-issuing period. This can be seen as studies of long-term performance over three to five years in general. In developed markets, there are several well-known papers, which range from works from the 1990s, such as Healy and Palepu (1990), Teoh et al. (1998b) and Soucik and Allen (1999a), to more recent research, e.g. Clarke et al. (2001), Hertzel et al. (2002), Krishnamurthy et al. (2005), Lyandres et al. (2005) and Eckbo et al. (2006). We find that these studies repeat the mixed results that firms underperform after issuing equity. For instance, while Soucik and Allen (1999a) find no underperformance of SEOs in the long-term in Australia, Lyandres et al. (2005) report that companies may exhibit underperformance in the post-issue period, having obtained data from companies in the U.S. However, Teoh et al. (1998b) respond to other previous studies, claiming that underperformance may occur in the pre-offering period but not post-offering.

Turning to the studies on our concerns in emerging markets, there has been some research concerning these particular areas of long-term performance in SEOs. They include the study determinants in the long-term instead of focusing only on how the SEO companies perform after issuing new equities. An example of this work is the study of Foerster and Korolyi (2000), who obtained a combination of samples from developed and emerging markets (including Hong Kong, Indonesia, Korea, the Philippines, Singapore, Taiwan and Thailand) from 1982 to 1996. Their results confirm the relationships between local market liquidity and depository receipts (DRs) in the performance of long-term returns. Some studies are based on data from emerging markets only (e.g. Claessen et al., 1995; Barry et al., 2002; Brown et al., 2008) and are relatively little concerned with the long-term (post-issuing) performance of SEOs.

Regarding the literature on countries within the Pacific Basin region, we also found a few studies relating to the long-term performance of SEOs. Some examples are listed as follows: Kang (1990) and Kim and Lee (1990) provide a similar study of the performance of SEOs in Korea in the short term, with a maximum of 6 months, rather than long-term. Their results show positive abnormal returns during the post-issuing months. With a longer study period of over 15 years, Dhatt et al. (1996) examine 791 rights issue announcements in Korea. Their findings confirm the same outcomes of the above existing studies in Korea in the announcement month, while there is a negative in the abnormal returns after the announcement. Cai and Loungran (1998) examine the performance of Japanese SEOs between 1971 and 1992. They suggest that the age of firms influences the companies in such a way that they underperform

during the long-term horizon. In addition, their results reveal that the SEO sample has poor operating performance in the post-issuing period. Soucik and Allen (1999b) selected 94 Australian SEO firms for their investigation into the relationship between a company's betas and the extent of post-issue underperformance. Their consequences show that there is an underperformance in the SEO firms, compared with the non-issuer firms (Soucik and Allen, 1999b, p.1839).

Having obtained the equity offerings in three markets (Japan, Korea and Hong Kong), Matthew (2002) attempts to establish the relationship between the long-term performance of the SEOs and the relevant regulatory and organisational structure. Applying the matching portfolio technique, his findings indicate that the Korean companies, which have negative long-run abnormal returns, show the best increase in number of shares outstanding (at least 50% change in market capitalisation) (*ibid,* p.329). His results also show that the performance of SEO firms in Japan depends on the firms' age; the older ones appears to perform better, while the performance of SEO firms in Hong Kong relies on the asymmetric information on whether to issue new equities when their stock prices undervalue the market. Brown et al. (2006, 2009) examine long-term underperformance and the relationship between corporate governance and firm performance over a 3-year post-issue window in Australia. They report that the private placement firms tend to have higher levels of market related to risk, are more highly leveraged and less profitable (Brown et al., 2006, p.206). From the sample of private placement, rights issuing and share purchase plans, their results indicate that the larger the companies, the more degree of long-term underperformance (Brown et al., 2009). With 93 samples of firms using employee

stock option (ESO) in Taiwan between 2001 and 2006, Lin and Tsai (2010) expect that offering ESO to the employees could improve the company's performance. Their evidence suggests, however, the opposite; that there is poorer long-term investment performance in the ESO issuing firms because of the asymmetric information.

Besides the literature relating to SEO long-term performance, we can notice from the evidence of IPO long-term performance in emerging markets and Asia-Pacific regions that it is possible that underperformance is the case of the post-issuing period. Nevertheless, we find a conflict among the findings in the literature on IPO long-term performance in emerging markets. For instance, while Corhay et al. (2002) examine the four-year period of Malaysian IPOs and show that they perform better than the market in the long-term, Ahmad-Zaluki et al. (2007) report in their study regarding IPOs in Malaysia that there is underperformance of Malaysian IPOs, particularly when the number of IPO firms in the market is small.

In Thailand, there are no particular studies regarding the long-term performance of SEO firms. The most closely related studies in this category are shown in the area of SEO operating performance, namely Ngamwutikul (2002) and Limpaphayom and Ngamwutikul (2004). These two studies provide similar examinations in Thailand between 1991 and 1994, with the exclusion of IPOs and financial firms[145]. While Ngamwutikul (2002) finds a poor operating performance after SEOs in her sample firms, Limpaphayom and Ngamwutikul (2004) show that more shares are offered by managers when the expectation of operating performance becomes worse. Their

[145] Ngamwutikul (2002) examines the pre- and post-offering period, while Limpaphayom and Ngamwutikul (2004) focus on the post-issuing period.

findings also suggest that the future prospects of issuing firms are signalled by using issue proceeds (Limpaphayom and Ngamwutikul, 2004).

Another closely related research in Thailand has been applied with the IPO sample. Chorruk and Worthington (2009) report from their evidence that the IPO's post-listing performance indicates generally poor performance, measured by monthly cumulative abnormal returns (hereafter, CARs), BHR and Wealth Relative. Nonetheless, in terms of the post-listing performance, we assume from the literature that they should have considered the operating and financial long-term performance together, since the authors have mentioned nothing regarding the separation. In fact, there is a similar relationship between operating and financial long-term performance. Both of these could be explained and measured via the financial ratios. The operating is normally captured via return on asset (ROA), return on equity (ROE) and return on investment (ROI), while the measurements of financing are concerned with liquidity, the ability to return loans and growth rate. In practice, the financial performance in Thailand could proxy via the earning-per-share (EPS) as the main measurement.

[Insert Table 6.1 here]

With the above literature, we see that most studies restrict the investigation to developed markets, while the studies in emerging markets (including Thailand) are still scant, giving few details of the wider picture (see the summary of the existing literature in Table 6.1). Although there is some literature relating to the long-term performance of SEOs within the Pacific Basin region, some studies have obtained the

data from countries which are currently considered as developed markets, e.g. Japan, Hong Kong and Singapore. The characteristics of these markets are different from the general characteristics of emerging markets, including Thailand. The main reasons for this lack and the difference in characteristics remain the same, as stated in the previous two empirical chapters, because the Thai capital market is relatively small in comparison with other markets, illiquid and highly volatile[146]. Since SEOs have become more important following the policy of the Federation of Thai Capital Market Organisations (FETCO) in order to expand this type of financing source, there should have been an increase in the number of studies in this area. The reason is that we need some suitable research and empirical evidence in order to support the suggestions of investments from the security companies (the brokers). Having had more studies of SEO post-issuing performance, investors would have more information and knowledge in this particular area for comparison with the information received from those brokers for their final investment decisions. As a result, investors could invest based on the knowledge in an appropriate way, making the market less volatile. In addition, we could analyse our study of SEO post-issuing performance to establish whether the results in developed markets carry over to Thailand, as an emerging market.

Within the study of SEO long-term performance in both developed and emerging markets (including Thailand and other Pacific Basin regions), the testable hypotheses are similar regarding whether there is over- or underperformance during the long-term period. Examples of these works are Healy and Palepu (1990), Cai and Loughran

[146] We provide the illustrations to support this with some figures later in section 6.3.1 – Data Sources and Definitions.

(1998), Soucik and Allen (1999a), Mathew (2002), Limpaphayom and Ngamwutikul (2004), Brown et al. (2009) and Lin and Tsai (2010). The outcomes from these studies guide us to know how the companies perform in the longer period; for instance, whether the firm underperforms or if the long-term abnormal returns are positive or negative. Since we have a limited amount of research into the long-term performance of SEOs in Thailand, we aim to develop our hypothesis in this chapter based on the existing literature mentioned above.

Nonetheless, the existing SEO literature on the long-term in Thailand is not as particularly concerned with long-term performance as previous studies of developed markets (e.g. Healy and Palepu, 1990; Teoh et al., 1998b; Clarke et al., 2001). Instead, they cover different areas within the study period, which are the long-term, e.g. the long-term abnormal return (Lertsupongkit, 2002)[147], the operating performance (Ngamwutikul, 2002; Limpaphayom and Ngamwutikul, 2004) and obtaining the IPO samples in the long-term performance (Chorruk and Worthington, 2009). As a result, our examination can be claimed to be the first study of the post-issuing performance (in terms of long-term performance) of SEOs in Thailand. In addition, our study provides more recent data, from areas such as the post-financial crisis period, which is the period during which the Thai economy was making a substantial recovery. To support this, we can see from Table 6.1 that the existing SEO literature in Thailand obtained the data either prior to or covering the period of the financial crisis between 1997 and 1998. The percentage of sample coverage is 100%, compared with the

[147] Lertsupongkit (2002) mainly considers the abnormal returns during the post-issuing period, but the period of study appears to be more short-term than long-term (in particular, the 30-day period after SEOs).

previous studies into Thai SEOs. This implies that our study, with 125 firms in the sample during 1999 to 2006, provides more substantial sample coverage than the earlier Thai research. In other words, with more recent data, our sample size is larger than the existing works, which obtained data in the study period before and during the financial crisis in 1997. Although a few studies were made shortly after 1997 (e.g. Lertsupongkit, 2002; Prangthawat, 2002), most companies in Thailand remained in the process of rehabilitation and/or reorganisation (Vithessonthi, 2008, p.135). Therefore, our study focuses clearly on the period during which the country was showing signs of recovery in the economy, i.e. from 1999 onward. In addition, we employ a slightly different methodology for measuring post-issuing performance in order to obtain the closest possible reflection of the characteristics of the Thai capital market and the institutional background[148].

Furthermore, we will turn to examining how companies perform after issue equity when issuing with different methods, as presented by Hertzel et al. (2002) and Krishnamuthy et al. (2005). We found a few papers in the Pacific Basin region considering issuing methods similar to these two in the U.S. They are Tan et al. (2002), who focus on the private placement and rights issue in Singapore between the first quarter of 1998 and the second quarter of 1996, and Anderson and Rose (2006), who analyse the private seasoned equity issues in New Zealand from 1990 to 2002. Nevertheless, although these two studies in Asia-Pacific countries investigate the performance of SEO companies, they appear to have been more focused on the short-term period than the longer term. However, Brown et al. (2009) are concerned with

[148] Further explanations of the methodology used in our study are given in section 6.3.2.

some individual issuing methods, e.g. private placement, rights offering and share purchase plans. Their examination relates to corporate governance, while our study focuses purely on how SEO firms perform during the post-issuing period. With the market differences (Thailand and Australia), the methodology of measuring post-issuing (long-term) performance and the fact that Australia is seen to be a developed market, we can claim that our study will provide a clear close reflection to the characteristics of emerging markets (small in size, small in number of listed firms and highly volatile) regarding issuing methods with more recent data (between 1999 and 2006).

Consideration of each issuing method will lead to useful evidence for the firm's managers to know how their firms are performing in the period after their SEOs, when they issue via different methods. In Table 6.2, we summarise as illustrations the evidence from the previous studies. Our hypothesis to be tested can be set down as follows:

H_0 : There is an underperformance among firms in the post-issue period of SEOs for common stock offering firms in the total sample and different issuing methods, where applicable.

[Insert Table 6.2 here]

However, there may be other events besides the equity offering during our holding period that can cause the post-issuing performance to be different to what it should be. These events include dividend announcements, earning announcements, stock splits

and the announcements of policies or regulations from the government or other related institutions (e.g. the Bank of Thailand, BOT). Nevertheless, according to our review, no previous studies have shown any specific concern regarding the other events. This is different from the section concerning stock price reaction, where a dummy variable can be brought into the estimation. As a consequence, we focus only on the event of SEOs during our study period, and assume that the other events are constant and have only minor impact on the post-issuing performance of SEO firms[149]. In other words, we take these events to be constant in terms of the control variable for our study.

In the next section, we describe the data and methodology to be used in this chapter.

6.3 Data and Methodology

6.3.1 Data Sources and Definitions

We obtained the data to estimate the post-issuing performance from two main sources: the SET's fact books and SETSMART (the SET database) during the period 1999 to 2006. Initially, we had 1,910 SEOs among 251 non-financial companies. Due to the difference in asset structures and the method of analysis, we have excluded the financial firms from our sample. We excluded not only the financial institutions but

[149] We could refer to our previous evidence from the section on stock price reaction (Chapter 4), which shows that other events beside SEOs in Thailand have no relationship to SEO stock price reaction. This is perhaps supported by insignificant results in our events dummy variable in a previous chapter (see section 4.4.4 of Chapter 4).

also the firms with SP or sign of suspension and unavailable data of daily returns. We also obtained the first SEO of each company to avoid any overlapping in the sample. Having organised our initial sample following Seiler (2004), we have 126 companies issuing via common stock to be applied in our examination.

We have excluded one firm (LL, see Appendix 3 for its name in full) because there are some SP signs during the post-issuing period (one year). This reduces our final sample to 125 companies. Among the 125 firms, we still have four different issuing methods as in our previous chapters; namely, rights issuing (XR) with 52 firms, private placement (PP) with 52 firms, stock dividend (SD) with 22 companies and public offering (PO) with 2 companies[150]. As in our earlier studies, our sample size here is different from the existing literature. It clearly shows that there are only two companies in our sample issuing new equities via PO, while the previous SEO works in both developed and emerging markets (e.g. Soucik and Allen, 1999a; Clarke et al., 2001; Mathew, 2002; Lyandres et al., 2005; Brown et al., 2009; Lin and Tsai, 2010) tend to focus only on PO. In general, the companies issuing new shares with PO in Thailand are small in number. We confirm this from some of the SEO literature in Thailand. For instance, Prangthawat (2002) has only 11 firms in her study during the period of 1996 to 2000 in Thailand. Similarly, we found only three companies in our initial sample between 1999 and 2006 in Thailand. Therefore, these two firms in the sample size for PO could lead to a bias in the evidence of post-issuing performance, because the outcomes would be based only on them. As a result, our hypothesis when

[150] There are three firms (namely, ITD, KTP and SORKON – see Appendix 3 for their names in full) which use two different issuing methods at the same time. Therefore, the total sample when combined with the four subsamples does not correspond to the total of 125 firms.

considering the method of PO separately does not provide the best reflection of a PO case in practice.

The explanation in this case is that issuing new shares with PO appears to entail a high cost of issuing and needs to be approved by the SEC (Securities Exchange Commission). The process of being approved could take longer than issuing to existing shareholders, XR for instance. This is because firms using XR to issue shares are allowed to issue new shares to the existing shareholders without any permission from the SEC, unless the company issues new shares in the same proportion to each existing shareholder who currently holds those shares in the firm (see section 3.2.4.1, regarding the notification KorChor.12/2543). Furthermore, although issuing with PP is also subject to gaining permission from the SEC, according to the KorChor.12/2543, it is related with the co-equal benefit between the issuing firms and the institutional investors.

We defined our post-issuing performance period of one year, following the clarification of Kothari and Warner (2006) that the long-term prospect can be referred to as the event-window for one year onward. We find the reason for this to be that the Thai capital market has a low level of liquidity, and is highly volatile and sensitive to events. To illustrate this, we refer to the statistic of the SET that the market size in Thailand measured via market capitalisation is clearly smaller than our neighbouring markets, such as Singapore and Malaysia, as of December 2004[151]. Although the

[151] The information was obtained from the article by the SET (SET NOTE): "How market capitalisation and P/E ratio increase" (in Thai). The Stock Exchange of Thailand Issue 3/2006, available online at http://www.set.or.th/th/product_services/research/setnote_p1.html [Accessed on 2 June 2010].

market itself seems to have a relatively high share turnover velocity (as a proxy for liquidity at around 84%, higher than Indonesia, Singapore, Malaysia and the Philippines)[152], the trend began to decline after 2003. This should have led to the market having less liquidity. The small amount of free-float in the market is another reason that causes the market to have less liquidity[153].

With the high number of individual investors, the volatility and sensitivity to events in the market are revealed to be at a high level. According to the statistic provided by the SET (as of 31 August 2009), around 64 per cent on average represents the number of individual investors in the past decade, while only 25 per cent on average represents the number of institutional investors. These individual investors usually follow rumours (trading without investment knowledge) and the economic factors: e.g. the GDP growth, the exchange rate, the oil prices and the current situations in the country, such as political uncertainty (Kasikorn Research Centre, 2006)[154]. Moreover, the trading in portfolios to make profits is another important reason that makes the Thai stock market highly volatile. The Kasikorn Research Centre (2006) indicates that these foreign investors have a huge amount of capital to invest in the market. When they invest in some blue-chip companies, it causes substantial changes in the market index. This is because since the Thai stock market is small, an increase in the share

[152] Source: World Federation of Exchange as of 31 July 2009.
[153] Source: Kasikorn Research Centre (2006) **The role of foreign investors in the Thai stock market** (in Thai). Vol. 12, Issue 1890. Available via the CD-Rom of Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/K-Econ [Accessed on 12 April 2011].
[154] Kasikorn Research Centre (2006) The **Thai stock market in the remaining period of the year: waiting for the new foreign cash flow** (in Thai). Vol. 12, Issue 1871. Available on the CD-Rom by Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/K-Econ. [Accessed on 12 April 2011].

prices of a few blue-chip companies causes an impact on the main composite index and other indices[155].

A longer period, if applied, should not reflect the actual evidence of the results of the SEO announcement[156]. In addition, the sample size turns out to be relatively small due to the availability of listed companies. Our sample size of 125 companies is clearly far behind the existing studies mentioned earlier in the area of long-term performance, such as Barber and Lyon (1997a) at 10,000, Teoh et al. (1998b) at 1,248, Spiess and Affleck-Graves (1999) at 2,229, Hertzel et al. (2002) at 619 and Lyandres et al. (2005) with 8,126 samples. Nonetheless, our sample size of 125 companies provides a slightly higher number of firms than the previous studies in Thailand and some Asia-Pacific countries, e.g. the study by Limpaphayom and Ngamwutikul (2004), which had only 62 firms for their sample size, Anderson and Rose (2006) with 55 firms in New Zealand and Lin and Tsai (2010) with 93 firms in Taiwan. A summary of our sample is shown in Table 6.3.

[Insert Table 6.3 here]

We provide the estimation of the mean difference in size among each issuing method and total sample, as shown in Table 6.4 – panel A. This indicates clearly that there are

[155] This can be seen in the correlations of the changes in the industrial index and the new buy of foreign investors during the period of 2003 to 2006, that there are high correlations among the industries that have high market capitalisation. These industries are Resources, Financial groups, Property and Telecommunications. The figures of the correlations are between 0.31 and 0.41. The information is taken from Kasikorn Research Centre (2006) **The role of foreign investors in the Thai stock market (**in Thai). Vol. 12, Issue 1890. Available from the CD-Rom of the Kasikorn Research Centre or its summary via: http://www.kasikornresearch.com/TH/K-Econ [Accessed on 12 April 2011].

[156] See further explanations mentioned in section 4.3.2.3 of Chapter 4.

no differences in the mean of the firm's size within our sample (insignificant results), except when the companies issue via SD (rejecting the null hypothesis). In other words, it is possible to explain that the firm sizes impact upon which issuing methods the companies will use to issue new shares. According to Tables 6.3 and 6.4 – panel A, it can be inferred from the average size that small firms in Thailand would prefer to issue via SD. This leads to the endogenetic problem. However, with close consideration to the real time trading in the SET and the behaviour of listed companies, this endogenetic problem should not be a case to which more attention needs to be paid.

[Insert Table 6.4 – panel A here]

The descriptive statistics in Table 6.3 clearly show that the maximum size of SD firms is the smallest within our sample, at THB 23,488.28 million. If the above assumption was true (small firms tend to issue new shares via SD), the minimum size of the whole sample would be shown at THB122.35 million for SORKON, instead of THB71.07 million for NEW[157]. We interpret the reason as being that in Thailand SD will be used as the issuing method when the companies would prefer to maintain the level of cash flow. This is because they have either unstable cash flow or poor performance. They need to use the dividend announcement to signal to the market that they are in the position of paying dividends to their shareholders, but those dividends will be paid in terms of common stocks. This method will have no incoming cash flow, while there is an increase in the number of shares outstanding. The companies which have a limited

[157] See Appendix 3 for the names in full.

capital (normally referred to as small- and medium-size firms) would prefer this method because they can retain their capital (less cash flow from financing); meanwhile, they are at least the companies that pay dividend. In addition, the investors or the shareholders are able to sell the stocks (from dividends) to receive capital gain. According to Thai law, this capital gain is tax-free, as it is the income from dividends[158]. Therefore, the larger companies or the blue chip companies would rather use issuing methods other than SD, because issuing via SD offers less incentive to their shareholders. In other words, issuing new shares with SD appears to be regarded as the dividend reason rather than the priority of offering new equities (indirect issuing new equities). Nevertheless, SD remains one of the issuing methods, since the number of shares outstanding increases although there is no incoming cash flow, as mentioned earlier.

As a result, we can claim from the above explanations that it is unnecessary for small firms to issue new equities via SD. In Thailand, it depends on how well the companies perform in the period they require equity financing rather than the size of the firms (based on our results in Table 6.4 – panel A). Consequently, the endogenetic problem in our case should not be the case.

6.3.2 Methodology

In parallel with the estimations of long-term performance in SEO firms, most authors have offered many suggestions for measuring performance in the long-term. These methodologies are, for instance, the BHR, the CAR approach, the calendar-time

[158] If a cash dividend is paid, however, investors are taxed on it; see section 3.2.2.3 in Chapter 3.

approach, the Fama-French 3-factor model, Fama-MacBeth regression, the matching firm technique, or even the simulation method (see Barber and Lyon, 1997a; Kothari and Warner, 1997, 2006; Jegadeesh and Karceshi, 2004; Fu, 2006). Furthermore, these methodologies are also suggested in the IPO literature concerning long-term performance. Some examples of these papers are Ali (1996), Teoh et al. (1998a), Eckbo and Norli (2005) and Hoechle and Schmid (2007).

From the previous literature, we find that the BHR (or BHAR: Buy-and-Hold Abnormal Return) approach seems to be the method mostly used for examining the long-term performance of SEO firms. Several studies adopted this approach in their research, including Kothari and Warner (1997, 2006), Barber and Lyon (1997a), Lyon et al. (1999), Byun and Rozeff (2003) and Eckbo et al. (2006). Regardless of the drawbacks of the BHR approach indicated in previous research (e.g. Barber and Lyon, 1997a; Kothari and Warner, 1997; Fama, 1998), the arguments from these studies support the BHR approach as being the appropriate estimator for measuring post-issuing performance in the long term (see also Mitchell and Stafford, 2000). Since we intend to examine the one year post-issuing performance, the BHR approach is identified to be the suitable estimator. This is supported in the statement of Ritter (1991, cited by Barber and Lyon, 1997a, p.344) that mean annual abnormal returns would be estimated via the BHR approach rather than the CAR approach, which is concerned with the monthly basis calculation. In addition, the BHR approach is claimed to be better than the periodic (monthly) rebalancing entailed in other approaches in order to measure the risk-adjusted performance (Kothari and Warner, 2006, p.27). Moreover, with the examination of IPO performance in Thailand,

Chorruk and Worthington (2009, p.10) demonstrate that the BHR approach provides the deduction of the return on a corresponding benchmark (market, industry and sector index)[159]. Consequently, the BHR approach should be the suitable method for our examination of SEO post-issuing performance. Since Chorruk and Worthington (2009) also apply the BHR approach in a similar period to ours, this approach could be the appropriate one for Thailand.

Nonetheless, Barber et al. (1996) and Barber and Lyon (1997a) report that the BHR approach contains bias, namely measurement bias, new listing bias and rebalancing bias[160]. We suspect that, to some extent, this bias may remain the appropriate preliminary measurement of the post-issuing performance in our study. However, although there are biases in the BHR approach, we suggest one potential explanation in order to continue using this approach, that our holding period (the post-issued period) is shorter than in other research. Thus, according to Mitchell and Stafford (1997, cited by Fama, 1998, p.294), BHR (or BHAR) can grow with the return horizon after the first year has passed; our study may not be affected in this case since we are concerned within the first period (first year). In addition, since the BHR approach is commonly used among practitioners and academic researchers, it should be worth beginning our measurement of post-issuing performance with the BHR approach as the introductory methodology in this area in Thailand, where our study is believed to be the first one to be based on the recent data set. Consequently, with

[159] Although the study of Chorruk and Worthington (2009) concerns the IPO sample, we notice from several studies (e.g. Teoh et al., 1998a; Eckbo and Norli, 2005; Hoechle and Schmid, 2007) that the methodologies of examining the IPO post-issuing performance show no substantial differences to those mentioned in our SEO literature (see section 6.2).

[160] The rebalancing bias may not be the case if the data from Thailand are applied. This is because it will occur when the BHR is computed via the equally weighted index, while in Thailand there is only the value-weighted index.

regard to the above reasons, we will follow this well-known method in our investigation.

A typical buy-and-hold experiment is defined by Eckbo et al. (2006, p.99) as involving buying the issuing firm's stock in the month following the issue month and holding the stock for a period from 3- 5 years or until delisting, whichever comes first. Nevertheless, we select the holding period of one year, according to Kothari and Warner (2006). The reason is that we focus mainly on the performance of the firms after their announcements of SEOs. If considering a longer period, it could be difficult to control other events. The Kasikorn Research Centre (2005 and 2006)[161] reports that these events are not only the other events, such as the dividend announcements, the stock splits and the announcements of operating performance, but also external factors, e.g. the economic factors, the political situations and the investments of foreign investors. Furthermore, these events would play an important role and could influence the firm performance (Kasikorn Research Centre, 2005). For instance, when the political chaos began, the exchange rate and the money flows could have had an effect in terms of the loss in confidence from investors, particularly foreign ones. This should influence the growth of the firms, leading to a poor performance. Thus, employing many years for the longer period of post-issuing could bring our examination right into the centre of the chaos, when confidence began to fall. Alternatively, we could interpret this in another way, that using a three- or five-year

[161] Sources: (1) Kasikorn Research Centre (2005) **The narrow movement in the Thai stock market and the risk factors** (in Thai). Vol.11 Issue 1731, available from the CD-Rom of the Kasikorn Research Centre or its summary via: http://www.kasikornresearch/TH/K-Econ [Accessed on 17 March 2011]; (2) Kasikorn Research Centre (2006) **The Thai stock market in the remaining period of the year: waiting for new foreign cash flow** (in Thai). Vol.12 Issue 187, available from the CD-Rom of the Kasikorn Research Centre or its summary via: http://www.kasikornresearch/TH/K-Econ [Accessed on 12 April 2011].

holding period in Thailand, as was done in previous literature, would not closely reflect the real performance of firms. This is mainly because of the high volatility in the market. In addition, with a relatively high level of sensitivity in the Thai capital market, companies might suffer from poor performance following the policy announcements of the government and related institutions (shock events) or other events, i.e. the effect of the announcement from the Bank of Thailand on reserves in capital investment in 2006.

Not only does the paper of Kothari and Warner (2006) select a 1 year period as its long-term horizon, but other studies, such as those of Byun and Rozeff (2003) and Jegadeesh and Karceshi (2004), also apply the period of 1 year for their measurement of long-term performance. As a result, we will utilise the holding period after the first SEO of each company (day 0) for a further 1 year (12 months) [162]. We apply the same calculation and estimation of BHAR as those suggested in several studies (e.g. Barber and Lyon, 1997a; Kothari and Warner, 1997, 2006; Mitchell and Stafford, 2000; Byun and Rozeff, 2003). The equation of BHARs and the test statistics are defined following Barber and Lyon (1997a) and Kothari and Warner (1997, 2006) as:

$$BHAR_i(t,T) = \prod_{t=1}^{T}\left(1+R_{i,t}\right) - \prod_{t=1}^{T}\left(1+R_{B,t}\right) \tag{6.1}$$

$$t\_BHAR = \frac{\overline{BHAR}}{\sigma_{BHAR}/\sqrt{n}} \tag{6.2}$$

where $BHAR_i(t,T)$ = BHAR of firm i during period t to T

[162] This means that we apply the period of the event window for 1 year. Since the SET has generally 20 trading days per month on average, according to our study period 1999 to 2006, this period can also be reckoned as 240 trading days.

$R_{i,t}$ = Return of firm i at time t

$R_{B,t}$ = Return on benchmark portfolio which refers to the SET index (the main composite index).

$\overline{BHAR}$ = Average value of BHAR

σ_{BHAR} = Standard deviation of BHAR and

n = Sample size of each issuing method and total sample.

Although the BHAR approach is mostly calculated together with the "matching firm" technique (e.g. Mathew, 2002), it would not be a suitable method for our study with the samples from Thailand. This is because, according to Eckbo et al. (2000, p.272), the matching firm technique is likely to generate abnormal performance by itself. Since there is high volatility in the market, the firm performance and the movement of stock prices could easily respond to the other events beside the SEO announcements (see Kasikorn Research Centre, 2005)[163]. Having the possibility of abnormal performance being generated in the technique, the evidence we have would not provide a real reflection of the post-issuing performance among SEO firms in Thailand in practice. Even though some studies in Thailand (i.e. Jirasetthakulchai, 2000) apply the matching firm technique in their examination, they focus on different study periods and examine them with regard to the dividend announcements. Furthermore, the matching firm technique could lead to an inability to identify the difference between the holding-period returns of the issuing firms, the non-issuing firms and the abnormal performance (Eckbo et al., 2000). Since we examine the post-

[163] This reference refers to the same source as previously mentioned on p.333.

issuing performance of SEO firms, we should know the differences between the returns of SEO and non-SEO firms in order to clearly identify their performances.

In addition, other approaches (e.g. the calendar-time portfolio approach) do not appear to be appropriate methods for measuring post-issuing performance. Mitchell and Stafford (2000, p.289) suggest that the calendar-time portfolio approach may fail to measure significant abnormal returns if abnormal performance primarily exists in months of heavy event activity. This may not be suitable to apply to the data from Thailand because the market is relatively sensitive to most events occurring at the time. The high number of individual investors also causes the market to have very high volatility. As a result, events could become the heavy event activity in any period of time because of the high level of sensitivity and volatility in the market. Consequently, although there are some biases in the BHR approach, it is the appropriate approach for our study since the other approaches provide less reflection on the real post-issuing performance in practice in Thailand. Concerning equations 6.1 and 6.2, we choose the market index (the SET index) as our benchmark. We also consider a different benchmark for our robustness test, which we will discuss later in section 6.4.2.

6.4 Empirical Results

We consider two kinds of empirical results. First, the main findings are concerned with the results of using the BHAR approach on SEO companies with different issuing methods, where applicable. Second, we explain some alternatives to robustness estimations, such as using a different technique or different benchmark for the measurement of post-issuing performance.

6.4.1 The Main Findings

Having estimated our sample of 125 companies, we reveal the outcomes statistically in Table 6.5.

[Insert Table 6.5 here]

Beginning with results from the total sample, the average of BHARs is clearly presented at a negative value at -0.27001. This refers to the fact that the return moves to the negative side after the announcement date and the companies have underperformed during the holding period. Moreover, with the t-statistic at -4.44606, this shows a highly significant result, meaning that we do not reject the null hypothesis of underperformance in SEO firms during the post-issue period (see Table 6.5 – panel A). In other words, the total sample of companies offering common stock did not underperform after the SEO announcements. In comparison to a previous study in Thailand, that of Chorruk and Worthington (2009), we have an interesting

result to illustrate, although the evidence shows that with the IPO sample Thai IPO firms revealed no underperformance in the first 12 months, which is the same period as our SEO case. One potential reason is that there are different issuing methods. IPO firms in Thailand first issue new equities via public offering (PO) (bringing the public in to be owners), but SEO firms prefer to issue to the existing shareholders in order to raise the responsibility of the owners to expand their businesses.

Furthermore, our findings appear to be at least consistent with those of the existing literature on long-term performance in Thailand. For instance, in the study of Prangthawat (2002), she indicates that companies (which have earning management around their SEOs) underperform only during the first year after their SEOs, while the reverse is true in the following year. This can imply that even though we considered a more recent period (1999 – 2006) in our study, during which SEOs were more popular, and the sample size is larger (see Table 6.1 for the percentage of our sample coverage compared with these two studies), SEO firms still underperform after the SEO announcements.

When issuing methods are individually considered, we find that there are underperformances among the firms issuing by rights issuing (XR), private placement (PP) and stock dividend (SD). These are confirmed by the significance of t-statistics at -1.68122 (XR), -3.32862 (PP) and -3.46503 (SD), see Table 6.5 – panels B, C and D. Consequently, our hypothesis of underperformance in the post-issuing period is true when different samples of issuing methods are estimated. As a result, it can be claimed that no matter which issuing methods are used, they will cause companies to

underperform during the post-issuing period. However, the XR firms show the significant result at 10 per cent, instead of 1 per cent, as in the total sample, PP and SD. This could be explained by the fact that issuing new shares via XR may help companies to underperform less because the average BHAR is higher than the other cases.

An alternative explanation, particularly for the PP firms, is that PP firms have the highest standard deviation among other issuing methods and the total sample. This could bring high volatility into the firms issuing new shares with PP. The reason is likely to be the co-equal benefit between the issuing firms and institutional investors (who are in relationship with the political parties in the coalition government)[164]. In addition, our results from PP firms show partly inconsistent evidence with the existing literature in the US, e.g. Hertzel et al. (2002) and Krishnamurthy et al. (2005), which suggests that there is no evidence of underperformance among the firms offering by PP. Nevertheless, our results report negative post-issuing performance (indicated at -0.32048, see Table 6.5 – panel C), which is consistent with the existing literature (namely Hertzel et al., 2002; Krishnamurthy et al., 2005). Therefore, we can claim that the aspect of post-issuing performance for companies issuing via PP is partly carried over to an emerging market such as Thailand. In contrast, our evidence of XR, PP and SD, including the total sample, is consistent with that of some of the literature relating to the Asia-Pacific region, such as Cai and Loughran (1998), Mathew (2002 – in Japan and Hong Kong), Brown et al. (2006, 2009) and Lin and Tsai (2010). This is

[164] See also the similar explanations in the previous chapters, i.e. section 4.4.4.3 and section 5.4.3.

possibly because these countries are in the same region, where the characteristics of the investments and investors are to some extent the same.

With only two companies issuing via PO, the results are totally different from those of other cases. Not only is there a positive on average of BHAR (at 0.07158), but the t-statistic of BHAR is insignificant (shown at 0.45331, see Table 6.5 – panel E), which necessitates rejection of our hypothesis of underperformance in the post-issuing period. This means that firms do not underperform where the PO is applied as issuing methods during the post-issuing period. Nevertheless, there could be bias in the results from the PO case since the sample consists of only two firms. Moreover, our evidence from Table 6.4 – panel B shows that there are mostly no differences in the performance (measured by the average BHAR) between the total sample and the three subsamples of issuing methods[165]. Although there is significance in the statistical value between XR and SD, it should not mean that the worst post-issuing performance of firms implies the issuing of new shares via SD. This is because the minimum average BHAR is shown in PRANDA (see Appendix 3 for the name in full), which issues via PP. Alternatively, we could explain that the SD firms would have the worst post-issuing performance (indicated as the most negative value of average BHAR at -0.44261, see Table 6.5 – panel D) because issuing new shares via SD is mostly used by the firms which have not performed well and need to maintain their cash flow. Consequently, with the poor performance and the fact that companies underperform after the SEOs, the SD firms would use the issuing method that is the most effective in their post-issuing performance.

[165] The subsample of PO was excluded due to a small sample size (only two companies).

[Insert Table 6.4 – panel B here]

Even though our sample size is small in comparison to earlier studies in developed markets, our results, by applying a similar methodology, remain mostly consistent with theirs, in that there are underperformances during the post-event period (e.g. Teoh et al., 1998b; Soucik and Allen, 1999b). This suggests that the out-of-sample estimations (e.g. Thailand) carry a similar aspect to the evidence in developed markets and are also consistent with the studies in the Asia-Pacific region (such as Japan and Hong Kong). However, we have some difficulties in comparing our evidence with other studies in Thailand, since few papers are available. We know from one study concerning SEO, Prangthawat (2002), that there is an underperformance of SEO firms during the first year after the issuing. This is consistent with our case, according to our statistical values, except for the firms which issued via PO. Since there are various methodologies for measuring post-issuing performance, we use these, i.e. applying different benchmarks or methodologies, as our robustness test in the following section.

6.4.2 Robustness Tests

As indicated in Spiess and Affleck-Graves (1999), obtaining a different benchmark is also possible as an alternative method for measuring post-issuing performance. We consider changing our benchmark to the sector index of the SET. The reason is that there are several companies in the SET and they are running different kinds of businesses. Focusing on each sector would lead us to particular concerns with the firms which are doing the same types of business. In other words, with the

consideration of the sector index, we would have a more specific reflection of the companies if they underperform after the issuing of new shares. This is because different sectors (businesses) may have different characteristics. For instance, according to the SET statistics, the firms in sectors ENERG, MINE, PROP, COMM and ICT are among those which have high market capitalisation (around 59 per cent of the total market capitalisation)[166].

Since we notice from our previous evidence that size is one of the factors which influences the SEO stock price reaction, a slight change in stock price due to the change in size could easily impact the stock market as a whole (Kasikorn Research Centre, 2006)[167]. Thus, if this is true, the substantial impact will be seen only in their sector and the entire market would not be fully affected by the change. We recall equations 6.1 and 6.2 with the use of sector as the benchmark, instead of the market index. The estimate sample size is reduced to 119 companies for the total sample: 51 firms in XR, 50 firms in PP, 19 firms in SD and 2 firms in PO. This is because there are some companies which are in the SET sector called "Industrial Material and Machinery (IMM)". This sector is a new one and first began trading in 2006[168].

[166] The abbreviations of sectors refer to Table 3.1 in Chapter 3. The figure is roughly taken from the SETSMART as of 31 July 2008. The industry "RESOURC" contains the highest percentage, at 33 per cent of total market capitalisation. This is followed by FINANCIAL (at 18 per cent), PROPCON (at 13 per cent) and SERVICE and TECH (at 11 per cent each). See the full names and lists of sectors in each industry in Table 3.1.

[167] Kasikorn Research Centre (2006) **The role of foreign investors in the Thai stock market** (in Thai). Vol. 12 Issue 1890, available from the CD-Rom from the Kasikorn Research Centre or the summaries via: http://www.kasikornresearch/TH/K-Econ [Accessed 12 April 2011].

[168] There are 25 sectors in 8 industries in the SET, as mentioned in Chapter 3 (see Table 3.1). This classification of sectors in the SET was mainly re-organised in January 2004 and we continue to re-arrange the listed companies into those sectors where applicable. The IMM sector was first introduced in July 2006 (first trading on 3 July 2006), with all 23 companies falling into this sector (information has been updated to May 2009).

Hence, revised equation 6.1 will be as follows:

$$BHAR_i(t,T) = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{B,t}) \tag{6.3}$$

$$t\_BHAR = \frac{\overline{BHAR}}{\sigma_{BHAR} / \sqrt{n}} \tag{6.4}$$

where $BHAR_i(t,T)$ = BHAR of firm i during period t to T

$R_{i,t}$ = Return of firm i at time t

$R_{B,t}$ = Return on benchmark portfolio which refers to each of the sectors in the SET in which the SEO firms are located

$\overline{BHAR}$ = Average value of BHAR

σ_{BHAR} = Standard deviation of BHAR and

n = Sample size of each issuing method and total sample

The results reveal that the SEO firms in the total sample, including when the firms issue via XR, PP and SD, underperform during the post-issuing period. We confirm the results by the significant t-statistics in all cases (except the PO) and the negative average BHAR (see Table 6.6 – panel A to D). These findings are consistent with our prior estimation with the use of market index as the benchmark and also the existing literature (e.g. Dhatt et al., 1996; Cai and Loughran, 1998; Mathew, 2002; Brown et al., 2009; Lin and Tsai, 2010). Nonetheless, our outcome in the PO firms remains unchanged, to reject the hypothesis of underperformance in the post-issuing period (see Table 6.6 – panel E). This finding appears to be biassed since the post-issuing

performances tend to be based only on two firms issuing via this method (PO). Furthermore, the results from the test of difference in the performance when the sector index is used report that there are no differences in the post-issuing performance between the total sample and the three subsamples (see Table 6.4 – panel C). Hence, different issuing methods do not cause the firms to underperform. One explanation is that it is because of the consideration of the sector index, where it groups the firms that have the same types of businesses together. When there are the changes of factors which particularly impact on this specific type of business, this impact would be in that sector and cause less interruption to the market as a whole.

[Insert Table 6.4 – panel C and Table 6.6 here]

In addition, not only is the sector index of the SET considered as a different benchmark, but we also consider changing our benchmark to the MSCI World Index[169]. We assume that if the Thai capital market is relevant, we should obtain a similar outcome when using MSCI as a benchmark. However, there are several indices in the MSCI World Index, of both developed and emerging markets. The MSCI, which is mostly related to Thailand, is "MSCI AC Far East Free ex Japan"[170].

[169] The MSCI refers to The Morgan Stanley Capital Investment, also known as the World Index. It is a stock market index of 1,500 world stocks, maintained by MSCI Inc. This index is often used as a common benchmark for world or global stock funds. The World Index covers 23 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States [Accessed via: http://en.wikipedia.org/wiki/MSCI_world, on 6 February 2010].

[170] This index covers nine countries: China, Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand. The information about using MSCI AC Far East ex Japan as the most relevant index to Thailand is given by the Thanachart Fund of Thanachart Bank [Accessed via: http://www.thanachartfund.com/webboard/question.asp?QID=1569, Thai version, on 3 December 2007, cited on 11 November 2009].

Since we previously applied the SET index in our BHAR equation, we planned to examine the robustness via the index of MSCI AC Far East ex Japan. Unfortunately, there is no daily data available for the full study period of 1999 to 2006. In fact, the daily prices of the MSCI AC Far East ex Japan are available from June 2002. This would not entirely cover our study period. Therefore, with the use of daily stock prices (to calculate the daily returns) in our study, the MSCI AC Far East ex Japan would not be appropriate to apply in our robustness test[171].

Besides the use of different benchmarks as the robustness test, we also turn to other approaches. Barber and Lyon (1997a, p.358) measure and examine long-term performance with both the BHAR and CAR approaches. Ritter (1991, cited by Barber and Lyon, 1997a, p.344), suggests that it is reasonable to obtain CARs to measure long-term performance. His discussions reveal that CARs should be suitable for the test of the mean monthly ARs of a sample firm. This could be the case for our study, because our holding period is one year or 12 months, which could to some extent still relate to a monthly basis. In addition, applying the CAR approach, we would see the difference in the outcomes (according to Barber and Lyon, 1997a, p.345) if there is the effect of monthly compounding; CARs ignore compounding, while BHARs include its effect. Furthermore, although Chorruk and Worthington (2009) examine the IPO sample in Thailand, their results on long-term performance are estimated by using CAR, together with BHR and Wealth Relative. As a consequence, we follow these suggestions for estimating CARs in order to capture post-issuing performance as

[171] We have found that the similar indices in MSCI (e.g. the MSCI AC Pacific and MSCI Asia ex Japan) have the same availabilities of daily data. See the MSCI website for further information: http://www.msci.com/products/indices/performance.html [Accessed 30 April 2011].

an alternative approach for our robustness check. The calculation of CARs remains that of applying the market model, as in our previous chapter on stock price reaction (see section 4.3.2 in Chapter 4). Therefore, CARs are estimated as follows:

$$t\_CAR = \frac{\overline{CAR_{iT}}}{\sigma_{CAR} / \sqrt{n}} \qquad (6.5)^{172}$$

where $\overline{CAR_{iT}}$ = Average value of CAR

σ_{CAR} = Standard deviation of CAR and

n = Sample size of each issuing method and total sample.

The results of CARs demonstrate in Table 6.7 that the firms are underperforming in the total sample and when they issue new shares via PP. This is shown by the significant t-statistics at -1.75811 for the total sample and -3.34812 for PP (see Table 6.7 – panel A and C). Thus, these findings are consistent with our prior estimations when the BHAR approach is applied. In addition, the average CAR in the PP firms is the lowest in value at -0.24759 (see Table 6.7 – panel C). This could imply that considering the CAR approach, the firms would show the worst underperformance during the post-issuing period when issuing new shares via PP, while in the XR firms there would be no underperformance. To support this, we claim the significant result in the test of difference in performance between the total sample and the three subsamples (see Table 6.4 – panel D). In the XR and SD firms, we found a difference in the outcomes, that there is no underperformance among the firms when they issue new shares via these two methods. This could be the difference, according to Barber

[172] This equation is as mentioned in Barber and Lyon (1997a, p.358).

and Lyon (1997a, p.345), regarding the monthly compounding, as mentioned earlier. However, the average CAR in the SD firms is negative in value (at -0.11750, see Table 6.7 – panel D). This could mean that the SD firms would slightly underperform during the post-issuing period, while the XR firms show no evidence of underperformance since there is a positive average CAR and insignificant t-statistics.

[Insert Table 6.4 – panel D and Table 6.7 here]

Moreover, a firm issuing via PO is another case to provide significant evidence. We claim that the companies could have underperformed when they issued new shares with PO. If this is the case, our findings might be consistent with the studies in Thailand, such as Prangthawat (2002) and Chorruk and Worthington (2009). Nevertheless, there would be again some bias due to the small sample size (only two companies). Therefore, our evidence under the CAR approach is partly robust with the evidence of the BHAR approach since we find the XR and SD firms have not underperformed during the post-issuing period.

6.4.3 Summary of Empirical Results

Our results indicate that there is underperformance of SEO firms during the post-issuing period in Thailand. With different samples of issuing methods, the evidence is unchanged. This is consistent with the previous literature, particularly that examining the data in the Asia-Pacific region (e.g. Dhatt et al., 1996; Cai and Loughran, 1998; Brown et al., 2006; Lin and Tsai, 2010). When the sector index is applied as a

different benchmark for the robustness test, our results provide the same conclusions that SEO firms underperform during the post-issuing period. Nevertheless, when we estimate the post-issuing performance with a different approach (the CAR approach), we have slightly changed results. While the outcomes of the total sample and PP firms are consistent with the BHAR approach, the XR and SD firms reveal no underperformance during the post-issuing period. In addition, examining with the BHAR approach would contain some biases, e.g. new listing bias, measurement bias and other event bias (Barber and Lyon, 1997a). However, although the BHAR approach has the possibility of bias, this approach would be the appropriate method to be used since the alternative approaches (e.g. matching firm technique and calendar-time portfolio approach) do not appear to be applicable to our study in Thailand due to their drawbacks.

6.5 Conclusions

Following the suggestions of several studies (e.g. Barber and Lyon, 1997a; Kothari and Warner, 1997, 2006), we use the BHAR (or BHR) approach in order to measure the post-issuing performance of firms. The evidence demonstrates that there is underperformance among Thai SEO firms, whatever their issuing methods. The same results remain when different samples of issuing methods are individually brought into consideration. These are consistent with the existing literature on emerging markets and the Asia-Pacific region. However, only companies issuing with "public offering" display the possibility of no underperformance during the post-issuing

period. The main explanation of the difference in these findings is the relatively small sample of public offering firms. Moreover, our results are also unchanged when we examine the BHAR approach with a different benchmark, namely the sector index. This would make our findings more specific to the real post-issuing performance because the benchmark focuses on the firms which have similar businesses (each sector). Applying the CAR approach as another robustness test also reveals that we provide the same evidence as when using the BHAR approach only with the firms in the total sample and the firms issuing via private placement. When we examine the sample of rights issuing and stock dividend, the companies do not underperform during the post-issuing period.

Although there are alternative approaches to measuring the post-issuing performance of SEO firms besides the BHAR approach, their drawbacks and their concerns do not appear to be appropriate to our study. These are, for instance, the failure to measure the significant abnormal return in the calendar-time portfolio approach and providing a slight reflection in practice in the matching firm technique. However, since we are the first study in Thailand in this area (post-issuing performance) with recent data, as far as we are concerned our study would carry over from the existing literature, which considers the data in developed markets.

We close this chapter by pointing out some practical implications of the evidence for investors and firm managers in Thailand. First, the results of our study into post-issuing performance could benefit investors in order to assist their investment decisions. They would prefer to know how the companies perform after the SEO

announcements and whether they are worth investing in. Furthermore, managers will be able to decide whether different issuing methods of SEOs can cause the companies to underperform during the post-issuing period. However, the decisions in this case may to some extent be in conflict with what the managers prefer to do during the issuing period.

Table 6.1: Summary of previous literature and the percentage of sample coverage compared with the existing Thai SEO studies
The table presents the summaries of existing literature on long-term performance of SEOs and related matters in Thailand (**Panel A**), Asia-Pacific regions (**Panel B**) and other markets (**Panel C**). The sample coverage of our study in this chapter is calculated as a percentage of the relevant sample obtained in previous research in Thailand during the same study period of 1999 to 2006.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Panel A: Literature in Thailand						
Jirasetthakulchai (2000)	Thailand	1977 – 1997	65	N/A	To examine the effect of dividend announcements on public offering of equity.	The larger the firm size, the more negative the ARs from equity offering.
Prangthawat (2002)	Thailand	1996 – 2000	115	Sample includes 60 firms from 1996-2000, coverage at 52.17%.	To investigate whether earning management and the timing of SEOs can explain subsequent poor performance	Negative relationship between discretionary accruals and operating performance of firms after SEOs.
Lertsupongkit (2002)	Thailand	1994 – 2001	59	Sample includes 74 firms from 1994-2001, coverage at 100.00%.	To examine the stock price reaction to the announcement of SEOs.	Negative stock price reaction after the SEO announcements.
Ngamwutikul (2002)	Thailand	1991 – 1994	62	N/A	To examine operating performance in SEO firms during the pre- and post-offering periods.	Poor operating performance after the SEOs of sample firms, measured by three proxies: ROA, ROE and Tobin's q / The asymmetric information in Thailand remains the major impact on operating performance.
Limpaphayom & Ngamwutikul (2004)	Thailand	1991 – 1994	62	N/A	To examine the post-issue operating performance.	More shares are offered when the expectation of operating performance is worse. Future prospects of issuing firms are signalled by using issue proceeds.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Vithessonthi (2008)	Thailand	1997 – 2006	115 (only non-financial firms)	Sample includes 173 firms from 1997-2006, coverage at 100.00%.	To examine the changes in the authorised common stock (PIAC) and how it can affect stock prices.	PIAC, on average, conveys information to the market / The larger the firm that announces a PIAC, the lower the CAR around the announcement.
Panel B: Literature in Asia-Pacific Regions						
Dhatt et al. (1996)	Korea	1977 – 1991	791	N/A	To examine market reactions to a large sample of clean rights issues over a 15-year period.	Negative ARs in the post-issuing months. Market reaction to Korean rights issues is more positive for firms with greater fall in leverage.
Cai & Loughran (1998)	Japan	1971 – 1992	1,389	N/A	To investigate the long-term stock and operating performance of SEO firms.	SEO firms underperform in the long term. Younger firms seem more severe. Also, poor operating performance revealed in the sample.
Soucik & Allen (1999a)	Australia	Jan. 1984 – Oct. 1993	137	N/A	To examine the long-term performance of SEO firms.	Significant positive initial returns in SEO firms, and a relationship between the extent of initial returns and subsequent underperformance.
Soucik & Allen (1999b)	Australia	Jan. 1984 – Oct. 1993	94	N/A	To investigate the relationship between a company's beta and the extent of post-issue underperformance, and to reassess factors affecting post-issue performance whilst controlling for risk.	SEO firms underperform more than non-issuers over the extended long-term period
Foerster & Korolyi (2000)	Hong Kong Indonesia Korea The Philippines Singapore Taiwan Thailand	1982 – 1996	333	N/A	To provide an analysis of the investment performance of non-U.S. firms through GEO.	Both DRs mkt liquidity and local mkt liquidity are significantly positively related to long-term return performance.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Mathew (2002)	Japan Korea Hong Kong	1997 – 1992 1979 – 1992 1982 – 1992	744 415 313	N/A	To examine and discuss the relationship between the long-term performance of the SEOs and the regulatory-organisational structure.	**Japan:** older firms perform better than younger firms. **Korea:** negative long-term ARs are caused by the firms that generate the greatest increase in number of shares outstanding. **H.K.:** use of asymmetric information theory to issue equity when the share prices are undervalued.
Brown et al. (2006)	Australia	1993 – 2001	3,650	N/A	To examine the relation between pre-SEO announcement date misevaluation and long-term post-SEO performance.	Both mean and median long-term AR (BHAR) are negative and are magnified as the holding period lengthens.
Brown et al. (2009)	Australia	1992 – 2006	2,941	N/A	To examine (1) relationship of corporate governance vs. firm performance and (2) whether good corporate governance mitigates post-issue underperformance.	The larger the company, the greater the long-term underperformance.
Lin & Tsai (2010)	Taiwan	2001 – 2006	93	N/A	To analyse the long-term investment performance of employee stock options (ESO) issued for employee compensation programmes.	Asymmetric information could cause the company with issuing ESO to have poor long-term investment.
Panel C: Literature on other markets						
Healy & Palepu (1990)	U.S.	1963 – 1981	128	N/A	To examine the hypothesis of a decline of stock price at SEO announcements.	When business risk of firms increases, a probability of financial distress seems to move together; then, financial leverage is reduced when firms issue common stock.

AUTHORS	MARKET	PERIOD	SAMPLE	SAMPLE COVERAGE	OBJECTIVE	FINDINGS
Teoh et al. (1998b)	U.S.	Jan. 1970 – Sept. 1989	1,248	N/A	To examine whether unusually aggressive management of earning through income-increasing accounting adjustments leads investors to be overly optimistic about the issuer's prospects.	Poor post-issue performance is partially explained in the pre-issue earnings management of seasoned new issuers.
Herizel et al. (2002)	U.S.	1980 – 1996	619	N/A	Investigating the stock price and operating performance of firms conducting private equity issues.	Private placements of equity, like public equity issues, take place when investors appear willing to overpay for the firm's equity.
Krishnamurthy et al. (2005)	U.S.	1983 – 1992	2,351 (397 PPs)	N/A	To examine the relation between stock price performance and the identity of the investor buying the shares in private placement of equity.	Both firms placing their equity and those issuing equity publicly exhibit significant positive ARs in the year prior to the equity issue. The firms engaging in PPs of unregistered shares are required to indicate explicitly the restricted nature of the shares at the time of the placement.
Lyandres et al. (2005)	U.S.	1970 – 2003	8,126	N/A	To study long-term underperformance following SEOs.	Equity issuers invest much more than matching non-issuers both before and after issuance.
Eckbo et al. (2006)	U.S.	1980 – 2004	83,282	N/A	To review and extend evidence on the performance of issuing firms in the 5 year post-issue period.	The long term performance of issuer is biased downward owing to a high expected return in benchmark.
This study	**Thailand**	**1999 – 2006**	**125**	**N/A**	**To examine the performance of SEO firms during the post-issuing period.**	**Expecting to have underperformance of SEO firms during the post-issued.**

Table 6.2: Previous evidence of long-term SEO performance in Thailand and Asia-Pacific countries
The table shows the summary of the findings of the existing literature on long-term SEO performance in Thailand and Asia-Pacific countries, together with the expectation of our study in this chapter. (+) refers to over-performance, (-) refers to underperformance and (0) refers to no underperformance.

Authors	Country	Firm Performance	Notes
Dhatt et al. (1996)	Korea	-	Through rights issuing during post-offering period.
Cai & Loughran (1998)	Japan	-	To be considered with age of firms
Soucik & Allen (1999a)	Australia	0	
Soucik & Allen (1999b)	Australia	-	
Mathew (2002)	Japan Korea Hong Kong	- + -	Post-offering period
Prangthawat (2002)	Thailand	-/+	- in first year, + in second year
Limpaphayom & Ngamwutikul (2004)	Thailand	0	SEOs help operating performance to be improved
Brown et al. (2009)	Australia	-	Consider relation to corporate governance
Lin & Tsai (2010)	Taiwan	-	Employee Stock Option firms
Our expectation	**Thailand**	**-**	**Post-issue period**

Table 6.3: Table of sample size in the post-issuing estimation

The table shows the summaries of sample size in our examinations of post-issuing performance after issuing new shares, together with different samples of issuing methods. The total sample refers to the sample size in total, regardless of the issuing methods. XR is defined as firms using rights issuing as their issuing method. PP is firms issuing newly shares via private placement. SD is defined as the firms issuing by stock dividend. PO refers to the firms using public offering as the issuing method. The average size is measured by average market capitalisation in million Thai Baht during the study period 1999 to 2006. The companies represented in each category are shown in parentheses and the full names of the companies are shown Appendix 3. The age of each firm was obtained from the number of months since the company first traded on the market. Average daily returns are the average of daily returns during the study period obtained from the SETSMART. Average Ownership is measured by the average of the top five major shareholders. Average turnover ratio is taken directly from the SETSMART: $Turnover\,Ratio = \left(\frac{Trading Volume}{Average Number Of Share Outstanding} \right) \times 100$. Industrial groups are the groups shown in the SET Index and contain (apart from the financial ones) the Agro and Food Industry (AGRO), Consumer Products (CONSUMP), Industrials (INDUS), Property and Construction (PROPCON), Resources (RESOURC), Services (SERVICE) and Technology (TECH).

Sample Size	Total Sample	XR	PP	SD	PO
Average Size	**8,399.61**	7,751.50	10,627.94	2,227.51	32,880.78
Maximum Size	**176,237.72 (ADVANC)**	93,552.06 (PTTCH)	176,237.72 (ADVANC)	23,488.28 (CPF)	64,416.73 (THAI)
Minimum Size	**71.07 (NEW)**	71.07 (NEW)	122.35 (SORKON)	122.35 (SORKON)	1,344.84 (S&P)
Average Age (months)	**99**	100	94	108	145
Average Daily Returns	**-0.00033**	-0.00030	-0.00018	-0.00082	0.00033
Average Ownership	**10.86635**	10.69251	10.46116	12.42480	11.82200
Average Turnover Ratio	**0.00570**	0.00471	0.00742	0.00427	0.00080
Number of Firms in each Industrial Group:					
AGRO	**20**	6	6	8	1
CONSUMP	**13**	7	4	2	-
INDUS	**21**	9	7	5	-
PROPCON	**24**	11	14	1	-
RESOURC	**8**	2	5	1	-
SERVICE	**24**	11	8	4	1
TECH	**14**	6	7	1	-
TOTAL	**125**	**52**	**52**	**22**	**2**

Note: Three firms (namely, ITD, KTP and SORKON) use two different issuing methods at the same time. ITD and KTP use XR and PP. SORKON applies PP and SD for its issuing methods. The full names of the companies are shown in Appendix 3. The market capitalisations were originally in the local currency (Thai baht: THB) and converted to US dollars at the rate (approximately) of THB 33.50 / USD 1.00. The total raw may not correspond to the summaries of each issuing method and each industry. The reason is that not only are there three firms issuing with two methodologies at the same time, the firm (USC – see full name in Appendix 3) is not categorised in any industries. In other words, there is no information on which industry and sector USC is located in.

Table 6.4: The two-sample t-test of sample size in the post-issuing estimation

The tables show the two-sample t-test in the post-issuing estimation. **Panel A** presents the table of the results from the mean difference of size (measured by market capitalisation) estimation among the total sample and each issuing method. **Panel B** shows the two-sample t-test of average BHAR by market index between the total sample (125 firms) and three subsamples of issuing methods for SEO post-issuing performance. **Panel C** shows the two-sample t-test of average BHAR by sector index between the total sample (119 firms) and three subsamples of issuing methods for SEO post-issuing performance. **Panel D** shows the two-sample t-test of average CAR between the total sample (125 firms) and three subsamples of issuing methods as the robustness for SEO post-issuing performance. XR stands for rights issuing. PP stands for private placement. SD stands for stock dividend. PO stands for public offering. The null hypothesis under this estimation indicates that there is no difference in the mean between the two samples. The degree of freedom is shown in parentheses and calculated by: $\frac{\left(S_1^2/n_1 + S_2^2/n_2\right)^2}{\frac{\left(S_1^2/n_1\right)^2}{n_1-1} + \frac{\left(S_2^2/n_2\right)^2}{n_2-1}}$; where S_1^2, S_2^2 are the variance of sample 1 and 2, n_1, n_2 refer to the sample size of sample 1 and 2.

PANEL A

	Total	XR	PP	SD	PO
Total	**1.0000**				
XR	0.2812 (117)	**1.0000**			
PP	-0.5124 (77)	-0.6817 (84)	**1.0000**		
SD	2.6205*** (119)	1.9074 (497)	2.0644** (55)	**1.0000**	
PO	-0.7515 (1)	-0.7788 (1)	-0.6776 (1)	-0.9454 (1)	**1.0000**

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

PANEL B

	Total	XR	PP	SD
Total	**1.0000**			
XR	1.0038 (96)	**1.0000**		
PP	-0.4434 (94)	-1.2100 (102)	**1.0000**	
SD	-1.2203 (32)	-1.7968* (45)	-0.7635 (46)	**1.0000**

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

Note: We have excluded the firms issuing via PO from the two-sample t-test of average BHAR via market index, average BHAR via sector index and average CAR because they contain only two companies.

PANEL C

	Total	XR	PP	SD
Total	**1.0000**			
XR	0.5102 (108)	**1.0000**		
PP	-0.3219 (85)	-0.6877 (94)	**1.0000**	
SD	-0.3059 (24)	-0.5826 (29)	-0.0702 (35)	**1.0000**

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

Note: We have excluded the firms issuing via PO from the two-sample t-test of average BHAR via market index, average BHAR via sector index and average CAR because they contain only two companies.

PANEL D

	Total	XR	PP	SD
Total	**1.0000**			
XR	0.9726 (84)	**1.0000**		
PP	-1.3696 (128)	-1.9096* (87)	**1.0000**	
SD	-0.0244 (29)	-0.6744 (45)	0.7350 (31)	**1.0000**

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

Note: We have excluded the firms issuing via PO from the two-sample t-test of average BHAR via market index, average BHAR via sector index and average CAR because they contain only two companies.

Table 6.5: The results of post-issuing performance by total sample and issuing methods

The table shows the statistical values of the estimation in order to examine the post-issuing performance of common stock offering companies (total sample: **panel A**), together with issuing methods: rights issuing (XR: **panel B**), private placement (PP: **panel C**), stock dividend (SD: **panel D**) and public offering (PO: **panel E**). BHAR is calculated by: $BHAR_i(t,T) = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{B,t})$, where $BHAR_i(t,T)$ = BHAR of firm i during period t to T, $R_{i,t}$ = Return of firm i at time t, $R_{B,t}$ = Return on benchmark portfolio which refers to the main composite index (SET index). *t_BHAR* is measured by: $t\_BHAR = \frac{\overline{BHAR}}{\sigma_{BHAR}/\sqrt{n}}$, where $\overline{BHAR}$ = Average value of BHAR, σ_{BHAR} = Standard deviation of BHAR, and n = Sample size of each issuing method and total sample. The companies are represented in parentheses with maximum value, minimum value and median of average BHAR (see Appendix 3 for full details)

	PANEL A	***PANEL B***	***PANEL C***	***PANEL D***	***PANEL E***
Statistic Values	**Total Sample**	**XR**	**PP**	**SD**	**PO**
Average BHAR	-0.27001	-0.15779	-0.32048	-0.44261	0.07158
Maximum	1.96817 (SHIN)	1.96817 (SHIN)	0.88492 (SAMTEL)	0.59988 (GFPT)	0.22950 (S&P)
Minimum	-3.29022 (PRANDA)	-2.60920 (EASTW)	-3.29022 (PRANDA)	-2.34147 (CM)	-0.08633 (THAI)
Median	-0.25828	-0.14608	-0.31635	-0.41019	0.07158
Standard Deviation	0.67898	0.67681	0.69429	0.59913	0.22332
t_BHAR	-4.44606***	-1.68122*	-3.32862***	-3.46503***	0.45331
Sample Size	**125**	**52**	**52**	**22**	**2**

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

Note: Three firms (namely, ITD, KTP and SORKON) use two different issuing methods at the same time. ITD and KTP use XR and PP. SORKON applies PP and SD for its issuing methods. The full names of the companies are shown in Appendix 3. The total raw may not correspond to the summaries of each issuing method and each industry. The reason is that not only are there three firms issuing with two methodologies at the same time, the firm (USC – see full name in Appendix 3) is not categorised in any industries. In other words, there is no information on which industry and sector USC is located in.

Table 6.6: The robustness results of post-issuing performance by total sample and issuing methods

The table shows the statistical values of the estimation in order to examine the post-issuing performance of common stock offering companies (total sample: **panel A**), together with issuing methods: rights issuing (XR: **panel B**), private placement (PP: **panel C**), stock dividend (SD: **panel D**) and public offering (PO: **panel E**). BHAR is calculated by: $BHAR_i(t,T) = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{B,t})$, where $BHAR_i(t,T)$ = BHAR of firm i during period t to T, $R_{i,t}$ = Return of firm i at time t, $R_{B,t}$ = Return on benchmark portfolio which refers to each sector in the Stock Exchange of Thailand that the SEO firms are in. *t_BHAR* is measured by: $t\_BHAR = \frac{\overline{BHAR}}{\sigma_{BHAR}/\sqrt{n}}$, where $\overline{BHAR}$ = Average value of BHAR, σ_{BHAR} = Standard deviation of BHAR, and n = Sample size of each issuing methods and total sample. The companies are represented in parentheses with maximum value; minimum value and median of average BHAR (see Appendix 3 for full details)

	PANEL A	***PANEL B***	***PANEL C***	***PANEL D***	***PANEL E***
Statistic Values	**Total Sample**	**XR**	**PP**	**SD**	**PO**
Average BHAR	-0.28406	-0.23234	-0.32263	-0.33589	0.03899
Maximum	-0.28406 (GRAND)	1.40189 (GRAND)	1.12250 (SAMTEL)	0.69615 (CPI)	0.23372 (S&P)
Minimum	1.40189 (PRANDA)	-2.79076 (EASTW)	-3.27634 (PRANDA)	-2.41519 (CM)	-0.15575 (THAI)
Median	-3.27634	-0.15548	-0.22584	-0.26989	0.03899
Standard Deviation	-0.19716	0.57932	0.73008	0.68935	0.27540
t_BHAR	-4.67091***	-2.86406***	-3.12477***	-2.12390**	0.20020
Sample Size	**119**	**51**	**50**	**19**	**2**

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

Note: Three firms (namely, ITD, KTP and SORKON) use two different issuing methods at the same time. ITD and KTP use XR and PP. SORKON applies PP and SD for its issuing methods. The full names of the companies are shown in Appendix 3. The total raw may not correspond to the summaries of each issuing method and each industry. The reason is that not only are there three firms issuing with two methodologies at the same time, the firm (USC – see full name in Appendix 3) is not categorised in any industries. In other words, there is no information on which industry and sector USC is located in.

Table 6.7: The robustness results of post-issuing performance by total sample and issuing methods

The table shows the statistical values of the estimation in order to examine the post-issuing performance of common stock offering companies (total sample: **panel A**), together with issuing methods: rights issuing (XR: **panel B**), private placement (PP: **panel C**), stock dividend (SD: **panel D**) and public offering (PO: **panel E**). Cumulative Abnormal Returns (CARs) are calculated by the market model: $AR_{it} = R_{it} - \alpha_{it} - \beta_{it}(R_{mt})$, where R_{mt} is market return on day t (in our case is defined as return on SET index which is the main composite index in the SET) α_i = intercept and β_i the OLS (Ordinary Least Square) estimators of the market model parameters, calculated in the estimation period. $CAR_{t(t_1,t_2)} = \sum_{t=t_1}^{t_2} AR_{it}$, where, t_1 and t_2 are the days between the event window. t_CAR is measured by $t\_CAR = \frac{\overline{CAR_{iT}}}{\sigma_{CAR}/\sqrt{n}}$, where $\overline{CAR_{iT}}$ = Average value of CAR, σ_{CAR} = Standard deviation of CAR, and n = Sample size of each issuing methods and total sample. The companies are represented in parentheses with maximum value; minimum value and median of average CAR (see Appendix 3 for full details)

	PANEL A	***PANEL B***	***PANEL C***	***PANEL D***	***PANEL E***
Statistic Values	**Total Sample**	**XR**	**PP**	**SD**	**PO**
Average CAR	-0.11327	0.01657	-0.24759	-0.11750	-0.00533
Maximum	4.46919 (HMPRO)	4.46919 (HMPRO)	1.44387 (SAMTEL)	1.09219 (SSE)	-0.00444 (S&P)
Minimum	-2.17770 (CM)	-1.71422 (AH)	-1.35256 (BLAND)	-2.17770 (CM)	-0.00622 (THAI)
Median	-0.06140	-0.03530	-0.25028	0.00268	-0.00533
Standard Deviation	0.72031	0.84306	0.53326	0.75424	0.00125
t_CAR	-1.75811*	0.14171	-3.34812***	-0.73072	-6.00955**
Sample Size	**125**	**52**	**52**	**22**	**2**

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

Note: Three firms (namely, ITD, KTP and SORKON) use two different issuing methods at the same time. ITD and KTP use XR and PP. SORKON applies PP and SD for its issuing methods. The full names of the companies are shown in Appendix 3. The total raw may not correspond to the summaries of each issuing method and each industry. The reason is that not only are there three firms issuing with two methodologies at the same time, the firm (USC – see full name in Appendix 3) is not categorised in any industries. In other words, there is no information on which industry and sector USC is located in.

CHAPTER 7

CONCLUSIONS

7.1 Introduction

A paucity of SEO literature on emerging markets is the main gap in the existing literature, which focuses mainly on developed markets. This leads to the question of whether the SEO evidence carries over to emerging markets, whose characteristics are different from the developed markets (e.g. high volatility, small size, inefficiency and illiquidity – see Mody, 2004). Having chosen Thailand as the evidence of an emerging market, we examined three empirical SEO studies. The first relates to the SEO stock price reaction. We obtained more recent data, e.g. during the post-financial crisis period, and introduced the new issues in more detail. The second empirical study is concerned with SEO underpricing. We examined determinants of SEO underpricing with different issuing methods. Lastly, we performed an investigation into the post-issuing performance of SEO firms. With the investigations of different issuing methods and a different sample size from the previous literature (e.g. Denis, 1994; Corwin, 2003; D'Mello et al., 2003; Median, 2005; Walker and Yost, 2007), our study bring a wider overview of SEOs in Thailand.

Consequently, this final chapter provides the summaries and the main findings of this study, together with the limitations and suggestions for future research. The remaining chapter is organised as follows: section 7.2 concludes the main findings of both the

literature and the empirical studies; section 7.3 points out the limitations of the study and section 7.4 suggests further interesting areas for any future research.

7.2 Main Findings

7.2.1 Evidence from the SEO Literature

We have surveyed the existing literature in the area of SEOs over recent decades. The previous studies show that they had mostly obtained the data from developed markets and provided comprehensive examinations, compared with those in emerging markets. The SEOs are largely influenced by typical capital structure theories, such as information asymmetry, agency theory and signalling theory. These theories helped us to develop the hypotheses for the empirical studies with out-of-sample data. Information asymmetry appears to be the main theory which plays an important part in SEOs, and is regularly discussed. For instance, the theory suggests that underpricing positively relates to information asymmetry (Yongtae and Myung Seok, 2005). Empirical evidence from the previous research is still inconclusive in some areas, e.g. stock price reaction and determinants of SEO stock price reaction, as well as underpricing. Furthermore, the studies in long-term performance are concerned mostly with firm performance during the post-issuing period, while the results remain mixed, with either underperformance or nothing after the offerings.

From our surveys, it is clear that the majority of both theoretical and empirical works in the area of SEO have been done by applying the data from the U.S. and other developed countries. The research in emerging markets is sparse, although these markets have become more interesting to investors in recent years. The main reason for the lack of literature is the difference in characteristics to the developed markets, such as illiquidity, high volatility and infrequent trading. We have found some interesting areas for expanding academic research into emerging markets. For instance, we obtain different data from an emerging market (Thailand in our case) and focus on whether the results carry over to our study. Repeating similar examinations and applying more recent data from Thailand are also interesting features for concern. In addition, providing the new investigation, such as issuing methods, is valuable for understanding SEOs in Thailand in more detail than is found in existing SEO research in Thailand (such as Jirasetthakulchai, 2000; Lertsupongkit, 2002; Prangthawat, 2002; Limpaphayom and Ngamwutikul, 2004).

The differences between the studies in developed markets and emerging markets are generally noticed in many areas, such as the sample size, regulations and characteristics of the market. In our study of Thailand, we have a relatively small sample size in comparison with the studies of developed markets. For example, our study contains 126 companies issuing via common stocks, while there are 435 samples in Denis (1994), 863 firms in D'Mello et al. (2003), 6,768 samples in Median (2005) and 438 samples in Walker and Yost (2007). In addition, the regulation on commission fees in Thailand still imposes a fixed rate. This leads to the fact that the security companies would have less motivation to find alternative source of income,

instead of based only on the commission fees (FETCO, 2006)[173]. Moreover, some characteristics of the Thai market, such as the high number of individual investors, could separate the market in terms of the volatility level compared to the other markets (see Figure 3.1 for the real figures). Nonetheless, comparing our study with the existing literature in Thailand and other emerging markets could provide more similar evidence. The example is clearly shown in the sample size since we calculated the percentage of sample coverage through the previous SEO research in Thailand. The figures suggest that our study has covered more than previous Thai research, both in sample size and the study period (which is more recent).

From the survey of the literature, we produced three empirical studies in each specific area of SEOs in Thailand. First, we chose one category of indirect flotation cost, namely SEO stock price reaction, for consideration with a variety of examinations, such as the announcement effect, dilution and determinants. Second, we completed another type of indirect flotation cost, namely underpricing, to identify the factor(s) impacting on SEO underpricing in Thailand. Having made two empirical studies during the issuing period, we then closed our empirical work by examining how the SEO companies perform during the post-issuing period.

7.2.2 Evidence from the SEO Empirical Studies

Our study aims to examine SEO companies in Thailand from 1999 to 2006. Although our final sample size is relatively small in comparison with those obtained in

[173] The FETCO refers to the Federation of Thai Capital Market Organisations, who provides the Master Plan of Developing the Thai Capital Market#2 (year: 2006-2010, Thai version). Available via: http://www.fetco.or.th [Accessed on 22 May 2009].

developed markets, they are similar when compared with the studies in Thailand. Unlike the existing literature that relates to public offering, our SEO samples are based mostly on issuing new shares to the existing shareholders, e.g. rights issuing and private placement. With reference to the previous literature, flotation costs appear to be the most appropriate area to focus on. The announcement of SEOs in Thailand causes the stock prices to react negatively. This evidence of negative stock price reaction is shown in our total sample and when the three subsamples of issuing methods are separately considered. Nevertheless, we find that there is a leakage of information before the announcement date, particularly when we examined issuing methods individually. To illustrate, the shorter the period before the announcement, the less possibility that information is leaked. We apply the longer event window, ±30 days, to confirm this. Our findings show that around 20 days prior to the announcement, the information is likely to leak. Moreover, our evidence reports no impact from the offering dilution (defined as discounting in prices in terms of market capitalisation). This is supported by the positive percentage of offering dilution, implying that the equity value in the announcement is less than the post-announcement.

In the determinant part, our examination is based on seven explanatory variables (suggested in the existing literature in emerging markets) and the two-day announcement abnormal return under the sample of 68 firms from the concept of balanced panel. We find that size, market-to-book and ownership are the three factors which affect the SEO stock price reaction since their statistical coefficients are significant. When we include the dummy variables of issuing methods in the

regression, rights issuing and stock dividend become the two issuing methods which influence the SEO stock price reaction. This is consistent with the previous literature on emerging markets (e.g. Demirgüc-Kunt, 1992; Alba et al., 1998; Barry et al., 2002). In the robustness test, we notice that the close correlation between the leverage and the return on asset (ROA, in terms of the proxy for operating performance) has been eliminated when we change the proxy of operating performance to the EBITDA (earnings before interest, tax, depreciation and amortisation). This leads to the consequence that in the regression there is likely to be no misspecification due to multicollinearity. Nonetheless, transforming the explanatory variables into the logarithm function in order to improve the elasticity in the coefficients does not allow the regression to fit the data as well as using the original regression with EBITDA. This case of transformation shows lower and negative values of R-squares and adjusted R-squares, respectively.

In long-term stock price reaction, we aim to examine: (1) whether the sales of equity are timed in the longer event window, particularly during the post-issuing period (see Asquith and Mullins, 1986) and (2) the relationship between short- and long-term stock price reaction in order to find the degree of mispricing that shows the correct stock price reaction in the long-term. Our evidence reveals that the stock prices respond negatively in the longer period after the SEO announcement. This implies that investors are likely to sell their equities in the long-term (post-issuing). Concerning the findings from the relationship between short- and long-term stock price reactions, we indicate no relationship in these two periods of reactions. This means that there is no large reaction (a shock reaction) in the short-term (referring to

the reaction of SEO announcement in our study), which will subsequently correct stock prices to the desired level. Consequently, the stock price reaction in the short-term is a correct reaction (no mispricing) and the long-term reaction does not result from the correcting of misprice in the short-term (depending on the current situations at that time). This evidence appears to be consistent with the market characteristics that the stock price reaction also depends on external factors, such as GDP, exchange rate, inflation and other events (see for example, Kasikorn Research Centre, 2003 in section 5.2.2).

In the determinants of SEO underpricing, we examine 12 explanatory variables (including the control variables and dummy variables) in our OLS regression. Since the existing literature in Thailand (e.g. Lertsupongkit, 2002; Vithessonthi, 2008) focuses on the stock price reaction and the determinants of market reaction, our study in this area claims to be the first in the area of SEO underpricing with the recent data set from the period of 1999 to 2006. Our results suggest that there is a positive impact between firm size (as a proxy of information asymmetry) and SEO underpricing in every case we estimate. This shows the inconsistency of the previous research (e.g. Corwin, 2003; Yongtae and Myung Seok, 2005), which reports a negative relationship between SEO underpricing and the information asymmetry. Furthermore, offer size relates to underpricing when estimating total sample and issuing methods individually, while volatility is shown to be related with underpricing when estimating only with the total sample (regardless of the issuing methods) and the rights issuing firms. This implies that our findings (particularly in volatility) reveal a contrasting reflection of the Thai market characteristics, since volatility is known to be the main

characteristic of the Thai market and it should affect SEO underpricing. However, when we estimate the regression with a different calculation of underpricing and transform the explanatory variables, our results change slightly in terms of significant variables. Thus, the Thai capital market appears to be sensitive to small changes.

Applying the Buy-and-Hold Return (BHR) approach, we find that Thai SEO firms underperform during the one year post-issuing period. These consequences remain the same when we examine the matter individually with a different sample size of issuing methods. Although the findings in each issuing method are inconsistent with the previous literature (e.g. Hertzel et al., 2002; Krishnamurthy et al., 2005, for the private placement case), they are consistent with the existing research around the Asia-Pacific region, such as Dhatt et al. (1996), Cai and Loughran (1998), Soucik and Allen (1997b), Mathew (2002), Brown et al. (2009) and Lin and Tsai (2010). By estimating with the different benchmark (sector index), our results report the same: there are underperformances during the post-issuing period in every case (total sample and different samples of issuing methods). Nonetheless, there are slight differences in the outcomes when a different approach (namely the cumulative abnormal return, CAR, approach) is employed in the estimation. The firms issuing via rights issuing and stock dividend are those reporting without any underperformance after issuing new equities. Although the BHR approach may cause some biases to occur in the results (e.g. new listing bias and measurement bias; see Barber and Lyon, 1997a), it appears to be the appropriate approach to measure and estimate the post-issuing performance in Thai SEO firms. This is due to some drawbacks in other approaches (e.g. the matching firm technique and the calendar-time portfolio).

7.3 Limitations

Having examined the SEOs in Thailand, we have some limitations in our study. These limitations could lead to the incompletion of some initial expectations in an area such as SEOs in Thailand. We can briefly describe these limitations as follows:

7.3.1 Data Limitation

The data are usually the main problem when they are obtained from emerging markets. In Thailand, it is difficult and limited to obtain and access long-term historical data (i.e. 20 years back) in person, unless having some connections with the people inside the stock exchange to obtain them. These data are, for instance, the historical daily prices, trading volumes, market capitalisation and the market index during the 1980s, while the prospectuses of issuing new shares in each firm are incomplete and missing. The latter is because the process of collecting the documents is inadequate. Although the listed companies are required to submit an electronic version of the prospectus and the financial statements to the SEC (The Securities Exchange Commission), the regulation was fully enforced in 2001[174], causing inaccessibility in some companies. Moreover, as mentioned previously, we conducted a cross-check for data in different databases, e.g. Thomson One Banker: Deal Equity (TOBDE) and DataStream. There are no filing forms available for the companies in Thailand via the TOBDE, while the trading information (e.g. closed prices and the market capitalisation) in DataStream is not the same as the data we obtained from the

[174] For the case of prospectuses, the related SEC notification is KorChor.48/2543 (in Thai), available via: http://capital.sec.or.th/webapp/nrs/data/1035s.pdf [Accessed on 11 May 2011]. For the case of financial statements, the related SEC notification is KorChor.46/2543 (in Thai), available via: http://capital.sec.or.th/webapp/nrs/data/1033s.pdf [Accessed on 12 May 2011].

SETSMART (the SET database). This information (i.e. the filing forms) should contain some interesting features, which are useful in order to expand our study into more particular areas. In addition, the unavailability of daily information from MSCI Barra remains a limitation to examining the robustness test in the estimation of post-issuing performance.

7.3.2 Limitation of Methodologies

The methodologies to be applied in the examination of SEOs in Thailand could be claimed to be another limitation in our study. Some methodologies, such as the matching firm technique and the Fama-French three-factors, do not appear to be appropriate to the case of Thailand, due mainly to their drawbacks. Omitting these methodologies in the examination of SEOs could subsequently mean losing the differences in the investigation of different methodologies for the robustness test. For instance, as indicated earlier, the matching firm technique could not provide the evidence that closely reflects the real characteristics of the Thai stock market. This is because the abnormal performance can be generated within this technique and it might not be possible to identify the difference between the holding-period returns of the issuing firms, non-issuing firms and the abnormal performance (Eckbo et al., 2000).

Furthermore, although Homsud et al. (2009) suggest that the Fama-French model is appropriate to describe the SET better than CAPM (capital asset pricing model, in terms of the market model), we discuss their interpretations in order to apply their suggested model (namely, the Fama-French model) in our study. First, we find that

the suggestion of Jirasetthakulchai (2000) includes the supporting statement that using CAPM (which can also refer to the market model) is the appropriate approach for the SET. Alternatively, since the Fama-French model concerns only size and value effect (book-to-market ratio), the risk in the SET might have other variables that are appropriate or involve more than these two factors (Homsud et al., 2009, p.39). Thus, examining first with the CAPM should be the case in order to find whether there are any other factors which impact on SEO stock price reaction (e.g. leverage, operating performance and ownership). If there are only size and value effects that influence the SEO stock price reaction, we would apply the Fama-French model to confirm the outcomes. Nevertheless, instead of applying the Fama-French model in our robustness test, we are subsequently concerned with the correlation between leverage and operating performance (proxy via ROA), which could lead to misspecification due to multicollinearity. In addition, we use the transformation of the variables into the logarithm function in order to adjust the elasticity in the coefficients. This makes the regression fit the data better.

7.4 Suggestions for Future Research

With our limitations, we briefly make some suggestions for further research into SEOs in Thailand (or other emerging markets), as follows.

First, although we have controlled and eliminated the misspecifications in our regression (e.g. the corrections between the variables, which show no close correlations), the evidence in some cases (such as the chapter on SEO underpricing in the robustness section) may lead to the existence of multicollinearity. This is shown with a high standard error in the explanatory variables and the insignificant variables. Nonetheless, this possibility arises in the robustness examination. Thus, we could apply different models (approaches) for the robustness check in future research. Even though the other approaches (e.g. the Fama-French model, the matching firm technique and the bootstrap) would not be eligible for Thai data (see, for example, section 7.3.2), we would suggest obtaining the data from different emerging markets and comparing the evidence with our study. The outcomes could provide an additional comprehensive view regarding SEOs in emerging markets.

Second, applying different benchmarks which are available in Thailand would be an excellent robustness examination in this area, particularly the SEO post-issuing performance. Those other benchmarks are namely the SET 100 and the FTSE SET. The MSCI World index could remain an interesting benchmark if we consider a different study period, in which the data is fully available in the MSCI.

Third, we suggest obtaining a different sample size in order to provide wider evidence in the Thai capital market. For instance, since we examine the common stock offering firms, we could turn to investigate the warrant issuing firms (as suggested in section 3.3.2). Issuing warrants in Thailand has further meaning than acting as as sweeteners and are attached to the common stocks, e.g. used as another technique for issuing new

equities (delay dilution) and issuing as the dividend. Therefore, considering the warrant issuing firms would to some extent fulfil the characteristics of SEOs in Thailand. Moreover, examining closely specific sectors or industries would give more particular evidence and close reflection on those particular businesses in those sectors or industries. In addition, since the capital market in Thailand has the MAI index (Market for Alternative Investment – see section 3.2.3.3), it would be interesting to examine the sample size from this index in order to cover the research in the middle-size companies. Additionally, considering different types of ownership would be another issue to classify the difference in sample size (e.g. family, institutional or foreign ownership).

Fourth, it is possible to suggest that in Thailand the SEO firms about to issue new equities via rights issuing change at the last minute to issuing via private placement when they realise that they may gain some benefit from those institutional investors. These investors could have some relationship with government departments, and would provide a convenient service when the companies require special needs, e.g. to speed up an administrative process. This is also known as co-equal benefit, which has been mentioned throughout our thesis. The feature of these institutional investors is therefore different from what we have learnt from the theoretical part and the general characteristics of private placement. We would suggest this point as a topic for future research in this particular area of private placement in Thailand. For instance, how and why do those reasons impact on the methodology of equity issuing in Thailand, or is there any particular reason for companies in Thailand to issue new shares via private placement?

Finally, having examined the SEOs in Thailand after the financial crisis of 1997, we would suggest considering SEOs in a different period of events. These events are, for instance, the credit crunch in 2008 and the deregulation of commission fees in 2012. The outcomes would provide some interesting features of whether these events influence the issuing of new equities in companies in Thailand, or whether these events impact on the performance of SEO companies in the country. In addition, consideration could be made of the firm performance in the sector (or industry) to which the state enterprises (e.g. the national rail service, the electricity service and the water service) go for listing on the stock exchange. Although these state enterprises have no exact period when they will be listed, we may consider (when they become listed in the future) how their IPOs influence the performance of the sector (or industry). This can focus on the pre- and post-listing of those state enterprises.

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Appendix 1: Daily trading volume graph between 1995 and 2009

Source: SETSMART up to July 2009.

Appendix 2: Types of institutional investor

The 17 types of "Institutional Investors" defined by the Securities and Exchange Commission (SEC) of Thailand (the notification KorChor.12/2543):

1. Commercial banks
2. Financial companies
3. Security companies for private or personal funds
4. Credit Foncier
5. Insurance companies
6. Juristic person set up by particular law
7. Bank of Thailand
8. International Financial Institutions
9. Government and state enterprise
10. Recovering and development of financial institutional system funds
11. Pensions funds
12. Provident funds
13. Mutual funds
14. Juristic person who has capital of more than 100 million baht
15. Juristic person who is a shareholder in categories 1 to 14 above and holds more shares than 75% of the total shareholders
16. International investors who meet categories 1 to 15 above and
17. Investors who have a stock purchase value of more than THB 10 million (roughly, THB33.50: USD1.00).

Appendix 3: Full details of the final sample to be applied in this thesis

The table shows the final sample of 173 SEO listed companies on the Stock Exchange of Thailand (SET) during the period 1999 to 2006. The first SEO of each company is used, in order to avoid any overlapping. *Local Code* shows the abbreviations of each company used in the real trading on the Stock Exchange of Thailand. *Types* refer to the different issuing methods: rights issuing (XR), private placement (PP), stock dividend (SD), public offering (PO) and warrant issuing (W). *Sector* identifies the sector in which the companies are traded on the SET shown in local code: Agribusiness (AGRI), Food and Beverage (FOOD), Fashion (FASHION), Home and Office Products (HOME), Personal Products and Pharmaceuticals (PERSON), Automotives (AUTO), Industrial Materials and Machinery (IMM), Paper and Printing Materials (PAPER), Petrochemicals and Chemicals (PETRO), Packaging (PKG), Construction Materials (CONMAT), Property Development (PROP), Energy and Utilities (ENERG), Mining (MINE), Commerce (COMM), Health Care Services (HEALTH), Media and Publishing (MEDIA), Professional Services (PROF), Tourism and Leisure (TOURISM), Transportation and Logistics (TRANS), Electronic Components (ETRON) and Information and Communication Technology (ICT). *Average Mkt Cap* is the average daily market capitalisation of each firm in million Thai baht (approximately THB33.50 / USD1.00) during the period 1999 to 2006. *Average Daily Returns* refers to the average daily returns during the period 1999 to 2006. *Times of SEOs* is number of times the companies issue SEOs during the period 1999 to 2006.

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
AA	Advanced Agro Public Company Limited	PP	PAPER	11,061.59	0.00031	1
ADVANC	Advanced Info Service Public Company Limited	PP	ICT	176,237.72	-0.00051	46
AFC	Asia Fiber Public Company Limited	W	FASHION	318.93	0.00043	3
AH	Aapico Hitech Public Company Limited	XR	AUTO	5,527.13	-0.00036	1
AJ	A.J. Plast Public Company Limited	W	PKG	1,012.31	0.00019	1
ALUCON	Alucon Public Company Limited	SD	PKG	1,763.89	0.00009	2
AMC	Asia Metal Public Company Limited	XR	IMM	1,621.21	0.00060	1
AP	Asian Property Development Public Company Limited	XR	PROP	5,830.76	0.00024	25
APRINT	Amarin Printing and Publishing Public Company Limited	SD	MEDIA	1,348.08	-0.00023	1
APURE	Agripure Holding Public Company Limited	PP	FOOD	547.90	-0.00004	6
ASIAN	Asian Seafoods Coldstorage Public Company Limited	W	AGRI	761.93	-0.00093	18
ASIMAR	Asian Marine Services Public Company Limited	W	TRANS	196.90	-0.00083	11
ATC	Arometric Public Company Limited	PP	ENERG	20,414.66	0.00105	14

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
BAFS	Bangkok Aviation Fuel Services Public Company Limited	SD	ENERG	3,693.82	-0.00213	1
BANPU	Banpu Public Company Limited	XR	ENERG	19,172.55	0.00076	12
BATA	Bata Shoe of Thailand Public Company Limited	XR	FASHION	153.49	-0.00040	2
BCP	The Bangchak Petroleum Public Company Limited	PP	ENERG	5,970.88	0.00012	9
BGH	Bangkok Dusit Medical Services Public Company Limited	XR	HEALTH	9,111.13	0.00040	6
BIGC	Big C Supercenter Public Company Limited	PP	COMM	16,543.54	0.00095	18
BLAND	Bangkok Land Public Company Limited	PP	PROP	5,075.92	-0.00087	27
CCET	Cal-Comp Electronics (Thailand) Public Company Limited	W	ETRON	10,928.58	-0.00117	16
CENTEL	Central Plaza Hotel Public Company Limited	XR	TOURISM	2,854.27	-0.00002	1
CFRESH	Seafresh Industry Public Company Limited	SD	AGRI	1,638.97	-0.00193	1
CIRKIT	Circuit Electronic Industries Public Company Limited	W	ETRON	509.34	-0.00070	1
CK	CH. Karnchang Public Company Limited	W	PROP	6,859.72	-0.00100	11
CM	Chiangmai Frozen Foods Public Company Limited	SD	AGRI	791.20	-0.00106	1
CPALL	CP All Public Company Limited	W	COMM	26,409.80	0.00014	5
CPF	Charoen Pokphand Foods Public Company Limited	SD	FOOD	23,488.28	-0.00111	21
CPI	Chumporn Palm Oil Industry Public Company Limited	SD	AGRI	928.82	-0.00096	2
CPL	C.P.L. Group Public Company Limited	SD	FASHION	565.09	-0.00006	1
CPN	Central Pattana Public Company Limited	XR	PROP	14,076.30	0.00008	2
CSC	Crown Seal Public Company Limited	XR	PKG	635.17	0.00021	1
CTW	Charoong Thai Wire and Cable Public Company Limited	W	IMM	2,290.59	-0.00006	16
CWT	Chai Watana Tannery Group Public Company Limited	W	AUTO	327.95	0.00014	1
DCC	Dynasty Ceramic Public Company Limited	XR	CONMAT	3,881.97	0.00073	1
DELTA	Delta Electronics (Thailand) Public Company Limited	XR	ETRON	27,541.01	-0.00122	17
D-MARK	Thai-Denmark Swine Breeder Public Company Limited	XR	FOOD	125.26	-0.00148	2
EASTW	Eastern Water Resources Development and Management Public Company Limited	XR	ENERG	4,001.68	-0.00099	10

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
EGCO	Electricity Generating Public Company Limited	W	ENERG	28,537.92	0.00021	6
ERAWAN	The Erawan Group Public Company Limited	XR	TOURISM	2,292.90	0.00006	15
FANCY	Fancy Wood Industries Public Company Limited	SD	HOME	2,093.60	-0.00137	2
GENCO	General Environmental Conservation Public Company Limited	PP	PROF	933.04	-0.00239	1
GFPT	GFPT Public Company Limited	SD	AGRI	1,719.10	0.00034	2
GOLD	Golden Land Property Development Public Company Limited	PP	PROP	4,886.81	-0.00016	8
GRAND	Grande Asset Hotels and Property Public Company Limited	XR	TOURISM	3,319.52	0.00021	3
GSTEEL	G Steel Public Company Limited	PP	IMM	11,618.47	-0.00158	1
HANA	Hana Microelectronics Public Company Limited	W	ETRON	15,544.94	-0.00056	145
HEMRAJ	Hemaraj Land and Development Public Company Limited	W	PROP	3,114.57	-0.00146	21
HFT	HWA Fong Rubber (Thailand) Public Company Limited	XR	AUTO	643.06	-0.00188	1
HIPRO	Hipro Electronics Public Company Limited	W	ETRON	1,782.03	0.00010	1
HMPRO	Home Product Center Public Company Limited	XR	COMM	4,024.89	0.00032	12
IEC	The International Engineering Public Company Limited	PP	ICT	1,198.80	-0.00072	30
INET	Internet Thailand Public Company Limited	W	ICT	1,229.82	-0.00077	1
IRPC	IRPC Public Company Limited	PP	ENERG	56,572.80	0.00001	2
ITD	Italian-Thai Development Public Company Limited	XR/PP	PROP	19,570.07	-0.00133	4
ITV	ITV Public Company Limited	W	MEDIA	11,975.98	-0.00142	13
JAS	Jasmine International Public Company Limited	W	ICT	4,444.16	-0.00154	28
JUTHA	Jutha Maritime Public Company Limited	XR	TRANS	351.23	0.00034	3
KCE	KCE Electronics Public Company Limited	XR	ETRON	2,100.26	-0.00157	12
KDH	Krungdhon Hospital Public Company Limited	XR	HEALTH	234.32	0.00105	1
KTECH	K-Tech Construction Public Company Limited	XR	PROP	929.18	-0.00300	1
KTP	Keppel Thai Properties Public Company Limited	XR/PP	PROP	853.70	0.00030	3
KWH	Wiik and Hoeglund Public Company Limited	SD	CONMAT	626.67	-0.00126	1

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
LEE	Lee Feed Mill Public Company Limited	SD	AGRI	1,633.66	-0.00029	2
LH	Land and House Public Company Limited	PP	PROP	43,614.04	-0.00065	34
LIVE	Live Incorporation Public Company Limited	PP	MEDIA	1,050.80	-0.00054	12
LL	Living Land Capital Public Company Limited	XR	PROP	185.48	-0.00038	1
LOXLEY	Loxley Public Company Limited	XR	COMM	3,862.65	-0.00101	4
LPN	L.P.N. Development Public Company Limited	XR	PROP	2,458.65	0.00050	16
LST	Lam Soon (Thailand) Public Company Limited	XR	FOOD	1,438.96	-0.00122	2
MAJOR	Major Cineplex Group Public Company Limited	W	MEDIA	9,313.89	-0.00127	7
MATCH	Matching Studio Public Company Limited	SD	MEDIA	923.32	-0.00323	1
MFEC	MFEC Public Company Limited	PP	ICT	1,249.88	-0.00089	1
MFG	Minor Food Group Public Company Limited	W	FOOD	1,987.08	-0.00013	9
MIDA	Mida Assets Public Company Limited	W	COMM	6,044.12	-0.00304	5
MINOR	Minor Corporation Public Company Limited	W	COMM	916.22	-0.00013	47
MINT	Minor International Public Company Limited	W	FOOD	7,157.42	-0.00010	48
MK	M.K. Real Estate Development Public Company Limited	W	PROP	1,218.92	-0.00028	11
MLINK	M-Link Asia Corporation Public Company Limited	XR	ICT	1,630.71	-0.00238	1
MME	Mida-Medalist Entertainment Public Company Limited	W	TOURISM	2,827.62	-0.00365	1
MODERN	Modernform Group Public Company Limited	PP	HOME	1,880.06	0.00077	7
MPT	Magnecomp Precision Technology Public Company Limited	PP	ETRON	2,683.14	-0.00108	12
MSC	Metro Systems Corporation Public Company Limited	XR	ICT	561.43	-0.00004	12
NC	Newcity (Bangkok) Public Company Limited	XR	FASHION	80.62	-0.00025	1
NCH	N.C. Housing Public Company Limited	XR	PROP	2,267.26	-0.00299	2
NEP	NEP Realty and Industry Public Company Limited	W	PKG	558.70	0.00043	6
NEW	Wattana Karnpaet Public Company Limited	XR	HEALTH	71.07	-0.00048	1
NFC	NFC Fertilizer Public Company Limited	XR	PETRO	1,948.37	-0.00044	4

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
NMG	Nation Multimedia Group Public Company Limited	PP	MEDIA	2,110.95	-0.00012	33
NNCL	Navanakorn Public Company Limited	PP	PROP	1,364.31	0.00124	1
NOBLE	Noble Development Public Company Limited	PP	PROP	2,101.34	0.00041	10
OGC	Ocean Glass Public Company Limited	PP	HOME	958.43	0.00087	1
PA	Pacific Assets Public Company Limited	PP	TOURISM	1,938.26	0.00015	4
PAF	Pan Asia Footwear Public Company Limited	XR	FASHION	1,546.13	-0.00051	4
PAP	Pacific Pipe Public Company Limited	W	CONMAT	1,513.85	-0.00308	2
PATKL	Patkol Public Company Limited	SD	IMM	420.34	-0.00007	2
PB	President Bakery Public Company Limited	XR	FOOD	1,670.68	0.00111	1
PDI	Padaeng Industry Public Company Limited	PP	MINE	3,196.91	0.00083	1
PG	People's Garment Public Company Limited	XR	FASHION	625.16	0.00026	1
PLE	Power Line Engineering Public Company Limited	W	PROP	3,339.01	-0.00142	13
POMPUI	Kuang Pei San Food Products Public Company Limited	PP	FOOD	136.22	-0.00370	2
PRANDA	Pranda Jewelry Public Company Limited	PP	FASHION	1,158.74	-0.00014	45
PTT	PTT Public Company Limited	W	ENERG	396,590.47	0.00143	2
PTTCH	PTT Chemical Public Company Limited	XR	PETRO	93,552.06	-0.00057	1
PTTEP	PTT Exploration and Production Public Company Limited	W	ENERG	149,671.14	-0.00050	10
RCI	The Royal Ceramic Industry Public Company Limited	PP	CONMAT	459.72	0.00003	1
RCL	Regional Container Lines Public Company Limited	PP	TRANS	8,052.68	0.00005	1
ROJNA	Rojna Industrial Park Public Company Limited	W	PROP	3,318.37	-0.00002	11
RPC	Rayong Purifier Public Company Limited	W	ENERG	2,878.96	-0.00319	3
S & J	S & J International Enterprises Public Company Limited	XR	PERSON	722.29	0.00011	7
S&P	S & P Syndicate Public Company Limited	PO	FOOD	1,344.84	0.00069	15
SAM	Samchai Steel Industries Public Company Limited	PP	CONMAT	2,046.78	0.00032	1
SAMART	Samart Corporation Public Company Limited	W	ICT	3,868.72	0.80470	13

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
SAMTEL	Samart Telecoms Public Company Limited	PP	ICT	1,583.17	-0.00010	1
SCCC	Siam City Cement Public Company Limited	XR	CONMAT	47,822.07	0.00061	1
SEAFCO	SEAFCO Public Company Limited	W	PROP	1,020.99	0.00089	1
SE-ED	Se-Education Public Company Limited	W	MEDIA	1,195.63	-0.00012	28
SF	Siam Future Development Public Company Limited	PP	PROP	2,269.05	0.00067	12
SH	Sea Horse Public Company Limited	PP	AGRI	300.03	-0.00054	1
SHIN	Shin Corporation Public Company Limited	XR	ICT	72,289.45	-0.00078	39
SIAM	Siam Steel International Public Company Limited	PP	HOME	723.96	0.00038	4
SIS	SIS Distribution (Thailand) Public Company Limited	W	ICT	552.13	-0.00130	3
SKR	Sikarin Public Company Limited	PP	HEALTH	571.73	0.00064	1
SNC	SNC Former Public Company Limited	PP	IMM	970.67	0.00153	1
SORKON	S. Khonkaen Food Industry Public Company Limited	PP/SD	FOOD	122.35	-0.00059	1
SPALI	Supalai Public Company Limited	W	PROP	1,951.31	-0.00012	21
SPORT	Siam Sport Syndicate Public Company Limited	W	MEDIA	437.29	-0.00102	15
SSC	Serm Suk Public Company Limited	W	FOOD	4,899.20	-0.00116	13
SSE	Sunshine Corporation Public Company Limited	SD	COMM	705.96	-0.00306	1
SSF	Suraon Foods Public Company Limited	SD	AGRI	598.68	-0.00131	1
SSI	Sahaviriya Steel Industries Public Company Limited	W	IMM	13,437.04	-0.00046	5
SSSC	Siam Steel Service Center Public Company Limited	SD	IMM	645.68	0.00117	1
STA	Sri Trang Agro-Industry Public Company Limited	XR	AGRI	1,792.16	-0.00055	5
STHAI	Shun Thai Rubber Gloves Industry Public Company Limited	XR	PERSON	1,496.70	0.00008	3
SUN	Sun Wood Industries Public Company Limited	W	HOME	182.88	-0.00038	4
SUSCO	Siam United Services Public Company Limited	PP	ENERG	756.15	-0.00082	3
SVH	Samitivej Public Company Limited	XR	HEALTH	1,438.08	0.00132	1
TASCO	Tipco Asphalt Public Company Limited	XR	CONMAT	3,164.27	-0.00039	7

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
TCCC	Thai Central Chemical Public Company Limited	XR	PETRO	2,855.61	0.00023	3
TCMC	Thailand Carpet Manufacturing Public Company Limited	PP	CONMAT	264.39	0.00024	1
TCP	Thai Cane Paper Public Company Limited	XR	PAPER	2,685.49	0.00030	7
TEAM	Team Precision Public Company Limited	SD	ETRON	638.81	0.00070	4
TF	Thai President Foods Public Company Limited	XR	FOOD	4,397.85	0.00069	2
TFD	Thai Factory Development Public Company Limited	XR	PROP	407.80	-0.00105	3
TFI	Thai Film Industries Public Company Limited	PP	PKG	2,272.56	-0.00016	5
TGCI	Thai-German Ceramic Industry Public Company Limited	PP	CONMAT	2,141.81	-0.00093	1
THAI	Thai Airways International Public Company Limited	PO	TRANS	64,416.73	-0.00003	8
THCOM	Thaicom Public Company Limited	XR	ICT	11,919.11	-0.00050	14
TICON	Ticon Industrial Connection Public Company Limited	W	PROP	4,462.92	-0.00023	18
TIPCO	Tipco Foods (Thailand) Public Company Limited	W	FOOD	1,284.99	-0.00001	12
TKS	T.K.S. Technologies Public Company Limited	W	ICT	945.67	-0.00125	3
TKT	T. Krungthai Industries Public Company Limited	W	AUTO	438.07	-0.00206	1
TLUXE	Thailuxe Enterprises Public Company Limited	XR	AGRI	367.82	-0.00053	3
TOC	Thai Olefins Public Company Limited	PP	PETRO	50,911.19	0.00050	1
TPP	Thai Packaging and Printing Public Company Limited	PP	PKG	198.58	0.00087	1
TRU	Thai Rung Union Car Public Company Limited	SD	AUTO	3,578.77	-0.00103	5
TRUBB	Thai Rubber Latex Corporation (Thailand) Public Company Limited	PP	AGRI	358.13	0.00042	2
TRUE	True Corporation Public Company Limited	PP	ICT	38,642.58	-0.00046	28
TSTE	Thai Sugar Terminal Public Company Limited	SD	TRANS	525.93	-0.00091	2
TT&T	TT&T Public Company Limited	PP	ICT	9,429.33	-0.00084	31
TTA	Thoresen Thai Agencies Public Company Limited	PP	TRANS	8,751.40	0.00085	15
TTI	Thai Textile Industry Public Company Limited	XR	FASHION	1,140.82	0.00026	1
TUF	Thai Union Frozen Products Public Company Limited	PP	FOOD	16,336.31	-0.00090	5

Local Code	Name of Companies	Types	Sector	Average Mkt Cap.	Average Daily Returns	Times of SEOs
TVO	Thai Vegetable Oil Public Company Limited	W	FOOD	3,597.12	-0.00059	11
UCOM	United Communication Industry Public Company Limited	W	ICT	14,604.76	0.00025	1
UMI	The Union Mosaic Industry Public Company Limited	W	CONMAT	875.24	-0.00040	2
USC	Universal Starch Public Company Limited	PP	N/A	276.62	-0.00052	2
UV	Univentures Public Company Limited	PP	PROP	868.81	-0.00061	12
VARO	Varopakorn Public Company Limited	SD	IMM	554.21	0.00025	3
VNG	Vanachai Group Public Company Limited	PP	CONMAT	5,874.33	0.00031	16
VNT	Vinythai Public Company Limited	XR	PETRO	8,309.00	0.00043	4
WIN	Wyncoast Industrial Park Public Company Limited	XR	TRANS	1,704.81	-0.00076	6
YNP	Yarnapund Public Company Limited	PP	AUTO	3,541.65	-0.00200	1

Appendix 4: The definitions of offering techniques from Thomson One Banker

The following definitions are additional clarifications to the other issuing methods mentioned in the contents of section 3.3.3 in Chapter 3. All the definitions are taken from the Thomson One Banker, available via: http://mergers.thomsonib.com.ezproxyd.bham.ac.uk/DealsWeb/help/nidef.htm#OFFERING_TECH [Accessed on 29 September 2009].

Third Party Allotment: The allotments of new shares to the third party of the issuing firms.

Auction: System by which securities are bought and sold through brokers on the securities exchanges, as distinguished from the over the counter market, where trades are negotiated. Price is established by competitive bidding between brokers acting as agents for buyers and sellers.

Block Trade: An underwriting structure in which the investment bankers purchase the shares from the issuer at a discount to the market price and re-offer the shares to investors. In this structure, the pricing of the transaction takes place within one business day.

Negotiated Sale: Underwriting of new securities issue in which the spread between the purchase price paid to the issuer and the public offering price is negotiated rather than having competitive bidding by multiple potential underwriters.

Offer for Sale: The practice of issuing a security by public subscription. The offer is advertised widely, stipulating the terms of the issue and closing of the offer at a future date.

Open Offer: An invitation to existing holders of securities to purchase or subscribe for securities in proportion to their existing holdings. This subscription is not made by means of a renounceable letter.