

## Is there IPOs' under Pricing on the MAI?

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### Abstract

*This study features Thai IPOs' performances evaluating initial returns of the IPO stocks first listing on the MAI between 2003 and 2015 (January-June). The sample including 123 IPO firms was examined whether or not they significantly under price using several metrics. For example, both the non-adjusted and market-adjusted initial returns approaches, three types of calculations and a significance statistic test were applied. The results suggest that the average of initial returns of the total IPO stocks are significant and positive at 56.26%, compared to those of -0.12% and -0.14% of the MAI measured by the MAI index(method1) and the MAI index (method2)consecutively. The IPO stocks outperform the market on average 56.38%,as estimated using the MAI index (method1) and 56.40%, when assessed applying the MAI index (method2). Finally, it is concluded that Thai IPO companies gain significant and substantial initial returns on the MAI*

**Keywords:** IPO stock, IPOs' performance, under pricing, going public, initial return, abnormal return, excess return, Thailand

**JEL Codes:** G31

### 1. Introduction

A well-known way for a firm to raise capital is by selling its shares in the public financial markets, which is called going public. In other words, going public means that the owner gives up private benefits of control for the benefit of being a publicly traded firm (Benninga, Helmantel & Sarig, 2005; Latham & Braun, 2010). It is also referred to as initial public offerings (hereinafter, IPOs), where shares are sold to public, often at a price below those prevailing on the first-day of trading, which the phenomenon is called under pricing (Logue, 1973; Ibbotson, 1975; Krishnamurti & Kumar, 2002; Hanley & Hoberg, 2012).

Several studies document that IPOs assure superior results in the short-run, which has led to declare that under pricing exists. For example, Logue (1973) and Ibbotson (1975) suggest that when companies go public, the shares they sell tend to be underpriced meaning that the share price jumps substantially on the first-day of trading. However, under pricing varies from one market to another market; see for example, 5.40% in Canada to 388% in China. Furthermore, under pricing has tended to fluctuate a great deal, averaging 21% in the 1960s, 12% in the 1970s, 16% in the 1980s, 21% in the 1990s and 40% in the four years since 2000(Kenourgios, Papathanasiou & Melas, 2007). Similarly, Lowry, Officer, and Schwert (2010) report significant volatility in initial returns. Engelen and Essen (2010) analyze 2,920 initial public offers in 21 economies, and show a 10% variation in the level of under pricing.

Going public marks an important watershed in the life of a young company. This provides access to public equity capital and so may lower the cost of funding the company's operations and investments. This also provides a venue for trading the company's shares, enabling the existing shareholders to diversify their investments and to crystallize their capital gains from backing the company. Nevertheless, there are disadvantages. Under pricing is costly to a firm's owners. Shares sold for personal account are sold at too low price while the value of shares retained after the IPOs is diluted. Also, the company acquires new obligations in the form of transparency and disclosure requirements and becomes accountable to a larger group of relatively anonymous shareholders, who will tend to vote with their feet by selling the shares rather than assist the company's decision makers in the way a venture capitalist might (Ljungqvist, 2004).However, most companies that go public do so via an initial public offering of shares to investors.

There are extensive theoretical arguments and ample of empirical studies explaining the existence of under pricing in equity markets in various economies. These are; see, for instance, studies on the U.S. market by Ritter (1991); studies on the U.K. market by Goergen, Khurshed, and Mudambi (2007); Germany by Ljungqvist (1997); France by Husson and Jacquillat (1989); Finland by Keloharju (1993); Hong Kong by Vong and Trigueiros (2010); Singapore by Saunders and Lim (1990); Korea by Kim, Krinsky, and Lee (1995); India by Ghosh (2005) and Malaysia by Ahmad-Zaluki, Campbell, and Goodacre (2011).

Conversely, a small number of studies on developed and developing markets show different views. For example, the study by Ghosh (2006) documents that not all IPOs performed well in 1999, the majority of the twenty-five IPOs that had the highest first-day gains over 200% in 1999 also had a poor performance record during 2001–2002. Moreover, it is suggested that ‘irrational exuberance’, as it was witnessed in the late 1990s, will be rare to see for the foreseeable future in the U.S. Jones and Ligon (2009) suggest that approximately 76% of total issues (6,427 public issues) result in positive initial return, which is 18.64%. A more current study by Sieradzki (2013) analyzes IPOs’ under pricing on the Warsaw Stock Exchange between 2003 and 2011, and reports that although on average IPOs’ investments are profitable, the number of IPOs with negative initial returns is quite high at 26.69% and that of IPOs with initial returns equal to 0% is 6.75%.

In summary, most studies find positive short-run returns for IPOs with various levels or magnitude while few studies show negative and/or neutral initial returns. The outcomes are inconclusive. Thus, it is interesting to reexamine the IPOs’ performances on either develop or developing markets that have dissimilar regulatory aspects and market condition applying different samples and analytical methods to answer questions related to under pricing and its level.

Considerably, in both developed and developing countries, most studies on IPOs’ under pricing have focused more on the main stock exchanges. Likewise, in Thailand, apart from a limited number of studies on IPOs’ performances, these studies have principally concentrated on IPOs’ investment returns on the Stock Exchange of Thailand (SET)<sup>1</sup> rather than the Market for Alternative Investment (MAI)<sup>2</sup>.

Therefore, this study was carried out to evaluate IPOs’ initial return on the Thai stock market, specifically the MAI. The investigations predominantly emphasize on the under pricing and its magnitude using several different metrics to answer question whether there is IPOs’ under pricing on the MAI.

Thailand is an emerging market reducing risk and increasing expected returns, which renders significant diversification advantages for globally-minded investors (Bekaert & Urias, 1996 and Khanthavit, 2001). The results presented by this study are interesting and can be guidelines for both local and foreign investors. This study also makes numerous contributions to the literature in the aspect of a variety of outcomes for IPOs’ performances; and national and international comparison results, whether under pricing exists and it is in the same direction and similar magnitude, added to this area for developed markets as general and emerging markets as particular.

The remaining paper is structured as follows. Section 1 introduces IPOs. Section 2 reviews the literature of relevant studies from both developed and developing markets. Section 3 describes data and methodologies used for analyses in this study. Section 4 reports results and the last section summarizes conclusions.

## 2. Literature review

IPOs were the most prevalent form of securities issued to raise capital by firms going public during 1990-2000 in the U.S.; however, they have been imperative in both developed and developing markets. Regarding the definition of under pricing, which is the equally weighted average first-day returns measured from the offer price to the first closing market price, the U.S. has historically been the world’s largest IPOs market; meanwhile China has had the most extreme under pricing. The average first-day return in the U.S. during the period 1990-2010 is 18%; whereas it is 156% for China (Mok & Hui, 1998).

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<sup>1</sup>The national stock exchange of Thailand officially commenced operations on 30 April 1975.

<sup>2</sup>It officially commenced operations on 21 June 1999 purposely to create new fund-raising opportunities for innovative business with high potential growth as well as provide a greater range of investment alternatives.

Several studies have been conducted to examine IPOs' short-run performances. For example, studies on developed markets by Rock, 1986; Tonic, 1988; Allen & Faulhaber, 1989; Benveniste & Spindt, 1989; Welch, 1992; Brennan & Franks, 1997; Tsangarakis, 2004; Alvarez & Gonzalez, 2005; Kenourgios et al., 2007; Goergen et al., 2007; and those on developing markets; see, for example, studies by Paudyal, Saadouni & Briston, 1998; Jelic, Saadouni & Briston, 2001; Li & Naughton, 2007; Peter, 2007 and Marisetty & Subrahmanyam, 2010.

Specifically, most IPOs' under pricing studies demonstrate positive short-run returns for investments. However, the short-run performance of IPOs significantly varies across markets. For instance, Rhee (2002) analyzes 803 IPOs on the U.S. stock market in 1999 and 2000, and finds that the average initial returns are 72% and 56% respectively. This is significantly higher than the average initial returns for those between 1990 and 2001, which are approximately 24%. ECHO (2005) presents statistics on the average IPOs' returns during 1990-2003 for nineteen European countries and for six-teen countries in Latin-America and Asia-Pacific region: in Europe, the highest average initial return is in Poland, which is over 60%, followed by Greece, Germany and Ireland, which is around 40%. Correspondingly, Sukacz (2005) studies 185 IPOs on the Warsaw Stock Exchange between 1991 and 2002, and reports that the average IPOs' under pricing equals 26%. Sieradzki (2013) finds that the average IPOs' return on the same market between 2003 and 2011 is positive at 14.20%. Also, it is suggested that the lowest average IPOs' return is in Luxembourg and Denmark, which is less than 10%. In other regions, the highest average IPOs' return is in Malaysia, which is about 90%, followed by Thailand and Singapore, which is around 30%. The lowest average IPOs' return is in Latin-American countries including Chile, Uruguay, Mexico and Brazil, which is less than 5%.

This is in accordance with the study by Kirkulak (2008), who reports that Japanese IPOs generate a statistically significant return of 49.93%. Meanwhile, Al-Hassan, Delgado, and Omran (2007) analyze 47 IPOs on six markets in the Gulf region between 2001 and 2006, and show that the average initial IPOs' return equals 290%, which is consistent with that for IPOs on the Chinese market documented by Mok and Hui (1998).

It is noticed that even though the average IPOs' returns vary significantly across markets, they are positive. Kooli and Suvet (2001) argue that many studies have indicated that the IPOs have been often notably undervalued in the primary market, with some movement towards a security's intrinsic value observed in secondary trading. This short-run phenomenon has been experienced in every country with a stock market although the degree of under pricing varies from country to country. Nevertheless, the more recent studies by Jones and Ligon (2009) and Sieradzki (2013) assert that not all IPOs perform positively. Thus, the results are mixed.

In Thailand, before 1999, all IPO companies were firms to be listing on the SET; however later the MAI was approved. Since then, Thai IPO firms have had a choice for going public by listing with either the SET or the MAI. With help promoting the listing of IPO companies by easing the requirement on track record; such as market capitalization and net profit, several more small and medium-sized enterprises (SMEs) are in the pipeline for entering the MAI.

Given a very limited number of Thai IPOs studies focusing either short-term or long-term performances; or either IPOs' under pricing or abnormal returns, these studies have only examined the IPOs' returns on the SET. There has not been a great deal of attention paid to those on the MAI. Furthermore, the prior studies used a small sample size of the IPOs, restricted research methods and limited international comparison. This leads to limitations of Thai IPOs' performance results in terms of knowledge, understanding and guidelines for both domestic and international investors.

Therefore, it was justified to conduct a comprehensive study investigating Thai IPO companies' performances on the MAI to add to the prevailing knowledge on the overall performances of the SET. In this study, in addition to including more sample data by covering a longer period from year 2003– 2015(January-June), Thai IPOs' under pricing on the MAI was examined using a variety of metrics. For example, two models: the raw initial return and the market-adjusted initial return with three types of calculations, and a significance test were applied.

### 3. Data and methodology

#### 3.1 Data

Reddy, Nangia, and Agrawal (2013c) suggest that there are critiques about using an earnings' management method to compute simple returns while assessing a share price around various financial announcements. This study thus uses stock price data rather than accounting data for the IPOs' under pricing measurements.

The SET is used as a significant source of data for the study. These data include the list of total IPO companies to be listing on the MAI during 2003-2015 (January-June), the IPOs’ subscription dates and prices, the IPOs’ first trading dates and prices and the MAI index.

### 3.2 Research methodology

The IPO price, by definition, is the price which the new shareholders buy the shares at issue. It is jointly determined by the listing firm and its underwriter at the end of the IPO procedure according to financial analysts’ valuations and the demand expressed for the shares. The definitive offer price is generally lower than the first equilibrium price, which is well-known under the term of IPO under pricing (Gajewski & Gresse, 2006).

As earlier discussion, most studies on developed and developing stock markets find the short-run IPO performances or positive initial returns, or under pricing after firms go public. These studies include Chen, Choi & Jiang, 2007; Zheng, 2007; Vithessonthi, 2008b; Yeh, Shu & Guo, 2008; Zouari, Boudriga & Taktak, 2009; Moshirian, Ng & Wu, 2010 and Vong & Trigueiros, 2010. This is confirmed by the study of Loughran, Ritter, and Rydqvist(1994),who state that the IPOs’ under pricing phenomenon exists in twenty-five countries, with higher IPOs’ under pricing on developing markets than on developed markets. Huang and Levich (1998) also find that initial returns for non-OECD countries average 65.90% versus 11.10% average initial returns in OECD countries. The extent of the IPOs’ under pricing ranges from a few percent for thirty-eight U.S. investment-bank issues to astounding 149.30% on the developing Malaysian market (Muscarella & Vetsuypens, 1989 and Hanley & Ritter, 1992).

Under pricing is measured by the percentage difference between the first-day closing price in the secondary market and the offering price at which the IPO shares were sold in the primary market (Ritter, 1998; Shi-you& Chang, 2008; Chan, 2010). It can be alternatively measured as the amount of “money left on the table”, which is calculated by the difference between the first-day closing price and the offer price multiplied by the number of shares sold at the IPO. In other words, under pricing means the initial return of an IPO corresponds to the difference between the equilibrium price following the issue and the IPO price. Moreover, it is advised that the post-IPO equilibrium price can be the first trade price following the IPO, the first closing price, or a closing price observed a few days after the IPO date (Loughran & Ritter, 2002; Ritter 2011).

Gajewski and Gresse (2006) document that raw initial returns can be measured by the difference between the post-listing equilibrium price and the final offering price divided by the offering price; and then, the raw initial return can be used as a measure of under pricing assuming that the normal return under efficiency would be 0 and that the equity risk is equivalent to the market risk.

$$U = (EP - OP)/OP \dots\dots\dots (1)$$

Where U is the raw initial returns, EP is the post-listing equilibrium price and OP is the final offering price.

Considerably, the measures of under pricing differ according to which price is taken as the post-IPO equilibrium price and which return is chosen as a benchmark. Specifically, a main problem is the choice of the equilibrium price, and it is suggested that when the market is sufficiently liquid, the equilibrium price generally corresponds to the first-day closing price. In other cases, the equilibrium price may be obtained a couple of days after the IPO. Perrier (1996) also considers that the market movements are too small to affect the initial returns significantly, and most studies measure IPOs’ under pricing with raw returns and select the closing price at the end of the first day of quotation as the equilibrium price. This is consistent with Kenourgios et al. (2007), Peter (2007), Reddy, Nangia, and Agrawal (2013c), who assert that several studies measure initial performance of IPOs by using raw returns, but inconsistent with Bessler and Thies (2007), who argue that raw returns are not considered as the best measure to determine the long-term performance of public offerings.

To measure the level of under pricing, most previous studies used the conventional method where the initial return available to the subscribers is given by (2), which is similar to (1), or it is known as the non-adjusted approach.

$$\text{Initial return}_i = (P_m - P_e)/P_e \dots\dots(2)$$

where  $i$  = Firm  $i$  ;  $P_m$  = First day price;  $P_e$ =Offer price

Nevertheless, Kooli and Suret (2001) suggest that the raw initial return measured by equation (2) would be valid in a market, where there is no time gap between the application closing date and the first day of trading and no rationing takes place.

If during this period, a major change occurs in market conditions, we should adjust for market return in the raw initial return estimated by equation (2), which is known as the market-adjusted measure model (3). Accordingly, Perrier (1996) states that the adjusted returns are preferred when the delay between the IPO date and the determination of the first equilibrium price is too long. Thus,

$$\text{Initial return}_i = (P_m - P_e) / P_e - (M_1 - M_0) / M_0 \dots (3)$$

where  $P_m$  = First day price;  $P_e$  = Offer price;  $M_1$  = Market index on the first day of trading;  $M_0$  = Market index on the application closing day. This measure supposes that the market beta of the stock is 1.

Also, the following approach is used to measure the under pricing's level, which is to adjust for the systematic risk of the firm. The initial return available to the subscribers is given by

$$\text{Initial return}_i = (P_m - P_e) / P_e - \beta_i (M_1 - M_0) / M_0 \dots (4)$$

where  $i$  = Firm I;  $P_m$  = First day price;  $P_e$  = Offer price;  $M_1$  = Market index on the first day of trading;  $M_0$  = Market index on the application closing day and  $\beta_i$  = Systematic risk of the firm  $i$ .

It is noted that regarding the difficulty of measuring the beta for IPOs may explain the unwillingness of using the equation (4) to assess the level of under pricing; meanwhile empirical results of various studies indicate that the market-adjusted measure (3) is the most used to calculate the under pricing's magnitude (see kooli & Suret, 2001). Furthermore, Gajewski and Gresse (2006) state that the most widely utilized adjusted measure is the initial return adjusted for a market index return. However, Affleck-Graves, Hedge, and Miller (1996) evaluate the degree of under pricing for the U.S. IPOs during 1975-1985 using the non-adjusted ((1) or (2)) and the market-adjusted measures (3), and find that there is no significant difference between the mean of the under pricing calculated by the two approaches. Meanwhile, Mokand Hui (1998) affirm that this is generally the case, when the time gap between the offering and the listing is short, and they suggest that one day increase in the time gap between offering and listing raises the level of under pricing by a factor of 0.69%.

Obviously, there have been studies concentrate on IPOs' performances but most of them have focused on the main stock markets rather than alternative markets, emphasized more on long-term performance; or even short-term performance analyses, they have preferably evaluated abnormal returns to initial returns or under pricing. Specifically, by comparison, with a very limitation number of Thai studies investigating IPOs' short-term performances; nearly all of them have given the priority to the SET, used a small sample size and applied the limited ranges of research methods.

This study is principally based on a sample of Thai IPOs to be listing on the MAI. The analyses emphasize the existing of IPOs' under pricing and its level using stock price data rather than accounting data, and applying several metrics. Specifically, an interest of this research is examining the IPOs' initial returns or under pricing: whether or not there is under pricing on the MAI as well as comparison results. The main issues are size and signs. Therefore, in addition to using a larger sample covering all data since the MAI index first established, or during 2003-2015 (January-June), more research methodologies are employed. For example, the study applies both the non-adjusted and adjusted approaches, which are (1) or (2) and (3). This also enables comparison of the results with previous studies.

### 3.2.1 Measures of IPOs' under pricing

To examine whether the existing of IPOs' under pricing, the non-adjusted (2) and the market-adjusted measures (3) were selected and used to assess the IPOs' under pricing and its level in the study, which are similar to those used by international studies such as Affleck-Graves, Hedge & Miller, 1996; Paudyal, Saadouni & Briston, 1998; Jelic et al., 2001 and Ahmad-Zaluki & Kect, 2012, and Thai studies such as Chorruck & Worthington, 2009. This helps make national and internationally comparisons with previous studies.

$$\text{Initial return}_i = (P_m - P_e) / P_e \dots (2)$$

where  $i$  = Firm  $i$ ;  $P_m$  = First day price;  $P_e$  = Offer price

$$\text{Initial return}_i = (P_m - P_e) / P_e - (M_1 - M_0) / M_0 \dots (3)$$

Where  $P_m$  = First day price;  $P_e$  = Offer price;  $M_1$  = Market index on the first day of trading;  $M_0$  = Market index on the application closing day (hereinafter, method1);  $M_0$  = Market index on the day before the first day of trading (hereinafter, method2). This measure supposes that the market beta of the stock is 1.

Thus, the initial returns were estimated using the three types of calculations along with (2) and (3).

### 3.2.2 Significance Test of Under pricing

To test the significance of under pricing, the *t*-test statistic was applied.

$$t = \frac{\bar{x} - \mu}{s / \sqrt{n}} \dots\dots\dots(4)$$

where  $\bar{x}$  = average returns; and  $s$  = standard deviations of initial returns for the sample of  $n$  firms.

#### 4. Results

The following section presents and explains the results of the analyses of performances of IPOs, or IPO stocks first listing on the MAI between 2003 and 2015 (January-June) in terms of the average initial returns for investors. The main issues are the size and signs of these initial returns and whether or not they are significantly different from zero.

Table 1 presents that most of the IPOs were issued and to be listing in 2014, 2013, 2004, 2005, 2009 and 2012, which are the years for the IPO stocks of twenty, fifteen, fourteen, eleven and ten stocks respectively. The each year average initial returns of the IPO stocks between 2003 and 2015 are completely positive. Even though the returns change over time ranging from 2.63% up to 113.65%, more than half of the IPO stocks; seven out of thirteen or around 53.85% generate positive initial returns greater than 50%.

Meanwhile, table 2 shows that the highest each year average initial returns of the twenty IPO stocks first listing on the MAI in 2014 are approximately 113.65%; meanwhile the lowest average initial returns of the six IPO stocks first listing on the MAI in 2006 are about 2.63%. These lead to the positive average of each year initial returns of 51.02%.

As to the total 123 IPO stocks first listing on the MAI between 2003 and 2015, 100 out of 123 stocks or 81.30% have positive initial returns, twenty out of 123 stocks or 16.26% earn negative initial returns and the remainders' initial returns are neutral. As a result, the average of initial returns of the total IPO stocks is approximately 56.26%, which is close to those of 51.02% shown in Table 1.

Table 3 presents that the each year changes in the MAI index (method1) according to the IPO stocks first listing on the MAI between 2003 and 2015 are positive and negative ranging from -1.62% up to 122.27%. By comparison, the market and the IPO stocks perform differently in terms of both magnitude and direction.

At the same time, table 4 demonstrates that the highest each year changes in the MAI index (method1); or in the other hand the increases of the MAI index are around 122.27% in 2010, which is similar to those of the initial returns of the IPO stocks of 113.65%. Meanwhile the lowest changes are about -1.62% in 2014. However, most of the changes or around 76.92% are positive resulting in 9.53% the average of each year increases in the MAI index (method1), as compared to 51.02% of the IPO stocks. Thus, on average, the IPO stocks outperform the market.

In line with the total 123 IPO stocks first listing on the MAI between 2003 and 2005, seventy-two out of 123 or 58.54% of the changes in the MAI index (method1) are positive, the remainders 41.46 % are negative. The changes in the MAI index (method1) on the day according to the first trading day of the IPO stock (AIE), which first listing on the MAI in 2004, are negative up to -52.70% compared to -25.47% of the initial returns of the IPO stock. This lastly is the explanation why the market exceptionally underperforms the IPO stocks. Finally, the average of all changes in the MAI index (method1) is negative at -0.12%, which is diverse from those of approximately 9.53% shown in Table 3.

Table 5 describes that corresponding to the IPO stocks first listing on the MAI between 2003 and 2015, the changes in the MAI index (method2) also diverse from the IPO stocks' each year average initial returns in terms of both magnitude and direction. However, they are similar to those of the MAI index (method1) especially in the aspect of the direction, not magnitude. The changes are inconclusive.

Table 6 shows that the highest each year changes in the MAI index (method2) are around 0.38% in 2011 meanwhile the lowest ones are negative at -1.27% in 2008, which is accordance with those of the MAI index (method1). Nevertheless, the changes are much smaller, when compared to those of the IPO stocks and the MAI index (method1). The average of each year changes are negative -0.09%.

In relation to the total 123 IPO stocks first listing on the MAI between 2003 and 2005, sixty-three out of 123 stocks or 51.22% of the changes in the MAI index (method2) show positive performances; meanwhile sixty out of

123 or 48.78% of the performances respond negatively. The average of all changes is -0.14%, which is consistent with those of around -0.09% presented in Table 5.

Table 7 presents that most of the IPOs were issued and listing on the MAI in 2014, 2013, 2004, 2005, 2009 and 2012, which are the years for the issues ranging from ten to twenty stocks. The average initial returns of the IPO stocks for each year between 2003 and 2015 are positive at between 2.63% and up to 113.65%; meanwhile those of the market analyzed by the MAI index (method1) and the MAI index (method2) are positive and negative ranging from -1.62% up to 122.27% and -1.27% to 0.98% respectively. They are far different. However, the market's performances measured by the MAI index (method1) and the MAI index (method2) are similar in terms of the direction, not the magnitude. The returns or the market's performances are mixed. Nevertheless, the returns estimated by the MAI index (method2) are much smaller, when compared to those of the IPO stocks and the MAI index (method1). As a result, the average of each year initial returns of the IPO stocks are approximately 51.02% and those of the market are 9.53% and -0.09% consecutively. Consequently, the IPO stocks outperform the market, when estimated using either the MAI index (method1) or the MAI index (method2). In other words, the IPO stocks behave greater than the market on average 50.81% and 51.16% respectively.

Table 8 demonstrates that the highest each year average initial returns of the IPO stocks are 113.65%, which the responses from the ones are first listing on the MAI in 2014. The four followers are 92.68%, 91.35%, 90.37% and 71.35%, which are the performances of the IPO stocks first listing on the MAI in 2012, 2011, 2013 and 2015 respectively. By comparison, the highest average initial returns of the market estimated using the MAI index (method1) and the MAI index (method2) are up to 122.27% and only 0.99%, in relation to the IPO stocks first listing on the MAI in 2010 and 2015 respectively. The four followers show quite small magnitude: these are 1.18%, 1.15%, 0.65% and 0.57% according to the IPO stocks first listing on the MAI in 2003, 2011, 2006 and 2012; and 0.38%, 0.32%, 0.21% and 0.05% along with the IPO stocks first listing on the MAI in 2011, 2010, 2009 and 2005, consecutively. Accordingly, the best performers are the IPO stocks that outperform the market 115.27% and 113.86%, when evaluated using the MAI index (method1) and the MAI index (method2), in line with the IPO stocks first listing on the MAI in 2014, respectively. Meanwhile, the four followers are the IPO stocks outperforming the market ranging from 70.86% to 92.11% corresponding to the IPO stocks first listing on the MAI in 2015, 2011, 2013 and 2012; and ranging from 71.11% to 92.90% according to the IPO stocks first listing on the MAI in 2015, 2013, 2011 and 2012, consecutively.

Consideration of each of the total IPO stocks first listing on the MAI between 2003 and 2015, 100 out of 123 stocks or around 81.30% earn positive initial returns; meanwhile seventy-two out of 123 or about 58.54% of the performances of the MAI index (method1) and sixty-three out of 123 or approximately 51.22% of the changes in the MAI index (method2) are positive. At the same time, twenty out of 123 stocks or 16.26% suffer negative initial returns compared to fifty-one out of 123 or about 41.46% of the changes in the MAI index (method1) and sixty out of 123 or 48.78% of the responses of the MAI index (method2) presenting negative returns. Finally, the average of initial returns of the total IPO stocks are positive approximately 56.26% compared to the negative returns at -0.12% and -0.14% of the market measured by the MAI index (method1) and the MAI index (method2) consecutively. Noticeably, the market's performances evaluated by the MAI index (method1) and the MAI index (method2) are closer than those of the IPO stocks and the MAI index (method1) or between the IPO stocks and the MAI index (method2).

For the analyses whether the IPO stocks outperform the market, in regard to each of the total 123 IPO stocks first listing on the MAI between 2003 and 2005, 101 out of 123 stocks or 82.11% outperform the market, as assessed by the MAI index (method1). Similarly, 103 out of 123 stocks or 83.74% outperform the market, when measured by the MAI index (method2). Meanwhile, the remaining twenty-two out of 123 stocks or 17.89% and twenty out of 123 stocks or 16.26% underperform the market, as evaluated by the MAI index (method1) and the MAI index (method2) respectively. In summary, on average, the IPO stocks perform better than the market up to 56.38% and 56.40% consecutively.

According to the ranking of the outperformed performances of the IPO stocks using the MAI index (method1), thirty out of 123 stocks or roughly 24.39% outperform the market up to more than 100%, which range from 101.02% to 208.08%.

Approximately 19.51% perform better than the market ranging from 53.66% to 99.40%; 23.58% behave greater than the market between 11.01% and 46.05% and around 14.63% earn positive abnormal returns lower than 10%, when compared to the market; meanwhile the remainders 17.89% underperform the market between -20.14% and -0.08%.

Correspondingly, when applying the MAI index (method2), thirty out of 123 stocks or 24.39% outperform the market more than 100% ranging from 100.03% up to 201.02%. Nearby 19.51% perform superior the market, which range from 50.17% to 99.40%; 21.95% behave greater than the market between 11.64% and 47.21% and roughly 17.89% produce positive excess returns less than 10%, as compared to the market; meanwhile the remainders 16.26% underperform the market ranging from -26.06% to -0.65%.

As to whether or not the under pricing is significant, the results show that eighty-seven out of 123 or about 70.73% of the IPO stocks first listing on the MAI earn significant and positive or negative returns. Meanwhile, 90 and 100 out of 123 stocks, or approximately 73.17% and 81.30% of the MAI's returns are either significantly positive or negative, when measured applying the MAI index (method1) and the MAI index (method2) respectively. Thus, on average, the IPO stocks first listing on the MAI gain significantly and substantially positive initial returns. Lastly, it is concluded that there is significant IPOs' under pricing on the MAI. The results are consistent with most of the previous studies focusing both developed and developing markets.

## **5. Conclusion**

This study examines the under pricing of Thai IPO stocks. The initial returns were used for the estimation of the IPOs' performances on the MAI whether or not they significantly under price. The non-adjusted and market-adjusted initial returns methods for the return measurements, three types of calculations and a significance statistic test were applied.

The results suggest that the each year average initial returns of the IPO stocks are positive ranging from 2.63% up to 113.65%; meanwhile those of the market analyzed by the MAI index (method1) and the MAI index (method2) are positive and negative between -1.62% and 122.27%, and -1.27% and 0.98% respectively. The market's performances are similar specifically in terms of the direction.

For further analyses, as to the total 123 IPO stocks first listing on the MAI between 2003 and 2015, approximately 81.30% earn positive initial returns compared to those of 58.54% and 51.22% of the MAI (method1) and the MAI (method2) respectively. Meanwhile, 16.26% of the IPO stocks suffer negative initial returns compared to the returns of 41.46% and 48.78% of the MAI (method1 and 2) consecutively. The results are consistent with each other especially in the aspect of the positive and negative returns proportion. As a result, due to the different magnitude, the average initial returns of the total IPO stocks are approximately 56.26% compared to those of -0.12% and -0.14% of the MAI (method1) and the MAI (method2) respectively.

By comparison, the IPO stocks outperform the market on average 50.81% and 51.16%; and 56.38% and 56.40% for method 1 and 2 respectively, when estimated from averaging each year performance and each of the total IPO stocks consecutively.

As to whether or not the under pricing is significant, the results show that eighty-seven out of 123 or about 70.73% of the IPO stocks first listing on the MAI earn significant and positive or negative returns. Meanwhile, approximately 73.17% and 81.30% of the MAI's returns are either significantly positive or negative, when measured applying the MAI index (method1) and the MAI index (method2) respectively. Thus, on average, the IPO stocks first listing on the MAI gain significantly and substantially positive initial returns. Lastly, it is concluded that there is significant IPOs' under pricing on the MAI.

The results are completely consistent with most past studies especially in terms of the direction even using different data and methodologies, finding that IPOs generate superior positive returns. For the under pricing degree, the outcomes are entirely consistent with studies focusing on developing markets. These studies include Bessler & Thies, 2007; Ritter, 1991 and Sahi & Lee, 2011, and Thai studies such as Chorrak & Worthington, 2009. In addition, Kim, Krinsky, and Lee (1995) state that investors who purchase IPOs at the offer price earn abnormal returns in the early aftermarket period. Likewise, Tsangarakis (2004) suggest that investors who buy newly listed shares on the first trading day realize positive average returns for periods up to a year.



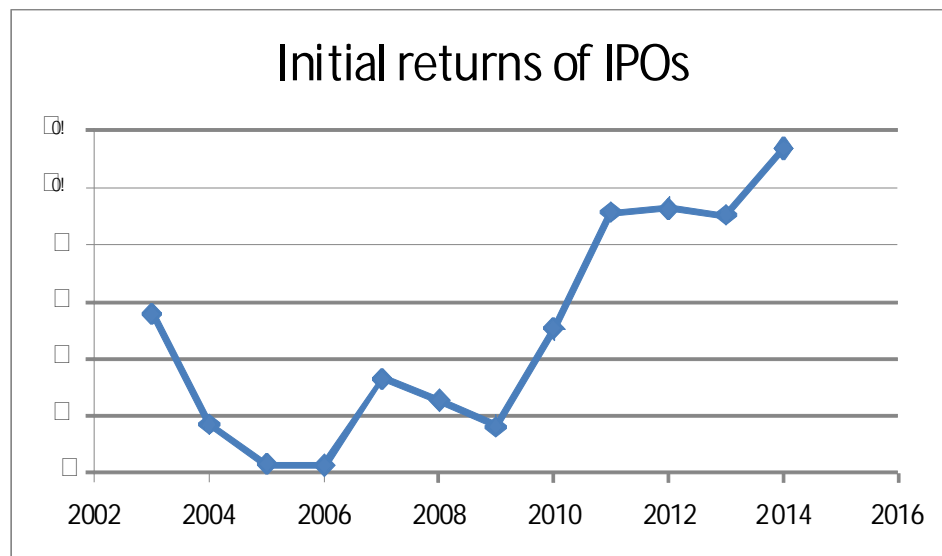
Ahmad-Zaluki and Kect (2012) assert that investors who purchase IPO shares on the MESDAQ Market gain high positive returns. Overall, the results presented by this study suggest that investors who purchase IPO shares gain high positive returns on the first listing on the MAI. Finally, it is concluded that Thai IPO companies are significantly underpriced on the MAI.

The study gives light to many results which are robust with respect to the different samples, methods, and time periods of the investigations. Explicitly, the findings are consistent with each other, particularly in terms of the return direction at least, when comparisons are made between the non-adjusted and market-adjusted models and comparisons across these two models and the three types of different calculations and between the each year average returns and the average of returns of the total IPO stocks. The results are mostly internally consistent, when compared within this study itself and also with most of the findings of previous studies of the developed stock markets and the limited existing studies of the Thai stock market.

Obviously, this study contributes to the understanding of the IPOs' performance on the MAI and can be guidelines for both local and foreign investors. Also, it enriches the Thai financial literature in terms of greatly enhancing the existing literature given the limited number of prior studies involved and the variety of their results.

**Table 1 the initial returns of IPO stocks first listing on the MAI between 2003 and 2015**

Year	No. of listed companies	IPO stocks' initial returns
2003	6	55.8313
2004	14	17.1063
2005	14	3.0182
2006	6	2.6341
2007	6	33.0338
2008	3	25.2424
2009	11	16.2885
2010	7	50.6242
2011	7	91.3542
2012	10	92.6827
2013	15	90.3701
2014	20	113.6542
2015	4	71.3568
Average		51.0151



**Figure1**

**Table 2 the ranking of initial returns of IPO stocks first listing on the MAI between 2003 and 2015**

Year	No. of listed companies	Ranking of IPO stocks' initial returns
2014	20	113.6542
2012	10	92.6827
2011	7	91.3542
2013	15	90.3701
2015	4	71.3568
2003	6	55.8313
2010	7	50.6242
2007	6	33.0338
2008	3	25.2424
2004	14	17.1063
2009	11	16.2885
2005	14	3.0182
2006	6	2.6341
Average		51.0151

**Table 3 the changes in the MAI index (method1) according to the IPO stocks first listing on the MAI between 2003 and 2015**

Year	Changes in the MAI index (method1)
2003	1.1887
2004	-1.2612
2005	0.0199
2006	0.6482
2007	0.2793
2008	0.1546
2009	0.3844
2010	122.2738
2011	1.1528
2012	0.5742
2013	-0.3957
2014	-1.6154
2015	0.5004
Average	9.5311

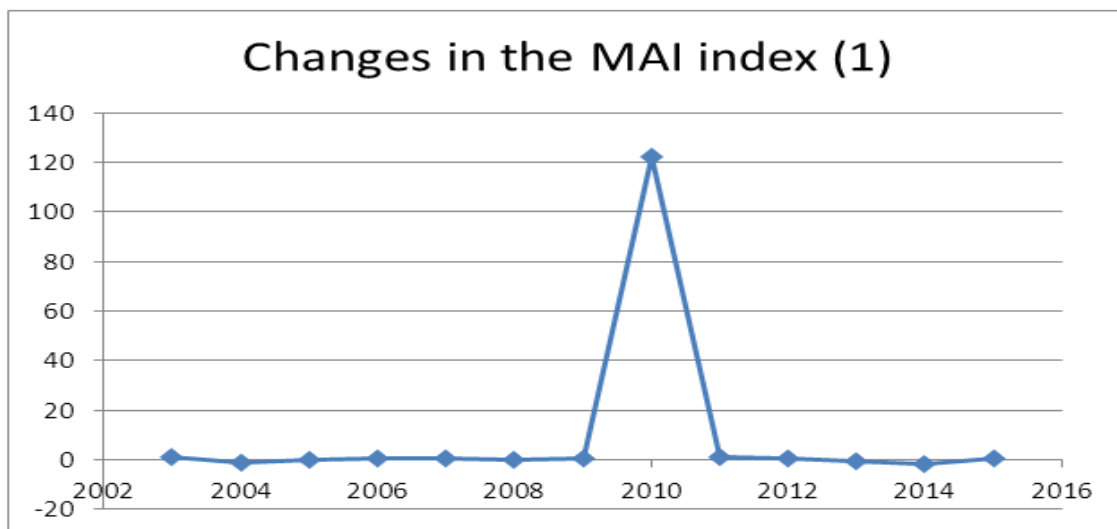


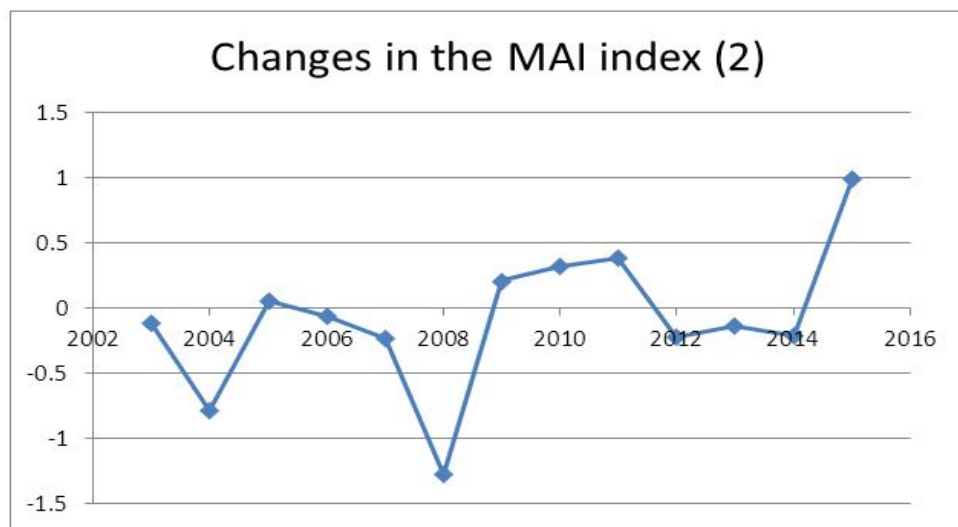
Figure2

**Table 4 the ranking of changes in the MAI index (method1) according to the IPO stocks first listing on the MAI between 2003 and 2015**

Year	Ranking of changes in the MAI index (method1)
2010	122.2738
2003	1.1887
2011	1.1528
2006	0.6482
2012	0.5742
2015	0.5004
2009	0.3844
2007	0.2793
2008	0.1546
2005	0.0199
2013	-0.3957
2004	-1.2612
2014	-1.6154
Average	9.5311

**Table 5 the changes in the MAI index (method2) according to the IPO stocks first listing on the MAI between 2003 and 2015**

Year	Changes in the MAI index (method2)
2003	-0.1147
2004	-0.7917
2005	0.0472
2006	-0.0664
2007	-0.2382
2008	-1.2709
2009	0.2058
2010	0.3195
2011	0.3804
2012	-0.2195
2013	-0.1420
2014	-0.2104
2015	0.9869
Average	-0.0857



**Figure 3**

Table 6 the ranking of changes in the MAI index (method2) according to the IPO stocks first listing on the MAI between 2003 and 2015

Year	Ranking of changes in MAI index (method2)
2015	0.9869
2011	0.3804
2010	0.3195
2009	0.2058
2005	0.0472
2006	-0.0664
2003	-0.1147
2013	-0.1420
2014	-0.2104
2012	-0.2195
2007	-0.2382
2004	-0.7917
2008	-1.2709
Average	-0.0857

Table 7 Comparison between the initial returns of the IPO stocks and the changes in the MAI index (method1) and (method2) according to the IPO stocks first listing on the MAI between 2003 and 2015

Year	IPO stocks' initial returns	Changes in the MAI index (method1)	Changes in the MAI index (method2)	Outperformed IPO stocks (method1)	Outperformed IPO stocks (method2)
2003	55.8313	1.1887	-0.1147	54.6426	55.9460
2004	17.1063	-1.2612	-0.7917	18.3675	17.8980
2005	3.0182	0.0199	0.0472	2.9983	2.9709
2006	2.6341	0.6482	-0.0664	1.9859	2.7005
2007	33.0338	0.2793	-0.2382	32.7545	33.2720
2008	25.2424	0.1546	-1.2709	25.0878	26.5133
2009	16.2885	0.3844	0.2058	15.9041	16.0827
2010	50.6242	122.2738	0.3195	49.5223	50.3047
2011	91.3542	1.1528	0.3804	90.2014	90.9738
2012	92.6827	0.5742	-0.2195	92.1084	92.9021
2013	90.3701	-0.3957	-0.1420	90.7658	90.5121
2014	113.6542	-1.6154	-0.2104	115.2696	113.8645
2015	71.3568	0.5004	0.9869	70.8563	71.1100
Average	51.0151	9.5311	-0.0857	50.8050	51.1578

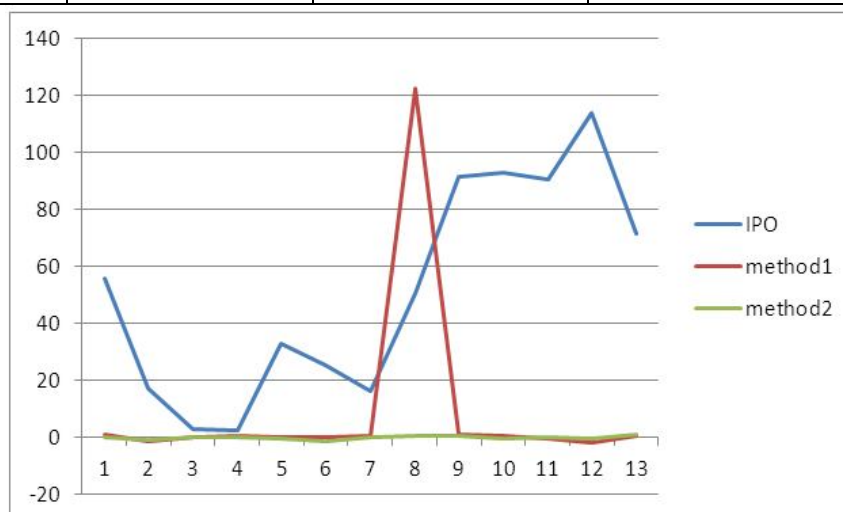


Figure 4

Table 8 The ranking of comparison results of the initial returns of the IPO stocks and the changes in the MAI index (method1) and (method2) according to the IPO stocks first listing on the MAI between 2003 and 2015

Year	Ranking of IPO stocks' initial returns		Ranking of changes in the MAI index (method1)		Ranking of changes in the MAI index (method2)		Ranking of out-performance of IPO stocks (method1)		Ranking of out-performance of IPO stocks (method2)	
2014	113.6542	2010	122.2738	2015	0.9869	2014	115.2696	2014	113.8645	
2012	92.6827	2003	1.1887	2011	-0.3804	2012	92.1084	2012	92.9021	
2011	91.3542	2011	1.1528	2010	0.3195	2013	90.7658	2011	90.9738	
2013	90.3701	2006	0.6482	2009	0.2058	2011	90.2014	2013	90.5121	
2015	71.3568	2012	0.5742	2005	0.0472	2015	70.8563	2015	71.1100	
2003	55.8313	2015	0.5004	2006	-0.0664	2003	54.6426	2003	55.9460	
2010	50.6242	2009	0.3844	2003	-0.1147	2010	49.5223	2010	50.3047	
2007	33.0338	2007	0.2793	2013	-0.1420	2007	32.7545	2007	33.2720	
2008	25.2424	2008	0.1546	2014	-0.2104	2008	25.0878	2008	26.5133	
2004	17.1063	2005	0.0199	2012	-0.2195	2004	18.3675	2004	17.8980	
2009	16.2885	2013	-0.3957	2007	-0.2382	2009	15.9041	2009	16.0827	
2005	3.0182	2004	-1.2612	2004	-0.7917	2005	2.9983	2005	2.9709	
2006	2.6341	2014	-1.6154	2008	-1.2709	2006	1.9859	2006	2.7005	
Average	51.0151		9.5311		-0.0857		50.8050		51.1578	

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