

What Explains the Initial Return of Initial Public Offerings after the 1997 Asian Financial Crisis? Evidence from Thailand

Chaiporn Vithessonthi

Department of Accountancy and Finance, School of Business

University of Otago

PO Box 56, Dunedin 9054, New Zealand

Tel: +64 3 479 8060; Fax +64 3 479 8171

E-mail: c.vithessonthi@mac.com

ABSTRACT

I find that the initial return of Thai initial public offerings (IPOs) issued between 2000 and 2010 is positive but lower than the initial return of Thai IPOs issued during the pre-1997 financial crisis period. The market P/BV ratio and term spread have a positive effect on the initial return. Furthermore, the amounts of T-bills, government bonds, and private debt securities, which are considered proxies for bond market development, are negatively related to the initial return, suggesting that the development of bond markets is likely to decrease the level of the initial return of IPOs. Furthermore, domestic interest rates have a large and negative effect on the initial return but foreign interest rates do not drive the initial return. In addition, the interest rate differential has a negative effect on the initial return of “hot” IPOs.

JEL classification: G12; G14; G15

Keywords: exchange rates; initial returns; initial public offerings; interest rates; Thailand

What Explains the Initial Return of Initial Public Offerings after the 1997 Asian Financial Crisis? Evidence from Thailand

ABSTRACT

I find that the initial return of Thai initial public offerings (IPOs) issued between 2000 and 2010 is positive but lower than the initial return of Thai IPOs issued during the pre-1997 financial crisis period. The market P/BV ratio and term spread have a positive effect on the initial return. Furthermore, the amounts of T-bills, government bonds, and private debt securities, which are considered proxies for bond market development, are negatively related to the initial return, suggesting that the development of bond markets is likely to decrease the level of the initial return of IPOs. Furthermore, domestic interest rates have a large and negative effect on the initial return but foreign interest rates do not drive the initial return. In addition, the interest rate differential has a negative effect on the initial return of “hot” IPOs.

JEL classification: G12; G14; G15

Keywords: exchange rates; initial returns; initial public offerings; interest rates; Thailand

1. Introduction

There are a number of empirical studies such as Ritter (1991), Kunz and Aggarwal (1994), Loughran and Ritter (1995), Drobetz, Kammermann, and Wälchli (2005) that use initial public offerings (IPOs) data to measure the short-run initial returns of IPOs and show that IPOs are generally underpriced; that is, the first-day market closing price of IPOs are higher than the corresponding offer price. One of explanations for the IPO underpricing is

concerned with the level of information asymmetry (see e.g., Rock, 1986). If asymmetric information accounts for the level of IPO underpricing, we will observe declining levels of IPO underpricing in emerging countries where their economy substantially develops and the levels of asymmetric information decrease.

A key question in this paper is whether there is evidence of lower initial returns of IPOs in emerging market countries in a recent time period, especially after financial crises. Thus, I examine whether the level of Thai IPO underpricing in the post-1997 financial crisis period is lower than that of the pre-1997 crisis period. More specifically, I examine a sample of 176 IPOs listed on the Stock Exchange of Thailand (SET) between January 2000 and December 2010, and compare the initial return of Thai IPOs in this sample period with (1) previous studies such as Allen et al. (1999) and Kim et al. (2004) using Thai IPO data in the pre-1997 Asian financial crisis period and with (2) a study of Vithessonthi (2008) using the IPO data after the 1997 Asian financial crisis period. I then examine whether stock market conditions, bond market conditions¹, interest rates and exchange rates affect the short-run stock returns of the IPOs in Thailand. Overall, in this paper I aim to contribute to the literature of IPOs by addressing the following questions:

- Is the initial return of IPOs in Thailand in the post-1997 Asian financial crisis lower than that of the pre-1997 Asian financial crisis period?
- What are the effects of stock market conditions on the short-run stock price performance of the IPOs in Thailand?

¹ According to a review article by Yong (2007), previous studies on Asian IPOs have not examined the effect of financial market conditions on the level of the IPO underpricing.

- What are the effects of bond market conditions² on the short-run stock price performance of the IPOs in Thailand?

As in Allen et al. (1999) and in Kim et al. (2004), I find that IPOs in Thailand between 2000 and 2010 are underpriced in the short run. That is, the average one-day initial return for the full sample is 15.82% and statistically significant at the 1% level. Furthermore, the average one-day market-adjusted initial return for the full sample is 15.85% and statistically significant at the 1% level. In comparison with prior studies using Thai IPO data during the pre-1997 Asian financial crisis period, I find that there is evidence of a substantial decline in Thai IPO underpricing in the post-1997 Asian financial crisis period. For instance, Allen et al. (1999) report that the mean initial return for the sample of 150 Thai IPOs during the period 1985-1992 is 63.49%. Likewise, Kim et al. (2004) find that the mean initial return of the IPOs in Thailand during the period 1987-93 is 67.66%. I also find that the initial return of this study is slightly lower than the 19.97% mean initial return of Thai IPOs during the period 2000-2005 reported by Vithessonthi (2008) and the 17.60% underpricing of Thai IPOs during the period 1997-2008 reported by Chorruck and Worthington (2010). In a related study, Kosala (2011) reports that the average offer-to-open and offer-to-close returns for 76 IPOs in the Indonesia Stock Exchange during the period 2001-2005 are 10.31% and 13.64%, respectively, and statistically significant at the 1% level. I find that the average initial return for the Indonesian IPO is lower than that of the Thai IPO reported in this study.

² In the financial development literature, for example, as in Levine and Zervos (1998), Chinn and Ito (2006), Zagorchev et al. (2011), and Boyd and Jalal (2012), measures for stock market conditions and bond market conditions in this paper are also used as indicators of financial market development.

I interpret the findings of lower initial returns of Thai IPOs in recent years as evidence that supports the notion that the level of asymmetric information in Thailand has substantially decreased in recent years. The findings also provide further support to the asymmetric information hypothesis of Rock (1986). Nonetheless, there is a puzzle that the initial returns of Thai IPOs reported in this study are lower than that of IPOs in developed countries such as Switzerland, as reported by Drobetz et al. (2005), or in Germany, as shown in Aussenegg, Pichler, and Stomper (2006). This fact raises a question of whether the lower level of asymmetric information in Thailand following the major financial and legal reforms in the aftermath of the 1997 Asian financial crisis only accounts for the low initial return of Thai IPOs in the post-1997 crisis period because it is unlikely that the level of information asymmetry in Thailand is lower than that of developed countries³. Taking in to account the fact that Kosala (2011) shows that the initial return for the Indonesian IPOs during the period 2001-20005 is lower than the mean initial return of Thai IPOs during the period 2000-2005 reported by Vithessonthi (2008) and than the underpricing of Thai IPOs during the period 1997-2008 reported by Chorruck and Worthington (2010), it is more likely that other factors play a more prominent role in determining the initial return of Thai IPOs.

Investors might be less optimistic after the 2008 global financial crisis, which would in turn lead to lower IPO initial returns in the aftermath of the 2008 global financial crisis. The fact that the average initial returns for the IPOs issued in 2008 and 2009 is 1.16% and 0.90%

³ As argued by Rock (1986), the asymmetric information prediction suggests that the level of information asymmetry should be positively associated with the initial underpricing cost. Thus, IPOs in countries with high levels of information asymmetry should on average have a higher initial underpricing cost than IPOs in countries with low levels of information asymmetry.

appears to also support the argument that poor market sentiments, rather than lower levels of asymmetric information, account for lower IPO initial returns in Thailand over the period 2008-2009. These findings provide some support to the argument of Ritter (1991) in a sense that the levels of optimism about the economy amongst investors may drive the short-run stock return of the IPO.

In contrast to Cox and Roden (1999) who find that the issue size of an IPO is positively related to the adjusted one-day abnormal return of the mutual thrift IPOs in the United States and to Samarakoon (2010) who finds that the IPO issue size is negatively related to the initial abnormal return of the IPOs in Sri Lanka, I show that the issue size has no effect on the short-run stock price performance of the IPO in Thailand. I then ask how stock market conditions are associated with the short-run stock price performance of the IPO, I find that the market P/E ratio has no effect on the initial return, that the market P/BV ratio has a positive effect on the initial return, and that market yield has a negative effect on the initial return. A positive association between the market P/BV ratio and the initial return implies that if investors are optimistic about future opportunities for firms in the stock markets, firms that go public during these periods will experience higher initial returns. Alternatively, one may argue that a high stock market valuation (indicated by a high market P/BV ratio) indicates overperformance (or overpricing) of common stocks, which in turn leads to a high short-run return of an IPO. Overall, these findings suggest that stock market conditions drive the initial return of an IPO in Thailand, providing further support to Adams et al. (2009) who find that industry price-to-book ratio at the end of the year prior to the IPO is positively associated with the one-day initial return of the mutual thrifts IPO in the United States.

Testing the effect of bond market conditions on the initial return of the IPO in Thailand, I find that the amounts of outstanding T-bills, outstanding government bonds, and outstanding private debt securities at the end of the month prior to the IPO month are negatively

associated with the initial return of the IPO, implying that when the level of outstanding debt securities as a proxy of bond market development is high, the initial return of the Thai IPOs is likely to be low. In this context, the amounts of outstanding T-bills, outstanding government bonds, and outstanding private debt securities are used as proxies for (1) bond market development and (2) the overall size of fixed-income security markets. Furthermore, I find that the amount of new T-bills issuance for the month prior to the IPO month has a negative effect on the initial return of the IPO, suggesting that Thai IPOs that go public during a period of a high volume of new T-bills issuance are likely to experience lower underpricing costs. However, the amount of new government bonds issuance for the month prior to the IPO month is weakly associated with the initial return of the IPO. Likewise, the amount of new private debt securities issuance for the month prior to the IPO month has no effect on the market-adjusted initial return of the IPO. The findings suggest that security issuance clustering (e.g., between two classes of securities: private/public debt securities and IPOs) appears to lower the initial return of IPOs.

As firms that want to go public are competing for funds not only against other domestic securities but also against foreign securities, I test whether the level of domestic and foreign interest rates could explain the short-run stock price performance of the IPO. I find that the domestic interest rate (measured as the 1-year government bond yield) is negatively related to the market-adjusted initial return of the IPO in Thailand. That is, a hypothetical 1% increase in the 1-year government bond yield for the month prior to the IPO month is associated with a 5.79% decrease in the initial return of the IPO. The effect of the domestic interest rate on the initial return is robust to different measures of domestic interest rates. Furthermore, the term spread on government bond yield has a large and positive effect on the initial return of the IPO. More specifically, I find that a 1% increase in term spread for the month prior to the IPO month is associated with a 7.91% increase in the initial return of the IPO. This result is

consistent with Estrella and Hardouvelis (1991) who suggest that the term spread is a good predictor of real economic activity. In addition, this finding is consistent with Schrimpf (2010) who reports that the term spread on government bonds has a predictive effect on stock market returns. Furthermore, my findings show that foreign interest rates for the month prior to the IPO month (measured as 1-month LIBOR and 1-year LIBOR) have no effect on the short-run stock price performance of the IPO. This finding is also robust to different proxies for foreign interest rates. I also find that real effective exchange rate (REER) of the Thai Baht, as a measure of the exchange rate of Thai Baht, at the end the month prior to the IPO month is not associated with the market-adjusted initial return. Furthermore, I find that the interest rate differential between Thailand and the United States (as a proxy for the domestic-foreign interest rate parity) at the end of the month prior to the IPO month is not associated with the market-adjusted initial return of the IPO.

Following Brau and Fawcett (2006), I also examine whether there are asymmetric effects on the initial return with respect to whether IPOs are hot or cold. As in Brau and Fawcett (2006), I define a “hot” IPO as the one with initial return greater than 10% and a “cold” IPO otherwise. New patterns of results emerge in both “hot” and “cold” IPO subsamples. Interestingly, I find a positive relationship between 1-year LIBOR and the market-adjusted return of the “cold” IPOs. While the real effective exchange rate does not affect the market-adjusted initial return in the full sample, the real effective exchange rate is positively associated with the market-adjusted initial return of the “cold” IPOs.

2. Overview of the literature

Studies using the US data such as Ritter (1991) and Schultz (2003) report that IPOs in the United States are underpriced. Other studies that examine the initial returns of IPOs in

developed countries also report evidence of IPO underpricing. For instance, Levis (1993) shows that the IPOs in the United Kingdom between 1980 and 1988 are on average underpriced by approximately 14%. Evidence of IPO underpricing in small- and medium-sized developed markets has also been documented. For instance, Saunders and Lim (1990) report the underpricing of IPOs in Singapore, whereas Kunz and Aggarwal (1994) find that there is evidence of IPO underpricing in a sample of 42 IPOs in Switzerland between 1983 and 1989. In a more recent study, Drobetz et al. (2005) also show that IPOs in Switzerland between 1983 and 2000 are underpriced by approximately 35%.

Several scholars examining IPO data in emerging market countries also report that IPOs in emerging markets are substantially underpriced. For example, Chen, Firth and Kim (2004) find that the average adjusted initial return for A-share IPOs in China during the period 1992-1997 is 145%. In a recent study, Su and Bangassa (2011) find that the average market-adjusted initial return for Chinese IPOs during the period 2001-2008 is 118.62%. Hensler, Herrera, and Lockwood (2000) also find that IPOs in Mexico between 1987 and 1993 are initially underpriced and that the initial underpricing of bank IPOs is larger than that of non-bank IPOs.

There are a number of explanations for the IPO initial underpricing. First, Rock (1986) suggests that the extent to which the IPO is underpriced depends upon the ex ante uncertainty about the true value of the IPO firm, thereby suggesting that higher levels of asymmetric information between better informed investors (e.g., managers) and less informed investors would lead to higher underpricing costs. The level of information asymmetry between firms and investors in emerging market countries appears to be greater than that of advanced countries, which should in turn lead to evidence of larger initial underpricing of IPOs in emerging market countries. Evidence supporting the information asymmetry argument is that the average initial returns of Chinese IPOs are substantially higher than that of US IPOs.

Ritter (1991) proposes another plausible explanation for the IPO underpricing by arguing that if investors were systematically too optimistic about the prospects of the IPO firms, then IPOs would be underpriced as investors bidding up prices of the IPOs. This argument would suggest that high initial returns of IPOs in emerging market countries could largely be driven by optimistic investors rather than by the potentially high level of asymmetric information.

3. Data and sample selection

I collect data for all Thai IPOs that began trading on the SET between January 1, 2000 and December 31, 2010 from the SETSMART database, which contains the most comprehensive information of the securities listed on the SET and Market for Alternative Investment (mai). The SET was established in 1975, and is the largest stock exchange in Thailand, whereas the mai is second stock market in Thailand, which was established in 1999. To provide an overview of the development of the Thai IPO market, Figure 1 illustrates the number of initial public offerings listed on the SET between 1975 and 2010.

(INSERT FIGURE 1 ABOUT HERE)

I arbitrarily select year 2000 as the beginning year in this study because (1) the Thai IPO market was practically nonexistent in the aftermath of the 1997 financial crisis (i.e. between 1997 and 1999), and (2) a new wave of Thai IPO listings began to emerge again in 2000. The initial sample consists of 189 IPOs in Thailand between January 2000 and December 2010. Consistent with the literature, as in Ritter (1991) and Ljungqvist and Wilhelm (2003), I exclude unit offers and closed-end funds (e.g., property funds) from the sample. Accordingly, the final sample consists of 176 IPOs.

Over the 11-year sample period 2000-2010, the total value of the 176 IPOs at the offer price is 1,010 billion Baht (or approximately 32 billion USD at the exchange rate of 31 Baht per USD), and the total value of the 176 IPOs at the end of the first-trading day price in the sample is 1,133 billion Baht (or approximately 36 billion USD at the exchange rate of 31 Baht per USD). These figures suggest that the IPO firms over the sample period leave 122 billion Baht on the table, representing the underpricing cost. The largest IPO is PTT Plc, with an issuing value of 97.93 billion Baht at the IPO price, while the smallest IPO is United Securities Plc, with an issuing value of 0.182 billion Baht at the IPO price. The five largest IPOs have the combined issuing value of 365.68 billion Baht at the IPO price, accounting for 36.18% of the total value of all IPOs in the sample.

Similar to Ritter (1984), Ljungqvist and Wilhelm (2003) and Cook et al. (2006), I use an initial return and a market-adjusted initial return as proxies for the short-run performance of the Thai IPOs. The initial return for each IPO is measured as the difference between the first-day closing price of an IPO and its corresponding offer price relative to the offer price (i.e. $(\text{close price} - \text{offer price})/\text{offer price}$). The market-adjusted initial return, which is also known as the “excess” or “abnormal” initial return, is then calculated as the difference between the initial return and the market return. In this study, a return on the SET index is used as a proxy for the market return. The SET index is the value-weighted market portfolio that includes all common stocks traded on the main board of the SET.

4. Analyses and empirical results

In this section, I explore (1) whether the IPOs in Thailand are underpriced in the short run and (2) what factors explain the short-run stock returns of the IPOs in Thailand. I begin

by asking whether IPOs in Thailand are underpriced in the short run, and if they do, what factor could explain variations in the short-run stock returns of the IPOs.

4.1. *Are initial public offerings in Thailand underpriced in the short run?*

To test whether IPOs in Thailand are underpriced in the short run, I adopt the standard event-study method. That is, I test the hypothesis that the average initial returns for the IPOs are equal to zero. To test this hypothesis, I employ the t test statistics as follows:

$$t_{IR} = \frac{AIR_{it}}{\left(\frac{\sigma(IR_{it})}{\sqrt{n}} \right)}, \quad (1)$$

where AIR_i is the sample average initial return, calculated as the arithmetic average of initial returns on all IPOs in the sample of n firms, and $\sigma(IR_{it})$ is the cross-sectional sample standard deviations of initial returns for the sample of n firms. I measure an initial return as the difference between the first-trading day closing price and the IPO offer price divided by the IPO offer price (i.e. (close price – IPO price)/IPO price), which is also known as offer-to-close return, as shown in Aggarwal and Conroy (2000) and Cook et al. (2006). A positive initial return indicates the underpricing cost of an IPO.

Table 1 presents average initial returns, standard deviations, minimum initial returns, maximum initial returns, and percentages of positive initial returns for Thai IPOs between 2000 and 2010 by years of issuance (Panel A) and by industry (Panel B). The initial returns are average across all IPOs for each year of issuance and the full sample. For the full sample, the average initial return for Thai IPOs is 15.82%, and statistically significant at the 1% level.

There appears to be a relatively wide range of initial returns evidenced by the fact that the smallest initial return is -36.40% and the largest initial return is 166.67%.

In comparison with studies using the US data, the average initial return for the full sample is comparable with the average initial return for the IPOs of 18.6% reported by Welch and Ritter (2002). The magnitude of the initial returns of the IPOs in this study is in fact relatively lower than that of US IPOs reported in the literature. For instance, Aggarwal and Conroy (2000), who report that the average initial return for a sample of 188 Nasdaq IPOs over May-October 1997 period is 19.47%. Likewise, Bradley and Jordan (2002) report that the average return for a sample of 3,325 IPOs in the United States between 1990 and 1999 is 22.60%, and suggest that the high average initial return in their study is attributable to the high average return (i.e. greater than 70%) for IPOs in 1999. Ljungqvist and Wilhelm (2003) report that the average initial return for the US IPOs during the hot markets are very high; that is, the average initial returns for IPOs in 1999 and 2000 are 73.3% and 57.7%, respectively. In a related study, Cook et al. (2006) report that the average initial return for a sample of 3,026 US IPOs between 1993 and 2000 is 28.95%.

Following Lam, Tan and Wee (2007) who suggest that the IPO underpricing costs tend to be lower in countries with better investor protections, the finding that the mean initial return of Thai IPOs during the period 2000-2010 is lower than the average initial return of Thai IPOs in the pre-1997 financial crisis period is consistent with the view that financial and legal reforms in Thailand following the 1997 financial crisis have led to the introduction of better investors' rights protection regulations in Thailand.

The average initial return of 15.82% in this study is also in line with the 14% average initial return for Spanish IPOs issued between 1987 and 1997 reported by Álvarez and González (2005), the 19.09% average initial return for a sample of French 62 IPOs listed between June 1999 and June 2001 reported by Derrien (2005), and the 15.93% average initial

return for the IPOs in Hong Kong during the period 1994-1998 reported by Mazouz, Saadouni, and Yin (2009). However, it is lower than the 46.48% average initial return for a sample of 254 German IPOs during the period 1999-2000 reported by Aussenegg et al. (2006) and the 33.5% average initial return for a sample of 105 IPOs listed on the Sri Lankan stock market during the period 1987-2008 reported by Samarakoon (2010).

The number of positive initial returns accounts for 63.64% of the IPOs in the sample. In addition, Table 1 shows that average initial returns for IPOs issued in 2003 is the largest (46.95%) and statistically different from zero at the 1% level, and that average initial returns for IPOs issued in 2004 and 2005 are positive and statistically significant at the 5% level. Due to the small number of IPOs issued in some years, I could only note that in a subsample period, the initial returns tend to be positive and statistically significant when the number of IPOs per year is not less than 18. Of all subsample periods, I find that the average initial returns for the Thai IPOs are small (i.e. less than 2%) but statistically insignificant for the IPO issuance in 2006, 2008 and 2009. Low initial returns for the IPO issuance in 2000 could be attribute to (1) the fact that the economy of Thailand had just recovered from the 1997-1998 Asian financial crisis, causing the initial wave of IPOs after the financial crisis to be less well received, and (2) the small number of IPOs issued in 2000 (i.e. 2 IPOs). A close inspection also shows that almost half the IPO issuance in 2006 occurred after the military coup in Thailand took place on 19 September 2006, leading to several negative initial returns for the IPOs in that period. Overall, the political instability in Thailand in 2006 could affect the IPO markets. The low initial returns for the IPOs issuance in 2008 and 2009, respectively, are consistent with the falling stock markets across developed and developing countries following the 2007-2008 financial crisis originating in the United States.

(INSERT TABLE 1 ABOUT HERE)

As Ritter (1991) notes that the IPO firms in the U.S. between 1975 and 1984 are not evenly distributed over all industries, and that there is substantial variation in the aftermarket performance of the IPO firms across different industries, I examine whether the initial returns of IPOs in Thailand differ across industries. To investigate the industrial effect on the IPO initial returns, I split the sample of 176 IPOs into eight subsamples based upon the SET's industrial classification.

Panel B of Table 1 reports the mean initial returns for the sample IPOs between 2000 and 2010 by industry. As the sample size of the agro and food subsample is 5 and the subsample size of the consumer products subsample is only 3, the results for these subsamples are not meaningful, and thus would not be discussed in detail. For other industries, I find that average initial returns appear to vary across industries, ranging from the average initial return of 7.61% for the property and construction subsample to the average initial return of 30.61% for the resources subsample. The mean initial return for the financials subsample is 29.06% and statistically significant at the 1% level. In addition, the mean initial returns for the resources, services, and technology subsamples are 30.61, 17.08, and 21.75%, respectively, and statistically significant at the 5% level. However, the mean initial return for the industrials subsamples is positive but statistically insignificant.

The results reported in Table 1 suggest that initial public offerings in Thailand between January 2000 and December 2010 are on average underpriced by 15.82%, and that the underpricing of the IPOs in Thailand seems to vary by year of issuance and by industry.

I then test the hypothesis that the average market-adjusted initial returns for the sample of Thai IPOs are not statistically different from zero by employing the t test statistics as follows:

$$t_{AR} = \frac{AAR_{it}}{\left(\frac{\sigma(AR_{it})}{\sqrt{n}} \right)}, \quad (2)$$

where AAR_i is the sample mean market-adjusted initial return, calculated as the arithmetic average of market-adjusted initial returns on all IPOs in the sample of n firms, and $\sigma(AR_{it})$ is the cross-sectional sample standard deviations of market-adjusted initial returns for the sample of n firms. As in Aggarwal (2000), I measure a market-adjusted initial return as an initial return less the one-day return on the market. I use the one-day return on the SET index as a proxy for the market return. Accordingly, a positive market-adjusted initial return implies a better performance of the IPO relative to its market benchmark on the IPO date.

Table 2 reports the mean market-adjusted initial returns for the sample IPOs by their year of issuance (Panel A) and by industry (Panel B). The results reported in Table 2 are generally consistent with the results reported in Table 1. The average market-adjusted initial return for the full sample is 15.85% and statistically significant at the 1% level. For subsample periods, I find that the pattern of the market-adjusted initial return subsamples is largely consistent with that of the initial market-adjusted initial returns reported in Table 1. For instance, the average market-adjusted initial returns for the IPO issuance in 2003, 2004, 2005 subsamples remain positive and statistically significant at the 5% level. The average market-adjusted initial returns for the IPO issuance in 2002 and 2010 subsamples are positive and statistically significant only at the 10% level. In comparison with other studies, the average market-adjusted initial return for the Thai IPOs in this study is relatively smaller. For instance, Drobetz et al. (2005) report that the average adjusted initial return for Swiss IPOs is 34.97%. Likewise, Chen et al. (2004) report that the average adjusted initial return for A-share IPOs in China between 1992 and 1997 is 145%. For a sample of 590 IPOs in China during the period 2001-2008, Su and Bangassa (2011) find that the average market-adjusted initial return is

118.62%. However, when compared with the average adjusted initial return for IPOs in New Zealand over the 2006-2010 period reported by Fauzi et al. (2012), the average adjusted initial return for the Thai IPOs is higher.

Given that the level of information asymmetry in Thailand should be higher than that of developed countries, the finding that the mean market-adjusted initial return of Thai IPOs is lower than that of IPOs in Switzerland, as reported by Drobetz et al. (2005) appears to suggest that the level of asymmetric information in Thailand may not explain the low initial return of Thai IPOs. I will investigate the factors that may drive the IPO initial returns in the next section.

(INSERT TABLE 2 ABOUT HERE)

Panel B of Table 2 reports the average market-adjusted initial returns for the IPOs by industry. As can be seen, the mean initial abnormal returns for five of the eight industries are positive and statistically significant. The mean market-adjusted initial returns for the financials and resources subsamples are 29.28% and 31.04%, respectively and statistically significant at the 1% level. The mean market-adjusted initial returns for the property and construction, services, and technology subsamples are 7.50%, 17.49%, and 21.68%, respectively, and statistically significant at the 5% level. However, consistent with the results in Panel B of Table 1, the mean market-adjusted initial return for the industries subsamples is positive but statistically insignificant.

Overall, the results in Tables 1 and 2 show that there is evidence of positive market-adjusted initial returns (which could be seen as abnormal or excess initial returns) for the IPOs during the period 2000-2010. I also find that the mean initial return of the IPOs in Thailand is substantially lower than the mean initial returns of the IPOs in Thailand during

the period 1987-93, as in Kim et al. (2004) and during the period 1985-1992, as in Allen et al. (1999). More importantly, the initial return of the IPOs in Thailand during the period 2000-2010 is significantly lower than the initial return of the IPOs during the period 2001-2008 in China, as in Su and Bangassa (2011). In addition, the initial return of the Thai IPOs is very close to that of the IPOs in more advanced markets such as Hong Kong, as reported by Mazouz et al. (2009). Furthermore, the market-adjusted initial returns for the IPOs in Thailand vary across industries.

4.2. What explains the short-run stock returns of initial public offerings in Thailand?

4.2.1. The effects of stock market conditions on the short-run stock returns of the IPOs

As a starting point for the short-run stock return of IPOs analysis, I estimate a simple regression of initial returns on the size of the IPO gross proceeds. The issue size of the IPO can be used as a measure of the level of prediscluse information about the IPO in the market and the level of information asymmetry (see e.g., Christensen et al., 2004; Cox and Roden, 1999). Large firms are expected to have more resources for promoting their IPOs than smaller firms. In addition, Cox and Roden (1999) find that the issue size has a positive effect on the adjusted one-day abnormal returns of the mutual thrift IPOs in the United States. To test whether issue size affects the short-run performance of the IPOs, I estimate the following regression:

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \varepsilon_i, \quad (3)$$

where IR_i denotes the initial return of IPO i ; $ISSUE_i$ denotes the issue size of the IPO, measured as the natural logarithm of the gross proceeds of the IPO (in millions of Baht).

Then, there is a question of whether stock market conditions determine the initial returns of the IPOs in Thailand. Empirical research shows that market conditions affect the short-run stock price performance. For instance, Su and Bangassa (2011) find that market condition, measured as the three-month weighted average return on the market prior to listing, has a positive effect on the market-adjusted initial return of the IPO in China. Likewise, Dey (2005) finds that the size of stock markets (i.e. market capitalization) is a determinant of portfolio turnover in a sample of 48 stock exchanges during the 1995–2001 period. Kim and Ritter (1999) find that market price-earnings (P/E) ratios and market market-to-book (P/BV) ratios of comparable firms could, to some extent, be used in IPO valuation. Furthermore, Adams et al. (2009) report that industry price-to-book ratio at the end of the year prior to the IPO is positively associated with the one-day initial return of the mutual thrifts IPO in the United States between 1992 and 2003.

Prior studies, as in Bouis (2009), show that the level of the stock market index as a measure of stock market valuations has a predictive effect on the timing of IPOs. Following Chinn and Ito (2006), who use the level of stock market capitalization as a measure of equity market development, I use the level of market capitalization of the SET as a proxy for the stock market development⁴. As larger stock markets tend to attract more foreign investors, the size of the stock market should signal the overall attractiveness of the stock market at the time of IPO listing. I also use market P/E ratios, market P/BV ratios, and market yield as proxies for stock market conditions. Accordingly, I test whether stock market conditions

⁴ Some scholars such as Hondroyannis et al. (2005) and Afonso and Jalles (2013) use the ratio of stock market capitalization to GDP as a proxy for stock market development and the size of the stock market.

affect the short-run stock price performance of the IPO by estimating the following regressions:

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 MKTPE_i + \varepsilon_i, \quad (4)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 MKTPBV_i + \varepsilon_i, \quad (5)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 MKTYIELD_i + \varepsilon_i, \quad (6)$$

and

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 MKTPE_i + \beta_4 MKTPBV_i + \beta_5 MKTYIELD_i + \varepsilon_i, \quad (7)$$

where IR_i denotes the initial return of IPO i ; $ISSUE_i$ denotes the issue size of the IPO, measured as the natural logarithm of the gross proceeds of the IPO (in millions of Baht); $MKTCAP_i$ denotes the market capitalization of the SET, measured as the natural logarithm of the market capitalization of the SET (in millions of Baht) on the IPO date, $MKTPE_i$ is the SET's price-to-earning ratio on the IPO date, $MKTPBV_i$ is the SET's price to book value ratio on the IPO date, and $MKTYIELD_i$ is the SET's market yield on the IPO date.

Table 3 presents the summary statistics of major variables in this study. As shown in Table 3, the IPO prices range from 1.31 Baht to 82.19 Baht, and the mean IPO price is 12.24 Baht. The average gross proceed is 5,743 million Baht, and the average market capitalization of the SET is 4,348.35 billion Baht. The market P/E ratios over the study period range from 3.37 to 27.88, with the mean ratio of 10.37. The mean market P/BV ratio is 1.81, while the

mean market yield is 3.19. The mean amount of outstanding government bonds is 1,343.77 billion Baht, which is roughly one-third of the mean market capitalization of the SET. The mean amount of outstanding private debt securities is 566.295 billion Baht, which is about 13% of the mean market capitalization of the SET. In addition, the average volume of outstanding T-bills is 151.73 billion Baht, which is less than 4% of the mean market capitalization of the SET. These figures suggest that the combined market of T-bills, government bonds, and private debt securities is on average about half the size of the SET. For comparison purposes, find that Thailand's GDP in 2000, 2005, and 2010 is 5,242.9, 6,836.9, and 8,176.2 billion Baht, respectively, thereby roughly indicating that the outstanding amount of the government bonds relative to the size of the GDP during the study period is not excessively high. Table 3 also shows that the mean 1-year government bond yield is slightly higher than both the mean US federal funds rate and the mean 1-month LIBOR but slightly smaller than the mean 1-year LIBOR.

(INSERT TABLE 3 ABOUT HERE)

Table 4 presents the OLS results of the one-day initial return for IPOs on issue size, market capitalization, market P/E ratio, market P/BV ratio, and market yield. Models 1-5 of Table 5 present the estimated parameters for Regressions (3) -(7). The results show that the estimated coefficients on issue size in all models of Table 4 are negative and statistically insignificant, suggesting that the issue size of the IPO does not have a significant effect on the initial return for the IPO. This result is largely consistent with a study of Derrien (2005), reporting that the issue size of the IPO is not related to the initial return of the IPO in France. Moreover, Aggarwal (2000) also reports that the issue size of the IPO exerts no effect on the market-adjusted initial returns. However, this finding is in complete contrast with

Samarakoon (2010) who finds that there is a positive and significant difference in the initial return between small and large IPO issues.

(INSERT TABLE 4 ABOUT HERE)

The estimated coefficient on market capitalization in Model 2 is negative and statistically insignificant, while the estimated coefficient on the market P/E ratio is negative and statistically insignificant. These results suggest that neither the size of the stock market, measured as the natural logarithm of the market capitalization, nor the market P/E ratio has a contemporary effect on the initial return for the IPO.

The results in Model 3 show that the model has an adjusted *R*-squared of 14.7%. In contrast with the results of Models 1 and 2, the estimated coefficient on the market capitalization of Model 3 is negative and statistically significant at the 1% level, indicating that the market capitalization of the SET as a proxy for the market size is negatively related to the short-run stock price performance of the IPO. The estimated coefficient on the market P/BV ratio is positive and statistically significant at the 1% level, suggesting that the market P/BV ratio as a proxy for the stock market conditions is positively associated with the short-run stock price performance of the IPO.

The results in Model 4 indicate that the model has an adjusted *R*-squared of 12.3%. The estimated coefficient on market yield is negative and statistically significant at the 1% level, suggesting that market yield is negatively associated with the one-day initial return of the IPO. The estimated coefficient on market capitalization is positive and statistically insignificant.

Model 5 of Table 4 presents the estimated parameters for Regression (7), which is a full model, including all three proxies for stock market conditions in the regression. The model

has an adjusted *R*-squared of 16%. The coefficient estimate of issue size remains statistically insignificant as in other models, confirming that issue size is not associated with the one-day initial return of the IPO. The insignificance of the issue size is inconsistent with the significant relationship between the issue size of an IPO and the adjusted one-day abnormal returns for the mutual thrift IPOs in the United States reported by Cox and Roden (1999). However, empirical findings of the effect of gross proceeds and initial returns of the IPOs is mixed. For example, Kirkulak and Davis (2005) report that the insignificant effect of gross proceeds on the initial return for Japanese IPOs is evident in some regressions results.

The estimated coefficient on market capitalization is negative and statistically significant at the 5% level. In contrast to Model 2, the estimated coefficient on the market P/E ratio is negative and statistically significant at the 5% level. Consistent with the results of Model 3, the estimated coefficient on the market P/BV ratio remains positive and statistically significant at the 1% level. In contrast with the results of Model 4, the estimated coefficient on market yield becomes statistically insignificant. The insignificance of market yield in Model 5 suggests the potential regression misspecification and multicollinearity among explanatory variables. Therefore, I check for multicollinearity by examining the correlation coefficients between the market P/E ratio, the market P/BV ratio, and market yield. The correlation coefficient between the market P/E ratio and market yield is 0.294 and statistically significant at the 1% level, while the correlation coefficient between the market P/BV ratio and market yield is 0.299 and statistically significant at the 1% level, indicating the presence of multicollinearity among the explanatory variables in the results of Regression (7).

Thus far, I have shown that the market/BV ratio and market yield are associated with the one-day initial return of the IPOs. I have also shown that the issue size is not related to the one-day initial return of the IPOs.

4.2.2. The effects of bond market conditions on the short-run stock returns of the IPOs

A novel aspect of this paper compared to previous studies⁵ is that I examine whether bond market conditions explain the initial return of IPOs. In essence, I address the question of whether there is a relation between bond market development and the initial return of IPOs. First, I test whether the amount of outstanding bonds has a significant effect on the initial return of the IPOs. Given that the amount of the outstanding bonds signals (1) the size of bond markets and (2) the level of development of bond markets in a country⁶, it is reasonable to expect that if bonds markets are large, an IPO could be more attractive to foreign investors because large financial markets⁷ lead to higher levels of liquidity in the markets, suggesting that there is a positive effect of the size of bond markets on the initial return of IPOs. On the other hand, it is also possible that when bond markets are large, firms that want to go public will face the greater level of competition in the market for funds, suggesting that the size of bond markets has a negative effect on the initial return of IPOs. Perhaps, the relation between the size of financial markets and the initial return of the IPO in emerging market countries is non-monotonic; that is, when financial markets are too small, foreign investors might not be interested in common stocks and thus do not participate in the IPO market. When financial

⁵ See Yong (2007) for a detailed review of IPO research in Asia.

⁶ Several scholars such as Afonso and Jalles (2013) use the ratio of bond market capitalization to GDP as a proxy for bond market development.

⁷ Throughout the paper, financial markets refer to banking, bond and equity markets. It is important to note that Zagorchev et al. (2011) measure financial development size by using the ratio of the sum of stock market capitalization, public and private bond market capitalization and depository money bank assets to GDP.

markets are sufficiently large, then foreign investors might become more active in equity markets, leading to higher levels of market liquidity and subsequently influencing the initial return of IPOs.

To test whether bond market conditions have a significant effect on the short-run stock price performance of the IPOs, I use outstanding T-bills, government bonds, and private debt securities as proxies for the size of public and private bond markets⁸. Accordingly, I estimate the following regressions:

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 TBILL_i + \varepsilon_i, \quad (8)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 GBOND_i + \varepsilon_i, \quad (9)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 PBOND_i + \varepsilon_i, \quad (10)$$

and

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 TBILL_i + \beta_4 GBOND_i + \beta_5 PBOND_i + \varepsilon_i, \quad (11)$$

where IR_i denotes the initial return of IPO i ; $ISSUE_i$ denotes the issue size of the IPO, measured as the natural logarithm of the gross proceeds of the IPO (in millions of Baht), and

⁸ Some scholars such as Levine and Zervos (1998) and Boyd and Jalal (2012) use (1) the ratio of the private bank lending to GDP and (2) the ratio of private bond outstanding to GDP to measure debt market development.

$MKTCAP_i$ denotes the market capitalization of the SET, measured as the natural logarithm of the market capitalization of the SET (in millions of Baht) on the IPO date; $TBILL_i$ denotes outstanding T-bills, measured as the natural logarithm of the amount of outstanding T-bills at the end of the month prior to the IPO month; $GBOND_i$ is outstanding government bonds, measured as the natural logarithm of the amount of outstanding government bonds at the end of the month prior to the IPO month; $PBOND_i$ is outstanding private debt securities, measured as the natural logarithm of the amount of private debt securities at the end of the month prior to the IPO month⁹.

(INSERT TABLE 5 ABOUT HERE)

Table 5 presents the results of the one-day initial return for IPOs on issue size, market capitalization, outstanding T-bills, outstanding government bonds, and outstanding private debt securities. Models 1-4 of Table 5 present the estimated parameters for Regressions (8)-(11). Consistent with the results of Table 4, the estimated coefficients on issue size in all Models of Table 5 are negative and statistically insignificant. This finding is in contrast with the finding of Su and Bangassa (2011), indicating that issue size has a negative effect on the market-adjusted initial return of the IPO in China. The results of Model 1 show that market capitalization is not related to the one-day initial return for the IPOs. The estimated coefficient on outstanding T-bills is negative and statistically significant at the 1% level,

⁹ The amounts of outstanding t-bills, government bonds, and private debt securities can alternatively be labelled as t-bill market capitalizaion, governmebt bond market capitaliation, and private bond market capitalization, respectively.

indicating that the amount of outstanding T-bills is negatively associated with the one-day initial return for the IPOs.

In Model 2 of Table 5, the estimated coefficient on market capitalization is positive and statistically significant at the 5% level. The estimated coefficient on outstanding government bonds is negative and statistically significant at the 1% level, suggesting that the amount of outstanding government bonds is negatively associated with the one-day initial return for the IPOs. Consistent with the results of Model 2, the results reported in Model 3 show that the estimated coefficient on market capitalization is positive and statistically significant only at the 10% level. The estimated coefficient on outstanding private debt securities is negative and statistically significant at the 1% level, suggesting that the amount of outstanding private debt securities is negatively associated with the one-day initial return for the IPOs. The results of Model 4 show that the relationship between outstanding T-bills and the initial return for the IPO remains significant; however, the estimated coefficients on outstanding government bonds and outstanding private debt securities are no longer statistically significant, suggesting that these results could be driven by the presence of multicollinearity. I find that the correlation coefficients among outstanding T-bills, outstanding government bonds, and outstanding private debt securities are in excess of 0.60, indicating that there is the problem of multicollinearity in Regression (11).

Overall, the results of Table 5 suggest that outstanding T-bills, outstanding government bonds, and outstanding private debt securities are negatively related to the short-run stock price performance of the IPOs, implying that bond market conditions affect the initial return of the IPOs.

As the IPOs could be competing with other new securities, I therefore test whether the amount of recent security issuances is associated with the short-run stock price performance of the IPOs. In addition, for foreign investors, the value of a domestic currency could play a

role in the portfolio allocation decisions. I test whether the exchange rate could affect the short-run stock price performance of the IPOs. Accordingly, I estimate the following regressions:

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 NTBILL_i + \varepsilon_i, \quad (12)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 NGBOND_i + \varepsilon_i, \quad (13)$$

and

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 NPBOND_i + \varepsilon_i, \quad (14)$$

where IR_i denotes the initial return of IPO i ; $ISSUE_i$ denotes the issue size of the IPO, measured as the natural logarithm of the gross proceeds of the IPO (in millions of Baht); $MKTCAP_i$ denotes the market capitalization of the SET, measured as the natural logarithm of the market capitalization of the SET (in millions of Baht) on the IPO date; $NTBILL_i$ denotes new T-bills, measured as the natural logarithm of the amount of new T-bills issuance for the month prior to the IPO month; $NGBOND_i$ is new government bonds, measured as the natural logarithm of the amount of new government bonds issuance for the month prior to the IPO month; $NPBOND_i$ is new private debt securities issuance, measured as the natural logarithm of the amount of private debt securities for the month prior to the IPO month.

(INSERT TABLE 6 ABOUT HERE)

Table 6 presents the results of the one-day initial return for IPOs on issue size, market capitalization, new T-bills, new government bonds, new private debt securities, and real effective exchange rate. Models 1-3 of Table 6 report the estimated parameters for Regressions (12)-(14). The estimated coefficient on new T-bills is negative and statistically significant at the 5% level, indicating that new T-bills issuance for the month prior to the IPO month has a negative effect on the one-day initial return for IPOs. The estimated coefficient on new government bonds in Model 2 is negative and statistically significant only at the 10% level, suggesting that new government bonds issuance for the month prior to the IPO month is weakly associated with the one-day initial return for IPOs. The estimated coefficient on new private debt securities in Model 3 is negative and statistically insignificant, indicating that new private debt securities issuance for the month prior to the IPO month has no effect on the one-day initial return for IPOs.

The findings reported in Table 6 suggest that new T-bills issuance for the month prior to the IPO month has a negative effect on the one-day initial return. New government bonds issuance for the month prior to the IPO month is not related to the one-day initial return. Furthermore, new private debt securities issuance for the month prior to the IPO month is not associated with the one-day initial return.

4.2.3. The effects of interest rates and exchange rates on the short-run stock returns of the IPOs

There is a question of whether interest rates could explain the short-run stock price performance of the IPOs. As noted by Fung, Cheng and Chan (2004) that IPOs in Asia typically require investors to pay subscription funds upfront when submitting their applications because underwriters in Asia usually adopt a non-discretionary IPO allocation

process, I expect that the level of interest rates would influence the IPO underpricing in these markets. In addition, Elyasiani and Mansur (1998) find that changes in interest rate levels are associated with the distribution of stock returns of banks. Similarly, Koch and Saporoschenko (2001) report that increases in interest rate levels have a negative effect on stock returns of Japanese keiretsu financial firms. Several scholars such as Estrella and Hardouvelis (1991) and Kamara (1997) suggest that the term spread on government bonds can be used as a predictor of real activity in the economy. Using data over the 1980-1999 period in South Korea, Paya and Matthews (2004) find that the term spread, measured as the difference between the Korean government long-term (10-year) bond yield and the Korean Federal Funds rate, has a positive effect on future economic growth in South Korea, providing further evidence of the predictive power of the term spread on future real economic activity in Asia. Moreover, Schrimpf (2010) finds that the term spread on government bonds has a predictive effect on stock market returns. Borrowing an argument from Ivanov and Lewis (2008) that the term spread could be used as a proxy for the cost of capital and that a lower term spread implies that the long-term return on a risk-free asset is falling, I expect that the term spread on government bonds, measured as the difference between the yield on a 10-year government bond and the yield on a 1-year government bond, could drive the initial return of the IPO.

Given that investors could invest in different classes of assets (e.g., domestic bonds, foreign bonds, domestic stocks and foreign stocks), the level of foreign interest rates could affect the short-run stock price performance of the IPOs. Hence, I use 1-month LIBOR and 1-year LIBOR as proxies for foreign interest rates. As Katechos (2011) reports that exchange rate returns are significantly associated with stock market returns, it is plausible that the value of a domestic currency is related to the initial return of the IPO. In this study I use the real effective exchange rate (REER) of Thai Baht as a proxy for the value of the domestic currency. An increase in the REER indicates the appreciation of Thai Baht, which would in

turn reduce the competitiveness of the country in international markets. To test the effect of interest rate parity on the stock price performance of the IPOs, I also use the interest rate differential between Thailand and the United States as a proxy for the interest rate differential. Accordingly, I estimate the following regressions:

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 INT_i + \varepsilon_i, \quad (15)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 SPREAD_i + \varepsilon_i, \quad (16)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 LIBOR1_i + \varepsilon_i, \quad (17)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 LIBOR2_i + \varepsilon_i, \quad (18)$$

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 RATEDIF_i + \varepsilon_i, \quad (19)$$

and

$$IR_i = \beta_0 + \beta_1 ISSUE_i + \beta_2 MKTCAP_i + \beta_3 REER_i + \varepsilon_i, \quad (20)$$

where IR_i denotes the initial return of IPO i ; $ISSUE_i$ denotes the issue size of the IPO, measured as the natural logarithm of the gross proceeds of the IPO (in millions of Baht); $MKTCAP_i$ denotes the market capitalization of the SET, measured as the natural logarithm of the market capitalization of the SET (in millions of Baht) on the IPO date; INT_i denotes the domestic interest rate, measured as the yield on a short-term (1-year) Thai government bond

for the month prior to the IPO month (due to missing data on the 1-month Thai government bond yield in early periods in the sample, the 1-year Thai government bond yield is there used as a proxy for the short-term interest rate); $SPREAD_i$ denotes the term spread on government bonds, measured as the difference between the yield on a 10-year government bond and the yield on a 1-year government bond for the month prior to the IPO month; $LIBOR1_i$ denotes the 1-month LIBOR for the month prior to the IPO month; $LIBOR2_i$ denotes the 1-year LIBOR for the month prior to the IPO month; $RATEDIF_i$ denotes the interest rate differential, measured as the difference between a yield on the 1-year government bond in Thailand and the US federal funds rate for the month preceding the IPO month; and $REER_i$ denotes the real effective exchange rate of the Thai Baht for the month prior to the IPO month.

(INSERT TABLE 7 ABOUT HERE)

Table 7 presents the results of the one-day initial return for IPOs on issue size, market capitalization, 1-year government bond yield, term spread, 1-month LIBOR, 1-year LIBOR, and interest rate differential. Models 1-6 of Table 7 show the estimated parameters for Regressions (15)-(20). In Model 1, the coefficient on the domestic interest rate (i.e. the 1-year government bond yield) is -5.796 and statistically significant at the 1% level, suggesting that on average, a 1% increase in the 1-year government bonds for the month prior to the IPO month is related to a 5.79% decrease in the one-day initial return on the IPO. The finding of a significant effect of the domestic interest rate on the initial return of the IPO provides further support to Koch and Saporoschenko (2001) who find that changes in interest rates are associated with stock returns of Japanese keiretsu financial firms.

The results reported in Model 2 show that the estimated coefficient on the term spread is 7.913 and statistically significant at the 1% level, indicating that a 1% increase in the term spread on government bonds for the month prior to the IPO month is associated with a 7.9% increase in the initial return of the IPO. This result is in line with the finding that the term spread on government bonds is associated with stock market returns reported by Schrimpf (2010). This finding provides further support to Estrella and Hardouvelis (1991) in a sense that the term spread is not only a good predictor of real economic activity but also a good predictor of the short-run return of the IPOs. As shown by Paya and Matthews (2004) that the term spread has a positive effect on future economic growth in South Korea, the positive relationship between the term spread and the initial return indicates that higher future expected economic growth (as implied by higher levels of the term spread) lead investors to be more optimistic about the future prospect of IPO firms, which in turn results in higher initial returns of the IPOs.

I find that in Model 3, the estimated coefficient on the 1-month LIBOR is negative but statistically significant only at the 10% level, indicating that the 1-month LIBOR for the month prior to the IPO month has no effect on the one-day initial return for IPOs. In Model 4, I find that the estimated coefficient on the 1-year LIBOR is negative but statistically significant only at the 10% level, suggesting that the 1-year LIBOR for the month prior to the IPO month is not associated with the one-day initial return for IPOs. These results suggest that foreign interest rates are not related to the initial return of the IPO in Thailand.

The estimated coefficient on the interest rate differential (measured as the difference between the yield on the 1-year Thai government bond and the US federal funds rate) in Model 5 is negative but statistically insignificant, suggesting that the interest rate differential for the month prior to the IPO month has no effect on the one-day initial return for IPOs. The results of Model 6 show that the estimated coefficient on real effective exchange rate is

negative and statistically insignificant, indicating that real effective exchange rate of the Thai Baht at the end the month prior to the IPO month has no effect on the one-day initial return for IPOs.

4.3. Robustness tests

The results presented above tend to suggest that market P/V ratio is positively related to the initial return of the IPO. In addition, outstanding T-bills, outstanding government bonds, outstanding private debt securities, domestic interest rates have a negative effect on the one-day initial returns of the IPO, whereas the term spread has a positive effect on the one-day initial returns of the IPO. In this section I discuss a robustness check, where I repeat a number of analyses with alternative measures for some variables under study.

First, I test whether my results are robust to different measures of the short-run stock price performance of the IPO by estimating Regressions (3)-(20) using the market-adjusted one-day initial return rather than the one-day initial return as a dependent variable. I find that the results of new estimated parameters are very similar to the results shown in Tables (4)-(7). Since the results are very identical, I do not report the new results, which are available upon request. Overall, my findings of the determinants of the short-run stock price performance of the IPO after the 1997 financial crisis are robust to different measures of the short-run stock price performance.

Second, the finding of the effect of the domestic interest rate on the one-day initial returns of the IPO is based on using the 1-year Thai government bond yield for the month prior to the IPO month as a proxy for the domestic interest rate. However, investors may consider other domestic interest rates as their benchmark. Therefore, I estimate Regression (15) again using (1) commercial banks' minimum lending rate (MLR), (2) commercial banks'

minimum retail rate (MRR), both for the month prior to the IPO month, as proxies for the domestic interest rate. The unreported results show that the estimated coefficients on the MLR on the initial return and on the initial return and the market-adjusted initial return are negative and statistically significant at the 5% level. Likewise, the estimated coefficients on the MRR on the initial return and on the market-adjusted initial return are negative and statistically significant at the 5% level. I interpret these findings as a possible indication that the effect of the domestic interest rate on the short-run stock price performance of the IPO in Thailand is not sensitive to the different proxies for the domestic interest rate environment.

Third, as I earlier show that the foreign interest rate (using the 1-month LIBOR and 1-year LIBOR as proxies for the foreign interest rate) prior to the IPO month are not associated with the one-day initial returns of the IPO. As with the domestic interest rate, investors may adopt different foreign interest rates as a benchmark. Hence, I estimate Regression (17) again using US federal funds rate, US prime rate, and US discount rate, all for the month prior to the IPO month as alternative measures for foreign interest rates. I find that the estimated coefficients for all three variables are not statistically significant at the 5% level. These findings further suggest that the level of the foreign interest rate does not drive the IPO underpricing cost in Thailand.

Fourth, with respect to the interest rate differential, I use (1) the difference between the MLR and the US federal funds rate for the month prior to the IPO month, (2) the difference between the MRR and the US federal funds rate for the month prior to the IPO month, (3) the difference between the MLR and the US discount rate for the month prior to the IPO month, (4) the difference between the MRR and the US discount rate for the month prior to the IPO month, (5) the difference between the MLR and the US prime rate for the month prior to the IPO month, (6) the difference between the MRR and the US prime rate for the month prior to the IPO month, (7) the difference between the MLR and the 1-month LIBOR for the month

prior to the IPO month, and (8)) the difference between the MRR and the 1-month LIBOR for the month prior to the IPO month as alternative proxies for the interest rate differential. I find that the estimated coefficients on all these interest rate differential variables are not statistically significant, suggesting that the home-foreign interest rate differential is not related to the one-day market-adjusted initial returns of the IPO in Thailand.

Fifth, another key question in the IPO underpricing costs is whether the same set of factors equally drives the initial returns for “hot” and “cold” IPOs. Following Brau and Fawcett (2006), I split the sample into a hot IPO subsample and a cold IPO subsample by defining a hot IPO firm when a firm’s initial return is greater than 10% and a cold IPO firm when a firm’s initial return is less than 10%. The “hot” IPO subsample then consists of 69 IPOs with the mean initial return of 45.68% and the mean issue size of 4,775 million Baht, whereas the “cold” IPO subsample consists of 107 IPOs with the mean initial return of -3.44% and the mean issue size of 6,367 million Baht. I then estimate several regressions using the market-adjusted initial return as a dependent variable. I find a number of interesting patterns in the regression results for the two subsamples. I find that the negative association between outstanding T-bills and the market-adjusted initial return remains evident in the “hot” IPO subsample but is no longer significant in the “cold” IPO subsample. When I look at interest rates, I find that 1-month LIBOR does not drive the market-adjusted initial returns in both “hot” and “cold” IPO subsamples but the effect of 1-year LIBOR on the market-adjusted initial return is positive and significant at the 1% level in the “cold” IPO subsample. In the full sample, the term spread has a large and positive effect on the market-adjusted initial return. However, I find that the term spread is positive but no longer significant in the “hot” IPO subsample. In addition, the estimated coefficient on the term spread becomes negative and statistically significant only at the 10% level in the “cold” subsample. While the interest rate differential is not significant in the full sample, I find that the interest rate

differential is negative and statistically significant in the “hot” IPO subsample. More importantly, the effect of interest rate differential on the market-adjusted initial return is economically significant; that is, a hypothetical 1% increase in the interest rate differential is associated with a 26% decrease in the market-adjusted initial return for “hot” IPOs. This finding indicates that the effect of the term spread on the market-adjusted initial return is sensitive to whether the IPOs are hot or cold. Concerning with exchange rates, I find that exchanges are still not related to the market-adjusted initial return in the “hot” IPO subsample but positive and significant at the 5% level in the “cold” IPO subsample.

To make this study comparable to financial market development research using the ratios of stock market capitalization and bond market capitalization to GDP, I estimate Regressions (4) through (14) again using stock market development, t-bill market development, government bond market development, and private bond market development¹⁰ instead of stock market capitalization, t-bill outstanding, government bonds outstanding, and private debt outstanding. For brevity, I do not report the results since they are qualitatively identical to those in Tables 4-6, suggesting that t-bill market development, government bond market development, and private bond market development are negatively associated with the initial return of Thai IPOs. These findings tend to support the view that the development of

¹⁰ To measure equity market development, I use the ratio of stock market capitalization to GDP. To measure t-bill market development, I use the ratio of t-bills market capitalization to GDP. To measure government bond development, I use the ratio of government bond capitalization to GDP. I use the ratio of private debt market capitalization to GDP. Since the GDP data are at the annual level, I use a one-year lagged GDP in the estimation of these ratios.

financial markets is likely to decrease the level of the initial return of IPOs in Thailand, and possibility in other emerging market countries.

5. Conclusions

With exception of a few earlier studies such as Hensler et al. (2000), Chen et al. (2004), Vithessonthi (2008), Mazouz et al. (2009), Kosala (2011), and Su and Bangassa (2011), we have limited knowledge of the IPOs in emerging market countries in recent years, especially after the 1997 Asian financial crises. Using a sample of 176 IPOs in Thailand between January 2000 and December 2010, I examine whether the level of IPO underpricing in Thailand during the post-1997 Asian financial crisis period is lower than that of the Thai IPO underpricing during the pre-1997 Asian financial crisis period. Based on my analysis, the primary conclusion is that the average initial returns of Thai IPOs have decreased in recent years, suggesting that the level of asymmetric information in Thailand after the 1997 financial crisis is lower than that of the pre-1997 financial crisis period. However, the fact that the mean market-adjusted initial return of Thai IPOs is lower than that of IPOs in Switzerland, as reported by Drobetz et al. (2005) raises a question of whether the level of asymmetric information in Thailand actually accounts for the low initial return of Thai IPOs in the post-1997 Asian financial crisis because the level of asymmetric information in Thailand should be higher than that of developed countries. In addition, the average initial return of 13.64% for the Indonesian IPOs during the period 2001-2005 reported by Kosala (2011) further raises a question of whether the information asymmetry argument really explains the low initial return of IPOs in Asian markets. A direct comparison between the negative market-adjusted initial return for IPOs in New Zealand during the period 2006-2010, reported by Fauzi et al. (2012), and the positive market-adjusted initial return for IPOs in

Thailand during the same period suggests that other factors such as bond market conditions play a stronger role in driving the initial return of IPOs in Asian markets.

I also examine whether stock market conditions (also known as equity market development), bond market development, domestic and foreign interest rates, and exchange rates could explain the short-run stock price performance of the IPO in Thailand. I find robust evidence that the issue size of the IPO in Thailand appears to exert no effect on the short-run stock price performance. This finding is inconsistent with prior studies. For instance, Cox and Roden (1999) show that the issue size of an IPO is positively related to the adjusted one-day abnormal return of the mutual thrift IPOs in the United States. Furthermore, Samarakoon (2010) reports that the IPO issue size is negatively associated with the initial abnormal return of the IPOs in Sri Lanka.

There is some evidence that market capitalization of the SET is associated with the initial returns, thereby providing some support to the notion that equity market development influences the level of the IPO underpricing. While the market P/E ratio is not associated with the initial return of the IPO, the market P/BV ratio is positively related to the initial return of the IPO. I also find a negative and significant relationship between market yield and the initial return of the IPOs. Overall, these results further lend support to prior studies such as Kim and Ritter (1999), Adams et al. (2009), and Su and Bangassa (2011), that show that stock market conditions could, to some extent, explain the initial return of the IPOs.

To the best of my knowledge, this paper is the first to examine the effects of bond market conditions on the level of the initial return of IPOs. I find that the amounts of outstanding T-bills, outstanding government bonds, and outstanding private debt securities at the end of the month prior to the IPO month, which are indicators of bond market conditions or bond market development in a broader sense, have a negative effect on the initial return of the IPOs. Moreover, I find that the amount of new T-bills issuance for the month prior to the IPO

month has a negative effect on the initial return of the IPOs. However, neither the amount of new government bonds issuance for the month prior to the IPO month nor the amount of new private debt securities issuance for the month prior to the IPO month has a significant effect on the market-adjusted initial return of the IPO. I consider these findings are novel in the sense that prior studies have not previously examined them. Overall, my results are consistent with the view that bond market development is an important determinant of the initial return of the IPOs.

The results show that the domestic interest rate, which is measured as the 1-year government bond yield, has a large and negative effect on the initial return of the IPOs in Thailand, suggesting that IPO listings in the high interest rate environment are likely to experience lower initial returns. This result is robust to different measures of the domestic interest rate. Furthermore, the term spread on government bond yield has a large and positive effect on the initial return of the IPOs, thereby providing further support to Schrimpf (2010) who finds that the term spread on government bonds has a predictive effect on stock market returns. When focusing on the effect of foreign interest rates on the short-run stock price performance of the IPOs in Thailand, I find that foreign interest rate variables appear to have no effect on the initial return of the IPOs. That is, foreign interest rates for the month prior to the IPO month (measured as 1-month LIBOR and 1-year LIBOR for the month prior to the IPO month) have no effect on the short-run stock price performance of the IPOs. These results are robust to different proxies for foreign interest rates. I find that the interest rate differential between Thailand and the United States for the month prior to the IPO month has no effect on the initial return of the IPOs. Real effective exchange rate of the Thai Baht at the end the month prior to the IPO month is not associated with the initial return of IPOs, which is inconsistent with prior findings of a significant relationship between exchange rates and stock market returns, as shown in Katechos (2011).

When I split the sample into a “hot” IPO subsample and a “cold” IPO subsample, I find a couple of interesting patterns of results. Most notable results are that in the “cold” IPO subsample, 1-year LIBOR is positively related to the market-adjusted initial return, and that a hypothetical 1% increase in interest rate differential is associated with a 26% decrease in the market-adjusted initial return for “hot” IPOs. Furthermore, the real effective exchange rate is positively related to the market-adjusted initial return of the “cold” IPOs.

Collectively, my findings suggest that it is possible to reasonably estimate the level of the initial return of the IPOs in Thailand. These new insights should allow us to better understand the IPO markets in emerging market countries, especially in emerging market countries that have undertaken financial and legal reforms following financial crises, which would help domestic and foreign investors with portfolio allocation decisions.

References

- Adams, B., Carow, K.A., Perry, T., 2009. Earnings management and initial public offerings: The case of the depository industry. *Journal of Banking & Finance* 33, 2363-2372.
- Afonso, A., Jalles, J.T., 2013. Growth and productivity: The role of government debt. *International Review of Economics & Finance* 25, 384-407.
- Aggarwal, R., 2000. Stabilization activities by underwriters after initial public offerings. *Journal of Finance* 55, 1075-1103.
- Aggarwal, R., Conroy, P., 2000. Price discovery in initial public offerings and the role of the lead underwriter. *Journal of Finance* 55, 2903-2922.
- Allen, D.E., Morkel-Kingsbury, N.J., Piboonthanakiat, W., 1999. The long-run performance of initial public offerings in Thailand. *Applied Financial Economics* 9, 215-232.

- Álvarez, S., González, V.M., 2005. Signalling and the long-run performance of Spanish initial public offerings (IPOs). *Journal of Business Finance & Accounting* 32, 325-350.
- Aussenegg, W., Pichler, P., Stomper, A., 2006. IPO pricing with bookbuilding and a when-issued market. *Journal of Financial and Quantitative Analysis* 41, 829-862.
- Bouis, R., 2009. The short-term timing of initial public offerings. *Journal of Corporate Finance* 15, 587-601.
- Boyd, J.H., Jalal, A.M., 2012. A new measure of financial development: Theory leads measurement. *Journal of Development Economics* 99, 341-357.
- Bradley, D.J., Jordan, B.D., 2002. Partial adjustment to public information and IPO underpricing. *Journal of Financial and Quantitative Analysis* 37, 595-616.
- Brau, J.C., Fawcett, S.E., 2006. Initial public offerings: An analysis of theory and practice. *Journal of Finance* 61, 399-436.
- Chen, G., Firth, M., Kim, J.-B., 2004. IPO underpricing in China's new stock markets. *Journal of Multinational Financial Management* 14, 283-302.
- Chinn, M.D., Ito, H., 2006. What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics* 81, 163-192.
- Chorruk, J., Worthington, A.C., 2010. New evidence on the pricing and performance of initial public offerings in Thailand, 1997–2008. *Emerging Markets Review* 11, 285-299.
- Christensen, T.E., Smith, T.Q., Stuerke, P.S., 2004. Public predislosure information, firm size, analyst following, and market reactions to earnings announcements. *Journal of Business Finance & Accounting* 31, 951-984.
- Cook, D.O., Kieschnick, R., Van Ness, R.A., 2006. On the marketing of IPOs. *Journal of Financial Economics* 82, 35-61.

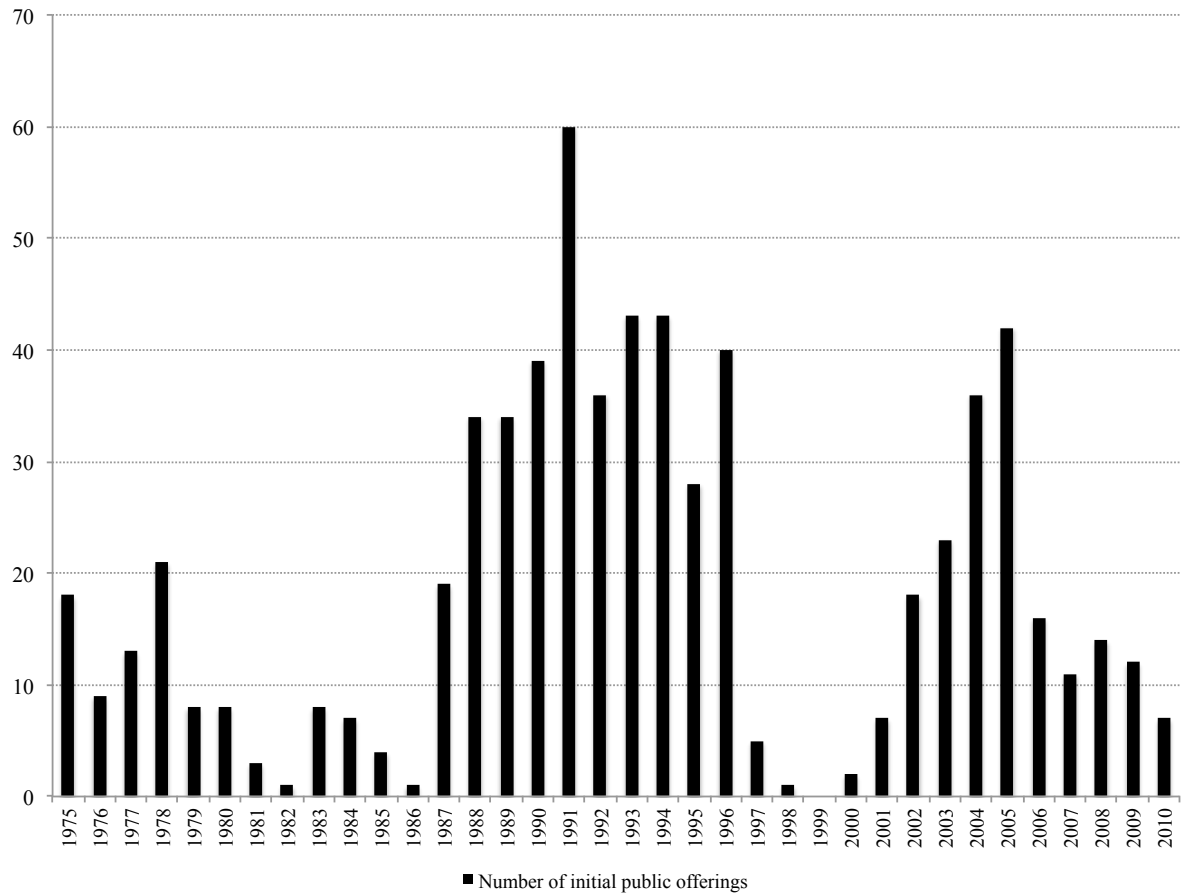
- Cox, S.R., Roden, D.M., 1999. Initial public offerings by mutual thrifts: The regulatory impact. *Journal of Economics and Finance* 23, 113-122.
- Derrien, F., 2005. IPO pricing in 'hot' market conditions: Who leaves money on the table? . *Journal of Finance* 60, 487-521.
- Dey, M.K., 2005. Turnover and return in global stock markets. *Emerging Markets Review* 6, 45-67.
- Drobtz, W., Kammermann, M., Wälchli, U., 2005. Long-run performance of initial public offerings: The evidence for Switzerland. *Schmalenbach Business Review* 57, 253-275.
- Elyasiani, E., Mansur, I., 1998. Sensitivity of the bank stock returns distribution to changes in the level and volatility of interest rate: A GARCH-M model. *Journal of Banking & Finance* 22, 535-563.
- Estrella, A., Hardouvelis, G.A., 1991. The term structure as a predictor of real economic activity. *Journal of Finance* 46, 555-576.
- Fauzi, F., Wellalage, N.H., Locke, S., 2012. The global financial crisis' impact on short-term performance of IPO: The case study of New Zealand firms' IPOs. *Asian Journal of Finance & Accounting* 4, 180-198.
- Fung, J.K.W., Cheng, L.T.W., Chan, K.C., 2004. The impact of the costs of subscription on measured IPO returns: The case of Asia. *Journal of Corporate Finance* 10, 459-465.
- Hensler, D.A., Herrera, M.J., Lockwood, L.J., 2000. The performance of initial public offerings in the Mexican stock market, 1987-1993. *Journal of International Money and Finance* 19, 93-116.
- Hondroyannis, G., Lolos, S., Papapetrou, E., 2005. Financial markets and economic growth in Greece, 1986–1999. *Journal of International Financial Markets, Institutions and Money* 15, 173-188.

- Ivanov, V., Lewis, C.M., 2008. The determinants of market-wide issue cycles for initial public offerings. *Journal of Corporate Finance* 14, 567-583.
- Kamara, A., 1997. The relation between default-free interest rates and expected economic growth is stronger than you think. *Journal of Finance* 52, 1681-1694.
- Katechos, G., 2011. On the relationship between exchange rates and equity returns: A new approach. *Journal of International Financial Markets, Institutions and Money* 21, 550-559.
- Kim, K.A., Kitsabunnarat, P., Nofsinger, J.R., 2004. Ownership and operating performance in an emerging market: Evidence from Thai IPO firms. *Journal of Corporate Finance* 10, 355-381.
- Kim, M., Ritter, J.R., 1999. Valuing IPOs. *Journal of Financial Economics* 53, 409-437.
- Kirkulak, B., Davis, C., 2005. Underwriter reputation and underpricing: Evidence from the Japanese IPO market. *Pacific-Basin Finance Journal* 13, 451-470.
- Koch, T.W., Saporoschenko, A., 2001. The effect of market returns, interest rates, and exchange rates on the stock returns of Japanese horizontal keiretsu financial firms. *Journal of Multinational Financial Management* 11, 165-182.
- Kosala, R., 2011. Intraday patterns of initial public offerings in hot and cold markets: An Indonesia study. *International Research Journal of Finance & Economics*, 188-197.
- Kunz, R.M., Aggarwal, R., 1994. Why initial public offerings are underpriced: Evidence from Switzerland. *Journal of Banking & Finance* 18, 705-723.
- Lam, S.-S., Tan, R.S.-K., Wee, G.T.-M., 2007. Initial public offerings of state-owned enterprises: An international study of policy risk. *Journal of Financial and Quantitative Analysis* 42, 313-337.
- Levine, R., Zervos, S., 1998. Stock markets, banks, and economic growth. *American Economic Review* 88, 537-558.

- Levis, M., 1993. The long-run performance of initial public offerings: The UK experience 1980-1988. *Financial Management* 22, 28-41.
- Ljungqvist, A., Wilhelm, W.J., Jr., 2003. IPO pricing in the dot-com bubble. *Journal of Finance* 58, 723-752.
- Loughran, T., Ritter, J.R., 1995. The new issues puzzle. *Journal of Finance* 50, 23-52.
- Mazouz, K., Saadouni, B., Yin, S., 2009. Offering methods and issuer-oriented underpricing costs: Evidence from the Hong Kong IPO market. *Journal of International Financial Markets, Institutions and Money* 19, 937-949.
- Paya, I., Matthews, K., 2004. Term spread and real economic activity in Korea: Was the crisis predictable? *Applied Economics Letters* 11, 797-801.
- Ritter, J.R., 1984. The "hot issue" market of 1980. *Journal of Business* 57, 215-240.
- Ritter, J.R., 1991. The long-run performance of initial public offerings. *Journal of Finance* 46, 3-27.
- Rock, K., 1986. Why new issues are underpriced. *Journal of Financial Economics* 15, 187-212.
- Samarakoon, L.P., 2010. The short-run underpricing of initial public offerings in the Sri Lankan stock market. *Journal of Multinational Financial Management* 20, 197-213.
- Saunders, A., Lim, J., 1990. Underpricing and the new issue process in Singapore. *Journal of Banking & Finance* 14, 291-309.
- Schrimpf, A., 2010. International stock return predictability under model uncertainty. *Journal of International Money and Finance* 29, 1256-1282.
- Schultz, P., 2003. Pseudo market timing and the long-run underperformance of IPOs. *Journal of Finance* 58, 483-518.

- Su, C., Bangassa, K., 2011. The impact of underwriter reputation on initial returns and long-run performance of Chinese IPOs. *Journal of International Financial Markets, Institutions and Money* 21, 760-791.
- Vithessonthi, C., 2008. Stock price performance of initial public offerings: The Thai experience. *Journal of International Finance and Economics* 8, 30-43.
- Welch, I., Ritter, J.R., 2002. A review of IPO activity, pricing, and allocations. *Journal of Finance* 57, 1795-1828.
- Yong, O., 2007. A review of IPO research in Asia: What's next? *Pacific-Basin Finance Journal* 15, 253-275.
- Zagorchev, A., Vasconcellos, G., Bae, Y., 2011. Financial development, technology, growth and performance: Evidence from the accession to the EU. *Journal of International Financial Markets, Institutions and Money* 21, 743-759.

Figure 1: Development of initial public offerings listed on the stock exchange of Thailand from 1975 to 2010



Source: Adapted from the SETSMART database

Table 1: Initial returns for Thai IPOs between 2000 and 2010 categorized by year of issuance and by industry

Year	<i>N</i>	Average Initial Returns (%)	Std. Dev.	<i>p</i> -value	Minimum Initial Returns (%)	Maximum Initial Returns (%)	% Positive Initial Returns
<u>Panel A: By year</u>							
2000	2	-1.44	15.64	0.917	-12.50	9.62	50.00
2001	7	36.78	61.48	0.165	-17.50	166.67	85.71
2002	18	15.55	31.77	0.053	-13.48	106.67	50.00
2003	22	46.95	44.17	0.000	-36.40	151.75	86.36
2004	36	14.05	31.97	0.012	-23.20	98.75	63.89
2005	38	10.09	23.15	0.011	-23.08	90.91	57.89
2006	16	1.44	11.07	0.610	-16.88	36.89	50.00
2007	7	22.50	54.94	0.320	-5.96	146.67	71.43
2008	12	1.16	11.96	0.743	-23.91	26.56	50.00
2009	11	0.90	12.31	0.814	-30.00	16.16	63.64
2010	7	17.63	21.81	0.076	-1.96	59.26	85.71
All issues	176	15.82	33.60	0.000	-36.40	166.67	63.64
<u>Panel B: By industry</u>							
AGR	5	0.91	7.26	0.792	-7.10	12.11	40.00
CON	3	7.40	16.74	0.524	-4.38	26.56	33.33
FIN	25	29.06	44.24	0.003	-12.43	166.67	72.00
IND	21	9.56	27.66	0.129	-23.91	90.91	52.38
PRO	60	7.61	25.49	0.024	-30.00	98.75	55.00
RES	15	30.61	33.61	0.003	-6.25	106.67	93.33
SER	23	17.08	37.97	0.042	-19.29	146.67	69.57
TEC	24	21.75	38.40	0.011	-36.40	117.11	70.83
All issues	176	15.82	33.60	0.000	-36.40	166.67	63.64

This table presents average initial returns for Thai IPOs during the 2000-2010 period by year of issuance (Panel A) and by the Stock Exchange of Thailand's industrial classification (Panel B). IPO prices and stock prices are obtained from the SETSMART database. Average initial return is the sample average initial return, computed as the arithmetic average of initial returns on all IPOs in the sample of *n* firms. According the classification of the SET, firms are listed in one of the following industry groups: (1) agro & food (AGR), (2) consumer products (CON), (3) financials (FIN), (4) industries (IND), (5) property & construction (PRO), (6) Resources (RES), (7) services (SER), and (8) technology (TEC).

Table 2: Market-adjusted initial returns for Thai IPOs between 2000 and 2010 categorized by year of issuance and by industry

Year	<i>N</i>	Average Market-Adjusted Initial Returns (%)	Std. Dev.	<i>p</i> -value	Minimum Market-Adjusted Initial Returns (%)	Maximum Market-Adjusted Initial Returns (%)	% Positive Market-Adjusted Initial Returns (%)
<u>Panel A: By year</u>							
2000	2	-0.55	14.11	0.965	-10.53	9.43	50.00
2001	7	37.14	60.69	0.157	-18.56	164.63	85.71
2002	18	15.52	31.60	0.053	-13.64	107.26	61.11
2003	22	46.86	43.81	0.000	-36.64	149.77	86.36
2004	36	14.16	32.18	0.012	-23.35	101.44	63.89
2005	38	9.90	23.06	0.012	-22.92	89.77	63.16
2006	16	1.52	11.00	0.587	-19.12	35.96	56.25
2007	7	22.94	54.59	0.309	-4.78	146.22	71.43
2008	12	1.08	11.92	0.759	-22.28	25.78	58.33
2009	11	1.24	12.43	0.748	-29.93	16.43	72.73
2010	7	17.65	264.58	0.077	-0.64	58.73	71.43
All issues	176	15.85	33.48	0.000	-36.64	164.63	67.05
<u>Panel B: By industry</u>							
AGR	5	0.31	6.68	0.923	-6.96	10.83	40.00
CON	3	7.45	16.03	0.506	-3.97	25.78	66.67
FIN	25	29.28	43.65	0.003	-11.81	164.63	80.00
IND	21	9.36	27.49	0.134	-22.28	89.77	47.62
PRO	60	7.50	25.45	0.026	-29.93	101.44	60.00
RES	15	31.04	33.91	0.003	-5.73	107.26	93.33
SER	23	17.49	37.56	0.036	-18.65	146.22	73.91
TEC	24	21.68	38.40	0.011	-36.64	117.74	70.83
All issues	176	15.85	33.48	0.000	-36.64	164.63	67.05

This table presents average market-adjusted initial returns for Thai IPOs during 2000-2010 by year of issuance (Panel A) and by the Stock Exchange of Thailand's industrial classification (Panel B). IPO prices, stock prices, SET indices are obtained from the SETSMART database. Average market-adjusted initial return is the sample average market-adjusted initial return, computed as the arithmetic average of market-adjusted initial returns on all IPOs in the sample of *n* firms. According the classification of the SET, firms are listed in one of the following industry groups: (1) agro & food (AGR), (2) consumer products (CON), (3) financials (FIN), (4) industries (IND), (5) property & construction (PRO), (6) Resources (RES), (7) services (SER), and (8) technology (TEC).

Table 3: Summary statistics of the variables

	Mean	Median	Minimum	Maximum	Std. Dev.
Initial return (%)	15.82	3.04	-36.40	166.67	33.60
Market-adjusted initial Returns (%)	15.85	3.44	-36.64	164.63	33.48
IPO price (Baht)	12.24	8.95	1.31	82.19	12.40
Gross proceeds (million Baht)	5,743	1,940	183	97,904	13,409
Stock market capitalization (million Baht)	4,348,352	4,595,980	1,303,353	8,186,840	1,444,721
Market P/E	10.37	9.27	3.37	27.88	4.07
Market P/BV	1.81	1.86	0.95	2.71	0.33
Market yield	3.19	3.04	1.60	6.28	0.78
T-bills outstanding (million Baht)	151,732	150,500	33,000	300,000	55,914
Government bonds outstanding (million Baht)	1,343,772	1,268,133	568,316	2,466,197	386,548
Private debt securities outstanding (million Baht)	566,295	471,312	215,888	1,251,444	283,080
New T-bills (million Baht)	44,543	44,000	4,000	100,000	21,101
New government bonds (million Baht)	26,805	18,000	0	291,599	36,317
New private debt securities (million Baht)	37,905	25,100	19	170,683	40,519
1-year government bond yield (%)	2.57	2.17	1.14	5.21	1.17
10-year government bond yield (%)	4.72	4.84	2.57	6.40	0.84
1-month LIBOR (%)	2.40	1.90	0.23	5.37	1.51
1-year LIBOR (%)	2.86	2.47	0.76	5.66	1.42
US Federal funds rate (%)	2.24	1.75	0.25	5.25	1.49
REER	91.30	89.12	85.20	104.85	5.64

This paper presents the mean, median, maximum, minimum, and standard deviation of the IPOs characteristics, stock market conditions, bond market conditions, interest rates, term spread, and exchanges rates in this study.

Table 4: The effects of stock market conditions on the level of initial returns for IPOs in Thailand between 2000 and 2010

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.306 (0.194)	1.747 (1.209)	3.849*** (1.143)	-0.459 (1.151)	4.840** (1.857)
Issue size	-0.019 (0.024)	-0.018 (0.023)	-0.028 (0.022)	-0.034 (0.022)	-0.032 (0.022)
MKTCAP		-0.097 (0.077)	-0.284*** (0.075)	0.096 (0.077)	-0.357** (0.152)
Market P/E		0.003 (0.005)			0.014*** (0.005)
Market P/BV			0.471*** (0.086)		0.493*** (0.159)
Market yield				-0.180*** (0.041)	-0.016 (0.060)
R^2	0.004	0.015	0.162	0.138	0.184
Adjusted R^2	-0.002	-0.002	0.147	0.123	0.160
F -statistic	0.718	0.875	11.083***	9.150***	7.662***
Number of observations	176	176	176	176	176

This table presents the results of the one-day initial return for IPOs on issue size, market capitalization (MKTCAP), market P/E ratio, market P/BV ratio, and market yield. The sample period is from January 2000 to December 2010. Issue size is measured as the natural logarithm of the IPO gross proceeds. Market capitalization is measured as the natural logarithm of the market capitalization of the Stock Exchange of Thailand (in millions of Baht) on the IPO date. Market P/E, market P/BV and market yield are the market P/E ratio, market P/BV ratio, and market yield of the Stock Exchange of Thailand on the IPO date, respectively. All OLS regressions are estimated with the White's heteroskedasticity consistent covariance matrix. Standard errors are reported in parentheses below coefficients. 1%, 5%, and 10% statistical significance is indicated with ***, **, and *, respectively.

Table 5: The effects of bond market conditions on the level of initial returns for IPOs in Thailand between 2000 and 2010

Independent Variable	Model 1	Model 2	Model 3	Model 4
Intercept	2.735** (1.237)	4.165*** (1.445)	0.959 (1.162)	4.132 (2.669)
Issue size	-0.023 (0.022)	-0.026 (0.023)	-0.022 (0.023)	-0.027 (0.022)
MKTCAP	0.096 (0.077)	0.209** (0.093)	0.217* (0.114)	0.237** (0.109)
T-bills	-0.325*** (0.093)			-0.277** (0.112)
Government bonds		-0.496*** (0.136)		-0.296 (0.274)
Private debt securities			-0.300*** (0.081)	0.007 (0.206)
R^2	0.114	0.067	0.062	0.129
Adjusted R^2	0.098	0.051	0.046	0.129
F -statistic	7.360***	4.103***	3.787**	5.050***
Number of observations	176	176	176	176

This table presents the results of the one-day initial return for IPOs on issue size, market capitalization (MKTCAP), T-bills, government bonds, and private debt securities. The sample period is from January 2000 to December 2010. Issue size is measured as the natural logarithm of the IPO gross proceeds (in millions of Baht). Market capitalization is measured as the natural logarithm of the market capitalization of the Stock Exchange of Thailand (in millions of Baht) on the IPO date. T-bills, government bonds, and private debt securities are measured as the natural logarithm of the amount of outstanding T-bills, outstanding government bonds, and outstanding private debt securities at the end of the month prior to the IPO month, respectively. All OLS regressions are estimated with the White's heteroskedasticity consistent covariance matrix. Standard errors are reported in parentheses below coefficients. 1%, 5%, and 10% statistical significance is indicated with ***, **, and *, respectively.

Table 6: The effects of bond market conditions on the level of initial returns for IPOs in Thailand between 2000 and 2010

Independent Variable	Model 1	Model 2	Model 3
Intercept	2.192*** (1.172)	1.404 (0.947)	1.525 (1.135)
Issue size	-0.018 (0.023)	-0.016 (0.020)	-0.017 (0.023)
MKTCAP	-0.061 (0.070)	-0.042 (0.060)	-0.080 (0.071)
New T-bills	-0.091** (0.041)		
New government bonds		-0.049* (0.030)	
New private debt securities			-0.003 (0.011)
R^2	0.038	0.063	0.014
Adjusted R^2	0.021	0.046	-0.003
F -statistic	2.277*	3.838**	0.843
Number of observations	176	176	176

This table presents the results of the one-day initial return for IPOs on issue size, market capitalization (MKTCAP), new T-bills, new government bonds, and new private debt securities. The sample period is from January 2000 to December 2010. Issue size is measured as the natural logarithm of the IPO gross proceeds (in millions of Baht). Market capitalization is measured as the natural logarithm of the market capitalization of the Stock Exchange of Thailand (in millions of Baht) on the IPO date. New T-bills, new government bonds, and new private debt securities are measured as the natural logarithm of the amount of total new T-bills issuance, total new government bonds issuance, and total new private debt securities issuance (in millions of Baht) for the month prior to the IPO month, respectively. All OLS regressions are estimated with the White's heteroskedasticity consistent covariance matrix. Standard errors are reported in parentheses below coefficients. 1%, 5%, and 10% statistical significance is indicated with ***, **, and *, respectively.

Table 7: The effects of interest rates and exchange rates on the level of initial returns for IPOs in Thailand between 2000 and 2010

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	1.550 (1.344)	1.076 (1.261)	1.808 (1.309)	1.649 (1.359)	2.152* (1.215)	1.462 (1.152)
Issue size	-0.015 (0.022)	-0.012 (0.023)	-0.013 (0.023)	-0.014 (0.022)	-0.013 (0.023)	-0.017 (0.023)
MKTCAP	-0.074 (0.086)	-0.065 (0.078)	-0.097 (0.082)	-0.084 (0.086)	-0.124 (0.077)	-0.050 (0.083)
INT	-5.796*** (2.090)					
Term spread		7.913*** (2.670)				
1-month LIBOR			-2.973* (1.732)			
1-year LIBOR				-3.573* (1.896)		
RATEDIF					-2.924 (4.678)	
REER						-0.005 (0.004)
R^2	0.060	0.066	0.040	0.044	0.026	0.019
Adjusted R^2	0.043	0.049	0.023	0.027	0.009	0.001
F -statistic	3.605**	3.981***	2.358*	2.576*	1.503	1.086
No. of obs.	176	173	173	173	173	176

This table presents the results of the one-day initial return for IPOs on issue size, market capitalization (MKTCAP), domestic interest rate (INT), term spread, 1-month LIBOR, 1-year LIBOR, interest rate differential (RATEDIF), and real effective exchange rate (REER). The sample period is from January 2000 to December 2010. Issue size is measured as the natural logarithm of the IPO gross proceeds (in millions of Baht). Market capitalization is measured as the natural logarithm of the market capitalization of the Stock Exchange of Thailand (in millions of Baht) on the IPO date. The domestic interest rate (INT) denotes the yield on 1-year government bond for the month prior to the IPO month. Term spread refers to the term spread on government bonds, measured as the difference between a yield on the 10-year government bond and a yield on the 1-year government bond in Thailand. The 1-month LIBOR, and 1-year LIBOR denote the 1-month LIBOR and 1-year LIBOR for the month prior to the IPO month, respectively. Interest rate differential (RATEDIF) is measured as the difference between the 1-year Thai government bond yield and the US federal funds rate for the month preceding the IPO month. REER denotes the real effective exchange rate of the Thai baht for the month prior to the IPO month. All OLS regressions are estimated with the White's heteroskedasticity consistent covariance matrix. Standard errors are reported in parentheses below coefficients. 1%, 5%, and 10% statistical significance is indicated with ***, **, and *, respectively.