Initial Underpricing of IPOs: Empirical Research on Corporations in Thailand
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Initial public offerings, initial underpricing, a significant first-day gain in a secondary market of a newly-issued listed stock, is a world-wide level phenomenon. Research for finding explanations of underpricing puzzles is studied for decades and most of them use data on developed markets. This research contributes to the research on IPOs from the view of an emerging market by using data on IPOs issued in Thai stock market. This paper studies initial underpricing of IPOs that listed on the Stock Exchange of Thailand (SET) during 2001 and 2007 comprising 133 issues. This testing period represents another cycle in Thai IPOs beginning when IPO market started to recover from Asian financial crisis in 2001, IPO boom during 2003-2005 and IPO downturn again from 2006 until now 2008 triggered by domestic political crisis as well as recent global financial crisis provoked by US credit crunch.

The Stock Exchange of Thailand (SET) is one of emerging stock markets in Asia Pacific. SET
was established and first traded in 1975. The number of new listed companies (IPOs) on the SET grows on and off depending on various circumstances surrounding Thai as well as global economy. From the information from the SET, as of April 2008 SET has 525 listed companies traded in the stock market and its market capitalization of Baht 6.5 trillion (around Yen 21 trillion).

Theories and explanations for IPO underpricing

In order to explain the existence of the IPO underpricing, several theories and models have been developed and proposed. Main explanations for short-run underpricing we used in this research are as follows:

1. Information asymmetry and the winner’s curse

In 1980s, Rock’s (1986) winner’s curse model is widely accepted as important rationale in explaining much of the underpricing. For simplicity, Rock groups all investors into two categories: perfectly informed, and completely uninformed with respect to knowledge of the future market price of the shares being sold. In his model, informed investors will be certain to buy shares only when an issue is underpriced. On the other hand, uninformed investors, who do not know which issue will be underpriced or overpriced, will be allocated only a partial of the most underpriced IPOs, while they are allocated in full for the least underpriced IPOs. They face a winner’s curse. If they get all of the shares which they demand, they will think that it is just because the informed investors do not want these shares. Therefore, the uninformed investors who are faced with this adverse selection problem, will only purchase the new issues if, on average, IPOs are underpriced sufficiently to compensate them for the bias in the allocation of IPOs.

2. Signaling theory

Several signaling models have formalized the notion that underpricing IPOs allow the firms and insiders to sell shares in the future at a higher price. In these models, the issuer is more informed than investors; that is issuing firms have private information about their real value. Rational investors fear a lemon problem. That is, only issuers with below average quality are selling their shares at average price but above average quality issuers may attempt to signal their quality by selling their shares at a lower price than the market. They follow a dynamic issue strategy, in which the IPO will be followed by seasoned offerings post IPO to recoup their up-front sacrifice. There is evidence both in favor and against the signaling theories. Welch (1989) note the evidence supporting substantial post issuing market activity by IPO issuers and it is clear that some of them approach the stock market with intention to conduct future seasoned issuances.
Source of data

The sources of data include SET’s website, “Fact Book” which is a yearly publication by SET providing comprehensive statistical review of the main trading and listed companies activities, database of the Securities and Exchange Commission (SEC) and web-based “SETSMART” which is a web-based comprehensive sources of Thai listed company data.

Measuring initial returns on IPO

By using the conventional calculation method with modification for market movements during last subscription day and first trading day, we find on average a market adjusted initial return on Thai IPOs during testing period is about 18 percent. This shows a declining trend in initial returns when comparing with previous literature using earlier data. This may be due to improvement in regulation on disclosures and accessibility of information to individual investors reducing information asymmetry between informed and uninformed investors. Another reason may be that testing period is an IPO cycle which is somewhat shorter than previous cycle. Normally, Initial returns tend to be low at the start and the end of a cycle. However, in general there is downward trend in initial returns in Thai IPO market like other Asian markets. In addition, initial returns tend to be higher during hot market year. In 2003 when the market return is 117 percent, its initial returns are also high. Due to either this high return or economic growth has lured more companies to list in SET in the following few years.

Determinants of initial returns

In order to understand what explain IPO underpricing in Thai market, we apply theories of information asymmetry and signaling when developing our multiple regression model. The information asymmetry theory’s winner’s curse model predicts that firms with high (low) information asymmetry risk will have high (low) IPO underpricing. Issue size and company age are proxies for information asymmetry theory. In signaling theory, the IPO underpricing reflects the quality of companies as good firms distinguish themselves from bad firms by their ability to lower offer price more. Earnings yield and percentage of share sold are used as proxies for quality signaling. Moreover, market volatility and listing year dummy is included as testing for cycle in IPOs.

Multiple regression model

In this research, various factors are combined in order to explain the initial returns. Every subject of the sample is included in the model by pooling irrelevant to its year of IPO issuance. Market adjusted initial return is a dependent variable. And for independent variables, we have issue size (in natural log), age of firm (in natural log), underwriter reputation score, technology company dummy, earnings yield, proportion of share sold, market volatility, dummy variables for the year of listing, and
dummy variables for the day of listing.

**Empirical results from multiple regression**

Multiple regression analysis is done in several models differentiated by sets of variables or sample inclusion as the following. The complete results from regression analyses are presented in table 12 through 24 in the dissertation.

1. **Pooling model** where all variables and subjects are included in one multiple regression model.
2. **Information asymmetry model** where only variables representing information asymmetry risk are included. That is issue size (in natural log), company age (in natural log), underwriter reputation, and technology firm dummy. Market volatility is included as a control variable over changes in market condition during testing period.
3. **Signaling model** where only variables according to signaling theory are included. This comprises earning yield, and percentage of share sold. Market volatility is included as a control variable.
4. **Information asymmetry and signaling model** where a set of independent variables in this model is just like pooling models but without the year-of-listing dummies.
5. **Separated by stock market condition** where we separate the samples into 3 periods according to market condition. This includes pre-boom period (2001-2002), boom period (2003-2004), and post-boom period (2005-2007).
6. **Inclusion of day-of-week dummies** where we use the pooling model plus day-of-listing dummies to test whether the day-of-week effects exist in IPO first-day returns.
7. **Including only variables that have explanatory power** including only variables that are proved to have explanatory power in explaining underpricing of IPOs and eliminating all other independent variables.

**Findings and conclusion**

While we find the model including only variables that have explanatory power has the highest adjusted R-square, findings and conclusion from the results of various models of multiple regression analysis as previously mentioned are described from the next paragraph.

While information asymmetry theory's winner's curse model predicts that firms with high (low) information asymmetry risk will have high (low) IPO underpricing, from the results of regression analysis, we find that even though there exists information asymmetry in Thai IPO, investors no longer take size or age as their indication of information asymmetry as issue size and company age do not convey information about firm risk in these recent years compared to the past. Instead, investors think
that underwriter reputation and business sectors play more significant role in determining information asymmetry in Thai IPO in this millennium. As there is no previous literature on underwriter reputation for Thai security market, we develop several ranking methods to use in regression analysis and find that the combination of ranking by market share, number of IPO led, and average IPO size is the best ranking method and produce the best results from regression analysis. For technology-related firms, we find their initial returns on average exceed those of regular IPOs about 20 percent and even double during a booming period. This suggests that investors consider technology-related firms having more information asymmetry as they have more uncertainty regarding future performance than firms in traditional industry.

The quality of firms is the concept used in signaling theory. Good firms distinguish themselves from bad firms by underpricing more. It is the ability that low quality firms cannot imitate. By testing proxies of signaling theory, we find that companies with high (low) earnings yield have high (low) initial returns as expected even though it is not statistically significant due to a shift in expected earnings yield during testing period. Besides, we find that companies that sold fewer (more) shares in percentage during IPO have higher (lower) initial returns as expected by the model but it is not statistically significant. We also find that excluding government-related or privatized IPOs from the sample can improve the explanatory power of percentage of share sold as there is a conflict between privatized and private IPOs over concept and interpretation on the level of share sold. This concludes that investors consider the proportion of share sold as a signal for quality of IPO issuers.

For market volatility which represents market condition, we find that during high (low) volatility, IPOs also have high (low) initial returns. This suggests the underwriter lower offer price to prevent IPO failures when market is more volatile. IPOs also have cycles. Their initial returns on average are not stable but change over time depending on overall stock market and economic condition. We find that there is a cycle in IPOs during testing period by testing year-of-listing dummies in the model although there is still no convincing model until now to quantify how macroeconomic and stock market condition influence underpricing of IPOs. In addition, apart from market returns we find the day-of-week effect in IPO context as well. IPO listed on Friday and Monday has substantially low initial returns compared with other days. This could be caused by investors’ losing their optimism and reluctance to invest in IPOs in those first trading days due to weekend effect in which investors fear bad news which tend to be released during weekend depressing market confidence on Monday. In sum, information asymmetry, signaling theory as well as IPO cycles can be used to explain part of underpricing in Thai IPOs.
Problems and challenges for future research

In testing IPOs of an emerging market, Thailand in this case, however, important problems found are that the number of subjects in the sample is quite small despite the sample we use is virtually the entire population. This causes difficulty in regression analysis to get results with robustness. We also lack a reliable important data representing demand in IPOs such as total number of shares subscribed by potential investors which is thought to directly relate to underpricing of IPOs. Thus, there is still room for future IPO studies; for example, testing about IPO demand, relationship between underpricing and proportion of shares subscribed by different types of investors, offer price setting and allocation procedures, accuracy of information disclosed during public offering, privatized versus private firms, etc. There are also many other theories of underpricing puzzles lie in waiting to study as well as a question about cycles in IPOs which until now nobody could develop such a model that is able to explain convincingly about them.
る。次に、シグナリング理論の実証のため、優良企業を表す変数として、IPO 時の利益回り（1 株利益/株価）と売り出し株式が発行済み株式に占める割合を選択している。2 番目の変数の根拠として、優良企業は将来の株価上昇を見越して、IPO 時にはまず、少ない割合の株式を売り出すと考えている。

実証研究の結果として次のことが得られた。まず、本研究が対象とした期間において、情報の非対称性モデルの代理変数である企業規模と企業年齢は、IPO 株式の初期収益率を説明することができなかった。次に、発行引受会社の評判と産業ファクター（IT 産業）が情報の非対称性を表す変数として有効であった。発行引受会社の評判に関しては、評判が高いほど、IPO 初期収益率が低い、すなわち、評判の高さは情報の非対称性の低さを表すと考えられる。また IT 産業の IPO 初期収益率は高かった。これは、IT 産業における情報の非対称性の大きさを含意していると考えられる。また優良企業を表す利益回りの係数と売り出し株式が発行済み株式に占める割合の 2 つの変数は、統計的に有意ではないものの、係数の符号は理論の予想通りであり、優良企業の方が IPO 初期収益率が高いという結果を得た。経済環境を表す変数として、市場の変動性や年ダミーも大きな影響を持つことも明らかとなった。IPO プロモーションがスタートした 2003 年ダミーの係数は有意に高い正の係数を示した。これらの実証結果と共に、本研究では、発行会社の評判を表す変数の作成に工夫がされており、その点も評価できる。

本論文は、途上国における新規公開株式の初期収益率を説明する要因に関して、先行研究以後の期間について分析が行われ、以前には有効であった変数がその有効性を失い新しい変数が有効であることを示したこと、産業ファクターの有効性を示したこと、IPO 時の市場環境も大きな要因であることを示したことなど、この分野における研究に新たな知見を与えると同時に重要な貢献をしていると考えられる。

よって本論文は博士（経営学）論文として「合格」であると判定する。