Factors Affecting the Initial Return of Initial Public Offerings

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Abstract

This study investigates the factors, particularly financial ratio, that affect the first-day initial return of an initial public offering. The minimum Bayes factor, which had never been used in previous studies, was employed to test the hypothesis instead of P-Value. The analysis was based on a sample of IPOs and related data in the period of March 23rd, 2016 to February 11th, 2021.

The results show that the initial return value of Initial Public Offerings (IPOs) was between -25 and 200 percent. The positive initial return was traded in the bull market and had a better financial ratio than the negative initial return. As for the factors ranging from the most to the least strength of evidence against the null hypothesis, investors and persons involved in IPOs should focus on the following factors: a 3-month market return, the return of equity, the price to book value per share ratio, the market capitalization, exchange, the debt to equity ratio, a 1-week market return, the price to earnings per share ratio, a greenshoe option, and the market return.

Keywords: 1) Initial return 2) Initial public offering 3) Financial ratio 4) Bayes factor

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Introduction

The start of the covid-19 pandemic began in Wuhan, Hubei, China in late 2019. As a result, the Chinese government launched many policies to control economic activities and transportation. However, it could not reduce the spread out of covid-19 disease to others cities in China or others countries. Many countries tried to stop this pandemic in many ways, such as by giving health information, changing daily life, or travel restrictions. However, the number of infected and dead persons was still increasing. The data from Department of Disease Control, Ministry of Public Health of Thailand on March 31st, 2021, reveals that the number of infected persons was more than 128 million and the number of deaths was more than 2.8 million (Ministry of Public Health, 2021). The government policies and measurements to decrease the spread had a direct impact on economic activities and caused the world economic recession. The International Monetary Fund (IMF) estimated a 3.5 percent decrease in world economic growth in 2020 (International Monetary Fund, 2021)

Thailand was one of the countries that had the impact of the covid-19 pandemic. In 2020, Thai economic growth dropped to 6.1 percent, the highest drop in 22 years (Nakornthab, 2021), and the unemployment rate increased from 0.98 percent to 1.69 percent (Office of the National Economic and Social Development Council, 2021). The Thailand and world recession caused the governments and central banks of many countries to implement measures and policies to stimulate the economy. It led to a fall in the money market's yield. For example, a 10-year Thai government bond yield reduced to 1.29 percent at the end of the second quarter of 2020. It also caused the low-interest rate on the deposit interest. Because of this, savers and investors in the bond market had to invest in others markets.

The Stock Exchange of Thailand (SET) is one of the markets that savers and investors are more interested in. In February 2021, the average turnover in SET was 94,318 million Baht per day, a year-on-year increase of 43.20 percent year on year (Stock Exchange of Thailand, 2021a). The trading account rose from 3,986,775 accounts, a year-on-year increase of 40.71 percent (Stock Exchange of Thailand, 2021b, and Stock Exchange of Thailand, 2021c). Moreover, the number of listed companies also increased continuously. Hence, there were more assets to support both domestic and foreign funds. The initial public offering (IPOs) is the stock that the company offers shares through the primary market. From March 2016 to March 2021, 138 companies were offering shares in the primary market and they were more popular with investors, particularly the IPOs of PTT oil and the retail business public company limited in early 2021. It had more than 5.3 hundred thousand subscriptions from retail investors (Stock Exchange of Thailand, 2021a). Many studies, Killins (2019, pp.102-133), Morricone, et al. (2017, pp.1133-1141), Chourou, et al. (2018, pp.318-341), and Heerden and Alagidede (2012, pp.130-138), found that the offering price of the IPOs always undervalued and the initial return on

first-day trading was high. The studies of Chan, et al. (2004, pp.409-430), Banerjee, et al. (2011, pp.1289-1305), and Akyol, et al. (2014, pp.43-58) found that the average initial return of the IPOs was 178.00, 29.11, and 16.50 percent, respectively.

This study aims to find the factors affecting the initial return of the IPOs in the Stock Exchange of Thailand by using the financial ratios of the IPOs, industries, and the stock market, such as market return, market sentiment, and market that the IPOs listed. It may benefit savers, investors, companies, or underwriters to make an appropriate and right decision in investing or funding.

Literature Review, Theory, and Concept of the Study

The initial return of the IPOs has been continuously studied. Previous research has been done in many stock exchanges around the world, such as the study of Heerden and Alagidede (2012, pp.130-138) which investigated the short-run initial return of the IPOs of Johannesburg Stock Exchange during 2006-2010, Klova (2017, pp.95-115) studies the initial return of the IPOs of 60 stocks in the shipping industry during 2004-2015 from four stock exchanges in the United States and Europe, Yan, et al. (2019) studied China's initial return of the IPOs during 2007-2010, and Madyan, et al. (2020, pp.226-234) used the data of the IPOs from Indonesian Stock Exchange during 2009-2014 to examine the initial return. As for the study about the initial return of the IPOs in Thailand, it has a great amount of research in this area, such as the studies by Parkatt (2016, pp.1173-1189), Keawsang (2016), Thukphan, Lonkani and Treerotchananon (2019, pp.41-73), and Kunnitikorn (2019). However, these researchers used general data about the IPOs, the stock exchange, or what they were interested in, such as the size of the business, the age of a business, the change rate of the stock index on the IPOs first-day trading, and the budget used in public relations, etc. Those studies also did not bring the financial ratio data that was widely used by investment analysts or experts to analyze the common stocks (Stock Exchange of Thailand, 2021d) in their studies. Some studies utilized only one financial ratio, such as Morricone, et al. (2017), and Peng, Wang and Chan (2020). They employed return on equity in their studies. Gao, Meng, and Chan (2016), and Bonaventura, Giudici, and Vismara (2018) used the return on assets. Therefore, this study focuses on financial ratios used by investors, analysts, and investment professionals to analyze and find the impact of financial ratios on the initial return of IPOs.

The four financial ratios employed in this study are as follows:

1. The debt-to-equity ratio that calculated from the debt to equity of the IPOs divided by the debt to equity of the industry. The debt-to-equity ratio of the IPOs is used to evaluate the company's financial leverage or to compare the debt and the equity of the company in terms of time. Its value normally should not be more than two times (The Thai Bond Market Association, 2021). However, the optimal debt-to-equity ratio value depends on the industry. Therefore, this study employed

the debt to equity of the IPOs divided by the debt to equity of its industry. This means how many times of debt to equity of the IPOs compared to the debt to equity of the industry. If the debt to equity is double, the IPOs will have more liquidity and default risks than the average of other equity in the same industry.

2. The price-to-book value per share ratio is used to compare the price-to-book value per share ratio of the IPOs to the price-to-book value per share ratio of the industry. The price-to-book value per share ratio of the IPOs represents how many times greater the book value per share is. This means how many times the investors pay compared to the shareholders who established the company. The value of the price to book value per share that the investors use to decide depends on the industry of the IPOs. The industries which tended to have high growth made the investors willing to pay at the high value of price to book ratio. Hence, this study utilizes the division between the price-to-book value per share ratio of the IPOs and the industry. The higher value of price-to-book value per share ratio of the IPOs and of the industry will attract investors to pay twofold for IPOs than other equity in the same industry.

3. The price-to-earnings per share ratio is the price-to-earnings per share of the IPOs divided by the price-to-earnings per share of the industry. The price to earnings per share of the IPOs shows the times of price to earnings per share or how many years of the breakeven when the investors bought the IPOs. Its value will be more or less depending on what the industry of the IPOs is assigned. When the profit of the industry has a positive trend, the price to earnings per share of the industry will be high. This study employed the price to earnings per share to compare the price to earnings per share of the IPOs and the industry. If the ratio is more than one, it means the price of the IPOs is higher than the price of other stocks in the same industry or it takes more time to gain the money capital back.

4. The return on equity is used to measure the profitability of the equity. The higher the return on equity is, the more desire it was for investment.

The study also employed many variables that had been used in previous research in the areas, such as the market capitalization, market return on the IPOs' first-day trading, greenshoe options, the market in which IPOs listed, the short-run market sentiment, and the long-run market sentiment. Previous research had used the accumulative return to indicate market sentiment, such as Killins (2019) and Grammenos and Papapostolou (2012) using a 60-day accumulative return and Parkatt (2016) using a 20-day accumulative return. In this study, the short-run and the long-run market sentiment was measured by the accumulative return in one week and three months, respectively.

The study not only focuses on the financial ratio and the variables that expect to have an impact on the initial return of the IPOs but also employed the Bayes factor to interpret the strength of evidence for rejecting the null hypotheses instead of using the P-value that had never been used in any previous research in initial return of the IPOs. The

use of probability calculated from t-statistic tends to reject the null hypotheses while the Bayesian approach is more accurate and credible (Page and Satake, 2017).

The study employed the Bayes factor to test the hypotheses because the P-value is not appropriate for testing the null hypotheses and is not representative of the population (Page and Satake, 2017). It has led to an incorrect conclusion in many studies in Thailand (Chirawatkul, 2016). There are two main differences between the P-value and the Bayes factor. First, the Bayes factor uses observed data only whereas P-value uses observed data and more extreme hypothetical outcomes. Second, the Bayes factor is calculated in relation to both the null and alternative hypotheses. The Bayes factor of Goodman (1999) and the interpretation of Held and Ott. (2016) are as follows:

$$Minimum\ Bayes\ Factor = e^{-z^2/2}$$

Table No. 1 Interpretation from Bayes factor

Bayes factor	Strength of Evidence to reject the null hypothesis
1 to 1/3	Weak
1/3 to 1/10	Moderate
1/10 to 1/30	Substantial
1/30 to 1/100	Strong
1/100 to 1/300	Very strong
Less than 1/300	Decisive

Source: Held and Ott. (2016)

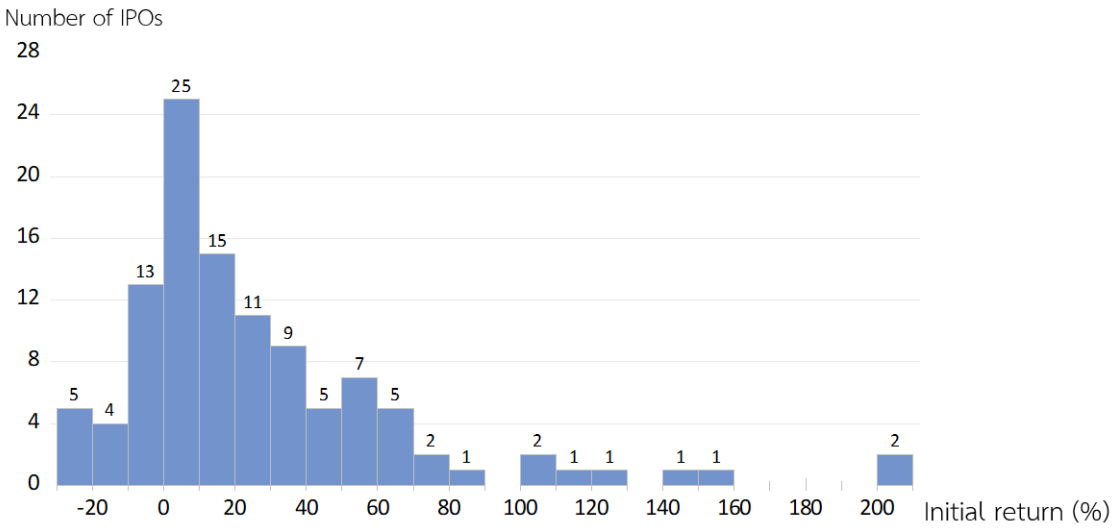
The study used the data of the IPOs listed on the stock exchange in Thailand, the Stock Exchange of Thailand (SET), and the Market for Alternative Investment (MAI) from February 11th, 2012 to March 23rd, 2016. The IPOs and the industry group's data were equity debt, price to book value per share, price to earnings per share, return on equity, market index, market capitalization, one-week and three-month accumulative returns before first-day trading, greenshoe option, and the market that IPOs listed. The variables in this study were calculated from these data as shown in Table No. 2. The study examined only the IPOs with complete data. Hence, there were 110 IPOs from 138 IPOs in this study. The estimation of the impact of independent variables on the initial return of the IPOs was analyzed by ordinary least squares and the hypotheses were tested by the Bayes factor.

Table No. 2 Definitions and calculations of the variables

Variable	Definition	Calculation
RETURN	Initial return of the IPOs or first-day return of IPOs	$\frac{The\ IPOs\ first-day\ closing\ price}{The\ IPOs\ offering\ price} \times 100$
DER	Debt to equity ratio	$\frac{Debt\ to\ equity\ of\ the\ IPOs}{Debt\ to\ equity\ of\ industry}$
MVMK	Market capitalization (Million Baht)	The market capitalization that IPOs listed
PBOOKR	Price to book value per share ratio	$\frac{Price\ to\ book\ value\ per\ share\ of\ the\ IPOs}{Price\ to\ book\ value\ per\ share\ of\ the\ industry}$
PER	Price to earnings per share ratio	$\frac{Price\ to\ earning\ per\ share\ of\ the\ IPOs}{Price\ to\ earning\ per\ share\ of\ the\ industry}$
RMK	Market return	$\frac{The\ market\ index\ on\ the\ IPOs\ first-day\ trading}{One\ day\ market\ index\ previous\ IPOs\ first-day\ trading} \times 100$
ROE	Return on equity	The return on equity of the IPOs
SENTI1W	One-week accumulative return of short-run market sentiment	$\frac{The\ market\ index\ on\ the\ IPOs\ first-day\ trading}{One\ week\ market\ index\ previous\ the\ IPOs\ first\ day\ trading} \times 100$
SENTI3M	Three-month accumulative return of long-run market sentiment	$\frac{The\ market\ index\ on\ the\ IPOs\ first-day\ trading}{Three\ months\ market\ index\ previous\ the\ IPOs\ first\ day\ trading} \times 100$
GSHOE	The dummy variable for greenshoe option	Equal to one when the IPOs have a greenshoe option, but equal to 0 if not
SETMAI	The dummy variable for the market that IPOs listed	Equal to one when the IPOs listed on the Stock Exchange of Thailand, but equal to 0 if not (listed in Market for Alternative Investment)

Results

The results of factors affecting the average initial return of initial public offerings in Picture No. 1 and Table No. 3 show that the average initial return of 110 IPOs is 27.44%. It has 73 IPOs that initial return ranges from -10% to 40%. One IPOS has a minimum initial return of -25.50% while two IPOs have a maximum of 200%. On average, the IPOs have a higher debt to equity than the industry 70.79% because one of the objectives of IPOs is to use the funding to pay off debt. Thus, the debt-to-equity will decrease and make more profit. The same as price to book value per share and price to earnings per share that their average value is greater than the industry value of 7.71 and 24.40, respectively. However, their average value is expected to reduce when they expand the business. The average value of return on equity and the market capitalization is 23.13% and 8.77 trillion Baht. The average initial return of IPOs is -0.03% while the market sentiment that is measured by the one-week and three-month accumulative return has a positive value or the market index has a positive trend.



Source: Calculation

Picture No. 1 The number of IPOs grouped by initial return

Table No. 3 Data description

Variable	Average	Median	Standard Deviation	Minimum	Maximum
RETURN	27.4396	15.6600	41.2309	-25.2000	200.0000
DER	1.7479	1.3122	1.6243	0.1000	9.4476
MVMK	8.7721	13.7622	7.8488	0.2088	18.0783
PBOOKR	1.0771	0.9513	0.5758	0.2852	2.9753
PER	1.2440	0.7970	2.0567	0.0071	19.3633
RMK	-0.0287	-0.0300	0.8498	-2.3500	2.4000
ROE	23.1291	19.9800	15.6817	2.7000	92.7100
SENTI1W	0.0256	0.0342	2.1443	-6.0141	6.9641
SENTI3M	0.0691	0.3114	7.3202	-18.1997	20.1020
GSHOE	0.1818	0.0000	0.3875	0.0000	1.0000
SETMAI	0.5455	1.0000	0.5002	0.0000	1.0000

Source: Calculation

The initial return of IPOs and their standard deviation are shown in Table No. 4. There are 88 IPOs or 80% of IPOs in this study that have a positive initial return. The average positive initial return is 36.67% while the average negative initial return of 22 IPOS is -9.48%. As for other variables, it is found that the IPOs with positive initial returns have better financial ratios than IPOs with negative initial returns, such the price to book value per share of positive initial return is less than 0.33 times, a positive initial return usually occurs when they have a positive short run and long run market sentiment. For market capitalization, a greenshoe option, and listed market variables, their average values are not quite different

even the IPOs have positive or negative initial returns. Therefore, these three variables could not discriminate the positive and negative initial returns of the IPOs.

Table No. 5 presents the average initial return and standard deviation. It shows that the average initial return decreased during the period of 2016 to 2019 because the market indices continued to rise at that time and reached the highest in 2018. Thus, the public offering price had less discount from the intrinsic price. From 2020 to 2021, the initial return had a huge increase because not only many policies from governments and central banks around the world were implemented to stimulate the economies, but also there was a fall in yield in the bond market after the crash in the stock market in early 2020 from coronavirus pandemic. Therefore, the large capital flowed to the stock markets.

Table No. 4 Mean and standard deviation of the variables classified by the initial return of the IPOs

Variable	Positive initial return			Negative initial return		
	Number of assets	Mean	Standard deviation	Number of assets	Mean	Standard deviation
RETURN	88	36.6701	41.0253	22	-9.4823	8.1127
DER	88	1.7135	1.6349	22	1.8852	1.6112
MVMK	88	8.9614	7.8413	22	8.0149	8.0168
PBOOKR	88	1.0106	0.5625	22	1.3431	0.5630
PER	88	1.1977	2.1408	22	1.4290	1.7098
RMK	88	-0.0366	0.8752	22	0.0027	0.7571
ROE	88	23.4958	15.2616	22	21.6623	17.5690
SENTI1W	88	0.1802	1.9967	22	-0.5928	2.6169
SENTI3M	88	1.1713	7.0994	22	-4.3396	6.6238
GSHOE	88	0.1932	0.3971	22	0.1364	0.3513
SETMAI	88	0.5568	0.4996	22	0.5000	0.5118

Source: Calculation

Table No. 5 Average initial return and standard deviation of the initial return of the IPOs classified by year

Year	Number of assets	Average initial return	Standard deviation
2021	1	62.5000	
2020	22	43.6964	67.5403
2019	25	4.5904	16.0320
2018	15	10.0640	23.4223
2017	29	32.1300	34.2405
2016	18	44.2806	27.0717

Source: Calculation

Strength of Evidence to reject the null hypothesis

In Table No. 6, the price-to-earnings ratio, market return, and greenshoe option variables show weak evidence indicating that there is no influence on the initial return of the IPOs. The Bayes factor represents the weak evidence on price to earnings ratio. It is probably because of the investors' expectations. When the IPOs use the funding to expand the business, it will generate more profit and make the price-to-earnings ratio better in the future. Therefore, the investors do not give attention to this ratio even if the price to earnings of the IPOs is higher than its industry. Similarly, they also do not focus on the market return which is the return on first-day trading. It does not reflect market directions or market trends. Like the two variables mentioned above, the greenshoe option variable does not have an impact on the initial return of the IPOs because the IPOs' price usually undervalues. Hence, the investors do not give priority to this variable as well.

Table No. 6 Estimated results

Variable	Coefficient	Std. Error	t-Statistic	Minimum Bayes Factor
Constant	46.2849	9.4172	4.9149	0.0000
DER	-2.6103	1.4264	-1.8300	0.1874
MVMK	-6.2790	2.8288	-2.2197	0.0851
PBOOKR	-19.4856	6.5569	-2.9718	0.0121
PER	1.4600	1.2183	1.1984	0.4877
RMK	-3.2013	4.6809	-0.6839	0.7915
ROE	0.6208	0.1745	3.5581	0.0018
SENTI1W	3.5048	1.9400	1.8066	0.1956
SENTI3M	2.5864	0.6485	3.9881	0.0004
GSHOE	-5.2048	7.3004	-0.7129	0.7756
SETMAI	84.6930	44.7899	1.8909	0.1673
R-squared 0.4085		F-statistic 6.8365		

Source: Calculation

The Bayes factor represents moderate evidence of debt to equity ratio. It indicates that the investors expect a decrease in debt to equity ratio after funding and an increase in the firm's borrowing ability. The results show a negative sign which means the raise in debt-to-equity ratio 1-time leads to a fall in the initial return of the IPOs of 2.61 percent. The reason is when the debt to equity of a firm is higher than the debt to equity of the industry, the firm's risk will increase and the price and initial return of the IPOs decrease. The coefficient of the one-week accumulative market return or the short-run market sentiment has a positive sign and the Bayes factor represents moderate evidence. It interprets that a one percent change in one-week accumulative market return leads to a 3.50 percent change

in the initial return of the IPOs in the same direction.

With the use of the Bayes factor, the coefficient of the market in which IPOs listed shows moderate evidence. It reveals that the IPOs listed in SET have a higher initial return than the IPOs listed in MAI 84.69 percent. It is because the investors prefer to invest in common stock in SET that has more registered capital and market capitalization, particularly the foreign investors who have huge financial funds.

The coefficient of market capitalization is -6.28 and the Bayes factor represents substantial evidence indicating that if the market capitalization increases by one trillion Baht, the initial return of the IPOs will decrease by 6.28 percent. The result is consistent with the short-run and the long-run market sentiment variables. The positive accumulative return of the market makes the market capitalization and stock price increase. Then, underwriters can set a higher IPOs price or fewer discounts than the theoretical price. Therefore, the initial return of the IPOs is not a great deal.

Strong evidence is found for the price-to-book value per share ratio coefficient where the change in price-to-book value per share ratio one time influences the initial return of the IPOs change of 19.49 percent in a negative way. The price-to-book value per share ratio should be the prior factor in consideration for investors. The return on equity and the short-run market sentiment are the important variables. The result reports the decisive evidence. If the return on equity and short-run market sentiment increase by one percent, the initial return of the IPOs will increase by 0.62 and 2.59 percent, respectively.

Conclusion and Discussion

The study of factors affecting the initial return of IPOs employed 110 IPOs from 2016 to 2021. The results found that the average initial return was 27.44%, 88 IPOs had positive initial returns while 22 IPOs had negative initial returns. On average, a better debt-to-equity ratio, price-to-book value per share ratio, price-to-earnings per share, and return on equity would make a positive initial return. Moreover, the bullish short-run and the long-run market sentiment were associated with a positive initial return.

The Bayes factor which measures the strength of evidence to reject the null hypotheses shows the factors impacting the initial return order by the strength of decisive to weak evidence are the long-run market sentiment, return on equity, price to book value per share ratio, market capitalization, market, debt to equity ratio, short-run market sentiment, price to earnings per share, a greenshoe option, and market return. Therefore, investors who want to invest in IPOs and investment bankers who underwrite the IPOs should focus on these factors, particularly the long-run and the short-run market sentiment. The return on equity and price-to-book value per share also affect the initial return. Furthermore, investors have to consider investing in the IPOs that are listed in the Stock Exchange of Thailand (SET) more than in the Market for Alternative Investment (MAI).

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