

THE MARKET PERFORMANCE OF BOOK BUILDING IPOs IN INDONESIA

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ABSTRACT

This research is aimed to determine the significant difference in short run and long run performance of Initial Public Offerings (IPOs) in Indonesian Capital Market through book building or fixed price marketing method. Moreover, it is intended to distinguish the characteristics of the issuer that might influence in their choice of marketing method. The sample firms are companies who went public in year 2007 to 2010. The aftermarket performance of the IPOs is assessed based on their short run performance (initial return) and long-term performance. The model has the marketing method as the dependent variable and size, age, industry and ownership of the issuer as independent variable. The result shows there is no significance difference in the short run performance between the marketing methods. However, there are significant difference in the long-run performance. For logistic regression, there are no significant relationship between the companies' characteristics that influence the marketing method chosen.

Keywords: Initial Public Offering (IPO), Book Building, Fixed Price, Undepricing, Information Asymmetry.

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INTRODUCTION

In a company's life, it will come to the point that more capital needed to grow. Most company cannot raise their capital due to limitations of their internal capacity and will need external help in order to get more capital. One way to gain capital externally is to go public, through Initial Public Offering (IPO).

There have been many studies examining the IPO firms and markets. Most studies try to examine the IPO stylish facts – underpricing, long run underperformance, and hot markets. Several hypotheses have been proposed to explain the facts, such as the winner's curse (Rock, 1986), the signaling theory (Beatty and Ritter, 1986), the fad theory (Ritter, 1991) among other theories. Most theories assume that IPO market is a high asymmetric information market. This is due to very limit information of a company available to the market pre-IPO. Therefore, there are some efforts done by the companies or regulated by the authority to reduce the information asymmetry situation. A more popular effort done by a company is to conduct a pre-IPO road show to potential investors. This is purported not only to introduce the company to the potential investors, but also to build the demands for the company's shares, hence the offer share price (Benveniste and Wilhelm, 1996). This marketing method is called the book building method. Because of the nature of the marketing process, the book building method is believed could reduce the IPO market information asymmetry rather than the fixed price method.

The nature of marketing methods between fixed price and book building are quite different in their mechanism to determine the offer price of the shares. The main difference between the marketing methods is the "price discovery" (Busaba & Chang, 2002). Issuers, who chose fixed price, let the price discovery take place in the aftermarket, since they did not find out investor's demand before setting the offer price. Book building method allows the price discovery before setting the offer price. In fixed price method, the appointed investment bank and issuer will set a price based on the projection of the company's performance, without any valuation from inventors (Benveniste & Busaba, 1997). While in book building method, it involves road shows or pre-marketing effort to potential investors to acquire information from them about the value of the

shares and they will include investors' valuation towards the setting of the offer price (Busaba & Chang, 2002).

In terms of the marketing method, fixed price marketing method had been used dominantly in Indonesia. However, starting in 2007, some companies started to use book building marketing method. In 2007, 3 out of 22 companies used book building. In the next year, 2008, almost 71% of the companies that offered IPOs use the book built method, and in 2010, almost 100% of companies use the book built method. This growth has shown the development of the usage of book built method in Indonesia. There has been a slow start of the use book building marketing method in Indonesia; however, it has been gaining a sharp increase in the popularity of book building marketing method.

Due to the "price discovery" process in the book building IPO, it is expected that not much opinion divergence regarding the IPO valuation between issuers and investors appears in the market. Hence, it is anticipated that there is not much difference of the IPO offer price and the early market price. This paper investigates the ability of book-built IPOs in reducing information asymmetry compared to fixed-price IPOs, which is resulted in lower IPO offer-market prices gap, in Indonesia Stock Exchange (IDX). Furthermore, since there has been a tremendous growth in book built IPOs in Indonesia, this paper would like also to examine whether there is some association between the firms' characteristics and their choice of marketing methods. Since the book building as a marketing method was used initially in Indonesia in 2007, this papers includes all IPO firms in IDX during the period of 2007 to 2010.

The result indicates that book-building IPOs experience lower IPO prices gaps compared to fixed-price IPOs do. However, the gaps appear to be statistically insignificant in the early market. Gradually, it gains some significant difference in the long-run. This result suggests that the information asymmetry in the early market is reduced; however, there are non-pricing factors that hold the asymmetry. Based on firms' characteristics, further analysis shows that prior to the IPO, book-building IPOs face higher (lower) information asymmetry than their counterparts.

The paper is structured as followed. The next section is the theoretical framework of how IPO marketing method could affect the market

information asymmetry, hence the IPO performance. It continues with the hypothesis development, research design, the findings and analysis, then the conclusion and possible future research.

THEORETICAL FRAMEWORK

Information Asymmetry in IPO Market

In the previous section, it has been stated that most current hypotheses about the IPO stylish facts assume that there is a high information asymmetry in IPO stock market. It is higher than the information asymmetry in the more established traded stock market. It is well understood since very little company information available to market prior to the IPO. This limited information makes valuing the company's share becomes more difficult.

The information asymmetry happens among the investors (Rock, 1986), between the company-underwriter and investors (Beatty and Ritter, 1986). The existing of the information asymmetry results in different market price to the offer price. The price difference in the early trading days is called the underpricing. The higher the information asymmetry the larger is the price gaps.

Ritter (1991) shows that after company's shares are traded more frequent in the market; investors hold more information that help them to value the shares. Then, the market adjusts its valuation on the IPO stocks. He finds a negative relationship between the underpricing level and its performance in the long run. He finds that more underpriced IPOs are more corrected in the long run. It implies that information asymmetry of the IPO early market could be analyzed also in the long run.

Marketing Methods in Determining the Price of IPOs

In the financial world, there are varying marketing methods for the IPOs pricing, however, book building and fixed priced marketing methods are the most popular ones that are used. Fixed price marketing methods have been used for so many years, up until the last decade. Book building has been steadily gaining popularity in pricing IPOs. The main difference of these two methods lays on the price discovery of the IPO. It can result in a higher or lower underpricing,

depending on which method are being used. Using different mechanisms of pricing may also influence the post-IPO trading behavior. Up to this point, it has been widely accepted that IPO could results in an abnormal return in the first market-trading day. As stated by Loughran *et al* (1994), this underpricing phenomenon has happened in almost every country.

In the process of fixed price marketing method, the appointed investment bank and the firm itself will set a price based on the projection of the company's performance. This method determines the price prior to, and without finding information about the investors demand for the stock at a particular price. This price is established without having any valuation from the investors (Benveniste & Busaba, 1997). Usually the price discovery takes place in the aftermarket, which is the initial trading market day (Busaba & Chang, 2002). The fixed price method has been historically dominant in the United Kingdom, and most other European countries. The prices of the shares are mostly based on the company's projection for its next year's performance, using their own calculative formula. This price could generate an initial return in the initial market-trading day. An empirical study in India has proved that there were trends where the fixed price method yields a positive initial return (Gopalaswamy *et al*, 2008).

Book building is a method for price discovery of the shares. In this method of valuation, the appointed underwriter will do several roadshows, or pre-marketing of the shares, to different investors that might be interested in the shares within a specific price range. Using the book building method, the underwriter would include investor's information into the price of the offering. According to Benveniste & Wilhelm (1996), book building is more than just polling investors information for the price discovery, it is also an attempt to know the demand of the issue. By knowing the demand from investors, it is then used to determine the size, price and allocation of the offering.

Characteristic of Firms in Choosing Marketing Method

This paper will also determine whether or not there are any differences in choosing marketing methods for IPOs based on the firm's characteristics. According to Chemmanur and Paeglis (2004), the quality of a firm and management is measured, based on the value

of the company, which includes the stakeholders such as the employee, shareholders, customers, and the industry of the business. Each of these stakeholders has their own corporate image embedded to their firms. Better management can signal a value of the firms to outsiders, which might reduce information asymmetry regarding their firms in the capital market (Chemmanur & Paeglis, 2004). These characteristics might influence the post-IPO performance.

The five main firm's characteristics that this paper will address are the size, age, industry that they operate in, the ownership of the issuers and the risk factors that the company will face in the future.

Larger firms will also attract larger investor and able to extract more information from potential investors through the book building marketing method. Also, large issuers will have better access to investment capital, since they are most likely to be backed up by informed investor, hence reducing information asymmetry (Bhabra & Pettway, 2003). The size and the amount of capital that the firm needs to gain could be an indicator that they are aiming to reduce the information asymmetry, which might affect their decision between the marketing methods.

Established firms send a signal to the public that it is less risky than the young and new firms. Older firms are most likely to be assessed by financial analyst, which will reduce the information asymmetry (Bhabra & Pettway, 2003). Ritter (1991) believe that the duration of the firm that has been operating before conducting an IPO are in better position to reduce the information asymmetry because they are able to provide several years of data of their operating performance to potential investors (Bhabra & Pettway, 2003).

Another characteristic of firm that the author would address are the industry where they have operated. For this particular study, the author would like to divide the industries to two sectors, the finance and non-finance industry. Finance industry is heavily regulated, and when a financial company has been operating for quite some time, it reflects on the quality of the firm's management (Chemmanur & Paeglis, 2004). High quality management is able to reduce information asymmetry.

Last characteristics the author would like to analyze are the ownership of the company, which will be divided into two groups, private company and State Owned Enterprises (SOE). Difference in ownership can affect the information asymmetry level, which could influence their choice of marketing method in processing the IPOs. Government owned companies or SOE has a built up reputation over the years, therefore they will have less information asymmetry to the public (Huang & Levich, 1999). Private company on the other side might experience more information asymmetry to the public, since their reputation is not as high as SOE.

When preparing the prospectus, underwriters and issuers will include relevant risk factors that are associated with the prospects of the business. The purpose of including risk factors in the prospectus are to provide potential investors with the uncertainty that will face the firms and able to assess the value of the shares accordingly. Firms with greater risk factors will face higher uncertainty, which will have higher information asymmetry between issuers and investors (Daily *et al.*, 2003).

Hypotheses Development

Based on the theoretical foundation described in the previous section, the author has mentioned the concepts of the book building method, initial return, long run performance, and characteristics of the firms.

Book building is a marketing method that has a nature to help in reducing the information asymmetry in the IPO market. Since book building are able to reduce information asymmetry more than fixed price methods, it is expected that book built IPOs will be less underpriced than fixed price IPOs.

H₁: Book Built IPOs will be less underpriced than fixed price IPOs.

Since there is less information asymmetry problem in the book built IPOs, it is expected that there will be less overreaction in the initial market-trading days, which will affect the long-run performance, due to the reduced volatility. Therefore, it is expected that book built IPOs will have lower underperformance than fixed price IPOs.

H₂: Book built IPOs will results in lower underperformance in the long run than fixed price IPOs.

For the third hypothesis, the author would like to investigate the characteristics of firms that might influence the issuer's choice of marketing method in hope that their choice will reduce the information asymmetry. The characteristics of the firms that will be included in this research will be the size, age, industry and ownership of the firm.

H₃: Companies that are smaller, younger and operates in non-finance industry, privately owned and have high risk factors tends to choose book building marketing method to reduce information asymmetry.

Companies with large tangible assets tend to have greater resources to reduce information asymmetry. Larger firms are able to attract larger investor and extract information from them. In the other side, smaller firms have fewer resources and have higher uncertainty in their valuation than larger firms. Therefore book built IPOs are suitable for smaller firms to reduce information asymmetry.

H_{3.a}: Smaller companies tend to choose book building as their marketing method to reduce information asymmetry.

Established firm has more reputation in the public's eye. Companies that has operated for such a long time before going public, shows the quality of the firm to the general public. Also, a financial analyst is more likely to analyze an established firm, which will reduce the information asymmetry. A young firm in the other hand is more likely to suffer a high degree on informational asymmetry (Chemmanur & Paeglis, 2004). Therefore book built IPOs are more suitable to younger firms to reduce information asymmetry.

H_{3.b}: Younger companies tend to choose book building as their marketing method to reduce information asymmetry.

Since the Central Bank of Republic of Indonesia and Ministry of Finance heavily regulates the finance industry, they will most likely have less information asymmetry than non-finance industry.

Therefore the book built IPOs are the main option for companies who operated in non-finance industry

H_{3,c}: Non-Finance companies tend to choose book building as their marketing method to reduce information asymmetry.

Reputation of SOE, political and economic factor has decreased the tendency to choose book building marketing method. Private company will suffer from more information asymmetry, since the reputation level is lower than SOE. Therefore book built IPOs are the first choice for the marketing method for private owned issuers.

H_{3,d}: Privately owned companies tend to choose book building as their marketing method to reduce information asymmetry.

High risk factors will increase the uncertainties in the company's future prospects. Company with higher risk factors will suffer from more information asymmetry between issuers and investors, since investors will face higher ambiguities in valuing the shares. Therefore book built IPOs are the first choice for the marketing method for high-risk companies.

H_{3,e}: Companies with high risk factors tend to choose book building as their marketing method to reduce information asymmetry.

RESEARCH DESIGN

Sample

The sample for this research was taken from the Indonesian Stock Exchange Database. All companies that went public during the year of 2007 until year 2010 were taken into the sampling data. The authors chose to use the data from the year 2007, since Indonesian companies started to use book built marketing method since 2007. Using this sample also enables the authors to compare the initial and long run performance of companies that uses different marketing method in the same time frame.

A total of 75 companies have offered IPO from 2007 to 2010. However, due one company has been delisted from the Indonesian

Stock Exchange Market, PT. Prime Petroservices Tbk, and 2 missing documents, our final sample consists of 72 companies for the analysis.

Research variables

This paper uses a general study methodology in investigating the initial return and the long-run performance of Indonesian companies that has been publicly listed. The long-run performance will be calculated monthly using Cumulative Abnormal Returns (CAR) and Buy-and-Hold Abnormal Returns (BHAR). The monthly returns of the IPO will be calculated based on the date of the IPOs, rather than at the end of each month. This way, each IPO will have the same timeframe of a monthly return. For both calculation, a timeframe of one year are used for the year 2007, 2008 and 2009, so they have the same Buy and Hold period. For IPOs that has been offered in 2010, the author will calculate the initial returns only. Each of the monthly return will need a benchmark to be compared with. These returns will be compared with the monthly return of Jakarta Composite Index. The author will calculate the monthly return of the Jakarta Composite Index using the date based on the IPOs, rather than end of each month, so they will have the same timeframe when benchmarking.

Initial Return of each IPO will be calculated as follow:

$$IR_t = \frac{P_{t,1} - P_{t,0}}{P_{t,0}} \tag{1}$$

$P_{t,0}$ = The offering Price .

$P_{t,1}$ = First market trading day closing price

The offering price will be found in the prospectus, and closing price will be found in the historical price of the share. Beside the initial return on market trading day, this paper will analyze the fifth day trading market return. Past researcher believed that share prices would take some time before they could achieve equilibrium in the supply and demand. It makes much more sense to measure underpricing or initial return over a longer period (Ljungqvist, 2006).

The fifth market return will be calculated as follow:

$$IR_t = \frac{P_{t,5} - P_{t,0}}{P_{t,0}} \tag{2}$$

$P_{t,5}$ = Fifth market trading day closing price

Monthly return of the stocks are calculated as follow:

$$r_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (3)$$

$P_{i,t}$ = Closing price of stock i in the month of t

$P_{i,t-1}$ = Closing price of stock i in the previous month

After calculating the monthly return of each stock, it will adjust the returns to the benchmark (Jakarta Composite Index - IHSB) monthly return. The adjusted return will be calculated as follow:

$$ar_{i,t} = r_{i,t} - r_{m,t} \quad (4)$$

$r_{i,t}$ = the monthly return of stock i

$r_{m,t}$ = the monthly return of IHSB at the same period of time

To calculate CAR, average adjusted return of the total number of stock for that particular year will need to be calculated as follow:

$$AR_t = \frac{1}{n} \sum_{i=1}^n ar_{i,t} \quad (5)$$

n = the number of stocks

$ar_{i,t}$ = the adjusted monthly return

The average adjusted return of the total stock will be used to calculate CAR in this equation:

$$CAR_t = \sum_{i=1}^n AR_t \quad (6)$$

This paper will use the firm's size in terms of their total tangible assets. The representation for a firm's size is natural logarithm of total tangible assets of each company from the very last financial statement before they went public. Total tangible assets from each firm are measured by the sum of their current assets and noncurrent assets excluding the intangibles.

Firm's age is the second characteristics that the author wishes to analyze. The firm's age will be the number of months they have been operating before they go public. The beginning of their business will be found under each prospectus of the company.

Within the prospectus, the author will also note the industry, which they are operating, and the ownership of the company. The industries will be divided into two parts, finance and non-finance industry. The

industry classification will be treated as a dummy variable. A finance company will have 1 in DFIN (dummy variable for finance industry) and 0 for the non-financial company. The ownership of classification will be treated as a dummy variable, where a State Owned Enterprise will have 1 in DSOE (dummy variable for SOE) and 0 for privately owned.

Variables that are included in the risk factors are the number of risks that the company discloses in the prospectus, the pre-IPO debt ratio, and the standard deviation of operating income. These variables are found within the prospectus. The number of risks will include the risk that will be faced by the company's business, shareholders and the market condition of Indonesia. While for the debt ratio and standard deviation operating income (3 years prior IPO), it will represent the risk of volatility in the earning.

Data Analysis

To test the hypothesis, the author will use t – test as follow:

$$t = \frac{CAR_{i,t} \sqrt{nr}}{\sigma(CAR_{i,t})} \quad (7)$$

σ = the standard deviation of the sample

As for the second calculation of the long-run performance, the author will use the Buy-and-Hold Abnormal Return (BHAR) calculated as follow:

$$BHAR_{i,t} = \prod_{t=1}^T (1 + r_{i,t}) \quad (8)$$

$r_{i,t}$ = the monthly return of the stock

The adjusted BHAR will be calculated as follow:

$$BHAR_{i,T} = \prod_{t=1}^T (1 + r_{i,t}) - \prod_{t=1}^T (1 + r_{m,t}) \quad (9)$$

$BHAR_{i,T}$ = buy and hold abnormal return for stock i in the period of T

For a one-year period, T will be set at 12 months.

Another calculation will be the mean market of the adjusted BHAR for the period t, which is calculated as follow:

$$BHAR_t = \frac{1}{n} \sum_{i=1}^n BHAR_{i,T} \quad (10)$$

n will be the number of the stock in the data sample

The BHAR will be calculated for one-year period. t is always set to 1, and T is set to 12 months. BHAR formula is used to calculate the return gained by investors that has purchased the stock at the first closing market price, and held until one-year anniversary, or until it is delisted from the stock exchange. An IPO will have outperformed the market when the value is positive and underperformed the market when the value is negative.

A t-test will be used to test the hypothesis on the adjusted BHAR, as follow:

$$t = \frac{BHAR_{i,T} - \overline{BHAR_{i,T}}}{\sigma(BHAR_{i,T})} \quad (11)$$

The methodology above will be used to test the first and second hypothesis, and it will be tested using the independent sample t-test statistic, Man-Whitney Wilcoxon test and Kolmogorov-Smirnov Z test. Independent sample t-test assumes that the two populations are normally distributed with identical variance; therefore the author will extend the analysis using sensitivity test with Man-Whitney Wilcoxon test and Kolmogorov Smirnov Z test. Both Man-Whitney Wilcoxon and Kolmogorov-Smirnov test does not assume that the distributions of the population are normal, therefore it is widely accepted than the independent sample t-test.

For this paper, the independent variable will be the company's size, age, industry, ownership and risk factors. Dependent variable will be the choice of marketing methods for pricing their IPOs, book building or fixed price. Dependent variable is usually dichotomous, where it will only take two values of occurrence, or no occurrence. Occurrence or 1 will be where the company chooses book building and non-occurrence or 0; will be where the company chooses fixed price method.

$$PROB(MM) = \beta_0 + \beta_1 Size_t + \beta_2 Age_t + \beta_3 DFIN_t + \beta_4 DSOE_t + \beta_5 Risk_t + \beta_6 DebtR_t + \beta_7 STDOL_t + \varepsilon_t \quad (12)$$

Where:

PROB (MM) = Choice of Marketing Method
(1 for Book Building marketing method, 0 for Fixed Price marketing method)

β_0 = model's constant

$\beta_1, \beta_2, \dots, \beta_7$ = regression coefficients

$SIZE_i$ = natural logarithm of total assets (excluding intangibles) of firm i
 AGE_i = months of establishment until going public firm i
 $DFIN_i$ = financial industry dummy of firm i
 (1 for financial industry, 0 for non-financial industry)
 $DSOE_i$ = Dummy State Owned Enterprise of firm i
 (1 for State Owned Enterprise, 0 for privately owned enterprise)
 $Risk_i$ = Number of risks
 $DebtR_i$ = Debt ratio of firm i
 $STDOI_i$ = Standard deviation of operating income (3 years prior IPO) of firm i
 ε_i = unobserved error component of firm i

FINDINGS AND DISCUSSION

This section discusses 2 parts of analysis. The first analysis is a discussion of findings on the performance of sample firms based on their IPO marketing method, and the second analysis is the discussion of the IPO firm characteristics analysis based on their chosen marketing method

Descriptive Statistics

This sub-section discusses the descriptive statistics of each variables observed in this research. Descriptive statistics will show the characteristics of the variables used for this research paper. Each variable are categorized into Full Sample, and two subsamples: Book Built IPOs, and Fixed Price IPOs. There will be 4 variables that are included in the IPO company performance descriptive statistics analysis. They are the Initial Return (IR1), Fifth Day Return (IR5), Cumulative Abnormal Return (CAR), and Buy-and-Hold Abnormal Return (BHAR). Table 1 presents the descriptive statistics of IPO market performances

Based on the table 1 below, there are positive abnormal return for every variable. The mean return for each variable has been statistically tested to determine whether the mean return are not equal to zero. Both IR1 and IR5, in full sample and subsamples, the mean return are significant at 0.01 level, which indicates underpricing of the

shares. CAR positive abnormal return are significant at 0.1 level only for the full sample and fixed price IPOs only. Unlike CAR, the second long run performance variable, BHAR, are significant at 0.01 level for all full samples and subsamples.

Table 1. IPO Performances Descriptive Statistics

This table describes descriptive statistics of each IPO performance. IR1 is the initial return on first trading day, IR5 is the initial return on fifth market trading day, CAR is the Cumulative Abnormal Return for 12 months and BHAR is the Buy-and-Hold Abnormal Return for 12 months.

Variable		Mean	Median	Standard Deviation	Min	Max
IR1	Full Sample	0.2917* **	0.1887	0.2861	-0.1813	1.0612
	Book Building IPOs	0.2637* **	0.1852	0.2645	-0.1700	0.7000
	Fixed Price IPOs	0.3350* **	0.2222	0.3166	-0.1813	1.0612
IR5	Full Sample	0.4414* **	0.2222	0.6375	-0.3000	2.6333
	Book Building IPOs	0.3998* **	0.1636	0.6110	-0.3000	2.6333
	Fixed Price IPOs	0.5059* **	0.1000	0.6826	-0.2750	2.1923
CAR	Full Sample	0.2026*	0.0905	0.8439	-1.0207	3.2301
	Book Building IPOs	0.0255	-	0.6368	-1.0207	1.6189
	Fixed Price IPOs	0.3666*	0.1456	0.9820	-0.8579	3.2301
BHAR	Full Sample	0.9379* **	0.9123	0.4096	0.4182	1.8103
	Book Building IPOs	1.0691* **	0.9838	0.4288	0.4998	1.8103
	Fixed Price IPOs	0.8164* **	0.7092	0.3571	0.4182	1.4953

*** Significant at $\alpha = 0.01$, ** significant at $\alpha = 0.05$, * significant at $\alpha = 0.1$

Average return during initial market trading day (IR1) is 0.2917 for the full sample. In comparison of IR1, book built IPOs generates lower average return and lower standard deviation than fixed price IPOs. The statistics indicate lower information asymmetry in the book building.

Average return for IR5, full observation of 74 companies is 0.4414. Categorically from book built samples and fixed price samples, results are similar to IR1. Both average return and standard deviation are lower for book building IPOs. Similar to IR1, IR5 indicates less underpricing and less information asymmetry in book built IPOs.

In long run performance, there are two different measurement that are used in this study, Cumulative Abnormal Return (CAR) and Buy-and-Hold Abnormal Return (BHAR). Cumulative Abnormal Return describes the returns for investors mimicking an aggressive trading behaviour. Investor buys the shares, sells it one month later, and repeat the process until the full 12 months. While in BHAR measurement describes the returns for investor who buys the shares at the initial market trading day and hold and sell the shares one year later. BHAR measurement assumes that any return that the shares generate will be reinvested at the share price growth rate.

First measurement of long run performance is Cumulative Abnormal Return (CAR) for the period of 1 year, for IPOs offered in the year 2007, 2008 and 2009. Average value of CAR is 0.2026. Previous studies found that in the long run, IPO shares underperformed in the long run (Ritter, 1991), however, in this study, both measurements (CAR and BHAR) generate positive returns, indicating that the IPO has outperformed the market. In this study, book built IPO have lower average CAR and standard deviation than fixed price offerings. Lower average return of CAR for book built IPO indicates lower performance in the long run compared to fixed price IPO.

The second measurement of long run performance is the Buy and Hold Abnormal Return (BHAR) for the period of 1 year, for IPOs offered in the year 2007, 2008 and 2009. BHAR has a mean value of 0.9379. In accordance to previous literature, where book built IPOs have less underperformance than fixed price IPOs can be seen from the BHAR. Book built offerings have a higher return than fixed price.

Performance Analysis Result

This sub-section presents the result of hypothesis testing regarding the difference performances between marketing method.

Table 2. Main Analysis of Performance Differences Between Book Building and Fixed Price Marketing Methods

This table contains the statistic parametric test of performance difference between two marketing methods.

Performance measure	Sub sample	Mean	Mean difference (BB – FP)	Independent sample t-test	
				T-stat	P-value
IR1	BB	0.264	-0.071	-	0.159
	FP	0.335		1.007	
IR5	BB	0.400	-0.106	-	0.250
	FP	0.506		0.679	
CAR	BB	0.0255	-0.3410	-	0.071*
	FP	0.3665		1.496	
BHAR	BB	1.0691	0.2527	2.300	0.013**
	FP	0.8164			

*** Significant at $\alpha = 0.01$, ** significant at $\alpha = 0.05$, * significant at $\alpha = 0.1$

Assuming that the values of the variable are normally distributed, this study uses independent sample t-test. Based on the result above, as expected, the book built IPOs experienced lower underpricing. These findings are similar to ones found by previous studies that found book building marketing method reduces the initial return (Busaba & Chang, 2002, Gopaldaswamy *et al*, 2008) since book built IPOs aggregates information from investors before setting the offer price which will reduce the information asymmetry between investors and issuers.

However, statistically, the mean difference between marketing methods for IR1 has a p-value of 0.159 and IR5 has a p-value of 0.250. Both short run performance measure have a p-value above 0.05, thus the result is insignificant. Therefore the first alternative hypothesis stating that book built IPOs has less underpricing than fixed price IPOs, has been rejected. It shows that there is no significant difference of IRs from both marketing methods. It indicates that book building marketing method in Indonesia is not

aimed to reduce information asymmetry that leads to less underpricing in the IPOs.

This result confirms a study conducted in India, where there is no significance difference of IPO initial returns between marketing methods (Gopaldaswamy *et al*, 2008). Previous research studied the degree of information asymmetry and information cost. It is argued that during roadshows, the underwriters are able to select investors that will be participating during acquisition of information. The more investors that participate, the more accurate the offer price, however the more underpricing it will be (Sherman & Titman, 2002). Increasing number of investors that evaluate the value of the share, will increase the accuracy the share price of issuers. However more underpricing occurs, since more discounts are needed to compensate investors for the information. If information is costless, underwriter can achieve the optimal number of investor participation and reduce the underpricing near to zero. Since information is costly, level of underpricing is determined by the investor's desire of information. Investor's desire for information is not the same; therefore this information asymmetry between informed and uninformed investors leads to underpricing (Sherman & Titman, 2002).

This study finds that CAR average return of book built IPOs is lower than fixed price, and the mean difference for CAR is significant at 0.1 levels with a p-value of 0.071. This result confirms previous studies in India, where CAR for book built offerings are lower than fixed price offerings (Pandey, 2005). This result is not of expected since in the long run, book built offerings should have a higher return than fixed price offerings.

However, if the measurement of long run performance used is BHAR, the result changes. One year BHAR describes the situation when investors decided to buy the shares during IPO and hold it for one year. The one-year BHAR book built offerings is significantly higher than fixed price at p-value of 0.013, which is significant at 0.05 levels. As hypothesized, the long run performance of book built IPOs, are expected to be less underperformed than fixed price. The result support the hypothesis only when the measures used is the BHAR. This result also confirms the previous study that has been done in India, where it has stated that the long run performance does indicate

a significant different based on the marketing method used in the process of IPO (Gopaldaswamy *et al*, 2008). Therefore the second alternative hypothesis is accepted when mimicking the trading behavior of BHAR measurement.

Measurement in CAR and BHAR from the same set of data can produce different results. Measurement of CAR does not represent an applicable investor trading strategy in the real world, while BHAR is more applicable (Drobotz *et al*, 2003). Based on the study, the author will conclude the significant difference of performance in BHAR measurement for the long run performance of IPOs. Therefore this paper will accept the hypothesis where book built IPOs are less underperformed than fixed price IPOs in the long run.

Sensitivity Analysis for the Performance Analysis

Independent sample t-test assumes that the two populations are normally distributed with identical variance. It is commonly found that stocks returns are not normally distributed; therefore as a sensitivity analysis, this study extends the analysis using a non-parametric statistics. Man-Whitney Wilcoxon test and Kolmogorov Smirnov Z test are conducted and the results are presented in table 3 below.

Table 3. Sensitivity Analysis of IPO Performance Differences

This table contains the result non-parametric tests (Man – Whitney Wilcoxon test and Kolmogorov – Smirnov Z), of the mean difference between two marketing methods.

Variable		Mean	Mean difference (BB – FP)	Man-Whitney Wilcoxon		Kolmogorov-Smirnov Z	
				Z Value	P-value	Z Value	P-value
IR1	BB	0.264	-0.071	-0.903	0.183	0.702	0.3545
	FP	0.335					
IR5	BB	0.400	-0.106	-0.288	0.3865	0.753	0.311
	FP	0.506					
CAR	BB	0.0255	-0.3410	-0.980	0.1635	0.870	0.2175
	FP	0.3665					
BHAR	BB	1.0691	0.2527	-2.363	0.009***	1.126	0.079*
	FP	0.8164					

*** Significant at $\alpha = 0.01$, ** significant at $\alpha = 0.05$, * significant at $\alpha = 0.1$

IR1 sensitivity analysis has a p-value for 0.183 and 0.354, and IR5 sensitivity analysis has a p-value of 0.386 and 0.311. Statistically

tested for both sensitivity tests, the result for IR1 and IR5 are consistent with the main analysis, where the mean difference of return is insignificant in the Indonesian IPO market. Both p-value are way above 0.10 levels, indicating no significance when applied in Indonesian market.

An inconsistency result occurs in CAR in the sensitivity analysis. While Parametric test (t-test of mean difference) shows a marginal significant difference of IRs, the non-parametric test fail to find significant results. Therefore the result for CAR when statistically tested is inconclusive.

More consistent results are found in BHAR results. The Man-Whitney Wilcoxon test and the Kolmogorov-Smirnov Z test generate all p-values below 0.10 significance level. For the Man-Whitney Wilcoxon has a p-value of 0.009, where it is very significant in 0.01 level, while in Kolmogorov-Smirnov Z test has a p value of 0.079, with significance level of 0.05. All results are consistent when the significance level is 0.10 levels. The result implies that the impact of book building marketing method on the IPO performance could be seen in the long run when investors buy the shares on the first trading day, and hold it for at least one year.

IPO Company Characteristics Analysis

This sub-section discusses the findings of IPO company characteristics analysis as the second part analysis of the paper.

Table 4 below presents the logistic regression analysis result on company's characteristic analysis on the marketing method chosen.

Table 4. Logistic Regression Results

This table contains the logistic regression analysis result, including the coefficient, Wald test, p-value and Exp(B) of each variables.

	Expected Sign	B	Wald	Sig.	Exp(B)
SIZE	-	-0.211	0.557	0.455	0.810
AGE	-	0.002	0.492	0.483	1.002
DFIN	-	0.602	0.407	0.523	1.827
DSOE	-	-0.612	0.224	0.636	0.542
RISK	+	0.045	1.709	0.191	1.046
DEBTR	+	-0.305	0.037	0.847	0.737

STDOI	+	0.008	1.629	0.202	1.008
Constant	N/A	0.560	0.182	0.670	1.751

Age and DFIN has expected negative signs, however, the results show positive coefficients. Furthermore, the test fails to reject the null hypothesis. This result implies that age and DFIN, as proxies to the information asymmetry, do not have any impact on the IPO marketing method chosen. Therefore managers of the issuers might not incorporate age and industry as a source of information asymmetry. Size and DSOE shows the expected signs in the coefficients, both of them are negative. However, the test fails to reject the null hypothesis. This result shows that size or SOE, as proxies do not influence issuers in choosing the IPO marketing method.

Both RISK and STDOI has the expected positive sign, however, statistically tested, the test fails to reject null hypothesis. This result shows that number of risk and standard deviation of operating income, as proxies, do not influence issuers in choosing the IPO marketing method.

DEBTR has expected positive sign, however the results shows positive coefficient. Likewise, the test fails to reject the null hypothesis. This result implies that DEBTR, as proxies to the information asymmetry, do not have any impact on the IPO marketing method chosen. Therefore managers of the issuers might not incorporate debt ratio of the company as a source of information asymmetry.

Previous study (Semenova, 2011), argued that larger and older companies face greater public scrutiny, since they are more visible to the public. Established and large companies are more likely to draw attention from a higher number of stakeholders and financial regulators than small and young companies. Being more visible and well known, media and the general public demanded more information than smaller and younger companies.

Since none of the independent variable in the logistic regression are significant towards the dependent variable, this model can be concluded that in choosing marketing method to process issuer's IPO

does not relate to the level of information asymmetry that the company conveys to the public.

Larger, older and well-known companies are more reputable and visible to the public eye. Investors and the general public demand more information from large issuers than younger companies. This demand from the public could be another reason why larger, older, finance industry and SOE chose book building marketing method. Since they are concerned with the public scrutiny, choosing book building marketing method could reduce the information asymmetry to satisfy the public demand (Semenova, 2011).

As argued in theoretical framework, the information asymmetry is a main factor in choosing marketing method. However, based on the findings in this study, this information asymmetry is not easy to measure. Several proxies used in this study could not provide a significant support to the hypothesis. The proxies used here, is merely related to the quantity of information, not the quality. There is an abundance of information that is available to public, however it is often difficult to extract data that is actually useful and relevant (Edmunds & Morris, 2000). Quantity and quality of information included in the company's prospectus might not be the same between large and small companies, old and young companies, Finance or non-finance companies, as well as SOE and non-SOE companies.

A prospectus of each company has a list what should be included in it. Smaller companies, for example, have smaller proportion of information than larger companies that will be included in the prospectus. Small and young companies might be able to give 100% of information in the prospectus, while larger company are only able to give 70% of information. Large companies have more information than small companies, and the complexity of the information increases. The quantity of information given by the company to the public might be great, however the qualities of information are uncertain (Edmunds & Morris, 2000). More factors in increasing popularity in book building marketing method are investor's demand and trends.

Several studies find that there are two major factors that impacted the increasing trend to choose the marketing method is the investor's

demand (Busaba, 2006) and the hype or publicity of book building (Degeorge *et al*, 2007).

Investors are interested in book built IPOs since they are able to work on the offering price depending on the information given to the issuer. Investors are able to give a piece of information and received a discount in terms of underpricing since they have given valuable sight to the value of the shares. When issuers set the offer price, it is constrained by two major need, ensuring the participation of investors, and inducing investors' truthful valuation in the value. From book building method, investors are able to manipulate the offering price by their information (Busaba, 2006). Another factor why investor demanded book building marketing method is the high aftermarket liquidity (Degeorge *et al*, 2007).

It could be inferred that the investor's demand is a major reason why book building has been gaining sharp popularity in Indonesia. Issuers are more concerned on investor's participation rather than reducing information asymmetry. Other than investor's demand, the general stakeholders also have their demand on the level of information given from the company.

Sharp increase of book building marketing method has been evident across countries. Since book building marketing method has been introduced in other countries, such as Japan, France and United States of America, other marketing method seems to have extinct and most issuers have chosen book building marketing method (Degeorge *et al*, 2007). Same pattern are taking place in Indonesian IPO market, from 2007, there are only 3 book building offerings, while in the period of 3 years, in 2010, 20 out of 22 offerings are book built.

Busaba (2006) believed that in markets when issuers are able to choose their marketing method, more firms will choose to process their IPOs using book building marketing method when there are increased volatility of the stock value. The sample period are drawn between 2007 and 2010, including year 2008 and 2009, in which there has been a major financial crisis that affected the Indonesian Stock Market, which leads to volatility of the stock value. This factor could affect the issuer's choice in choosing book building marketing method.

CONCLUSION AND FUTURE RESEARCH

This paper investigates the difference performance in marketing method in Indonesian IPO market. Fixed price marketing method has been pre-dominantly used in Indonesia. Book building marketing method has been allowed since 2000, however Indonesia started to use book building marketing method in 2007. Since the introduction, usage of book building marketing method has a sharp increase of 77% from 2007 to 2010.

Based on our analysis on the market performance difference between samples in different marketing method, it could be concluded that the impact of the chosen marketing method could be seen in the long-run when the investors buy and hold the shares at minimum for 1 year, in which the book built IPO firms produces higher returns to the investors than the fixed price IPO firms. We find no evidence to support our hypothesis in the short-run.

The logistic regression results shows there are no significant relationship between size, age, industry, ownership and risk of the firms in choosing the marketing method. Therefore it could be concluded that firm's characteristics in terms of size, age, industry, ownership and risk does not influence the choice of marketing method.

Based on the findings, it appears that when a company chose book building marketing method, it is not aimed to reduce information asymmetry to the public. According to Shiller (1990), IPO market is subjected to trends. Prior research show that hype (Degeorge *et al*, 2007), investor's demand (Busaba, 2006) and volatility of capital market (Busaba, 2006) might be the major factors in choosing book building marketing method.

The time span that was taken for the sample could be a reason why book building has been gaining popularity. Busaba (2006) believed that issuers would choose book building marketing method at times when the volatility of stock value has increased. In 2007, there were only 3 book built offerings, however when the financial crisis hit United States of America, which has impacted Indonesian Capital Market, usage of book building marketing method has increased.

Based on the findings of the results, there are some recommendation that will be addressed to investors, issuers and investment bankers. Investors should focus on the long-term strategy in buying book built IPOs. Investors should mimic the trading behavior of BHAR measurement where investors buys book built IPOs in the initial market trading day and hold it for one year, or longer period of time. Mimicking BHAR measurement could be beneficial to investors since it shows significant difference in the return between book building offering and fixed price offerings, where book built IPOs generates higher return.

Issuers and investment banker should consider the information that will be included in prospectus. Large quantity of information in prospectus increases the complexity of the information (Edmund & Morris, 2000). Information given should be complete, concise, and relevant.

This study could be extended by other researchers, fellow students or academians. There are some recommendation that can be taken under consideration in the future, such as, extending period of time of the research, investors and underwriters behaviour, quantity and quality of prospectus and hype of book building marketing method.

REFERENCES

- Arnold, T., Fische, R. P., & North, D. (2010). The Effects of Ambiguous Information on Initial and Subsequent IPO Returns. *Financial Management* , 1457 - 1519.
- Buckland, R., Herbert, P. J., & Yeomans, K. A. (1981). Price discount on new equity issues in the UK and their relationship to investor subscription in the period 1965-75. *Journal of Business Finance and Accounting* , 14, 65 - 76.
- Busaba, W. Y. (2006). Bookbuilding, the Option to Withdraw, and the Timing of IPOs. *Journal of Corporate Finance* , 159 - 186.

- Busaba, W. Y., & Chang, C. (2002). Book Building vs. Fixed Price Revisited: The Effect of Aftermarket Trading. *Journal of Corporate Finance*, 16, 370 - 381
- Bank of England Quarterly Bullentin. (1986). *New Issue Costs and methods in the UK Equity Market*.
- Beatty, R. P., & Ritter, J. R. (1986). Investment Banking, Reputation, and The Underpricing of Initial Public Offerings. *Journal of Financial Economics* , 15, 213 - 232.
- Benveniste, L. M., & Wilhelm, Jr, W. J. (1996). Initial Public Offering: Going by the Book. *The Journal of Applied Corporate Finance* .
- Benveniste, L. M., & Busaba, W. Y. (1997). Book Building vs. Fixed Price: An Analysis of Competing Strategies for Marketing IPOs. *Journal of Finance and Quantitative Analysis* , 383.
- Biro Stabilitas Sistem Keuangan. (2002). *Kajian Stabilitas Keuangan Juni 2003*. Jakarta: Bank Indonesia.
- Bhabra, H. S., & Pettway, R. H. (2003). IPO Prospectus Information and Subsequent Performance. *The Financial Review* , 38, 369 - 397.
- Bodie, Z., Kane, A., & Marcus, A. (2002). *Investment*. New York: McGraw-Hill.
- Cai, J., Liu, Y., & Qian, Y. (2008). *Information Asymmetry and Corporate Governance*. Drexel University, Department of Finance. Philadelphia: Working Paper.
- Chemmanur, J. T., & Paeglis, I. (2004). Management Quality, Certification, and Initial Public Offerings. *Journal of Financial Economics* .
- Chemmanur, T. J., Paeglis, I., & Simonyan, K. (2010). Management Quality and Equity Issue Characteristics: A comparison of SEOs and IPOs. *Financial management* , 1601 - 1642.
- Chi, J., & Padgett, C. (2005). Short-Run Underpricing and Its Characteristics in Chinese Initial Public Offering (IPO) Markets. *Research in International Business and Finance* , 71 - 93.

- Cornelli, F., & Goldreich, D. (2003). Bookbuilding: How Informative Is the Order Book? *The Journal of Finance* , 58 (4), 1415 - 1443.
- Edmunds, A., & Morris, A. (2000). The Problem of Information Overload in Business Organization: A Review of The Literature. *International Journal of Information Management* , 12 - 28.
- Eleswarapu, V. R., Thompson, R., & Venkataraman, K. (2004). The Impact of Regulation Fair Disclosure: Trading Costs and Information Asymmetry. *The Journal of Finance and Quantitative Analysis* , 209 - 225.
- Erdogan, A. I. (2010). The Long-Run Performance of Initial Public Offerings: The Case of Turkey. *European Journal of Economics, Finance and Administrative Sciences* .
- Daily, C. M., Certo, S. T., Dalton, D. R., & Roengpitya, R. (2003). IPO Underpricing: A Meta-Analysis and Research Synthesis. *Entrepreneurship Theory and Practice* , 27 (3), 271 - 295.
- Dewenter, K., & Malatesta, P. (1997, September). Public Offerings of State-Owned and Privately-Owned Enterprises: An International Comparison. *The Journal of Finance* .
- DeGeorge, F., Derrien, F., & Womack, K. L. (2007). Analyst Hype in IPOs: Explaining the Popularity of Bookbuilding. *The Review of Financial Studies* , 1021 - 1058.
- Dimson, E. (1979). The Efficiency of The British New Issue Market for Ordinary Shares. *Doctoral Thesis* . London Business School.
- Drobetz, W., Kammerman, M., & Walchli, U. (2003). *Performance of Initial Public Offerings: The Evidencen for Switzerland*. University of Basel, Department of Finance. Basel: Working Paper.
- Financial Express. (2005, June 13). *The Financial Express*. Retrieved February 14, 2011, from Fixed-prices IPOs scores over book-built ones: <http://www.financialexpress.com/news/fixedprice-ipos-score-over-bookbuilt-ones/141547/>

- Foerster, Bruce S.; Burch, C. John; Securities Industry Association. (2001). *Capital Markets Handbook*. Aspen Law & Business.
- Geddes, R. (2003). *IPO and Equity Offerings*. Oxford: Butterworth-Heinemann.
- Gopaldaswamy, A. K., Chaturvedi, K., & Sriram, N. (2008). Long Run Post Issue Performance Of Fixed Price and Book Built IPOs: An Empirical Study On Indian Markets. *Journals of Advances in Management Research* , 64 - 76.
- Grinblatt, M., & Hwang, C. Y. (1989). Signalling and the Pricing of New Issues. *The Journal of Finance* , 393 - 420.
- Ibbotson, R. G. (1975). Price Performance of Common Stock New Issues. *Journal of Financial Economics* , 2, 235 - 272.
- Indonesia Stock Exchange. (2010). *History: Indonesia Stock Exchange*. Retrieved 03 16, 2011, from Indonesia Stock Exchange:
<http://www.idx.co.id/Home/AboutUs/History/tabid/72/language/id-ID/Default.aspx>
- Hu, W. Y., & Ritter, J. R. (2007). *Multiple Bookrunners in IPOs*. Florida: University of Florida.
- Huang, Q., & Levich, R. M. (1999). *Underpricing of New Equity Offerings by Privatized Firms: An International Test*. New York University, Department of Banking and Finance. New York: Working Paper.
- Heflin, F., Subramanyam, K. R., & Zhang, Y. (2003). Regulation FD and the Financial Information Environment. *The Accounting Review* , 1 - 37.
- Hsin, H. Y. (2008). *Fixed-Price, Auction, and Bookbuilding IPOs in Taiwan*. Tainan: National Cheng Kung University.
- Jenkinson, T., & Ljungqvist, A. (2001). *Going Public: the Theory and Evidence on How Companies raise Equity Finance*. Oxford: Oxford University Press.
- Jones, S. L., Megginson, W. L., Nash, R. C., & Netter, J. M. (1999). Share Issue Privatizations as Financial Means to Political and Economic Ends. *Journal of Financial Economics* , 217 - 253.

- Kutsuna, K., & Smith, R. (2003). Why Does Book Building Drive Out Auction Methods of IPO Issuance? evidence from Japan. *Review of Financial Studies* , 1129-1166.
- Kaneko, T., & Pettway, R. H. (2003). Auction versus Book Building of Japanese IPOs. *Pacific-Basin Finance Journal* , 439 - 462.
- Kasmir. (1998). *Bank dan Lembaga Keuangan Lainnya*. Jakarta: Pt. Raja Grafindo.
- Levis, M. (1990). The Winner's Curse Problem, Interest Costs and the Underpricing of Initial Public Offerings. *The Economic Journal* , 76 - 89.
- Ljungqvist, A. (2006). *IPO Underpricing*. New York University. New York: Working Paper.
- Loughran, T., Ritter, J. R., & Rydqvist, K. (1994). Initial Public Offerings: International Insights. *Pacific - Basin Finance Journal* , 2, 165 - 199.
- Maps of World. (1999, September 17). *Maps of World*. Retrieved February 14, 2011, from Book Building IPO: <http://finance.mapsofworld.com/ipo/book-building.html>
- Ministry of Finance. (2009). *Republic of Indonesia; Ministry of Finance*. Retrieved April 2, 2011, from Responsibility and Functions: <http://www.depkeu.go.id/Eng/Organization/?prof=tupoksi>
- Otero, S. A., & Mendez, V. G. (2005). The Long-Run Underperformance of Initial Public Offerings: A Methodological Problem? *Revista de Economia Aplicada* , 51 - 67.
- Pandey, A. (2005). *Initial Return, Long Run Performance and Characteristics of Issuers: Differences in Indian IPOs Following Fixed Price Book Building Processes*. Indian Institute of Management Ahmedabad. Working Paper.
- Prastiwi, A., & Kusuma, I. W. (2001). Analisis Kinerja Surat Berharga Setelah Penawaran perdana (IPO) Di Indonesia. *Jurnal Ekonomi dan Bisnis Indonesia* , 177 - 187.
- Sekaran, U., & Bougie, R. (2009). *Research Methods for Business*. West Sussex, United Kingdom: John Wiley & Sons Ltd.

- Semenova, N. (2011). *Information Asymmetry in Environmental Information: Evidence on Size and Industry Effects on Market Value among Swedish SIX 300 Companies*. Stockholm: oikos Foundation for Economy and Ecology.
- Sherman, A. E. (2000). IPOs and Long-Term Relationships: An Advantage of Book Building. *The Review of Financial Studies* , 697 - 714.
- Sherman, A. E., & Titman, S. (2002). Building the IPO Order Book: Underpricing and Participation Limits with Costly Information. *Journal of Financial Economics* , 3 - 29.
- Shiller, R. (1990). Speculative Prices and Popular Models. *Journal of Economics Perspective* , 55 - 65.
- Reilly, F. K. (1977). New Issues Revisited. *Financial Management* , 28 - 42.
- Ritter, J. R. (1998). Initial Public Offerings. *Contemporary Finance Digest* , 2 (1), 5-30.
- Ritter, J. R. (1984). Signalling and The Valuation of Unseasoned New Issues: A Comment. *The Journal of Finance* , 39, 1231 - 1237.
- Ritter, J. R. (1991). The Long-Run Performance of Initial Public Offering. *The Journal of Finance* , 3 - 27.
- Rock, K. (1986). Why New Issues are Underpriced? *Journal of Financial Economics* , 187 - 212.
- Vandekerckhove, W., & Leys, J. (2007). Information Asymmetries in Socially Responsible Investment. *Philosophica* , 5 - 19.
- Welch, I. (1989). Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings. *The Journal of Finance* , 44, 421 - 449.