



Original Article

Underpricing or Overvaluation? Theoretical Review of Initial Public Offering Phenomenon

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Abstract: The abnormal initial return of Initial Public Offerings (IPOs) has become an interesting financial phenomenon that attracts many researchers' interest. This phenomenon has become more attractive because IPOs have increased during the pandemic since 2021. This study investigates whether the positive initial performance of IPO stock led to underpricing or overvaluation in a broader context in the form of literature reviews. After elaborating and analyzing several related studies, theories and empirical research in the literature, this research finds that the aftermarket has a lower performance than the initial one. It shows that abnormal initial returns tend to be caused by investors' overvaluation and overreaction instead of underpricing.

Keywords: Abnormal return, initial return, IPO, underpricing, overvaluation.

1. Introduction

An initial public offering (IPO) is a corporate event when a private company becomes a public company by selling its shares to the public. The company conducts an IPO to raise new capital to support the company's future growth. IPOs have become interesting issues to discuss since the trend of private companies to go public is increasing lately. During the Covid-19 pandemic, Pricewatercoopers (PwC) showed

that global IPO proceeds were 35% higher in 2021 (up to the third quarter) than the full year of 2020. In addition, IPOs have evolved to become an alternative funding source of debt (Singh & Kumar, 2018).

A financial anomaly phenomenon during IPOs that gets a lot of attention from scholars, the business world media and the general public is the positive abnormal initial performance of a stock after the issue (Ibbotson, 1975; Jamaani & Alidarous, 2019). Loughran and Ritter (2004)

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show that a first-day abnormal return existed though it changed over time. In 1980-1989, U.S. IPOs first-day return was 7% and became 15% in 1990-1998. During 1999-2000, a high first-day return occurred at 65% and it reverted to 12%-15% after that bubble period until 2019. When the Covid-19 pandemic occurred in 2020, Ritter (2020) found that the IPO first-day return was around 64% in the U.S. Figure 1 shows the number of offerings and the average percentage of first-day returns in the U.S. stock market in 1980-2020.

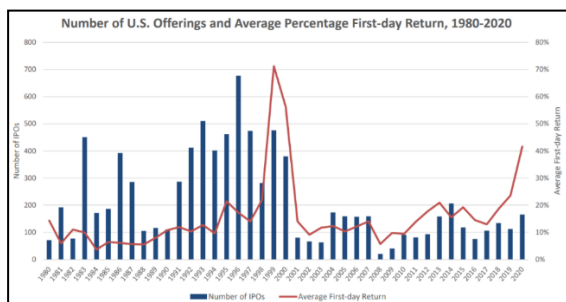


Figure 1: Number of US offerings and average percentage first-day return, 1980-2020
 Source: Ritter (2020).

Interestingly, the abnormal IPO initial return phenomenon is not only reported in the U.S. but occurs in many stock markets around the world (Y. Chen, Wang, Tong, & Zhu, 2017; Jamaani & Alidarous, 2019; Loughran & Ritter, 2004). Several previous studies regarding positive initial returns in countries outside the U.S. are as

follows. Adjasi, Osei, and Fiawoyife (2011) researched IPO stocks in the Nigerian Stock Exchange from the period 1990 to 2006 and showed an average abnormal initial day return of 43.1%. Song, Tan, and Yi (2014) used the IPO data of 948 Chinese firms and found that average initial returns were 66%. Mindosa and Pasaribu (2020) recorded that IPO stocks in Indonesia give an average return of 20-30% on the first day of listing. Engelen and van Essen (2010) recorded average first-day returns from several countries and showed that average underpricing in Germany, Singapore, Netherland, Japan and Canada are respectively 17.58%, 19.52%, 7.80%, 31.48% and 20.57%.

These positive abnormal initial returns could indicate either underpricing in the primary market or overvaluation in the secondary market (Han & Wu, 2007; Ibbotson, 1975; Song et al., 2014). The critical question is whether the positive initial return of IPO stock signifies underpricing or is the result of investors' overvaluation. Many theories are proposed to solve the puzzle of IPO positive initial returns. The theories could be classified into two categories: underpricing theory and investor-sentiment theory. Jenkinson and Ljungqvist (2001) divide underpricing theory into three categories: information asymmetry, institutional factors and ownership and control considerations. Table 1 shows several previous studies and theories to explain the IPO initial return anomaly.

Table 1: Previous studies and theory used to explain IPO's initial return anomaly

Theory	Past studies	Method	Samples
1. Underpricing theory			
Information asymmetry theory	Albada, Yong, Ezani, and Mat Hassan (2019)	Cross-sectional regression model	393 IPOs listed on Bursa Malaysia between January 2000 and December 2015
	Kennedy, Sivakumar, and Vetzal (2006)	OLS and 2SLS	All U.S. publicly traded IPOs during 1991-1998
	Ibbotson (1975)	Regression analysis	New issues in U.S. during 1960-1969
	Ivo Welch (1989)	Mathematics model	IPO firms in U.S. 1977-1982
	Allen and Faulhaber (1989)	Mathematics model	-

Institutional factor theory	Ibbotson (1975)	Regression analysis	New issues in U.S. during 1960-1969
	Booth and Smith (1986)	Regression analysis	Security issuance provided by SEC (1977-1982)
	Rydqvist (Rydqvist, 1997)	Regression analysis	251 Swedish IPOs
Ownership and control theory	Brennan and Franks (1997),	Regression analysis	69 IPO in UK
	Stoughton and Zechner (1998)	Mathematics model	-
2. Investor-sentiment theory	Ivo Welch and Ritter (2002)	Regression analysis	IPO in U.S. from 1973-2001
	I. Welch (1992)	Mathematics model	-

Source: Author's original data (2022).

Previous studies mainly discussed positive initial performance as underpricing and did not consider the possibility of investors' overvaluation (Allen & Faulhaber, 1989; Engelen & van Essen, 2010; Füllbrunn, Neugebauer, & Nicklisch, 2020). Song et al. (2014) and Han and Wu (2007) explained underpricing involving IPOs' overvaluation phenomena in their analysis. However, their studies are only in a China context. There is no literature that probes the reason behind the IPO initial return anomaly, whether it is due to underpricing or investor's overvaluation, in a broader context in systematic literature. Therefore, this study aims to investigate whether positive initial performance of IPO stock leads to underpricing or overvaluation in a broader context, not only in one country. This study is a literature review that comprehensively attempts to answer the critical question by analyzing several existing theories.

This paper is organized into six sections. Section 2 presents market efficiency during IPOs. Section 3 and section 4 discuss underpricing theory and investor-sentiment theory in explaining the initial performance anomaly. Section 5 presents an argument whether initial IPO price-performance tends to be underpricing or overreaction. Section 6 is the conclusion.

2. Is the market not efficient?

Efficient market hypothesis (EMH) refers to whether price fully reflects a particular piece of

available market information (Fama, 1970). Fama (1970) and Fama (1991) classify market efficiency into weak form tests, semi-strong form tests, and strong-form tests. Weak form tests claim that the stock price already fully reflects all information in the history of past trading (Fama, 1970; Kok & Munir, 2015). The semi-strong form states that stock prices reflect all available public announcements, while the strong form states that stock prices reflect all public and private market information (Fama, 1970; Vidal-Tomás & Ibáñez, 2018).

A positive initial return on the first day after new stock is issued raises a question of whether or not the market is efficient. This has been the subject of debate among researchers until now. Ibbotson (1975) conducted empirical research to find whether there is a departure of market efficiency in the aftermarket. By using four group regressions created based on the number of months securities are held and the month of the seasoning, the study found that there is a possible departure of market efficiency at the beginning of the month following the offering; but overall, market efficiency could not be rejected. Yu and Tse (2006) conducted empirical research on all online fixed price A-share in China found that the price of IPO stocks changes quickly after an IPO as a form of quick information adjustment. Therefore, the market is efficient.

Meanwhile, Shayne and Soderquist (1995) straightforwardly mentioned that the IPO market is inefficient. They stated that aftermarket trading price reflects the true value of the stock.

Their study supported a previous study conducted by Loughran and Ritter (1995). Loughran and Ritter (1995) showed two underlying phenomena of IPOs: If IPOs are made in a high market the IPOs underperform the seasoned stocks available in such a market. They found that investors would make more money when they invested in seasoned stocks steadily instead of investing in IPO stocks. They also demonstrated that the IPOs' first-day abnormal return is usually short-lived and that IPOs are not always underpriced in the long term. This implicitly shows that the aftermarket price of IPO stock is sometimes lower than the initial IPO price, which signifies that the IPO price does not reflect the true available information in the market. In other words, investors may overvalue the IPO stock in the first-day offering so the demand is high and increases the price. Hence, the market is inefficient. In addition, Chang, Chen, Kao, and Wu (2014) conducted empirical research of underpricing in Taiwan. They suggested that high IPO underpricing might not represent the increase of information disclosure but rather market efficiency.

Previous studies conducted by Shayne and Soderquist (1995) and Loughran and Ritter (1995) tend to show that there is market inefficiency during IPOs. Though Ibbotson (1975) and Yu and Tse (2006) conclude that the market is efficient, they do not reject that there is departure of market efficiency following the offering. Moreover, an abnormal positive initial return that allows investors to take profit strengthens the existence of market inefficiency during IPOs. The next questions are: If the market is inefficient, what causes this inefficiency? What causes that the information is not fully reflected in the stock's price? Who gets more information and who gets less information? To find the answers, the authors attempt to analyze underpricing theories that consist of information asymmetry, institutional factors and ownership and control considerations in the following section.

3. What causes underpricing?

Underpricing is the practice of listing IPO stocks at a price below their fundamental value. An example is that the fundamental value of a stock is worth \$200 but the listed IPO price is \$120. This phenomenon will result in a positive abnormal first-day return. What causes underpricing phenomena to occur? To explain this phenomenon Jenkinson and Ljungqvist (2001) provide three underpricing theories: information asymmetry theory, institutional factors and ownership and control considerations.

3.1. Information asymmetry theory

This section presents several information asymmetry problems between the different IPO parties that underlie underpricing. The IPOs parties themselves consist of three key players: the issuing firm, the underwriter and investors.

(1) The issuing firm is a company that is listed in the stock market for the first time. The goal of the issuing firm is to acquire the highest possible offer price for the floated share. The issuing firm has the best information of the future firm's prospect (Allen & Faulhaber, 1989; Grinblatt & Hwang, 1989). Due to wishing to acquire the highest possible offer price, the issuing firm does not share all available information with the investors. Consequently, IPO issuing firms create an asymmetrical information problem with the investors.

(2) The underwriter is a financial specialist – investment bank, commercial bank or brokerage firm – who helps the issuers' issuing process. The primary function of an underwriter is to evaluate the firm's value to determine the IPO's stock price. The underwriter will earn underwriting fees called the underwriting spread (C. Chen & Mohan, 2002). The issuing firm could choose either a firm-commitment or a best effort agreement (Bower, 1989). Best effort is the underwriter's commitment to make their best effort to sell as much stock as possible while firm commitment is where the underwriter purchases all shares and has to sell them all to get money.

An underwriter could create asymmetric information problems either for issuing firms or for investors. They can intentionally set a lower IPO price for their personal gain to attract more investors so all the IPO stock will be sold. Underwriters also can overprice the IPO company, which benefits the issuers at the expense of investors.

(3) Investors are people who subscribe to the IPO offering and hold shares for a long investment horizon (Jenkinson & Ljungqvist, 2001). There are two types of investors: retail and institutional (Jaiyeoba, Abdullah, & Ibrahim, 2020). Retail investors are private or individual investors, while institutional investors are investors from institutions that tend to be more financially sophisticated. The investor's goal is to achieve a maximum return when purchasing IPO stock due to the underpricing phenomena.

Jenkinson and Ljungqvist (2001), Balvers, Affleck-Graves, Miller, and Scanlon (1993), Albada et al. (2019), Kennedy et al. (2006) provide several information asymmetry theories to explain the underpricing phenomena. The most common information asymmetry theories are signaling, principal-agent, winning curse, and book-building effect theory.

(1) Signaling theory

Allen and Faulhaber (1989) state that a good company tends to signal investors regarding its future superior prospects by selling IPO stock at a low price. They can sell the stock at a low price because they believe that their performance will be better in the future, thus increasing the stock price. This statement aligns with Ibbotson (1975) who states that the purpose of IPO underpricing is to leave a good taste in investors' mouths so that future underwriting could be sold with a more attractive price. In addition, Grinblatt and Hwang (1989) also support that underpricing is a signal that the company is good.

Ibbotson (1975) explains that bad firms could send the same signal as good firms. Meanwhile, Ivo Welch (1989) mentions that imitation expense costs can cause bad firms to appear to be good firms. In the end, this imitation

cost will induce bad firms to reveal their quality voluntarily.

(2) Principal-agent theory

Baron (1982) introduces the principal-agent theory between firm issuer and underwriter. This study states that investment bankers as underwriters have more superior capital market demand information. Underwriters can be classified into reputable and non-reputable underwriters. Non-reputable underwriters tend to set a lower IPO price, not as a signal to the investor, but to benefit themselves and investors. Selling at a lower IPO price could reduce the marketing effort to sell the stocks.

(3) Winning curse theory

There are two types of investors: informed investors and uninformed investors. Rock (1986) shows that educated investors have better information than the issuer and underwriter. His study also states that uninformed investors cannot get any abnormal return from an IPO and they usually purchase unprofitable new issues. There is asymmetric information between informed and uninformed investors. Informed investors can estimate the value of the firm due to their financial knowledge so they can purchase underpriced IPOs while uninformed investors do not. This causes adverse selection problems to occur. Therefore, the issuing firm should price the share at a discount to guarantee that uninformed investors buy the issue.

(4) Book building effect theory

Book building is how an underwriter tries to determine the price of the stocks in an IPO. Benveniste and Spindt (1989) found that institutional investors have superior information to that of issuing firms and underwriters. Therefore, institutional investors have an important role in determining an IPO price during book building since they have that superior information. Institutional investors who bid for the stocks aggressively are considered as revealing favorable information of the issuing firms and are compensated by underpricing.

Figure 2 shows the diagram summary of those four information asymmetry theories and their relationship with the key IPO parties.

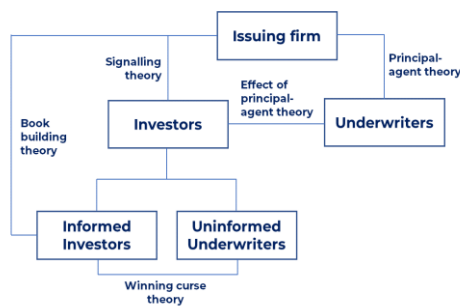


Figure 2: Diagram summary of information asymmetry theories

Source: Author's Original Data (2022)

3.2. Institutional factors

Institutional factors could be the determinant of underpricing phenomena. Three common institutional factors lead to underpricing: lawsuit avoidance, price stabilization, and tax argument. These factors are difficult to generalize since institutional factors in each country are different while underpricing is a global phenomenon.

(1) Lawsuit avoidance

Ibbotson (1975) mentioned that an issuing firm sells its IPO stocks at a discount to reduce the possibility of future lawsuits from disappointed shareholders due to post-IPO performance. Meanwhile, not all firms in all countries face this lawsuit risk and this factor is more significant in the U.S. (Ljungqvist, 2004). Therefore, this explanation fails to explain underpricing around the world.

(2) Price stabilization

Booth and Smith (1986) initiated the price stabilization concept. IPO underwriters conducted underpricing to make the aftermarket price more stable. Underwriters intervene in the aftermarket to reduce the potential price drop for a few days or weeks. Yet, Jenkinson and Ljungqvist (2001) found that price stabilization rationale is difficult to be observed by investors.

(3) Tax argument

This tax argument is more difficult to generalize since each country has a different tax policy. Underpricing stock is a way to help employees to get a greater return since income

tax is higher than capital gain tax (Rydqvist, 1997). Therefore, paying employees using underpriced assets is an exchange for salary. Meanwhile, this does not apply in countries with different tax systems or that are tax-free.

3.3. Ownership and control theory

As the firm grows, it needs to separate its ownership and control. The firm needs to employ professionals to manage the firm, called managers. The manager's existence could cause an agency problem with the shareholders since they have different interests to fulfill (Jensen, 1986). Evidently, this agency problem could lead underpricing to occur. Two main hypotheses explaining the underpricing phenomenon are: retaining managerial control and agency cost.

(1) Retaining managerial control

Brennan and Franks (1997) stated that underpricing will allow managers to protect their control over firms. Underpricing will attract many investors to invest in the company. Therefore, it will cause oversubscription. As a result, the firm needs to do allotment since there are a lot of investors who are willing to purchase the stocks. There will be no single or several large shareholders, yet, greater ownership dispersion will occur. Higher ownership dispersion will reduce shareholders' monitoring over managers.

(2) Agency cost

Agency cost hypothesis is contrary to retaining the managerial control purpose. Stoughton and Zechner (1998) mentioned that underpricing is used to attract large blockholders to do internal monitoring to minimize agency problems between shareholders and managers. However, this hypothesis needs to be further proven.

4. Overvaluation and behavioral bias

First-day positive abnormal returns are not solely caused by underpricing. Several researchers have argued that it tends to lead to

investors' overvaluation behavior. As Loughran and Ritter (1995) found, abnormal returns of the first day are short-lived. Hence, stock may be overpriced based on longer-term performance. As we discussed in sections B and C, during IPOs, the market is not efficient since asymmetric information is highly likely to occur, causing the price not to reflect overall information. Several studies show that many investors try to take advantage of this inefficient market. Moreover, they do not have true information.

Hence, behavioral bias, such as investor overconfidence occurs in the market, which causes overreaction. Ivo Welch and Ritter (2002) asserted that investors' excessive optimism might explain the price leaps when trading opens. Overreaction is investor reaction beyond the normal reaction since investors usually overweight current information and underweight prior data (Bondt & Thaler, 1985). The other factor that causes overreaction to happen is information cascade. I. Welch (1992) proposed information cascade among IPO investors that causes first-day return to occur. Investors did their actions based on the bids of earlier investors and disregarded their own information. In other words, investors imitate what previous investors did.

5. Empirical research: Underpricing or behavioral bias?

The phenomenon of an abnormal return on the first-day of trading still leaves a big question: Is it caused by underpricing or overvaluation? The author tries to integrate all theories and previous empirical studies to answer the question. As explained in section B, generally, the market is efficient (Fama, 1991). Yet, the market faces inefficiency during the IPO process that leaves the opportunity for investors to take profit. Therefore, to prove whether underpricing or overvaluation plays a big role in the first-day abnormal return, aftermarket IPO performance could be the indicator to analyze since information is more available in aftermarket

performance (Ibbotson, 1975). Song et al. (2014) presented that when aftermarket performance shows a positive return, it confirms underpricing while when aftermarket performance shows a negative return, it confirms investors' overvaluation. That study also stated that investors can assess the intrinsic value to determine whether the IPO is either underpriced or overvalued. Yet, as Fama (1991) has mentioned, determining the true price of the assets is not certain since there are a lot of asset pricing models that are still debatable.

Agarwal, Liu, and Rhee (2008) researched 256 IPOs from 1993 to 1997 in the Hong Kong Stock Market. They found that an IPO with high investor demand has a large positive initial return yet has a negative long-run excess return. They stated that their result could not be explained by the information asymmetry hypothesis or underpricing hypothesis, but by the speculative bubble hypothesis in which a positive initial return is due to the overoptimistic reaction of the investors. Dell'Acqua, Etro, Tetia, and Murria (2015) conducted similar research on 129 IPO stocks in the Italian Stock Exchange from January 2001 to December 2012. Two-thirds of the sample offering had first day returns. The study found that the aftermarket performance after 30 days had a lower return than the first-day trading. The authors suggest that there is overvaluation and overreaction by investors during the first day trading instead of underpricing.

Similar research is also conducted by Vakrman and Kristoufek (2015) for the U.S. market for the period 2004 to 2010. They found that returns in the first day are higher for IPOs that receive higher attention through Google searches. Consistent with previously discussed research and prior research of Derrien (2005), those IPOs shows price reversals in the long term indicating overoptimistic investor. Friesen and Swift (2009) also qualitatively found the same conclusion. Baig and Chen (2022) also found the existence of first day abnormal returns during the pandemic. They found that there was more post-IPO return volatility than before the pandemic.

Therefore, they predicted that IPOs would underperform in the long run. Kuswanto (2021) found that during the pandemic, underpricing is only significant for the T1 of the trading day. After that, the stock's return consistently declines, which implicitly shows aftermarket performance drop.

Most empirical research found that overvaluation and overreaction are the main sources of a positive abnormal return in the first trading day based on aftermarket performance. Almost no research found that underpricing is the dominant predictor of that anomaly. Abraham, Harris, and Auerbach (2016) found an interesting result. Their study showed that long-term positive returns are owned by firms with a high growth rate. Consistent with signaling theory, it revealed that IPOs underpricing occurs only for companies with good prospects in the future. Therefore, the authors conclude that a positive abnormal return in the first-day trading tends to be a result of investors' overvaluation instead of underpricing.

Song et al. (2014) who specifically examined underpricing and overvaluation, found that the level of underpricing and overvaluation of IPO stocks in China is 14-22% and 44-53% respectively. Hence, the extreme IPO initial return determinant is overvaluation, which supports the author's conclusion.

6. Conclusion

Abnormal IPO initial returns are a common phenomenon in financial studies, which attracts some researchers and academicians to dig deep for the main cause of the initial return, whether due to underpricing or investors' overvaluation. There are several underpricing and investment sentiment theories explaining that phenomenon. After analyzing and comparing several related studies, theories, and empirical research in the literature, the author concludes that abnormal initial returns tend to be caused by investors' overvaluation and overreaction. Moreover, such

investors did not have adequate information to imitate what previous investors did.

Nevertheless, empirical research to test underpricing and overvaluation needs to be conducted to ensure the result of this study. Future researchers could examine the determinants of abnormal IPO initial returns (due to underpricing or investors' overvaluation) by using several countries as the research sample. Moreover, this study uses aftermarket performance as an indicator to find the cause of abnormal initial returns. Future researchers could try to analyze using another related indicator. In addition, this study does not take into account the impact of the pandemic on underpricing or overvaluation. Future researchers could consider the effect of the pandemic in their future research.

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