

Why do IPOs leave money on the table for investors on the first day of trading? A theoretical review

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Abstract

To find out the possible theoretical reasons for leaving money on the table, this study reviews the literature on the short-run market performance of IPOs. Leaving money on the table is measured by the difference between the closing price on the first day of trading and the issue price, multiplied by the number of shares issued. The main cause for leaving money on the table is short-run underpricing which rewards positive financial returns for initial investors at the very first day of trading. The short-run underpricing is a universally accepted phenomenon. The theoretical reasons for underpricing vary according to the markets, models and sample periods. The academic researchers have more emphasized on asymmetric information theories to explain the theoretical reasons for short-run underpricing phenomenon. The theoretical explanation also links with the uncertainty and the information asymmetry among the issuer, the underwriter and the investor. The issuer, underwriter (investment banker) and investor are major players in the IPO process. However, there is no single dominant theoretical reason for short-run underpricing. Further studies focus more on the behavioural finance approach to find out the real reasons for underpricing, which is complete dearth of literature on the short-run market performance of IPOs.

Keywords: *IPO, Leaving money on the table, Positive returns, Asymmetric information theories*

1. Introduction

Leaving money on the table is defined as the first trading day returns earned by initial IPO investors in monetary terms. It is measured by the difference between the closing price on the first

day of trading and the issue price (PRICE), multiplied by the number of shares issued (Ritter, 2014). Leaving money on the table mainly comes through the short-run underpricing which provides positive financial returns for initial

investors at the very first day of trading. Therefore, short-run underpricing is referred to as “Leaving money on the table”. Most IPOs worldwide are underpriced in the short-run, thereby leaving huge amount of money on the table. The short-run underpricing is a universally accepted phenomenon.

This universally accepted phenomenon was first documented in the finance literature by Stoll and Curley (1970), Logue (1973) and Ibbotson (1975). These researchers used the term first-day return instead of underpricing. This phenomenon was examined by other researchers in later work (Chan, Wang & Wei 2004; Chang et al. 2008; Dimovski & Brooks 2005; Finn & Higham 1988; Ibbotson, Sindelar & Ritter 1994; Lee, Taylor & Walter 1996; Loughran & Schultz 2006; Moshirian, Ng & Wu 2010; Omran 2005; Ritter 1987). They discovered that there are a number of theoretical explanations why IPOs are underpriced.

This research paper seeks to review the empirical evidence and theoretical explanation for the underpricing phenomenon. The remainder of this article is organized as follows. Section 2 reviews the empirical evidence on the underpricing phenomenon. Section 3 covers theoretical explanation for the underpricing - phenomenon, and Section 4 concludes the major findings.

2. Evidence on underpricing phenomenon

This section reviews the empirical evidence on the under pricing phenomenon.

Dimovski and Brooks (2004) stated that the price of a newly listed company's shares being below the price at which the shares subsequently trade is known as underpricing. The terms first-day returns and underpricing are used interchangeably by academics (Ritter & Welch 2002). The high returns achieved by investors on the very first day of a company's shares being listed on a stock exchange have been reported historically (McDonald & Fisher 1972; Reilly & Hatfield 1969). The underpricing of IPOs has been widely documented in the finance literature and it appears to be a short-run phenomenon.

Extensive research on this phenomenon indicates that, on average, investors outperform (underprice) in the market, and therefore, underpricing has been a persistent empirical phenomenon for many decades (see Table 1). Moshirian, Ng and Wu (2010) examined the price performance of a selected sample of 4,439 IPOs from advanced and emerging Asian markets from 1991 to 2004. Their study provides a comparative assessment on the short- and long-term stock performance of Asian and developed countries. The findings show that initial underpricing in the emerging Asian markets of China (202.63%), Korea (70.3%) and Malaysia (61.81%) exceeded

Table 1: Evidence on the short-run underpricing phenomenon

Country	Average initial return (%) ^a	Sample size	Sample period	Author(s)
Australian				
Australia	29.2	93	1966–1978	Finn & Higham
Australia	11.86	266	1976–1989	Lee, Taylor & Walter
Australia	16.36	523	1979–1989	How & Low
Australia	107.18	130	1979–1990	How
Australia	19.74	340	1980–1990	How, Izan & Monroe
Australia	15.48	313	1976–1993	Balatbat, Taylor & Walter
Australia	25.6	358	1994–1999	Dimovski & Brooks
Australia	25.47	333	1991–1999	Da Silva Rosa, Velayuthen & Walter
Australia	11.96	11	1989–1999	Gong & Shekhar

Australia	33	275	1993–2000	How, Lam & Yeo
Australia	26.72	419	1995–2000	Bayley, Lee & Walter
Australia	48.04	156	1999–2000	Ho et al.
Australia	16.13	260	1994–2004	Nguyen, Dimovski & Brooks
Australia	37.35	68	1995–2004	Bird & Yeung
Australia	28.8**	743	1992–2004	How, Ngo & Verhoeven
Australia	19.8	1103	1976–2006	Lee, Taylor & Walter; Woo; Phan; Ritter
Australia	25.47	254	2006–2011	Perera & Kulendran
Non-Australian				
Austria	6.5	96	1971–2006	Aussenegg
Belgium	13.5	114	1984–2006	Rogiers, Manigart & Ooghe; Manigart Du Mortier; Ritter
Brazil	48.7	180	1979–2006	Aggarwal, Leal & Hernandez; Saito
Canada	7.1	635	1971–2006	Jog & Riding; Jog & Srivastava; Kryzanowski, Lazrak & Rakita; Ritter
Chile	8.4	65	1982–2006	Aggarwal, Leal & Hernandez; Celis & Maturana; Ritter
China	164.5	1394	1990–2005	Chen, Choi, and Jiang
Cyprus	23.7	51	1999–2002	Gounopoulos, Nounis & Stylianides
Egypt	8.4	53	1990–2000	Omran
Finland	17.2	162	1971–2006	Keloharju
France	10.7	686	1983–2006	Husson & Jacquillat; Leleux & Muzyka; Paliard & Belletante; Derrien & Womack; Chahine; Ritter
Germany	25.3	700	1978–2008	Ljungqvist; Rocholl; Ritter; Vismara
Hong Kong	15.9	1008	1980–2006	McGuinness; Zhao & Wu; Ljungqvist & Yu; Fung, Gul & Radhakrishnan; Ritter
India	92.7	2811	1990–2007	Marisetty & Subrahmanyam
Indonesia	21.5	339	1989–2008	Hanafi; Danny; Suherman
Iran	22.4	279	1991–2004	Bagherzadeh
Ireland	23.7	31	1999–2006	Ritter
Japan	40.1	2628	1970–2008	Fukuda; Dawson & Hiraki; Hebner & Hiraki; Pettway & Kaneko; Hamao, Packer & Ritter; Kaneko & Pettway; Ritter; Tokyo IPO.com
Jordan	149	53	1999–2008	Mammar
Korea	55.2	1490	1980–2006	Dhatt, Kim & Lim; Ihm; Choi & Heo; Mosharian & Ng; Cho; Ritter
Malaysia	69.6	350	1980–2006	Isa; Isa & Yong; Yong
Mexico	15.9	88	1987–1994	Aggarwal, Leal & Hernandez; Eijgenhuijsen & van der Valk
Netherlands	10.2	181	1982–2006	Wessels; Eijgenhuijsen & Buijs; Jenkinson, Ljungqvist & Wilhelm; Ritter
New Zealand	20.3	214	1979–2006	Vos & Cheung; Camp & Munro; Ritter
Norway	9.6	153	1984–2006	Emilsen, Pedersen & Sætem; Liden; Ritter
Poland	22.9	224	1991–2006	Jelic & Briston; Ritter
Portugal	11.6	28	1992–2006	Almeida & Duque; Ritter
Russia	4.2	40	1999–2006	Ritter

Source: The figures were taken from 'Initial Public Offerings: International Insights' by Loughran, Ritter and Rydqvist (1994, updated 2010) and rest of the figures were based on the papers published by the authors.

Note: * The average initial returns are equally weighted average returns, which are calculated using issue prices and first-day listing prices. Some of the returns are raw returns and some are market-adjusted returns.

** The authors have calculated the first-day returns for dividend payers (332) and non-payers (441) as 22% and 32% respectively. Considering these returns, the study recalculated the average first-day return for all sample companies (743) as 28.8% ($(22\% \times 332 + 32\% \times 441) / 743$).

that of the developed markets of Hong Kong (21.43%), Japan (34.04%) and Singapore (33.10%).

A study on the listed securities at the Karachi Stock Exchange (KSE) by Sohail, Raheman and Durrani(2010) investigated a sample of 73 IPOs using data for 10 years (2000-2009). The performance of the IPOs was analysed according to different states of the economy: normal, boom and recession. The results showed that the Pakistan IPO market provided positive abnormal returns to investors on a short-run basis, as was observed in other countries. Under normal economic conditions, the average raw return (ARR) of the first day was 43% and the market-adjusted first-day return was 36.75%. Generally, the average market-adjusted return was 42.17%, 40.99%, 37.35%, 38.17%, and 39.38% on the close of the first, fifth, tenth, fifteenth and twentieth day respectively. Further, the findings indicate that, under the boom conditions in 2008, investors could earn a 95.60% market-adjusted return on the very first day.

Chan, Wang and Wei (2004) analysed 570 A class shares and 39 B class shares in Chinese IPOs over the period 1993-1998. A-shares are tradable only by domestic investors and B-shares are tradable only by foreign investors. The findings were consistent with the results from previous studies; they found that there was a huge underpricing of A class shares of IPOs. The average return of an A-share IPO on the first trading day was 178%. In contrast, underpricing for B-share IPOs was much smaller, with an average return of 11.6% on the first day of trading. Further, Banerjee, Hansen and Hrnjic (2009) empirically analysed the cross-country differences in IPO underpricing among 18 countries between 2000 and 2006. They found that, on average, investors over performed

(earning high stock returns) in the short-run IPO market.

Underpricing of IPOs in Egypt was analysed by Omran (2005) using a sample of 53 privatisation IPOs between 1994 and 1998. The study identified that the sample companies' yielded economically and statistically significant initial excess returns in line with the underpricing phenomenon of IPOs, which is widely documented as a universal phenomenon in the finance literature.

The US IPO market has been studied extensively by many researchers over the last two decades. Johnston and Madura(2002) showed that initial returns were more favourable for internet IPOs than non-internet-firm IPOs during the period of 1996 to 2000. In addition, the degree of underpricing (initial return) of internet firms was not significantly different after the demise of the internet sector. They investigated a sample of 366 internet-related IPOs and the average initial return was 78.5%. In addition, Loughran and Schultz (2006) and Ritter and Welch (2002) reported average initial-day returns in the United States of 18.1% and 18.8% respectively. The studies of Ibbotson (1975), Ritter (1987) and Ibbotson, Sindelar and Ritter (1994) reported initial-day returns of between 11.4% and 47.8%.

The Australian IPO market has been widely examined by many researchers over the past years. Finn and Higham(1988) reported that Australian industrial and commercial IPOs were underpriced by 29.2%. Further, Lee, Taylor and Walter (1996), How, Izan and Monroe (1995) and Dimovski, Philavanh and Brooks (2011) reported industrial sector IPO underpricing in the short-run market of 11.86%, 19.74% and 29.6% respectively. However, Dimovski and Brooks (2008) and How (2000) documented mining IPO

underpricing of 13.3% and 107.18% respectively. Dimovski and Brooks (2005) and Dimovski and Brooks (2004) found Australian mining and energy IPOs and industrial and resource IPO underpricing on the first-day return of 17.93% and 25.6% respectively. Da Silva Rosa, Velayuthen and Walter (2003) reported that venture-capital-backed and non-venture-capital-backed IPOs were underpriced by 25.47%, whereas Gong and Shekhar (2001) found privatised IPOs were underpriced by 11.96%. Bird and Yeung (2010) and Bayley, Lee and Walter (2006) found Australian IPO underpricing of 37.35% and 26.72% respectively. Perera and Kulendran (2012) reported that Australian IPOs were underpriced in the primary market by 25.47%.

Table 1 presents selected empirical evidence on short-run underpricing in Australian and non-Australian studies. According to the table, the level of underpricing in Australia varied from 11.96% to 107.18% in the period 1966 to 2004. Loughran, Ritter and Rydqvist (1994 [updated 2010]) reported that Australian IPOs were underpriced on average by 20% during the period 1976-2006. The level of underpricing in Australia varied according to the sample size and sample period. Most of the higher underpricing levels were reported for a low sample size, except for the study by Gong and Shekhar (2001). Compared with the underpricing levels in developed countries, including European countries, the United Kingdom and the United States, except for Germany, Ireland, Poland and Switzerland, Australian IPOs were underpriced at a higher rate. However, the sample sizes used to calculate average initial returns in Germany, Ireland, Poland and Switzerland were lower than those in Australia. In comparison with the emerging markets of Chile, Egypt, Hong Kong,

Mexico and Turkey, the average level of underpricing in Australia was higher. Generally, developed-market underpricing levels were more consistent than those of the emerging markets because they had less variation in average initial returns in the first listing day.

In general, this review of the literature suggests that underpricing (outperforming) of IPO securities in the short run is a universally persistent phenomenon. Ritter and Welch's (2002) study found that approximately 70% of the IPOs ended the first day of trading at a closing price greater than the offer price, whereas 16% had a first-day return of exactly zero. However, very few IPO studies have reported that IPOs were overpriced (underperforming) in the short run (Shaw 1971; Stigler, 1964).

3. Theoretical explanation for underpricing phenomenon

This section explains the possible theoretical reasons for the underpricing phenomenon. There are a number of reasons why IPOs are underpriced. The theoretical explanation links with the uncertainty and the information asymmetry among the issuer, the underwriter and the investor. The issuer, underwriter (investment banker) and investor are major players in the IPO process. The underpricing determinants are used as proxies to explain the theoretical concepts related to underpricing.

Ibbotson (1975) examined the initial market performance on newly issued common stocks that were offered to the general public during the period of 1960-1969. The results indicated that the average initial performance was positive and the sample companies were underpriced by 11.4%. The aim of this study was to determine whether the positive initial performance took place

because a low offering price was set or because investors overvalued the new issues. The final results indicated that if there was any departure from efficiency in the market, positive initial performance could only be attributed to the low offering price. The study documented a number of possible explanations for this short-term underpricing under the subtitle of 'Economic Interpretation of the Results'.

There are three main interested parties in IPOs: issuers, underwriters and investors. Underwriters are the intermediaries between the issuers (funds needers) and the investors (fund suppliers). A primary legal requirement according to the Rules of Fair Practice is that new issues must be offered at a fixed price. Once underwriters are limited to offering new issues at a fixed price according to the law, there is potential for one-sided risks to occur. Therefore, underwriters may break the syndicate once the offering is made and sell the offering at lower than the fixed price that was set for the offering. However, it is not possible to sell any part of the issue above the fixed offering price under strong demand conditions.

Underwriting takes place on either a 'firm commitment' or 'best efforts' basis. Under the firm commitment basis, the underwriter buys all of the issues from the issuer and subsequently bears all of the risks in selling the issue. Then, the underwriter determines the investors' purchasing price (fixed offering price), which is equal to the underwriter's purchasing price from the issuer plus the underwriting spread. In the best-efforts method, the issuer takes the risk of selling the issue at the fixed price, but the underwriter receives the underwriting spread to cover costs. Ibbotson's (1975) study suggested the following new scenarios, which were used to explain the

underpricing of new issue offerings.

- Regulations require underwriters to set the offering price below the expected value.
- Underpriced new issues 'leave a good taste in investors' mouths' so that future underwritings from the same issuer can be sold at attractive prices.
- Underwriters collude or individually exploit inexperienced issuers to favour investors.
- Firm commitment underwriting spreads do not include all of the risk assumption costs.
- Through tradition or some other arrangement, the underwriting process consists of underpricing offerings with full (or partial) compensation via side payments from investors to underwriters to issuers.
- The issuing company and underwriter perceive that underpricing constitutes a form of insurance against legal suits.

Many of the above reasons that Ibbotson (1975) presented in his study were formally explored by other researchers in later work. Among them, Ritter (1998) explained a number of possible reasons for new issue underpricing based on a number of different theories on various aspects of the relations between investors, issuers and investment bankers (underwriters) who take IPO firms into the public. Further, this study explained that these theories are not mutually exclusive. These short-run underpricing theories are illustrated in Figure 1. All of the theories (hypotheses) to explain short-run underpricing are discussed below.

The winner's curse hypothesis

The winner's curse hypothesis assumes that

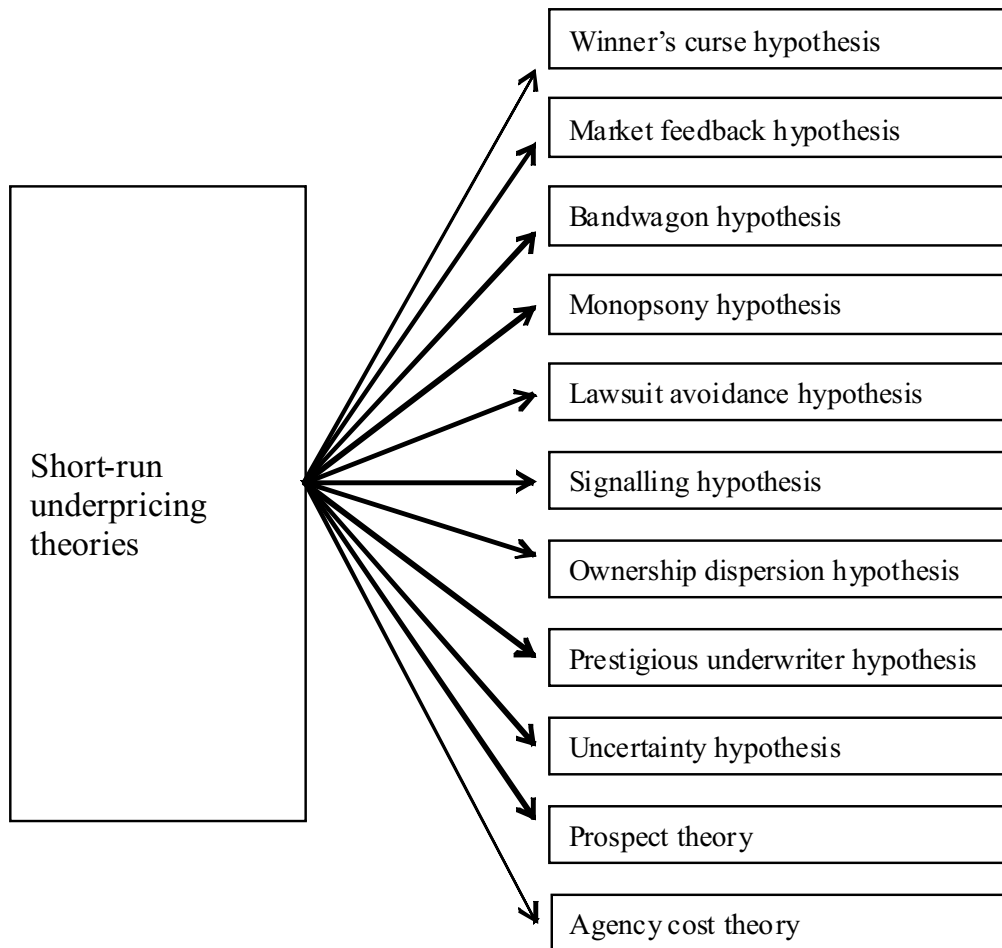


Figure 1: Short-run underpricing theories

underpricing can be used to attract uninformed investors who would otherwise suffer the 'winner's curse' when trading with informed investors. The winner's curse problem implies that informed investors do not give uninformed investors a chance to invest when an offer is attractive and they withdraw from the market when an offer is unattractive. To encourage participation by uninformed investors, all IPOs must be underpriced or discounted. The following discussion shows how this hypothesis has been tested by researchers in the IPO area.

Numerous studies have tested the winner's curse hypothesis in different countries. The first attempt was made by Rock (1986), who documented that high positive returns in IPOs cannot be realised in practice due to the winner's curse or adverse selection problem. Uninformed investors are allocated a greater number of shares in overpriced IPOs and a smaller number of shares in underpriced IPOs because informed investors will subscribe only for underpriced IPOs. Rock proposed that underpricing was needed to attract uninformed investors. In

equilibrium, the first-day returns after adjusting for the allocation rate should equal the risk-free rate. Koh and Walter (1989) studied 66 IPOs on the Singapore Stock Exchange during 1973-1987. During this period, if the IPOs were oversubscribed, all subscribers of similar size had an equal chance of obtaining the shares. Their tests confirmed the major predictions of the winner's curse hypothesis, or Rock's hypothesis. They showed that there was a significant positive correlation between the oversubscription ratio and first-day return. They concluded that the returns of uninformed investors were similar to the risk-free rate. This indicates that to break

even, investors need to be underpriced. Keloharju (1993) also confirmed the presence of the winner's curse model using 80 IPOs in the Finnish market from 1984 to 1989. This study documented a significant negative relationship between the shares allocation rate and first-day return. Amihud, Hauser and Kirsh (2003) studied 284 IPOs in the Tel Aviv Stock Exchange (TASE) from 1989 to 1993. They found that allocations were negatively related to underpricing and these findings support the existence of a winner's curse model. They concluded that underpricing occurred to a greater extent than was necessary to attract sufficient demand. Derrien (2005) studied

Table 2: Testable Hypotheses and Empirical Evidence of the Winner's Curse Model to Explain Underpricing

Testable hypothesis	Empirical evidence	
	Supportive	Contrast
The abnormal initial returns for uninformed investors are zero when adjusted for rationing.	Rock (1986), Koh and Walter (1989), Levis (1990), Keloharju (1993), Lee, Taylor and Walter (1996), Huang (1999), How (2000), Amihud, Hauser and Kirsh (2003), Derrien (2005), Yu and Tse (2006), Chen and Chen (2010)	Khurshed et al. (1999)
Underpricing is lower if information is distributed homogeneously across investor groups.	Michaely and Shaw (1994)	
The greater the ex-ante uncertainty about the value of the IPO company, the higher is the expected underpricing.	Ritter (1984), Beatty and Ritter (1986), Ritter (1991), Keasey and Short (1992), Kiyamaz (2000)	McGuinness (1992)
Underwriters that underprice too much will lose business from issuers.	Beatty and Ritter (1986), Nada and Yun (1997), Dunbar (2000)	
Underpricing can be reduced by minimising the information asymmetry by choosing a prestigious underwriter and a reputable auditor.	Both and Smith (1986), Carter and Manaster (1990), Timan and Trueman (1986), Michaely and Shaw (1994), Habib and Ljungqvist (2001)	McGuinness (1992), Betty and Welch (1996)

Source: Ljungqvist (2007) and the papers published by the authors listed in the table.

62 IPOs in the French Stock Exchange from 1999 to 2001. This study documented a positive correlation between the individual-investor demand and first-day return. Derrien's findings show that IPO demand can be explained by market conditions prevailing at the time of the offering. IPOs in bullish market conditions attract more individual-investor demand. Chen and Chen (2010) examined the underpricing of A-share IPOs in the Chinese tourism industry. Their study tested the winner's curse as an information asymmetry-based theory and their findings confirmed the hypothesis. Further, they documented that investors, in spite of the high level of underpricing, should expect to earn more than a market-adjusted return in the risk-free rate. Yu and Tse (2006) also tested the winner's curse hypothesis to explain IPO underpricing in China and they found the winner's curse was a main reason for underpricing in China.

Table 2 summarises several other testable hypotheses and empirical evidence related to the winner's curse model, which can be used to explain short-run underpricing.

The market feedback hypothesis

Book building is used by investment bankers (underwriters) to undertake widespread marketing campaigns (roadshows) to canvass regular investors' opinions prior to pricing shares. Based on the investors' opinions acquired during the pre-selling period, investment bankers may underprice IPOs to attract regular investors. To encourage regular investors to reveal their valuations truthfully, the investment banker compensates investors via underpricing. In addition, with a view to encouraging honest publicity for a given IPO, the investment banker must underprice issues for which favourable information is discovered by more than those for which unfavourable information is discovered.

Finally, the offer is adjusted upwards or downwards in the final prospectus based on the market feedback. In other words, IPOs with an upwards-adjusted offer price would be more underpriced than IPOs with a downwards-revised offer price.

Several notable studies have been carried out by many researchers in different markets of the world to test the market feedback hypothesis. Benveniste and Spindt (1989) reported that underpricing arises naturally as a cost of compensating investors with positive information about the value of the stock for truthful disclosure of their private information. In addition, the theory presented in this study helps to explain the marketing of the types of securities, such as high-yield bonds, for which informational frictions may be important. Benveniste and Wilhelm (1990) studied the effect on IPO proceeds of uniform-price restrictions and restrictions on the allocation of oversubscribed issues. They indicated that uniform-price restrictions increase the cost of soliciting information from regular investors and, when combined with even-handed distribution restrictions, make information gathering impossible. Finally, they concluded that either adverse selection or the cost of soliciting information may be the central force behind IPO underpricing. Spatt and Srivastava (1991) reported that a posted-price mechanism leads to an allocation of the security that maximises the seller's expected revenue, given the informational constraints imposed by the potential buyers. Benveniste and Spindt (1989), Benveniste and Wilhelm (1990) and Spatt and Srivastava (1991) argued that the common practice of book building allows underwriters to obtain information from informed investors.

Hanley (1993) first documented that the most commonly discussed factor behind book building theories is the effect of revisions in the offer price during the filing period. This study found that issues' final offer prices that exceed the

limits of the offer range have greater underpricing than all other IPOs. This concludes that underwriters do not fully adjust their pricing upward to keep underpricing constant when demand is strong. These results are consistent with those of Benveniste and Spindt (1989), who found that shares in an offering are rationed and prices only partially adjust to new information.

The information revelation theory of book building was examined by Lee, Taylor and Walter (1999). They found that a large number of better informed investors (institutional investors) tended to preferentially request participation in IPOs with higher initial returns. In related work, Cornelli and Goldreich (2003) examined institutional bids submitted under the book building procedure for a sample of international equity issues. They concluded that information in bids that included a limit price, especially those of large and frequent bidders, affected the PRICE. In addition, public information affected the PRICE to the extent that it was reflected in the bids.

The bandwagon hypothesis

Ritter (1998) documented that the IPO market may be subject to a bandwagon effect or informational cascade. The bandwagon effect can be observed when potential investors are concerned, not only about the information they have regarding a new issue, but also whether other investors are purchasing. In other words, investors do not want to buy shares even when there is favourable information if other investors do not want to buy the shares. Therefore, issuers want to underprice their shares to encourage the first few potential investors to buy so that all subsequent investors will want to buy shares without considering their own information. The bandwagon effect was tested by Welch (1992).

The investment banker's monopsony power hypothesis

Another valid explanation for the short-run underpricing phenomenon is the investment banker's (underwriter's) monopsony power. Under this hypothesis, investment bankers take advantage of their superior knowledge of market conditions to underprice offerings. This helps underwriters to spend less on marketing efforts and ingratiate themselves with buy-side clients. In addition, investment bankers are successful at convincing clients and regulatory agencies. Thus, underpricing is normal for IPOs. Underwriters' monopsony power has been examined by many researchers. Ritter (1984) argued that, under the assumption of perfect or symmetric information, investment bankers take advantage of their superior knowledge of market conditions to underprice the offerings to maximise their incomes.

The lawsuit avoidance hypothesis

According to the securities acts in different countries, all participants who have signed an IPO prospectus are liable for any material omissions. Therefore, the frequency and severity of future lawsuits can be minimised by using underpricing of shares. Ritter (1998) has argued that underpricing of IPOs is a very costly way of reducing the probability of future lawsuits. Further, other countries in which securities class actions are unknown, such as Finland, have just as much underpricing as in the United States.

The lawsuit avoidance hypothesis is also related to the risk of litigation. Underwriters are intermediaries between the issuer and the capital market and make pricing decisions that maximise their own welfare. Underwriters set the PRICE knowing that they will be sued in the future if there is evidence that the courts will judge as indicative of overpricing. A perfect sequential equilibrium exists because some issues are overpriced, some

are underpriced, there is underpricing on average, and there is a positive probability of successful litigation against the underwriter (Ogden, Jen & O'Connor 2003, p. 411).

The signalling hypothesis

Underpricing of new issues signals that future share offerings can be sold at a higher price by issuers and insiders. This argument has been considered by many researchers in several signalling models. The hypothesis assumes that intrinsically higher-valued firms strategically underprice their shares to discourage lower-valued firms. In addition, high-valued firms underprice more than low-valued firms with a view to encouraging information production by investors that will then be revealed in the price of the secondary market. These models involve firms that deal directly with investors rather than investment bankers (Ogden, Jen & O'Connor 2003, p. 411). Various empirical studies have lined up with this hypothesis and a very few studies have rejected the signalling hypothesis.

Welch (1989), among others, proposed a signalling model in which issuers convey their private information about the value of their firms by underpricing their IPOs. Allen and Faulhaber (1989) examined the signalling hypothesis in relation to underpricing in the IPO market. They found that underpricing can signal favourable prospects for a firm. In certain circumstances, firms with the most favourable prospects find it optimal to signal their type by underpricing their initial issue of shares, and investors know that only the best can recover the cost of this signal from subsequent issues. Jegadeesh, Weinstein and Welch (1993) also tested the signalling theory in relation to the IPO market. They found a positive relationship between IPO underpricing and the size of subsequent season offerings. Their

findings are more consistent with the implications of the signalling hypothesis. In contrast to the findings of the above three empirical studies, Michaely and Shaw (1994) did not find empirical evidence to support the signalling model as an explanation for why firms underprice. They found that (1) firms that underprice more return to the reissue market less frequently, and for a lesser amount, than firms that underprice less, and (2) firms that underprice less experience higher earnings and pay higher dividends, contrary to the model's predictions. In their model, they found no evidence of either a higher propensity to return to the market for a seasoned offering or a higher propensity to pay dividends for IPOs that were more underpriced. Ritter and Welch (2002) have argued that, theoretically, it is unclear why underpricing is a more efficient signal than committing to spending money on charitable donations or advertising. Ritter (2003b) also mentioned that underpricing generates publicity. This publicity creates additional investor interest (Aggarwal, Krigman & Womack 2002; Chemmanur 1993) and additional product market revenue from greater brand awareness (Demers & Lewellen 2003). However, Habib and Ljungqvist (2001) have argued that this type of promotion is more expensive than traditional advertising campaigns such as television and newspaper advertising.

The current findings of Chen and Chen (2010) are also in line with the findings of Michaely and Shaw (1994). They also documented empirical evidence to support the rejection of the signalling hypothesis. Further, they mentioned that investors in the Chinese tourism IPO market should not view underpricing as a signal of quality firms. Zou and Xia (2009) retested the signalling hypothesis in explaining the underpricing phenomenon in IPOs

for both non-book building IPOs and book building IPOs. However, they reported mixed empirical evidence in Chinese IPOs for the signalling hypothesis. The signalling hypothesis was retested by Francis et al. (2010). They clearly stated that signalling does matter in determining IPO underpricing. Further, they argued that the evidence clearly supports the notion that some firms are willing to leave money on the table voluntarily to obtain a more favourable price at seasoned offerings when they are substantially wealth constrained.

The ownership dispersion or control hypothesis

This hypothesis assumes that issuing IPO firms may purposely underprice their shares with a view to increasing excess demand and attracting a large number of small shareholders. The dispersion of ownership will increase the liquidity of the market for the shares and establish a strong management team, which can create a challenging environment for competitors.

Brennan and Franks (1997) examined how separation of ownership and control evolves as a result of an IPO and how underpricing of the issue can be used by insiders to retain control. They found that the pre-IPO shareholders in a firm, the directors, sell only a modest fraction of their shares at the time of the offering and in subsequent years. In contrast, the holdings of non-directors are virtually eliminated during the same period. Finally, they concluded that a large majority of shares owned by pre-IPO shareholders are sold at the IPO or in subsequent years. Booth and Chua (1996) also explained that the issuer's demand for ownership dispersion creates an incentive to underprice. Promoting of oversubscription allows broad initial ownership, which in turn increases secondary market liquidity. Increased liquidity reduces the return required by the investors. However, broad

initial ownership requires an increase in investor-borne information costs, and these information costs are offset via underpricing. Finally, the empirical findings of this study confirmed that initial underpricing is reflected in the level of ownership dispersion.

Prestigious underwriter hypothesis

Underwriter reputation is an important variable to explain why IPOs are underpriced. Beatty and Ritter (1986) have argued that, under the situation of asymmetric information, underwriters are more concerned about their reputation and, therefore, they do not underprice IPOs too much. Carter and Manaster (1990) have also argued that underwriters have an informational advantage and they undertake only high-quality offerings with a view to enhancing their reputation and retaining their high-prestige status. Carter, Dark and Singh (1998) and Kenourgios, Papathanasiou and Melas (2007) examined the effect of underwriter reputation, and their findings are in line with Beatty and Ritter's hypothesis. Dimovski, Philavanh and Brooks (2011) also tested the link between underwriter reputation and underpricing using Australian evidence, and their results confirm that more prestigious underwriters are associated with a high level of underpricing.

The uncertainty hypothesis

If uncertainty about the value of the new issue is high, underpricing of that new issue is also high. The changing risk composition hypothesis, which was introduced by Ritter (1984), assumes that riskier IPOs will be more underpriced than less risky IPOs. Loughran and Ritter (2004) have argued that a small part of the increase in underpricing can be attributed to the changing risk composition of the universe of firms going public. Beatty and Ritter (1986) have also argued that the greater the uncertainty about the value of a new issue, the greater the underpricing needed to

attract uninformed investors. Further, they found that, while underpricing is common, the 'need' for and extent of underpricing is reduced if uncertainty about IPOs' future cash flows is reduced.

Prospect theory

Ritter (2003b) suggested that it is easy to understand why underwriters would like to leave money on the table. He argued that the situation is similar to a professor being more inclined to give an A grade to a student who offered a \$10,000 gift in return. He cannot understand, however, why issuers do not get upset about leaving money on the table. Loughran and Ritter (2002b) applied prospect theory to address this issue. This theory was originally developed by Kahneman and Tversky (1979). Prospect theory is not a normative theory about how people should behave; it is a descriptive theory on how people do behave. It assumes that people focus on change in wealth, rather than level of wealth.

One of the puzzles presented by IPOs is that issuers rarely become upset about leaving substantial amounts of money on the table. Loughran and Ritter (2002b) advanced the prospect theory model, which focuses on the covariance of money left on the table and wealth changes. They considered the second puzzling pattern (the HM) in the finance literature and found that more money is left on the table following recent market rises than after market falls. They explained that most of the IPOs leave relatively little money on the table and some IPOs leave a great deal of money on the table. By integrating loss and gain, issuers are happy to leave money on the table. Further, they argue that leaving money on the table is an indirect compensation to the underwriter and underpricing is an indirect cost to the issuer. They concluded that the results of prospect theory can be used to explain the HM phenomenon.

Agency theory

Ritter and Welch (2002) have argued that agency conflicts should be addressed in relation to the underpricing of IPOs in future explanations. The agency conflict of underpricing was first addressed by Baron (1982). Therefore, this hypothesis is known as Baron's hypothesis. According to his theory, the issuer is less informed than its underwriter. Therefore, the issuer is unable to monitor the underwriter's activity without incurring costs. In contrast to these findings, Muscarella and Vetsuypens (1989) found that, when underwriters themselves go public, their shares are also underpriced, even though there is no monitoring problem. This finding is not in line with the Baron hypothesis. Loughran and Ritter (2004) have argued that an agency problem between the decision makers at issuing firms and other pre-issue shareholders also contributes to a willingness to hire underwriters with a history of leaving large amounts of money on the table.

Ritter has summarised that all of the above explanations for short-term underpricing can be considered rational strategies of investors. In addition to these explanations, several other explanations have been proposed involving irrational strategies by investors. These irrational strategies can be used to explain the long-run performance of IPOs. However, behavioural and agency conflicts have become more important as explanations for the short-run underpricing phenomenon.

4. Conclusions

This section summarises the above discussed international literature pertaining to the short-run market performance of IPOs.

In the short run, initial investors always earn high positive returns because the first-day listing prices are greater than the PRICES. This is known as short-run underpricing, which is a universally accepted persistent phenomenon or a puzzle. Even if short-run underpricing is documented as a persistent phenomenon in the IPO literature, the degree of underpricing and reasons for underpricing are not persistent because of such factors as the sample size, market, sample period, measures and models. Therefore, there is no single dominant theoretical reason for underpricing, and only a few studies explain the relative importance of different explanations of underpricing (Ritter & Welch 2002). However, in explaining short-run underpricing, academic researchers have paid more attention to asymmetric information theories. They have found that short-run underpricing violates the efficient market hypothesis (EMH). The theoretical reasons also link with the uncertainty and the information asymmetry among the major players in the IPO process. The behavioural view of finance has not been given sufficient attention in the literature of short-run underpricing.

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