A Review of IPO Under pricing Phenomenon in Asia

Ali Albada
*Othman Yong**
Graduate School of Business
Universiti Kebangsaan Malaysia, Malaysia
**Corresponding author: othmanyo@ukm.edu.my*

ARTICLE INFO

Article history:
Received 30 August 2018
Revised 14 November 2018
Accepted 18 November 2018
Published 6 January 2020

Keywords:
IPOs, initial public offerings, asian IPOs, IPO under pricing, regulatory environment.

JEL Codes: G11, G12, G14, G24, G32.

ABSTRACT

This paper reviews the current status of IPO research in Asia, especially when it comes to the issue of the under pricing phenomenon. This interest stems from the increasing attention that some of the Asia Pacific region countries have, due to their higher average initial returns in comparison to other developed and developing countries. In this review, we identify the determinants for the high levels of under pricing as reported in the literature. We find that the regulatory environment of these Asian countries is the most reasonable source for such under-pricing, as it sets it apart from other developed and developing countries.

1. Introduction

This paper is a sequel to Yong's (2007) work, where he reviewed the IPO research in Asia before 2007. Furthermore, he investigated some of the unique features that are related to the Asian IPO markets such as pricing mechanisms, family business IPOs, privatization IPOs, legal systems, listing requirements, small investors, and price limits. In his review paper, Yong also suggested that the IPO research in Asia was still lacking in exploring unresolved issues such as the right time for issuing an IPO, the effect of the volume or size of IPOs, the difference in Asian laws and their enforcement, cultural differences, governmental interference, pricing mechanism, marketing of IPOs, and auditor reputation and how they affect IPO under pricing. The purpose of the present paper is, therefore, to review the Asian IPO literature since then till the most

recent one, in order to see how much of the previous gaps have been addressed in the literature. Even though this paper is supposed to be a sequel to Yong (2007), we still include some of the previous works (before 2007) due to the following reasons: (a) some of these works are either ignored or overlooked by Yong (2007); (b) these works are the basis for future related research and thus their inclusion is important in terms of continuity of discussion; and (c) those earlier works, especially in the developed markets, are the basis for some of the future works (or result in future works) in Asia.

2. Short-Term Under Pricing of Asian IPOs

The IPO under pricing (or positive initial returns) puzzle was documented in many different countries, where the literature showed that under pricing was not exclusive to the United States (US) market. According to Heerden and Alagidede (2012) and Yong (2007), most of the work regarding IPO initial returns had been carried out using data from the US. Among the first empirical studies that tested under pricing and reported a positive mean initial return in the US IPO market were Ibbotson (1975), Logue (1973), and Stoll and Curley (1970). A study conducted by Ritter and Welch (2002) documented an average initial return of 18.8% in the US.

Table 1. Empirical Evidence of Under Pricing in the Asia-Pacific Region

Country	Avg. Initial Return*	Size	Time Period	Classification	Sample Source
Asian-Pacific Region					
China	118.4%	2,512	1990-2013	Developing	Chen et al. (2008); Jia et al. (2014)
Hong Kong	15.8%	1,486	1980-2013	Developed	Zhao and Wu*; McGuinness (1992); Ljungqvist and Yu (2003); Fung et al. (2007)
India	88.5%	2,964	1990-2011	Developing	Marisetty and Subrahmanyam (2008); Ritter(2003)
Indonesia	24.9%	464	1990-2014	Developing	Suherman*
Japan	41.7%	3,236	1970-2013	Developed	Dawson and Hiraki (1985); Hebner and Hiraki (1993); Fukuda (1984); Pettway and Kaneko; Hamao et al. (2000); Kaneko and Pettway (2003)
Korea	59.3%	1,720	1980-2013	Developed	Ihm*; Dhatt et al. (1993); Choi and Heo*; Mosharian and Ng*; Cho*; Joh*; Dealogic*
Malaysia	56.2%	474	1980-2013	Developing	Isa (1993); Isa and Yong*; Yong*; Ma*; Dealogic*
Pakistan	22.1%	80	2000-2013	Developing	Mumtaz et al. (2016)
Philippines	18.1%	155	1987-2013	Developing	Unite and Sullivan (2003); Dealogic*

(continued)

Country	Avg. Initial Return*	Size	Time Period	Classification	Sample Source
			Asian-Pacific Region		
Singapore	25.8%	609	1973-2013	Developed	Lee, Taylor and Walter; Dawson; Dealogic
Sri Lanka	33.5%	105	1987-2008	Developing	Samarakoon (2010)
Taiwan	38.1%	1,620	1980-2013	Developed	Chen (1992); Chiang*
Thailand	35.1%	500	1987-2012	Developing	Lonkani and Tirapat*; Wethyavivorn and Koo-smith (1991); Ekkayokkaya and Pengniti (2012); Vithessonthi (2014)
Australia	21.8%	1,562	1976-2011	Developed	Lee et al. (1993); Woo*; Pham*; Ritter (2003)
New Zealand	18.6%	242	1979-2013	Developed	Vos and Cheung (1993); Camp and Munro (2000); Alqahtani*; Dealogic*

* The source of data, from individuals mentioned by Loughran et al. (1994), is based on the latest updated version (February 16, 2015) of the website, https://site.warrington.ufl.edu/ritter/files/2015/05/Initial-Public-Offerings-International-Insights-2015-05-21.pdf, as visited on June 14, 2018.

Researchers in different countries had tested the IPO under pricing phenomenon and many of these studies had confirmed a positive initial return in various markets around the world. This overview regarding the under pricing literature was made possible through the latest updated version (February 16, 2015) of Loughran's et al. (1994) table, which presents the average under pricing history for 52 countries. Loughran et al. (1994) constructed the table by collecting figures from various studies at that time for the purpose of understanding the differences in under pricing between countries. The original table covered 25 countries from 1960 to 1992. The present review paper is focused on the Asian region, and for that reason in this review, we use the table by Loughran et al. (1994) to cover only the Asian countries (See Table 1). China comes in first with the highest initial return in the Asian region, reporting an average initial return of 118.4% and covering the period ranging from 1990 to 2013 with a sample size of 2,512 firms. According to Moshirian et al. (2010), the high initial return in China was due to the distinctive corporate governance system, security laws, and lack of law enforcement.

The Asia Pacific region has gained particular attention among researchers because some of these countries had documented a higher average initial return in comparison to other developed and developing countries. In an early study, Jenkinson (1990) covered the period from 1985 to 1988 to test the IPO performance, by comparing the direct and indirect costs of raising the initial equity finance in the United Kingdom (UK), the US, and Japan. The study reported that the prices of the new issues relative to the market, after one week of trading, increased by over 12% for the UK, between 9% and 11.4% for the US, and nearly 74% for Japan. Jenkinson (1990) concluded that the under pricing

was due to the new equity issues being typically priced at a discount relative to their subsequent trading prices in the after-market. In the case of the UK, the discount was around 7.0%, while in the US, this value was around 10%. In contrast, the Japanese IPO prices soared, on average, by nearly 55% after one week. Furthermore, Ritter (2003) who reported that the average initial return in the US IPO market was significantly lower than the average initial return in the Asian IPO markets and substantiated this finding. His study tested the under pricing of IPOs in 38 countries, for which among the sample were 11 Asian countries, namely China, Malaysia, Korea, Thailand, India, Singapore, Taiwan, Japan, Philippines, Hong Kong, and Indonesia with an average initial return of 256.9%, 104.1%, 74.3%, 46.7%, 35.3%, 31.4%, 31.1%, 28.4%, 22.7%, 15.9%, 15.1%, respectively.

Moshirian et al. (2010) also examined the initial return, where their sample covered the Asia Pacific region by focusing on the six major markets (China, Hong Kong, Japan, Korea, Malaysia, and Singapore). They employed a cross-sectional analysis to test the initial returns, with a sample consisting of 4,439 IPOs and covering the period from 1991 to 2004. They documented a gradual increase in the level of excess returns for IPO under pricing in the Asian region. Furthermore, Moshirian et al. (2010) reported that the abnormal excess returns had been one of the distinguishing features of the Asian IPOs before the financial crisis of 1997. However, the IPO markets of the Asian region had shown significant declines in the abnormal excess returns since the beginning of the 1997 crisis. After the brief decline, the Asian IPO markets started to resurrect its previous glory during the so-called "Technology Boom" period of 1999–2000. Moreover, the IPO markets were accompanied by a greater degree of under pricing.

The IPO literature also consists of studies that investigated the under pricing of individual Asian countries. For example, in an early study in the Philippines, Unite and Sullivan (2003) tested the IPO performance of 104 IPOs from 1987 to 1997. They reported an average initial return of 22.7%. In another example of an early study, Chi and Padgett (2005) studied the Chinese IPO market by covering 668 IPOs from January 1996 to December 2000. They reported an average 129.2% under pricing in the Chinese IPOs. Other early studies that examined different Asian countries include: McGuinness (1992) on Hong Kong; Kim et al. (1995) on Korea; Mok and Hui (1998) and Su and Fleisher (1999) on China; Hwang and Jayaraman (1993), Pettway and Kaneko (1996), and Cai and Wei (1997) on Japan; and Koh and Walter (1989) and Lee et al. (1996) on Singapore.

In more recent studies such as Darmadi and Gunawan (2013) reported an average under pricing of 22.20% in Indonesia by covering 101 IPOs from 2003 to 2011. Boonchuaymetta and Chuanrommanee (2013) reported an average 18.03% under pricing for Thailand covering 153 IPOs for the period 2001–2011. Moreover, covering a sample of 948 Chinese IPOs, Song et al. (2014) reported an average initial return of 66%. Komenkul and Siriwattanakul (2016) documented an average initial return of 25.36% for 245 IPOs that were issued in Thailand between 2001 and 2012. Pandya (2016) reported a cumulated average abnormal return of 15.73% for the study period between 2003 and 2013, using a sample of

183 firms listed on the Indian stock exchange. Sochi and Islam (2018) reported an average under pricing of 198.8%, for 50 IPOs listed on the Dhaka Stock Exchange from June 2011 to June 2016. Moreover, Sochi and Islam (2018) found that oversubscription rate and offer size had a substantial influence on the IPO under pricing. Finally, Cheunga et al. (2018) reported the short-term performance of IPOs in Hong Kong from 1994 to 2014, and their results showed that under pricing magnitude varied annually and ranged from a negative 32.5% to a positive 93.5% for the sample of 938 Hong Kong IPOs. Overall, 601 IPOs (64.9%) obtained positive initial returns, with an average initial return of 9.6%.

3. Regulatory Environment and Under pricing

In an early study related to the regulatory environment, Loughran et al. (1994) concluded that the degree of under pricing varied enormously across countries due to the contractual mechanisms used and the characteristics of the firms going public. Furthermore, they argued that countries with the highest average initial returns tended to be countries where institutional constraints were binding (the average initial returns at the time of the study for Malaysia, Korea, and Brazil were 80.3%, 78.1, and 78.5%, respectively). Meanwhile, countries with the lowest average initial returns i.e. below 10.0% (e.g. Canada, France, and the Netherlands) tended to be countries in which most of the firms going public were relatively large firms with a long operating history and where the contractual mechanism used had auction-like features. Finally, they reported that the move in recent years by most East Asian countries to reduce regulatory interference during the 1990s in the setting of offering prices resulted in less under pricing in comparison to the 1980s.

Moshirian et al. (2010) documented an interesting fact regarding the listing requirements. They concluded that the initial return in the emerging markets, where the listing requirements were lenient, was higher in comparison to the developed markets, where the listing requirements were more stringent. They reported an initial return of 202.63%, 70.30%, and 61.81% for the emerging markets of China, Korea, and Malaysia, respectively. They also reported an initial return of 21.43%, 34.04%, and 33.10% for the following developed markets in Asia, which are Hong Kong, Japan, and Singapore, respectively. Hence, they concluded that investors could earn abnormal returns by subscribing to the newly issued shares during the first day of listing and sell them at the end of the listing day. In an early study by Jelic et al. (2001), which covered a sample of 182 Malaysian IPOs from 1980 to 1995, they concluded that, in immature IPO markets, initial returns were high. They explained that this was due to a weak regulatory environment and the failure of investment bankers to adequately manage the process of listing new issues.

Liu et al. (2014) used 963 Chinese A-share IPOs that went public on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) IPOs from 1997 to 2009 to investigate the relationship between under pricing and legal protection, by controlling for time-invariant characteristics of regions.

They concluded that firms from a province with more developed legal framework experienced less under pricing after controlling for time-invariant, province-fixed effect. Furthermore, the extent of under pricing was decreased by the strength of legal protection of property rights. Importantly, these tendencies were evident only after the introduction of a book-building system, which provides issuers and underwriters with discretion on offering price determination.

Zeng and Zhang (2015) investigated how family involvement and political connection affect IPO under pricing of private firms. They used hand-collected information on private companies listed on the small and medium enterprises (SMEs) of Shenzhen Stock Exchange and covered the period from 2004 to 2012. They concluded that private firms with top-level political connections and family involvement had lower IPO under pricing. Furthermore, they reported that family involvement lowered IPO under pricing in the mid-east region of China where the institutional environment was poor. However, the effect of political connection was not significant in the mid-east region of China. Moreover, they documented that both political connections and family involvement significantly lowered the IPO under pricing in the eastern region of China, where the institutional environment was well developed. Finally, they argued that under pricing for large companies could be reduced by political connections, while for small companies the under pricing could be reduced by family involvement.

Using a sample of 7,627 IPOs issued during 2000–2008 from 32 countries (among these countries were Australia, China, Hong Kong, India, Japan, Malaysia, Korea South, Singapore, Taiwan, Thailand), Espenlaub et al. (2016) explored the impact of the legal system on IPO survival. They argued that the legal systems effectively protect investors' interests, enforce contracts and control information and agency costs of external financing, and not only encourage companies to list their stocks (as shown in previous studies) but also ensured that IPO companies are able and willing to stay listed. They documented that a one unit increase in the Legality Index constructed by Berkowitz et al. (2003), i.e., an increase in the Legality Index from its value in the US (20.85) to that in Switzerland (21.91), increases survival times by over 17%. Moreover, they reported that IPOs in countries with legal systems of above-median quality [i.e., with values of the Legality Index above that of Hong Kong (19.11)] have between two to 2.6 times longer survival times than IPOs in countries with below-median legality (such as China, India, Korea South, Malaysia, Taiwan, and Thailand). Finally, they reported that IPOs in countries with legal institutions originating in the UK common law system have nearly 40% longer survival times than those with civil law systems.

Wadhwa et al. (2016) included all IPOs and seasoned equity offerings (SEOs) listed on the Bombay Stock Exchange (BSE) and the National Stock Exchange from 1991 (the year of financial deregulation) to 2012. They examined whether equity issues through IPOs or SEOs were due to mispricing or growth opportunities. To address this question, they followed the method of Rhodes-Kropf et al. (2005) to decompose market-to-book ratio (M/B) into

market-to-value ratio (M/V), to account for mispricing, and value-to-book ratio (V/B), to control for growth opportunities. They documented that the proceeds from equity offerings were used to finance investment opportunities, such as real assets, inventory, and capital expenses. Moreover, they argued that the tight regulations and high transparency limited issuing firms from the tendency to exploit investors and motivated them to focus on value-creating activities. Finally, they documented that the market penalized firms that issued overvalued stocks to increase their cash holdings, as exhibited by poor long-term stock performances.

Chen et al. (2015) investigated two inconclusive issues regarding IPO under pricing in the Chinese IPO market, due to China being the largest socialist country in the world. The first issue is on whether private firms or state-owned enterprises (SOEs) under-price their IPOs more than private-owned firms. The second issue is on the effect of institutional environment on IPO under pricing. Their final sample contained 675A-share IPOs and covered the period 1999–2007. They concluded that SOEs under-priced their IPOs more than private firms. Specifically, SOEs controlled by the central government (CSOEs) under-priced their IPOs 27 percentage points more than private firms, whereas SOEs controlled by local governments (LSOEs) under-priced their IPOs 7 percentage points more than private firms. Moreover, they used the National Economic Research Institute Index Marketization (NERIIM) to proxy for the institutional environment. They found that one index score improvement in institutional environment was associated with a two-percentage-point reduction in IPO under pricing. Finally, they reported that a better institutional environment reduces IPO under pricing most effectively for private firms, followed by LSOEs, and the least for CSOEs.

4. Significant Variables in Determining Under Pricing in Asia

4.1 Issue-Specific Factors

Prospective investors diligently evaluate information disclosed by the issuer through draft offered documents in the prospectus. The investors conduct their assessment of firm valuation and hence have a perception regarding its offer price. In addition to the disclosed information, various issue-specific attributes are evaluated and thus the price perception of investors determines the success factor of the IPO (Katti & Phani, 2016).

4.1.1 Underwriter and auditor reputation

Yon and Park (2009) examined the role of underwriters' reputations on the IPO pricing process and its effect on subsequent initial returns by analysing 275 IPOs between July 2002 and December 2006 listed on the Korean Securities Dealers Automated Quotations (KOSDAQ). They documented that underwriters with higher reputations exercised more bargaining power than issuing firms or

institutional investors in the offer price decision process. On the other hand, the underwriters' certification role was not sufficiently carried out to build a reputation on price discovery.

In a recent study, Tong and Ahmad (2015) reported a negative relationship between underwriter reputation (Big 5 underwriters) and under pricing in the Malaysian IPO market, which means that the higher the reputation of an underwriter, the lower the level of under pricing. Their study covered 322 IPOs, from January 2002 to December 2008. However, in a more recent study, Ammer and Ahmad-Zaluki (2016) found that IPOs underwritten by Big 5 underwriters, which had a high market share and charged low underwriting spread experienced higher levels of under pricing. Furthermore, they reported that under pricing increased in IPOs with biased earnings forecasts. Finally, they revealed that the more accurate the earnings forecasts were, the more minimised would the asymmetric information be and hence, the less would be the IPO under pricing. Their study sample covered 265 IPOs listed on the Main Market of Bursa Malaysia, for the period between 2002 and 2012.

Espenlaub et al. (2016) using data on 7627 IPOs issued during 2000–2008 from 32 countries, conducted a study on the indirect impact of the legal systems on the survival of IPOs, through enhancing the effectiveness of IPO certification by venture capital (VC) investors and reputable underwriters and auditors. They documented that a well-functioning (above-median) legal system helped in amplifying the effect of IPO certification on IPO survival, through doubling the certification effect in the case of VC certification and tripling it in the case of underwriter certification. Furthermore, they concluded that the effectiveness of the auditor certification depended almost entirely on a well-functioning (above-median) legal system.

Sundarasen et al. (2017) examined the influence of underwriters and auditors' reputation on IPO initial returns in Malaysia, using a sample of 228 IPOs for the period 2005–2012. The results showed that auditors' reputation had a significantly positive relationship with IPO initial returns. Reputable auditors increased the demand for the IPOs in the secondary market because they were perceived by investors as providers of true and fair value of the audited reports. This subsequently caused the closing price on the first day to increase, thus influencing the initial returns. Nevertheless, after the Global Financial Crisis of 2008, a negative relationship was documented. As for the relationship between underwriters' reputation and IPO initial returns, a negative relationship was documented. Reputable underwriters were cautious in their reputation capital and thus avoided overly under pricing the IPOs and leaving issuers money on the table. The negative relationship could also be due to investors' perception that reputable underwriters would have placed the offer price of IPOs as close as possible to the market/fair value of the shares. These were most evident during the crisis.

Rumokoy et al. (2017) utilized the social network analysis to investigate the effect of underwriter network centrality within the investment banking industry on IPOs outcomes in the China's primary market between 2006 and 2012. Their study sample covered 1,157 Chinese firms issuing A-share IPOs and

the sample was retrieved from the China and Stock Market Accounting Research (CSMAR) database. They documented that the network centrality improved the underwriter capability of drawing a high number of institutional investors through effectively tapping into peers' institutional client base. This would lead to higher under pricing, because the underwriter needed to compensate these institutions for their private information. Furthermore, they documented that IPOs underwritten by central underwriters outperformed other IPOs that were underwritten by less central underwriters. Finally, they concluded that hiring a more central underwriter could be used as a signal to indicate the quality of the issuing firm.

Khurana et al. (2017) investigated the effect of auditors' reputation on IPO under pricing using a comprehensive sample of 14,029 IPOs from 37 countries over a period from 1995 to 2014. Their study sample covered the following Asian countries: Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, Taiwan, and Thailand. They documented, after controlling for country, industry, and year-fixed effects, that issuing firm with Big 4 auditors were associated negatively with under pricing, especially in IPO markets where investor protection laws were weak. Furthermore, they argued that issuing firms in countries plagued with weak legal regimes could use auditor reputation as a signalling tool to signify their quality and reducing the cost of issuing new equity.

Jiao et al. (2017) examined the benefits of overallotment option (OAO) to issuers in the Japanese IPO market by covering 1,008 IPOs listed on all Japanese stock exchanges and markets from January 2002 to December 2011. They documented that OAO benefited the issuers through allowing them to have lower total issuing cost, more accurate pricing, larger issue size relative to shares outstanding, and better post-IPO performance. In other words, OAO option helped in reducing under pricing cost on the issuing firms.

Mohamed and Saadouni (2018) examined the impact of incentive fees in mitigating conflicts of interest between the IPO firms and their underwriters, using a sample of 285 IPOs listed on the Hong Kong Stock Exchange from January 2003 to December 2014. They documented that a high-quality firm which was characterized to be large in size, capable of raising more proceeds, had lower growth opportunities, went public during high market volatility, and were underwritten by reputable underwriters, offered higher incentive fees. Furthermore, they categorized a firm with the previous characteristics to be a less risky IPO and tended to use incentive fees at the time of listing to minimize under pricing and underwriters' compensation.

4.1.2 Board structure

Darmadi and Gunawan (2013), using 101 Indonesian IPOs from 2003 to 2011, documented that board independence was positively related to the level of under pricing. Moreover, they reported that there was a negative relationship between board size and institutional ownership and the IPO under pricing. They

argued that these two governance mechanisms play important roles in mitigating information asymmetry between the issuer and the potential investors. They also found that ownership concentration was insignificant in explaining the first-day returns. Finally, the type of corporate control revealed that government controlled companies tended to experience higher under pricing.

In the case of Malaysia, Yatim (2011) examined the relationship between board structure and initial return using 385 Malaysian IPOs from 1999 to 2008. In her study, she looked at four board structure variables, which were board independence, dual leadership structure, board reputation, and board size. She concluded that due to the risky nature of IPO firms, Malaysian investors did not favour the separation of board chair and CEO positions, instead preferred stability and continuity in executive leadership. This resulted in a positive and significant relationship of dual leadership structure with the initial return. However, Yatim (2011) reported a negative correlation between board reputation and the initial return. Finally, both board size and board independence were not significantly correlated with the initial returns. In a more recent study, Badru et al. (2017) examined the impact of board characteristics on the amount of capital raised through an IPO for a sample of 220 Malaysian IPOs over the period from 2005 to 2015. Using OLS regression, they reported that board with ethnic Malay directors had a significant and positive association with the amount of capital raised, while a weak significance was found for board size. However, using the robust regression techniques, they managed to document that other than board ethnicity, other board characteristics namely board size, board independence, and CEO duality were significantly associated with the amount of capital raised.

McGuinness (2016) examined the economic benefits of board gender diversity for the state and privately controlled firms in the Hong Kong IPO market. McGuinness (2016) concluded that the pursuit of such board gender diversity was value enhancing in relation to the longer-run performance of initial public offerings (IPO) stocks, especially where female board members were unencumbered by family-connection with other directors. Furthermore, McGuinness (2016) reported that there was little evidence of a link between female board representation and IPO under pricing.

On the issue of board structure, a recent study by Handa and Singh (2017) investigated the signalling effect of board structures and ownership attributes on IPO under pricing using 404 Indian IPOs. They concluded that board size and board committees exhibited a significantly positive relationship with IPO returns on listing day. In Indian markets characterized by concentrated family-owned firms, promoter ownership did work as an effective signal for investors who took cues of firm potential from ownership patterns. Finally, they reported that corporate governance measures had a minuscule contribution in explaining the under pricing of Indian IPOs and indicated that investors did not incorporate these as a major consideration in their investment decision.

Xu et al. (2017) investigated the effect of boardroom heterogeneity on IPO under pricing. Boardroom heterogeneity is characterized by the functional background, educational background, age, and length of tenure. They covered 355 firms listed on China's Growth Enterprise Market from its beginning in 2009

until 2012. In their study, they concluded that functional heterogeneity and age heterogeneity had a significantly negative relationship with IPO under pricing. However, educational heterogeneity had a positive relationship with IPO under pricing, while heterogeneity in tenure did not have a significant relationship with IPO under pricing. Furthermore, they argued that functional, educational and age heterogeneity conveyed signals to potential investors regarding a firm's quality.

Hanafi and Setiawan (2018) studied 182 IPOs listed on the Indonesia Stock Exchange from 2006 to 2015, to investigate the effect of ownership concentration and institutional ownership on IPO under pricing. They documented that ownership concentration did not have an effect on IPO under pricing, while institutional ownership had a negative relationship with IPO under pricing. Furthermore, they investigated whether the effect of institutional ownership was not constant across the level of institutional ownership. They found that the negative effect of institutional ownership on IPO under pricing was stronger below the 0.8 level, and the negative effect disappeared above that level. They suggested that the monitoring effect of institutional investors disappeared in a high level of institutional ownership due to the increase in the "principal-principal" conflicts. Finally, they argued the importance of ownership in companies' affairs from the policy perspective, and that this might affect IPO under pricing.

Cheunga et al. (2018) examined the effect of corporate governance factors on IPO under pricing, by focusing on the multiple roles of the founder in Hong Kong. They categorized IPOs into four groups based on the role of the founder, which are (1) no-founder firms (companies with no specific founder); (2) pure-founder firms (companies whose founder is neither the company's chairman of the board nor its CEO); (3) founder-chairman/CEO firms (companies whose founder is either the company's chairman of the board or its CEO); and (4) founder-chairman-CEO firms (companies whose founder is the chairman and CEO). They found that the level of under pricing differed among the four categories, where the under pricing levels of no-founder, pure-founder, founder-chairman/CEO and founder-chairman/CEO firms were 14.9%, 9.5%, 8.4% and 7.7%, respectively.

4.1.3 Lock-up period

In their study, Boonchuaymetta and Chuanrommanee (2013) were interested in investigating the relationship between underwriter reputation, ownership concentration, book-building, IPO allocation, the length of the lock-up period, and investor interest and IPO under pricing in the Thailand IPO market. They covered 153 IPOs listed between 2001 and 2011. They found that IPO allocation was the strongest factor in influencing under pricing in a negative relationship. They also found that the length of the lock-up period, issue size, industry, and hot issue market had significant positive relationships with under pricing. However, underwriter reputation was not associated with under pricing as the choice of underwriter was restricted by Thai regulator's requirements. Moreover, they

reported that institutional investors played very limited roles in explaining under pricing in Thai IPOs. Finally, they argued that provisions that could restrain insider dealings such as a longer lock-up period could yield a higher initial return and changing the ownership concentration by a small percentage did not affect under pricing.

Mohd Rashid et al. (2014) used a sample of 384 IPOs listed on Bursa Malaysia between 2000 and 2012 to investigate if the lock-up ratio and lock-up period had a positive relationship with the initial return in the Malaysian IPOs market. In their study, they showed that the effect of the lock-up period was more pronounced than the effect of the lock-up ratio, which they considered to be preliminary. They documented that both the lock-up period and the lock-up ratio were more appropriate for signalling the quality of the issuing firm than the risk of the issuing firm. Furthermore, they concluded that the relationship with the initial return was more pronounced in the case of lock-up periods rather than lock-up ratios, and lock-up periods were more appropriate for signalling the quality of the firm.

Huang et al. (2015) used a sample of 218 Taiwanese IPOs from 2005 to 2011 to investigate the behaviour of institutional investors during announcement day and expiration day of lock-up. They found that the trading of institutional investors produced insignificant abnormal returns on announcement lock-up day, but the cumulative return on announcement day was significantly different from zero. Moreover, they found that the relationship between lock-up ratio and institutional investor on announcement day was insignificant. Finally, they examined the relationship between the lock-up ratio and the institutional investors' influence on the initial return of IPOs. They found that the abnormal trading of foreign institutional investors and dealers produced an insignificant initial return.

Recent studies regarding the lock-period are more interested in investigating the effect of the lock-up provisions on trading volume changes around lock-up expiry dates (Zameni & Yong, 2016) and on trading volume changes around lock-up expiry dates (Zameni & Yong, 2017). Zameni and Yong (2016) sample comprised of 379 Malaysian IPOs, issued from January 2001 to December 2011. They reported a positive abnormal trading volume at lock-up expiry date for IPO market, except for the ACE market, which is the acronym for "Access, Certainty, Efficiency", the construction sector, and the technology sector were negative. They argued that the high trading volume at and around the lock-up expiration was compatible with shareholders' selling due to diversification reasons and wealth recognition and which was also an indication of insiders' lack of confidence about a company's future prospect. Furthermore, the significant negative trading volume can be interpreted in a way that insiders of those related boards and sectors do not sell their shares significantly but would rather watch what would happen to the market and are optimistic about the market's future. Zameni and Yong (2017) documented that

the share price drop around the lock-up expiry was due to the increase in the adverse selection element of the bid-ask spread, which resulted from trading volume increase around the lock-up expiry.

In Australia, both mandatory lock-ups (ML) and non-mandatory lock-ups (NML) firms co-exist. This is because, in the Australian regulatory setting, ML is applied to insider shares of IPO firms that do not satisfy profit or asset tests. Taking advantage of this unique IPO policy, Haman et al. (2017) investigated the effect of different lock-up types on long-run returns (buy-hold abnormal return at the fifth year post listing). Their study sample consisted of 571 IPO firms listed on the Australian Securities Exchange (ASX) and covered the period from 2003 to 2007. Their sample contained 460 firms with ML only and 111 NML. They indicated that the average market-adjusted under pricing of ML firms was significantly lower than for NML firms, at the one percent level. Furthermore, they reported that an increase in market-adjusted returns by one percent decreased long-run returns by 0.47 percent. Moreover, they showed that insider equity ownership subject to lock-ups, the weighted average number of days of the lock-ups, the natural logarithm of the number of days from the registration of an IPO prospectus to the IPO listing date, and reputable underwriter had a positive relationship with long-run returns. On the same subject, their study concluded that long-run returns for ML firms were significantly lower (higher) than for NML firms, and good corporate governance was positively associated with long-run returns for both lock-up type firms. Finally, they found that the listing survival rate of ML firms was higher than for NML.

Taking the advantage of regulatory change on the IPO lock-up for institutional investors and a unique disclosure of institutional investor bidding information in China, Gao et al. (2017) investigated the impact of IPO lock-up removal on IPO pricing. Their study sample consisted of 474 Chinese IPO from November 1, 2010, to December 31, 2012. They documented that institutional investor bid price increased due to the IPO lock-up removal. Furthermore, they found that the effect was stronger for sub-samples with less reputable underwriter and IPOs with higher value uncertainty. They concluded that the impact was channelled to a higher IPO offer price and a lower first-day return. Their results suggest that IPO lock-up removal (IPO lock-up) increases (decreases) IPO share valuation.

4.1.4 Other factors

Yong (2013) used 357 IPOs and covering the period from January 2001 to December 2008 to investigate the issues of winner's curse, size effect, and bandwagon effect in explaining the under pricing phenomenon in the Malaysian IPO market. He concluded that the average initial return for the Malaysian private placement IPOs (a proxy for informed investors) was significantly lower than that of the non-private placement IPOs (a proxy for uninformed investors), which supported the winner's curse hypothesis, where uninformed investors demanded a higher initial return in the absence of informed investors. This finding is further

supported by Mohd Rashid et al. (2014), who concluded that institutional investor participation had a significantly negative coefficient, indicating that uninformed investors (non-private placement subscribers) tended to demand higher initial returns compared to informed investors (private placement subscribers). Finally, on the issue of IPO flipping (the immediate selling of an IPO by the successful subscribers upon IPO listing in the open market), Che-Yahya et al. (2014) examined the influence of institutional investors' participation on the flipping activity of Malaysian IPOs. They concluded that the greater participation of institutional investors during an IPO was expected to be an effective strategy to control aggressive flipping activity; this means that the greater participation of institutional investors during an IPO is expected to be an effective strategy to control aggressive flipping activity.

Deng and Zhou (2015) employed 355 IPOs listed on Shenzhen Stock Exchange (SZSE), covering the period from October 30, 2009, to December 31, 2012, to re-examine the determinants of initial returns for ChiNext (a NASDAQ-style board of the SZSE) IPOs that were initiated under the new Chinese-style book-building process in a more market-oriented environment. They managed to identify three factors that drove the initial under pricing of ChiNext IPOs: the pre-issue share allocation multiplier from institutional investors (offline oversubscription), issue size (size effect), and the listing day stock market conditions (market momentum).

Kang et al. (2015) examined the effects of insiders' ownership levels and ownership changes in pre-IPO periods on IPO under pricing and insiders' share-selling behaviours after lock-up expirations, and paying special attention to the form of ownership: direct ownership and indirect ownership through affiliated firms. Their study sample consisted of 669 IPO listed on the Korea Exchange (KRX) and covering a period from January 2000 to November 2011. They found that insiders' ownership level was positively related to under pricing. Furthermore, they documented that IPO under pricing was influenced by direct ownership and not by indirect ownership. Moreover, they reported tha-t both insiders' direct ownership level and the increase in insiders'direct ownership in pre-IPO periods helped in increasing the probability of insiders' share selling after the lock-up. This implies that insiders can strategically use their direct ownership in share-selling activities during the IPO process in their effort to improve their wealth.

Banerjee (2016) investigated the effect of company-specific and market sentiment related factors on the under pricing of Indian IPOs. Company-specific factors include the pre-issue financial position, corporate governance, and post issue promoter holding, firm age at the time of the issue, reputation of the lead manager of the issue, reputation of the credit rating agency, IPO Grade, and the appetite of the retail and institutional investors. Market sentiment related factors were the change in the money supply, foreign institutional investors' (FII) in-flows, price to earnings (PE) ratio of the market, and market return. Out of the 16 factors they examined, only nine factors had statistically significant effects on under pricing of IPOs. Firm age, debt-to-equity(DE) ratio, and investment

bank's (IB) reputation had a negative relationship with under pricing, while a number of independent directors, PE ratio, money supply, market return, return-on-net worth (RONW), and IPO Grade had a positive relationship with IPO under pricing.

Choie (2016) investigated the causes that led under pricing to be higher in the Korean IPO market in comparison to the US IPO market. Choie (2016) first used the optimal offer price from the perspectives of both the issuing firm and its underwriting investment bank. Choie (2016) concluded that the IPO price was likely to be lower than the actual initial market price because both issuing firms and its underwriters would tend to agree upon IPO price below the expected initial market price. Furthermore, he concluded that the magnitude of IPO under pricing in the Korean market had a positive relationship with the variance of the probability distribution of the initial market price, and the marginal cost of making the after-market. Moreover, the underwriter's spread had a negative relationship with the IPO under pricing.

Gumanti et al. (2017) used a sample of 290 Indonesian IPOs that went public between 1989 and 2005 to examine the number of risk factors, use of proceeds for investment, size of the issue, and the level of ownership retained and their effect on IPO under pricing. The number of risk factors was found to be positively related to the level of average positive initial returns (under pricing). The level of ownership retention had a negative but insignificant relationship with the level of under pricing. Firms that used the proceeds from the offering for investment or expansion purposes were less under-priced than their counterparts that used the funds for operating purposes. Furthermore, size of the issue was negatively associated with the level of under pricing.

Chang et al. (2017) took advantage of a unique pre-IPO market in Taiwan that had an organized trading platform and was mandatory for firms aiming for an IPO, and in January 2005 firms had to be traded on the Emerging Stock Market (ESM) in Taiwan for at least six months before they applied for an IPO. Their sample consisted of 218 firms that went public between October 25, 2005, and March 1, 2011. They concluded that IPO offer price was largely dependent on the pre-market price. The pre-market price-multiple alone explained about 90% of the variations in the offer price-multiple. Furthermore, they found that peers' prices were no longer important in determining the offer price after taking into account the issuer's own pre-market price. Moreover, the more volatile or riskier the stock, the less informative the pre-market price and the greater the discount taken in setting the offer price relative to the pre-market price (and similarly, a higher first day return). However, despite the informative pre-market price, they documented that the level of IPO under pricing was still at a high average level, 55.3%, in contrast to the prediction of asymmetric information-based book building theories. They argued that the high level of IPO under pricing was due to the underwriters' monetary incentives to under-priced shares, where the stronger the underwriter's incentives to under-price and the stronger their bargaining powers, the higher the under pricing. Finally, building on the previous argument they concluded that agency problems could lead to high

levels of IPO under pricing, even with little information asymmetry or valuation uncertainty about the stock.

4.2 Country-Level Factors

Banerjee et al. (2011) investigated the influence of four country-level characteristics on IPO under pricing. These characteristics are differences in level of information asymmetry (analyst following and stock price synchronicity are the proxies), investors› home-country bias (home-country bias is the proxy), effectiveness of contract enforcement mechanisms (country-level anti-self-dealing index is the proxy), and accessibility of legal recourse (country-level prospectus liability index is the proxy). Their sample included 36 countries, among them, are China, Hong Kong, India, Indonesia, Japan, Singapore, Malaysia, Taiwan, and Thailand. The sample consisted of 13,386 international IPOs from January 1, 2000 to December 31, 2006. They concluded that there was a positive and significant effect of country-level information asymmetry on IPO under pricing. Secondly, they found that lower cost to entice the block holders, measured by domestic investors› home-country bias, reduced IPO under pricing. Thirdly, effective contract enforcement mechanisms helped in reducing IPO under pricing. Finally, they documented a positive relationship between the accessibility of legal recourse and IPO under pricing.

With regard to country-level factors, Vithessonthi (2014) used a sample of 187 IPOs in Thailand between January 2000 and December 2010 to investigate whether the financial development, domestic interest rates, and interest-rate differentials simultaneously explains the variations in the short-run IPO under pricing. The study documented that stock market development drove the initial return of the IPOs by: (1) lowering the level of information asymmetry; and (2) attracting foreign investors into the IPO market. Furthermore, the stock market's P/BV (price-to-book value) ratio was positively related to the initial return. Vithessonthi (2014) argued that the development of stock markets generally resulted in lower initial returns, while favourable stock market conditions led to higher initial returns as they shifted the demand curve for the IPOs outwards. Moreover, they reported that the T-bills market capitalization, government bond market capitalization, and private bond market capitalization, which were used as an indicator for the development of the bond markets, had a negative effect on the initial return. In addition, the amounts of new T-bills and government bond issuances had a negative effect on the initial return, suggesting that all else equal, the development of bond markets might cause an inward shift of the demand curve for the IPOs, thereby lowering the initial returns. Finally their results showed that interest-rate differentials had a positive effect on the initial return when the interest-rate differential was positive, suggesting that IPOs listed in the high interest rate differential environment were likely to experience higher initial returns.

Boulton et al. (2017) covered 13,285 IPOs from 36 countries to examine the influencing effect of accounting conservatism on the under pricing. They

reported that IPOs were under-priced less in countries in which existing public firms practiced more accounting conservatism. According to a study by Boulton et al. (2017), the following Asian countries were ranked from the most to the least conservative in financial reporting practices: New Zealand, Australia, Thailand, Hong Kong, Philippines, Taiwan, India, Singapore, Malaysia, Japan, and Indonesia. New Zealand had the lowest IPO under pricing and Indonesia had the highest IPO under pricing. Furthermore, they examined the relationship between conservatism and under pricing alternative measures of conservatism, such as country mean regressions, sample country exclusions, and endogenous treatment models. They concluded that higher country-level conservatism was associated with lower country-level information asymmetry, which explains the lower IPO under pricing. They also found that common country-level factors, such as legal origin, influenced the relation between accounting conservatism and IPO under pricing.

4.3 IPO Pricing Method

Reddy (2015) covered 133 IPOs, issued through book-building route, during January 2007 through December 2009 and which were subsequently listed on the National Stock Exchange of India Ltd (NSE). The study reported negative returns in the long run and concluded that under pricing had occurred in the Indian IPOs market. The results inferred that post-market offers assured positive returns in the short run but tended to plunge and became negative in the long run. However, Boonchuaymetta and Chuanrommanee (2013) concluded that book-building pricing method did not explain under pricing in Thai IPOs.

Chen and Wu (2015) developed a measure of the expected net wealth gains of pre-IPO shareholders to investigate who controls the decision for choosing the issuing method (auction, or fixed-price public offer): Is it the underwriter or the issuer? Their study covered 712 IPOs listed either on the Taiwan Stock Exchange (TWSE) or on Taiwan's over-the-counter market (OTC) during the period of 1996–2003. Their sample consisted of 623 IPOs that used the fixed price public offer. The remaining 89 IPO firms employed the hybrid auction procedure. They concluded that the choice for the issuing method was mostly dependent on the issuer, because issuers took into consideration their firm's characteristics and the principle of wealth maximization. Furthermore, they documented that under pricing under the fixed-priced method was higher than the auction method. However, they argued that most issuers were more concerned with goals that maximized the dynamic objective function rather than minimized under pricing.

Dhamija and Arora (2017) reported that the level of under pricing for the small and medium enterprise (SME) IPOs listed on the Bombay Stock Exchange (BSE) and Mumbai and the National Stock Exchange (NSE) platforms, were found to be lower than that of IPOs listed on the main board stock exchanges

in India. This may be partially due to the fact that the SME platform was at its infancy stage and had failed to attract investors' interest. This was reflected in a low level of oversubscription of SME IPOs at 1.35 times on average. Furthermore, they reported that the type of offer, size of the issue, promoter holding, the extent of oversubscription, lead manager prestige and the stock exchange of listing as the key determinants in the under pricing of SME IPOs. Post listing, these IPOs had significantly outperformed the benchmark index. Their study covered 100 IPOs starting from February 23, 2012 (when the first such IPO was made) to March 31, 2015.

With regard to IPO mechanism, Huang et al. (2017) investigated the effects of three initial public offering (IPO) methods (namely fixed-price, auction, and book-building, all of which have been practised in Taiwan), on post-IPO performance and the trading behaviour of institutional investors. Of these three methods, the empirical results showed that book-building IPOs exhibited significantly higher initial returns and institutional ownership of stock offerings, and that auction IPOs had higher long-run returns. The price effect of institutional herding and flipping behaviour with respect to fixed-price IPOs significantly eroded long-run IPO performance. IPO data were from the 1996–2012 period and the final IPO sample included 1,198 firms comprising 663 fixed-price IPOs, 91 hybrid-auction IPOs, and 444 hybrid-book-building IPOs.

In Malaysia, the fixed-priced mechanism is the most popular practice when it comes to pricing an offer price (Low & Yong 2013; Yong, 2015). According to Low and Yong (2013) and Yong (2015), the fixed-priced mechanism helped in increasing the divergence of prospective investors' opinion regarding the true value of the IPO because the settled price does not reflect their beliefs and expectations regarding the true value of the issue. However, with the book-building and auction offerings methods, potential investors are solicited by the issuers regarding the value of the IPO before the offer price is set up (Low & Yong, 2013; Yong, 2015). Not factoring the prospective investors in the offer price will lead to heterogeneity of opinion among investors (Yong, 2015; Chowdhry & Sherman, 1996). The first-day price spread is the most common way to proxy the heterogeneity of investors regarding the true value of an IPO (Yong, 2015). Low and Yong (2013) and Yong (2015) documented a significant relationship between under pricing and first-day price spread. They argued that the higher the under pricing the higher the heterogeneous beliefs among investors.Yong (2015) investigated the relationship between investor heterogeneity and variables such as initial return, the ratio of the first-day volume over total unit offered, and listing board. He concluded that IPOs that were characterised with high initial return, high first-day trading volume, and listed on the ACE Market suffered from a very high divergence of opinion regarding their true values among the investors due to their speculative nature. Moreover, Low and Yong (2013) documented IPOs that were highly under-priced, small in offering size and were listed on the MESDAQ Market tended to have a high level of heterogeneous beliefs among investors.

5. Conclusion

This paper reviews the recent status of IPO research in Asia, especially when it comes to the issue of the under pricing phenomenon. This interest stems from the increasing attention that some of the Asia Pacific region countries have, due to their higher average initial returns in comparison to other developed and developing countries. The review starts with showing the levels of under pricing in different Asian countries that is made possible with the help of the latest updated version (February 16, 2015) of the table by Loughran et al. (1994) that contains the average under pricing history for 52 countries. Furthermore, based on the updated table by Loughran et al. (1994), we are able to identify the top five Asian countries with the highest levels of under pricing in the region, in the following order: China, India, Korea, Malaysia, and Japan, with a reported average initial return of 118.4%, 88.5%, 59.3%, 56.2%, and 41.7%, respectively.

This paper concludes that the regulatory environment is an important influencing factor in determining the level of under pricing. The second part of the review deals with the literature which investigated such issues, where most of the literature regarding such issues was related to the Chinese IPOs. From the literature (Moshirian et al., 2010; Liu et al., 2014; Espenlaub et al., 2016; Wadhwa et al., 2016; Chen et al., 2015), we find that the level of under pricing is higher in countries with lenient regulatory environments and lower in countries with tighter regulations and higher transparency.

The next part of the paper reviews the various determinants (i.e. issue-specific factors, country-level factor, and IPO pricing method) of under pricing in the Asian region. We find that issue-specific factors become more relevant in influencing the initial returns of IPOs, especially in countries characterised with lenient regulatory environments and high levels of information asymmetry among the main participants of the IPO process (i.e. investment banks, issuers, and prospective investors). This is due to prospective investors relying on such pre-available information (in the IPO prospectus) to build their own perception about the success factors of an IPO (Katti & Phani, 2016). For example, the reputation of the main investment bank that undertakes the responsibility of underwriting the issues of the listing firm helps prospective investors in identifying good investment opportunities. This is due to the perception of the investors that the reputation of the investment bank has the ability to signal the quality of the listing firm and to reduce the level of information asymmetry around its issues (Rumokoy et al., 2017). Furthermore, the reputation of the auditing firm has the ability to help prospective investors identify good investment opportunities through signalling on the quality of the issuing firm (Khurana et al., 2017). However, the effect of such signals on under pricing is still quite contradictory, which varies from negative to positive and sometimes to non-significant. This conclusion is based on Beatty and Welch's (1996) explanation in justifying such results, where they argued that the results would differ depending on the economic conditions during different periods. The same can be said about board structure. We also find that the lock-up period has a positive relationship with

under pricing, specifically, the longer the lock-up period the higher the level of under pricing (Boonchuaymetta & Chuanrommanee, 2013; Mohd Rashid et al., 2014). Moreover, the new trend in the lock-up literature is steering towards investigating the effect of the lock-up provisions on trading volume changes around the lock-up expiry date.

Literature on country-level factors shows that any microeconomic factors that helped in reducing the level of information asymmetry, tightening country regulations and increasing the country's financial transparency will have a reducing effect on under pricing. Finally, the pricing method of an IPO plays an important role in determining the level of under pricing, where countries that used auction and book-building pricing methods have lower under pricing levels than countries that used the fixed-priced method. This is because auction and book-building methods allow prospective investors to be part of the pricing process by providing their opinions and beliefs regarding the true value of an IPO, which helps in reducing the level of information asymmetry between the participating parties in the IPO process and thus will lead to lower under pricing. On the other hand, the fixed-priced method does not allow prospective investors to participate in the process of setting up the offer price of an IPO. This in turn will lead to increase in the level of information asymmetry among the participating parties in the IPO process and thus will result in higher under pricing.

References

Ammer, M. A., & Ahmad-Zaluki, N. A. (2016). The effect of underwriter's market share, spread and management earnings forecasts bias and accuracy on under pricing of Malaysian IPOs. *International Journal of Managerial Finance*, *12*(3), 351-371.

Badru, B. O., Ahmad-Zaluki, N. A., & Wan-Hussin, W. N. (2017). Board characteristics and the amount of capital raised in the Malaysian IPO market. *Journal of Multinational Financial Management*, 42-43, 37-55.

Banerjee, S. (2016). Determinants of under pricing of graded IPOs in the Indian capital market. *Singapore Management Journal*, *5*(1), 45-66.

Banerjee, S., Dai, L., & Shrestha, K. (2011). Cross-country IPOs: What explains differences in under pricing? *Journal of Corporate Finance*, *17*, 1289–1305.

Beatty, R. P., & Welch, I. (1996). Issuer expenses and legal liability in initial public offerings. *Journal of Law and Economics*, *39*(2), 545–602.

Berkowitz, D., Pistor, K., & Richard, J. F. (2003). Economic development, legality, and the transplant effect. *European Economic Review*, *4*, 165–195.

Boonchuaymetta, E., & Chuanrommanee, W. (2013). Management of the IPO performance in Thailand. *Journal of Multinational Financial Management, 23*(4), 272-284.

Boulton, T. J., Smart, S. B., & Zutter, C. J. (2017). Conservatism and international IPO under pricing. *Journal of International Business Studies*, *48*(6), 763–785.

Cai, J., & Wei, K. C. J. (1997). The investment and operating performance of Japanese initial public offerings. *Pacific-Basin Finance Journal*, *5*(4), 389–417.

Camp, G., Munro, R. (2000). Under pricing of initial public offerings in New Zealand: A comparison of the fixed price and book-build methods. Unpublished working paper (University of Melbourne).

Chang, C., Chiang, Y. M., Qian, Y., & Ritter, J. R. (2017). Pre-market trading and IPO pricing. *Review of Financial Studies*, *30*(3), 835–865.

Chen, H. C., & Wu, S. C. (2015). Who makes the choice on IPO underwriting methods? Issuers vs. underwriters. *Financial Management*, *44*(4), 753-783.

Chen, H. L. (1992). The price behaviour of IPOs in Taiwan. Unpublished working paper (University of Illinois).

Chen, Z., Choi, J. J., & Jiang, C. (2008). Private benefits in IPOs: Evidence from state-owned firms. Available at SSRN:https://ssrn.com/abstract=1089563.

Chen, Y., Wang, S. S., Li, W., Sun, Q., & Tong, W. H. S. (2015). Institutional environment, firm ownership, and IPO first-day returns: Evidence from China. *Journal of Corporate Finance*, *32*, 150-168.

Cheunga, Y. L., Dai, Y., Ouyang, Z., & Tan, W. (2018). Who leaves money on the table? The role of founder identity in Hong Kong. *Applied Economics*, *50*(7), 774-788.

Che-Yahya, N., Abdul-Rahim, R., & Yong, O. (2014). Moderating effect of investor demand on the relationship between institutional investors' participation and flipping activity. *Labuan Bulletin of International Business & Finance*, *12*, 1-12.

Chi, J., & Padgett, C. (2005). Short-run under pricing and its characteristics in Chinese Initial Public Offering (IPO) markets. *Research in International Business and Finance*, *19*(1), 71–93.

Choie K. S. (2016). Factors of IPO under pricing. *International Journal of Economics and Finance*, *8*(2), 1-8.

Chowdhry, B., & Sherman, A. (1996). International differences in oversubscription and under pricing of IPOs. *Journal of Corporate Finance*, *2*, 359–381.

Darmadi, S., & Gunawan, R. (2013). Under pricing, board structure, and ownership: An empirical examination of Indonesian IPO firms. *Managerial Finance*, *39*(2), 181-200.

Dawson, S. M., & Hiraki, T. (1985). Selling unseasoned new shares in Hong Kong and Japan, a test of primary market efficiency and under pricing. *Hong Kong Journal of Business Management*, *3*, 125-134.

Deng, Q., & Zhou, Z. G. (2015). Offline oversubscription, issue size, and market momentum: The driving forces for ChiNext IPOs' initial under pricing. *Chinese Economy*, *48*(2), 114–129.

Dhamija, S., & Arora, R. K. (2017). Initial and after-market performance of SME IPOs in India. *Global Business Review*, *18*(6), 1536–1551.Dhatt, MS., Kim, Y. H., & Lim, U. (1993). The short-run and long-run performance of Korean IPOs: 1980-90. Unpublished working paper (University of Cincinnati and Yonsei University).

Ekkayokkaya, M., & Pengniti, T. (2012). Governance reform and IPO under pricing. *Journal of Corporate Finance*, *18*, 238–253.

Espenlaub, S., Goyal, A., & Mohamed, A. (2016). Impact of legal institutions on IPO survival: A global perspective. *Journal of Financial Stability*, *25*, 98–112.

Fukuda, S. (1984). Sinki-Jojo-Kabushiki no Kakaku Performance, Shogaku-Kenkyu. Kansei Gakuin University, *32*, 83-105.

Fung, S., Gul, F. A., & Radhakrishnan, S. (2007). Investment banks' repeated IPO business opportunities and IPO under pricing. Available at SSRN: https://sci-hub.tw/https://ssrn.com/abstract=998394.

Gao, S., Liu, J., & Chan, K. C. (2017). Does the removal of the IPO lockup matter in IPO pricing? *Finance Research Letters*, *23*, 246-252.

Gumanti, T. A., Lestari, A. R., & Abdul-Manan, S. S. (2017). Under pricing and number of risk factors of initial public offerings in Indonesia. *Business: Theory and Practice*, *18*, 178-185.

Haman, J., Chalmers, K., & Fang, V. (2017). IPO lock-ups, long-run returns, and growth opportunities. *Journal of International Financial Markets, Institutions and Money*, *49*, 184-199.

Hamao, Y., Packer, F., & Ritter, J. R. (2000). Institutional affiliation and the role of venture capital: Evidence from initial public offerings in Japan. *Pacific-Basin Finance Journal*, *8*, 529-558.

Hanafi, M. M., & Setiawan, A. (2018). Ownership concentration, institutional ownership, and IPO under pricing: Evidence from Indonesia Stock Exchange. *International Journal of Governance and Financial Intermediation*, *1*(1), 3-17.

Handa, R., & Singh, B. (2017). Performance of Indian IPOs: An empirical analysis. *Global Business Review*, *18*(3), 734-749.

Hebner, K. J. & Hiraki, T. (1993). Japanese initial public offerings, in: Walter, I., & Hiraki, T. eds., Restructuring Japan's financial markets (Business One/ Irwin, Homewood. IL).

Heerden, G., & Alagidede, P. (2012). Short run under pricing of Initial Public Offerings (IPOs) in the Johannesburg Stock Exchange (JSE). *Review of Development Finance*, *2*(3-4), 130–138.

Huang, H., Chiang, M., Lin, J., & Lin, Y. (2017). Fixed-price, auction, and book-building IPOs: Empirical evidence in Taiwan. *Finance Research Letters*, *22*, 11-19.

Huang, P. K., Chang, P., & Chiang, Y. M. (2015). Lock-up provision and institution investors trading. Available at SSRN: https://ssrn.com/abstract=2565293.

Hwang, C. Y., & Jayaraman, N. (1993). The post-listing puzzle: Evidence from Tokyo Stock Exchange listing. *Pacific-Basin Finance Journal*, *1*(2), 111–126.

Ibbotson, R. G., & Jaffe, J. F. (1975). "Hot issue" markets. *Journal of Finance*, *30*(4), 1027–1042.

Isa, M. M. (1993). List of Malaysian IPOs. Unpublished working paper (University of Malaya).

Jelic, R., Saadouni, B., & Briston, R. (2001). Performance of Malaysian IPOs: Underwriters reputation and management earnings forecasts. *Pacific-Basin Finance Journal*, *9*(5), 457–486.

Jenkinson, T. (1990). Initial public offerings in the United Kingdom, the United States, and Japan. *Journal of the Japanese and International Economies*, *4*(4), 428–449.

Jia, C., Xie, Z., & Zhang, D. (2014). Analyst coverage in the remarket of IPOs. Available at SSRN: http://ssrn.com/abstract=2450012.

Jiao, Y., Kutsuna, K., & Smith, R. (2017). Why do IPO issuers grant overallotment options to underwriters? *Journal of Corporate Finance*, *44*, 34-47.

Kanekoa, T., & Pettway, R. H. (2003). Auctions versus book building of Japanese IPOs. *Pacific-Basin Finance Journal, 11*, 439-462.

Kang, S. K., Kang, H. C., Kim, J., & Kim, N. (2015). Insiders' pre-IPO ownership, under pricing, and share-selling behaviour: Evidence from Korean IPOs. *Emerging Markets Finance and Trade*, *51*(3), 66-84.

Katti, S., & Phani, B. V. (2016). Under pricing of initial public offerings: A literature review. *Universal Journal of Accounting and Finance, 4*(2), 35-52.

Kavita, W., Reddy, V. N., Goyal, A., & Abdulkadir, M. (2016). IPOs and SEOs, real investments, and market timing: Emerging market evidence. *Journal of International Financial Markets, Institutions and Money, 45*, 21-41.

Khurana, I., Ni, C., & Shi, C. (2017). The role of big 4 auditors in the global primary market: Does audit quality matter most when investors are protected least? Presented at Asian bureau of finance and economic research annual conference, Gardenia, Azalea, 2017.

Kim, J. B., Krinsky, I., & Lee, J. (1995). The after-market performance of initial public offerings in Korea. *Pacific-Basin Finance Journal*, *3*(4), 429–448.

Koh, F., & Walter, T. (1989). A direct test of Rock's model of the pricing of unseasoned issues. *Journal of Financial Economics*, *23*(2), 251–272.

Komenkul, K., & Siriwattanakul, D. (2016). How the unremunerated reserve requirement by the Bank of Thailand affects IPO under pricing and the long-run performance of IPOs. *Journal of Financial Regulation and Compliance*, *24*(3), 317-342.

Lee, P. J., Taylor, S. L., & Waiter, T. S. (1993). Australian IPO pricing in the short and long run. Unpublished working paper (University of Sydney).

Lee, P. J., Taylor, S. L., & Walter, T. S. (1996). Expected and realised returns for Singaporean IPOs: Initial and long-run analysis. *Pacific-Basin Finance Journal*, *4*(2&3), 153–180.

Liu, J., Uchida, K., & Gao, R. (2014). Legal protection and under pricing of IPOs: Evidence from China. *Pacific-Basin Finance Journal*, *27*, 163-187.

Ljungqvist, A., & Yu, X. (2003). Stock market development, liquidity and corporate governance. Unpublished working paper (New York University).

Logue, D. E. (1973). On the pricing of unseasoned equity issues: 1965-1969. *Journal of Financial and Quantitative Analysis*, *8*(1), 91–103.

Loughran, T., Ritter, J. R., & Rydqvist, K. (1994). Initial public offerings: International insights. *Pacific-Basin Finance Journal*, *2*(2&3), 165-199.

Low, S. W., & Yong, O. (2011). Explaining over-subscription in fixed-price IPOs: Evidence from the Malaysian stock market. *Emerging Markets Review*, *12*(3), 205–216.

Low, S. W., & Yong, O. (2013). Initial public offerings and investor heterogeneity: Evidence from Malaysia. *American Journal of Finance and Accounting*, *3*(1), 41-56.

Marisetty, V., & Subrahmanyam, M. (2008). Group affiliations and the performance of initial public offerings in the Indian stock market. Unpublished working paper (Stern School of Business, New York).

McGuinness, P. (1992). An examination of the under pricing of initial public offerings in Hong Kong: 1980-90. *Journal of Business Finance and Accounting*, *19*(2), 165–187.

McGuinness, P. (2016). IPO firm performance and its link with board officer gender, family-ties and other demographics. *Journal of Business Ethics*, *1*, 1-23.

Mohamed, A., & Saadouni, B. (2018). Incentive fees: Do they bond underwriters and IPO issuers? Available at SSRN: https://ssrn.com/abstract=3009871.

Mohd Rashid, R., Abdul-Rahim, R., & Yong, O. (2014). The influence of lock-up provisions on IPO initial returns: Evidence from an emerging market. *Economic Systems*, *38*(4), 487–501.

Mok, H. M., & Hui, Y. (1998). Under pricing and after-market performance of IPOs in Shanghai, China. *Pacific-Basin Finance Journal*, *6*(5), 453–474.

Moshirian, F., Ng, D., & Wu, E. (2010). Model specification and IPO performance: New insights from Asia. *Research in International Business and Finance*, *24*(1), 62–74.

Mumtaz, M. Z., Smith, Z. A., & Maqsood, A. (2016). An examination of short-run performance of IPOs using extreme bounds analysis. *Estudios de Economia*, *43*(1), 71-95.

Pandya, F. (2016). After market pricing performance of Initial Public Offerings (IPOs). *Jindal Journal of Business Research*, *5*(1), 1–16.

Pettway, R. H., & Kaneko, T. (1996). The effects of removing price limits and introducing auctions upon short-term IPO returns: The case of Japanese IPOs. *Pacific-Basin Finance Journal*, *4*(2-3), 241–258.

Reddy, K. S. (2015). The aftermarket pricing performance of initial public offers: Insights from India. *International Journal of Commerce and Management*, *25*(1), 84-107.

Rhodes–Kropf, M., Robinson, D. T., & Viswanathan, S. (2005). Valuation waves and merger activity: The empirical evidence. *Journal of Financial Economics*, *77*, 561–603.

Ritter, J. R. (2003). Differences between European and American IPO markets. *European Financial Management*, *9*(4), 421-434.

Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *Journal of Finance*, *57*(4), 1795–1828.

Rumokoy, L. J., Neupane, S., Chung, R. Y., & Vithanage, K. (2017). Underwriter network structure and political connections in the Chinese IPO market. *Pacific-Basin Finance Journal*, Available online 7 November 2017.

Samarakoon, L. P. (2010). The short-run under pricing of initial public offerings in the Sri Lankan stock market. *Journal of Multinational Financial Management*, *20*, 197–213.

Sochi, M. H., & Islam, R. (2018). What impacts IPO under pricing? Evidence from Dhaka Stock Exchange. *International Journal of Business and Management*, *13*(3), 1-10.

Song, S., Tan, J., & Yi, Y. (2014). IPO initial returns in China: Under pricing or overvaluation? *China Journal of Accounting Research*, *7*, 31–49.

Stoll, H. R., & Curley, A. J. (1970). Small business and the new issues market for equities. *Journal of Financial and Quantitative Analysis*, *5*(3), 309–322.

Su, D., & Fleisher, B. M. (1999). An empirical investigation of under pricing in Chinese IPOs. *Pacific-Basin Finance Journal*, *7*(2), 173–202.

Sullivan, M. J., & Unite, A. A. (2001). The influence of group affiliation and the underwriting process on emerging market IPOs: The case of the Philippines. *Pacific-Basin Finance Journal*, *9*, 487–512.

Sundarasen, S. D., Khan, A., & Rajangam, N. (2017). Signalling roles of prestigious auditors and underwriters in an emerging IPO market. *Global Business Review*, *19*(1), 69–84.

Tong, L. Y., & Ahmad, R. (2015). The signalling power of the investment banks' reputation on the performance of IPOs on Bursa Malaysia. *Jurnal Pengurusan*,*45*(1), 1-16.

Unite, A. A., & Sullivan, M. J. (2003). The effect of foreign entry and ownership structure on the Philippine domestic banking market. *Journal of Banking and Finance*, *27*(12), 2323–2345.

Vithessonthi, C. (2014). What explains the initial return of initial public offerings after the 1997 Asian financial crisis? Evidence from Thailand. *Journal of Multinational Financial Management*, *27*, 89-113.

Vos, E. A., & Cheung, J. (1993), New Zealand IPO under pricing: A reputation based model. *Small Enterprise Research*, *1*, 13-22.

Wadhwa, K., Reddy, V. N., Goyal, A., & Mohamed, A. (2016). IPOs and SEOs, real investments, and market timing: Emerging market evidence. *Journal of International Financial Markets, Institutions and Money*, *45*, 21-41.

Wethyavivorn, K., & Koo-smith, Y. (1991). Initial public offerings in Thailand, 1988-89: Price and return patterns. In: S. G. Rhee & R. P. Chang, (Eds.) *Pacific-Basin Capital Markets Research*, Vol. 2 (North-Holland, Amsterdam).

Xu, Z., Wang, L., & Long, J. (2017). The impact of directors' heterogeneity on IPO under pricing. *Chinese Management Studies*, *11*(2), 230-247.

Yatim, P. (2011). Under pricing and board structures: An investigation of Malaysian Initial Public Offerings (IPOs). *Asian Academy of Management Journal of Accounting and Finance*, *7*(1), 73–93.

Yon, K. H., & Park, S. H. (2009). The effect of underwriters' reputations on post-deregulation IPO pricing: Price discovery ability versus bargaining power. *Asia-Pacific Journal of Financial Studies*, *38*(4), 611-656.

Yong, O. (2007). A review of IPO research in Asia: What's next? *Pacific-Basin Finance Journal*, *15*(3), 253–275.

Yong, O. (2013). When do after-market IPO prices stabilize? Evidence from Malaysian fixed-price IPOs. *International Review of Business Research Papers*, *9*(4), 77–90.

Yong, O. (2015). What is the "true" value of an initial public offering? *Journal of Scientific Research and Development*, *2*(10), 78–85.

Zameni, A., & Yong, O. (2016). Lock-up expiry and trading volume behaviour of Malaysian initial public offering's. *International Journal of Economics and Financial* Issues, *6*(S3), 12-21.

Zameni, A., & Yong, O. (2017). Effects of lock-up expiry on bid-ask spread of Malaysian IPOs. *American Journal of Finance and Accounting*, *5*(1), 64-84.

Zeng, J., & Zhang, Q. (2015). Family involvement, political connection and IPO under pricing: Evidence from the companies listed on the SME Board of China. Available at SSRN: https://ssrn.com/abstract=2648147.