“Research on the IPO underpricing of the Hong Kong growth enterprise market”

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Research on the IPO underpricing of the Hong Kong growth enterprise market

Abstract

According to the general practice of the international security markets, the new stock issue prices are often lower than the closing price of the first day. This means that the issue of the new stock exists in the Initial Public Offering (IPO) underpricing. This paper analyzes the HKGEM in an all-round approach from three aspects of market characteristics, market index and issuance pricing of stocks. It further studies the price decision model and the issuance pricing method of the stock correlated with the IPO underpricing on the growth market, and carries out a theoretical research into the IPO underpricing of the HKGEM on the basis of a combined market analysis of the HKGEM. The finding of this paper reveals that it carries out the statistical analysis of the IPO underpricing in the HKGEM from four perspectives for different years, different trades, and that whether there is a venture capital background on the main business in different areas separately. In this paper, we consider that the developing stage, market environment and investor state of the HKGEM are different from those in the developed nations.

Keywords: HKGEM, IPO underpricing.
JEL Classification: G14, G15, G39.

Introduction

IPO is a vital step when the stocks of a stock company originally held by a few people are to be issued to the public. The systematic IPO underpricing is a prevalent phenomenon and has been one of the hot research topics in the financial field. Starting from the issuance mechanism arrangement and interest game behaviours of the issuer, the underwriter, and the investors, many researchers give various explanations for the IPO underpricing as to different markets, environments or stages.

Hong Kong is an important international financial centre in the Asia-Pacific region. Established on November 15, 1999, the Hong Kong Growth Enterprise Market (HKGEM) has played a very crucial role over the years in the Hong Kong economy and its capital market. Since its birth, the HKGEM has been continuously weak. Some scholars think that the main reason is "birth at the wrong time" – when the global network technology bubble shattered. After the 1997 Asian financial crisis, the Hong Kong economy stood stagnant that then has influenced the HKGEM.

Besides this, the HKGEM at the early stages preferred the high-tech companies already doing business on-line and the new economy with the listed companies of too few industries. Its market values relied too much on such enterprises. Because of the ignorance of the company quality and insufficiency in the supervision coupled with the features mentioned above, the investors were continuously losing their confidence in the HKGEM. Taking into consideration that there is no much literature systematically researching the HKGEM IPO underpricing at present, this paper will apply the theoretical analysis and positive research methods to undertake an overall survey of the HKGEM IPO underpricing on the basis of relevant research.

The remainder of this paper is organized as follows. Section 1 systematically summarizes various outputs of the IPO underpricing researches. Section 2 deals with an overall analysis of the HKGEM from aspects such as market characteristics, market index, issuance of stocks and pricing methods. Section 3 undertakes the statistical analysis and positive research on the HKGEM IPO underpricing phenomena and the final section concludes.

1. Review of literature

Since the Logue's thesis on the IPO underpricing published in the *Journal of Financial and Quantitative Analysis* in 1973, the experts on economics and finance have devoted a lot of time to this problem. Many scholars have undertaken a deep theoretical study on the IPO underpricing of different markets from various aspects.

Rock's (1986) "winner's curse" model thinks that a security issuing enterprise and its underwriter do not know the true value of the stock which they provide while some investors know it accurately. The investors who do not know will face a "winner's curse" whereby they are more probably given the premium-priced stocks. Therefore, a great number of the stocks assigned to them may not be a good thing that will reduce their willingness to subscribe to the new stocks. Because the knowing investors' demand cannot cover all of the new stocks issued, the issuing market has to rely on the unknowing investors' participation. Then, the necessary action must be taken to ensure that the unknowing investors are kept in the market. The IPO underpricing is just one

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of the aspects used. The underwriter will compensate the ill-informed investors' information inferiority through an overall lower-pricing equilibrium. Beatty & Ritter (1986) expands Rock's model and points out that the greater the uncertainty of the issuing company's value, the greater the value of information, the greater the ill-informed investors' prejudice and the greater the necessary discounting would be. Koh & Walter (1989) uses the Singaporean data to test Rock's model and the result tells us that there is no significant difference between the return of the investors with the information inferiority and a risk-free rate, which shows that the "winner's curse" is apparent in the Singaporean market. Su et al. (1999) use a sample of 587 companies listed from 1994 to 1999 to verify the above-mentioned reverse selection hypothesis. Besides, Keloharju (1993) and Levis (1993) study the IPO markets separately in Finland and England. Their results also support the hypothesis and conclusion of Rock's model.

Contrary to Rock's model, Allen & Faulhaber (1989), Grinblatt & Hwang (1989), and Welch (1989) argue that compared with the investors, the issuing company knows more about the present value and risks of its future cash flow. Because of the information inadequacy, the investors cannot accurately judge the company's true value.

The rational investors will worry about a "lemon problem": only those companies below the average quality will be willing to sell their stocks at the average price. Since the low-quality companies can easily use a registry application form and prospectus to disclose the false information and pretend to be worthful, the highquality companies try to present the information on their quality to the potential investors by using signals (especially those that are difficult for the low-quality companies to imitate) for differentiating themselves from the low-quality companies, such as the insider ownership retention rate, selection of underwriter (Booth & Smith, 1986), and selection of auditor (Titman & Trueman, 1986), etc. The IPO underpricing is a kind of useful signal to present a company's quality by an issuing company.

Chowdhry & Sherman (1996) study the underwriting methods applied to IPO in different countries. They have found out that the degree of the IPO underpricing and the underwriting method have a close relationship with the interval from issuance to the listing. For the new stocks using the firm to underwrite their IPO underpricing degree are more severe than those using the best-effort underwriting. Moreover, there is a certain time interval between the new stock issuance and the real listing. Usually, the longer the interval, the more severe the IPO underpricing degree is. In order to prevent the risk brought about by this uncertainty, the underwriter and the issuer may intentionally ask a lower price for a new stock during pricing.

Aggarwal & Rivoli's (1990) study shows that the IPO price of a new stock is not apparently lower than its intrinsic value, and that it is the investors' enthusiasm that raises its price on the first day of the listing. Tinic (1998) and Ritter (1991) have also found out that the bubbles existed in the issuance market and the IPO underpricing might be influenced by the investors' psychological factors. Abnormal return of a new stock is due to the investors' excess optimism and welcome; i.e. the difference between the offering price and the trading price after listing may be caused by a market pricing error. This is the so-called "speculative-bubble hypothesis".

Wong & Chiang (1986) have studied 64 Singaporean new stocks from January 1975 to September 1984. They have concluded that for a new stock, and for an increase of capital, its abnormal return was 56.0% if it has been offered to the public, 46.7% if it was issued between 1980 and 1984, 65.9% if it was issued between 1975 and 1979, and its abnormal return was 30.4%. Firth and Liau-Tan (1997) develop various signalling models to explain the valuation of the unseasoned new issues listed on the Stock Exchange of Singapore from 1980 to 1993. They use the entrepreneurs' retained ownership, dividend underpricing, and the reputation of the financial advisers as signals in their models.

Kim et al. (1993, 1995), Taylor & Greg (1998), Levis (1993), and Dawson (1987) have studied the new stocks in Korea, Australia, England, and Hong Kong separately. Their findings also show the existence of the IPO underpricing. Teoh et al. (1998) attribute some of the poor post-IPO stock performance to the optimistic accounting early in the life of the firm in order to induce the investors to purchase their issue.

Eckbo and Norli (2003) argue that the IPOs have low returns because they actually have low risk, as indicated by high liquidity and low leverage. However, in a separate study, Ritter and Welch (2002) find a beta of 1.73 for their portfolio of the IPOs, indicating a high exposure to the market risk.

Previous studies examining the IPO performance in Hong Kong focus on the main board listings. McGuinness (1992) investigates 92 IPOs in Hong Kong from 1980 to 1990 inclusively and finds that most of the post-listing cumulative returns are contributed by the close of the first trading day. Dewenter and Field (2001) examine the infrastructure firm's IPOs with the relaxed listing requirement in the period from 1996 to first half of 1997. They find that the investment banks will avoid highly speculative issues in order to protect their reputations. Cheng et al. (2004) investigate the intra-day pattern of the 159 IPOs listed on the Stock Exchange of Hong Kong between the period of September 1995 and December 1998. They indicate that the initial underpricing for the IPO firms is 12.3 percent. This paper seeks to examine the IPO performance on the specialized GEM, so as to understand better the characteristics of the abnormal IPO performance.

Pak To Chan, Fariborz Moshirian (2007) examine the stock return performance of the IPO stocks which are listed on the Growth Enterprise Market (GEM) in Hong Kong. By using several benchmarks, over 3 years, they find that the results produced are sensitive to the benchmark employed. The two factors causing the underperformance of GEM stocks are the ‘technology boom’ and ‘IPO effects’. This suggests that appropriate benchmarks are very important for assessing the performance of newly issued stocks. The results of the cross-sectional analyses suggest that the Hong Kong GEM is a unique market.

The HKGEM is a characteristically emerging market. Studying its IPO underpricing requires the guidance of the established theories and experiences and it will not be broken away from its real environment. Only on this basis the practical and profound research of the HKGEM can be undertaken.

2. Analysis of the HKGEM

2.1. Positioning of the HKGEM. The unique positioning of the HKGEM is expressed as follows:

First, to take the growing companies as its targets. The HKGEM takes the “growth potential” as its positioning subject and does not set any restrictions in terms of industries or scales. Its objects are the emerging companies of various industries, which need extra funds to realize their expansion or development plans. It provides a channel for raising funds to the small emerging companies with a short history but good profit prospects, so as to provide opportunities for their development and the expansion of business.

Second, a market established for the professional investors who know the market well. The emerging companies listed in the HKGEM usually have weak foundations with a rather high risk of failure. Their requirements are lower than those of the main-board market, which may facilitate some excess radical issuers and company promoters in funding some companies with little opportunity for success, or poor performance. These two factors will increase the overall risk carried by the investors of the HKGEM.

Finally, the independent market positioning. Besides the main-board market, the HKGEM is a brand new financing market, which has its organization and full-time staff as well as the independent front management and market supervision to make its operation independent of the main-board market. It is not inferior to the main-board market. It is not a “springboard” helping the companies’ list and then shift to the latter, but a financing market totally parallel to the latter. The Hong Kong Exchanges and Clearing Limited (HKEx) allow the HKGEM companies to shift to the main-board market and the companies in the latter shift to the HKGEM. But first of all they have to be delisted from the original market and then apply for the listing to the other, and they can be listed only after satisfying the relevant listing rules.

2.2. Operation characteristics of the HKGEM. The basic operation idea of the HKGEM is to emphasize the concepts of “let the buyer beware” and “market determines” coordinated by the strict information revelation. Some of the main characteristics behind the HKGEM are:

1. One of the most apparent characteristics of the HKGEM is that its initial listing requirements are not as strict as those of the main-board market; i.e., the HKGEM does not set the requirements of the company earnings and net assets. On the one hand, the HKGEM caters for the medium and small-sized enterprises and what it pays much attention to is the growth potential, but not the current financial foundations; on the other hand, the knowledge economy status brings about qualitative change to a standard of measurement of the enterprises. The most important indexes to evaluate an enterprise are its human resources and technological achievements, which determine its core competitive power and development potential instead of the traditional indexes such as assets and liability, present gains, etc.

2. It requires the frequent and timely revelation of much information on the listed companies. According to the HKGEM’s characteristics, the HKEx adopts the supervision idea of “information revelation as essential”. The low requirements of the listing in the HKGEM are extremely likely to cause “good and evil mixed up” and it is more difficult to evaluate the high-tech enterprises. After being listed, the issuer in the HKGEM has to make a comparison of business development in the previous two fiscal years with the original business plan every half a year, and to compile a quarterly report besides

the semi-annual and annual financial reports. The sufficient revelation of the issuer's information will do well for the investors' objective judgment of the enterprises and the efficient risk control.

3. The HKGEM sets up more strict corporate control rules to urge the listed companies to abide by the rules and appropriate business rules. From the first day of the listing, the issuer must establish a stable and healthy corporate governance system to support its conformity to the HKGEM listing rules.

4. The sponsor plays an extremely important role during a company's listing. In the HKGEM, it is the issuer and the sponsor who determine whether the issuer is suitable to be listed instead of the approval of an administrative department. Whether the listing is successful depends on whether the issuer can sell the minimum shares declared, and if share allotment is not necessary. Hence, the HKEx sets up the strict conditions for the qualifications of the sponsors, stipulating that a sponsor must have the necessary capabilities and credibility, high standards of professionalism and necessary resources; and that the issuer must continue to enlist the support of the sponsor for two complete fiscal years after being listed; and the latter shall assist the former in abiding by the HKGEM's rules as an advisor. For its own benefit, the sponsor, as a person subject to the solitary liability, must give much advice and supervision of the listed company's business development and information revelation, and this will do well towards protecting the external investors' interests.

2.3. Market Index of the HKGEM. The HKGEM Index was introduced on March 17, 2000, and has been falling since then. In order to eliminate the negative influence of the index falling down the market, the HKEx introduced the HKGEM Standard & Poor's Index (GEM) to substitute the former HKGEM Index (GEI) on April 14, 2003. The GEM takes a composite account of turnover of the listed companies' market value, representative of the industry, financial health, etc., and re-adjusts the formation of index constituent stocks and makes itself more representative.

Figure 1 shows GEI and its daily logarithmic return trends of 746 trading days from March 17, 2000 to March 31, 2003. On the whole GEI does not perform well and fell continually after its introduction. The closing GEI was only 108.3, about 10% of its initial value on March 31, 2003.

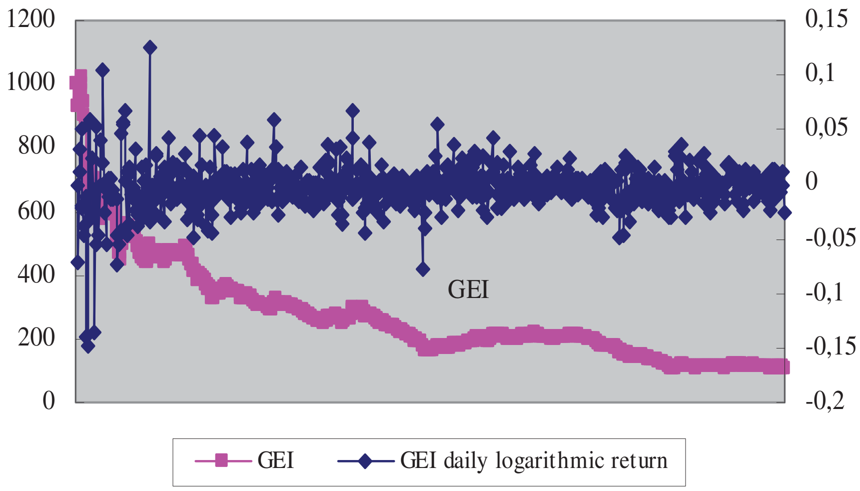

Fig. 1. GEI and its daily logarithmic return in the HKGEM (17 March, 2000 to 31 March, 2003)

Figure 2 shows the GEM and its daily logarithmic return trends of 178 trading days from April 14, 2003, when the GEM was first introduced, up to December 31, 2003. The GEM takes 1000 points as its basic point. Its calculation started from March 3, 2003. On April 14, 2003, the GEM was 940.80 points on its first day of the official introduction. Within the 178 trading days, the lowest closing index appeared on April 30, 2003 as 901.36 points and the highest on September 8, 3003 as 1252.75 points. Compared with Figure 1, after its introduction, the GEM up and down extents were smaller than those of GEI, and from a general view it went up gradually.

A company to be listed in the HKGEM adopts three pricing methods – setting issuing price section, setting issuing price upper limit, and setting issuing price. These pricing methods applied to the HKGEM provide successful examples for a reasonable stock pricing for the medium and small-sized enterprises with high growth potential, but having no earning records. On the whole, the numbers of the companies practising each pricing method are equal.

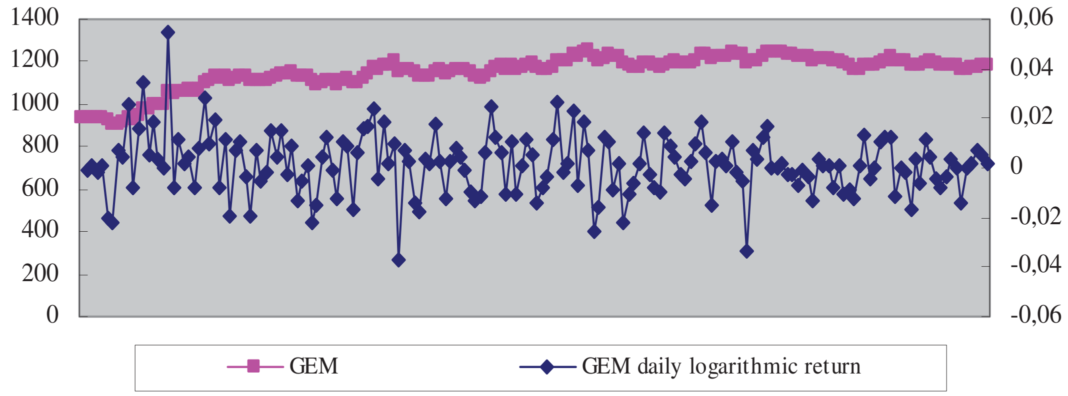

Fig. 2. The GEM and its daily logarithmic return in the HKGEM (14 April, 2003 to 31 December, 2003)

By the end of 2003, 182 out of the 184 HKGEM listed companies had announced their stock pricing methods, of which 66 adopted setting an issuing price section (about 36.3% of the 182 companies), of which 59 adopted setting an issuing price upper limit (about 32.4%), and of which 57 adopted setting an issuing price (about 31.3%) (as it is shown in Figure 3).

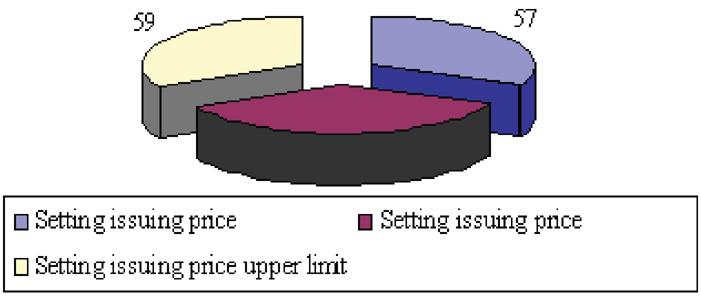

Fig. 3. Stock pricing methods distribution in the HKGEM

By the end of December 31, 2003, 181 out of the 184 HKGEM listed companies had effective records of stock par value. Most of their stock par values are 0.1 or 0.01 Hong Kong dollar (HKD), among which 79 were 0.1 HKD, amounting to 43.6% out of 181, and among which 63 were 0.01 HKD, amounting to 34.8% of the 181. In the analysis below, all stock par values will be converted into HKD, using the exchange rate of 1 USD/7.8 HKD. Since the stock par values are different, it is hard to accurately decide whether the stock issuing price, by itself, is high or low with respect to a company's value. The issuing price per unit par value will be used to decide whether the issuing price is high or low in relation to a company's value.

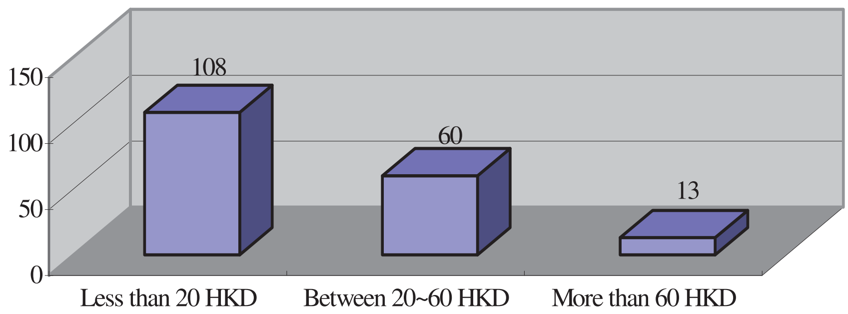

Fig. 4. Companies' distribution according to their issuing prices per unit par value

Figure 4 indicates that the issuing prices per unit par value of the listed companies in the HKGEM can be divided into three categories: (1) less than 20 HKD; (2) from 20 to 60 HKD (inclusive); and (3) more than 60 HKD. Among the 181 listed companies whose issuing prices per unit par value can be accurately computed, 108 fall in the first category, amounting to 59.7% of the total 181; 60 in the second category is amounting to 33.1%; and 13 in the third category is amounting to 7.2%.

2.4. Statistical analysis and positive research of the IPO underpricing in the HKGEM. *2.4.1. Data source and treatment.* Data in this paper are from the HGEMIPOR database designed and developed by GUO TAI AN Information Technology Co., Ltd in Shenzhen of Guangdong Province, P.R. China. As for some missing data and abnormal data, the corrections have been made according to the corresponding information obtained from the HKEx Growth Market website, such as the prospectuses and annual financial statements, etc.

Since the GEM was introduced on March 20, 2003, this paper adopts two calculation terms in the statistical analysis of the IPO underpricing – considering the GEM or not considering the GEM – which corresponds to the different sizes of the sample.

In the model without considering the stock index, the sample under study contains the listed companies from November 25, 1999, when the HKGEM was established, to December 31, 2003. Except for six companies with the abnormal or the incomplete data, the actual sample contains 178 listed companies in the HKGEM.

In the model considering the stock index changes, the sample under study contains the listed companies from March 20, 2000, when GEI was introduced, to December 31, 2003. Except for 13 companies that were listed before the introduction of GEI and six companies with the abnormal or the incomplete data, the actual sample contains 165 listed companies in the HKGEM.

2.4.2. Methodology. Most scholars define the IPO underpricing as the percentage of the first-day closing price to the issuing price of a new stock. This article follows this definition and calculates the IPO underpricing rate using the following two different formulas:

$$IR = (P_1 - P_0)/P_0, \quad (1)$$

$$AR = (P_1 - P_0)/P_0 - (I_1 - I_0)/I_0. \quad (2)$$

In equation (1), IR stands for the return of the first day of the listing to the date of issue (underpricing rate); while AR in (2) stands for the abnormal return of the first day of the listing to the date of issue (the abnormal IPO underpricing rate); P_1 stands for the closing price of the sample stock on the first day of the listing; P_0 stands for the issuing price of the sample stock; I_1 stands for the closing index on the first trading day of the sample stock; and I_0 stands for the closing index the day before the listing of the sample stock.

Equation (1) does not take into account the corresponding market index return, while equation (2) calculates the market index return in the HKGEM. As for the selection of indexes, from March 20, 2000 to March 31, 2003 GEI was used which was independently compiled and introduced by the HKEx and belonged to a market value weighted index. The GEI base day is March 17, 2000 and its basic point is 1000. Since April 14, 2003, the GEM has been used, which is jointly compiled by the Standard & Poor's and the HKEx.

2.4.3. Hypothesis. This paper underlines four hypothessis.

H1: Subscription expenses are not considered. Subscription expenses refer to the opportunity cost of the fund being occupied and the expense of applying. Relative to price rising on the first day, subscription expenses in the HKGEM can be ignored.

H2: Time interval is not considered from the date of the issue to the first day of the listing. This is because there is only a short interval between them in the HKGEM.

H3: Issuing P/E ratio is not considered. Issuing P/E ratio is the ratio of issuing price of a stock to its earnings per share. Since the HKGEM does not set up a lowest earning limit requirement for the companies in their business records and most of the listed companies newly established do not realize earnings, it is hard to accurately decide their earnings per share. Moreover, in the HKGEM there are mostly the high-tech or internet companies' stocks, which are different from the traditional industries and they do not have a stable industry average yield.

H4: Transaction cost is the expense occurring in the trading stocks including the commission and stamp tax. Since its amount is rather small (usually not more than 1% of the trading amount), it is not considered.

3. Statistical analysis and positive research

3.1. Statistical analysis of the new stock IPO underpricing and abnormal IPO underpricing. According the equations of IPO underpricing rate and abnormal IPO underpricing rate, we use data of the sample stocks and calculate the IPO underpricing rates and abnormal IPO underpricing rates of stocks on their first day of the listing in the HKGEM. The statistical analysis result is shown in Table 1, together with the average IPO underpricing rate. The abnormal IPO underpricing rates are 20.94% and 17.78% respectively as a whole in the HKGEM. That the former is just a bit higher than the latter is due to the influence of the market index.

Table 1. Statistical analysis of IPO underpricing rate and abnormal IPO underpricing rate

	IPO underpricing			Abnormal IPO underpricing		
	All samples	New stock discounted	New stock falling below issuing price	All samples	New stock discounted	New stock falling below issuing price
Average underpricing rate	20.94%	40.70%	-23.25%	17.78%	38.31%	-21.11%
Median	5.13%	17.14%	-13.85%	4.67%	17.49%	-10.37%
Sample standard deviation	59.84%	60.64%	23.47%	52.70%	52.37%	23.28%
Coefficient of variation	2.86	1.49	-1.01	2.96	1.37	-1.10
Skewness	2.18	2.38	-1.19	1.69	1.92	-1.36
Kurtosis	9.72	9.17	3.70	6.76	5.91	4.19
Min. value	-88.64%	0.00%	-88.64%	-89.44%	0.05%	-89.44%
Max. value	343.82%	343.82%	-0.80%	233.53%	233.53%	-0.10%
Size of sample	178	123	55	165	108	57

From Tables 2 and 3, it can be seen that stock IPO underpricing rates and abnormal IPO underpricing rates concentrate on the category of 0-50%; 94 stocks and 83 stocks in the samples under study fall into this category, amounting to 52.8% and 50.3%, respectively, in the samples.

Table 2. Distribution of IPO underpricing rate

IPO underpricing rate	< 0%	0-50%	50-100%	100-150%	≥ 150%
Number of stocks	55	94	14	5	10
Percentage	30.90%	52.80%	7.90%	2.80%	5.60%

Table 3. Distribution of abnormal IPO underpricing rate

Abnormal IPO underpricing rate	<0%	0-50%	50%-100%	100%-150%	≥150%
Number of stocks	57	83	12	5	8
Percentage	34.55%	50.30%	7.27%	3.03%	4.85%

3.2. Analysis of the IPO underpricing rate in different years. Table 4 shows the new stock IPO underpricing rates and abnormal IPO underpricing rates from 1999 to 2003 in the HKGEM. It can be seen that a positive correlation does not exist between the first day return or the first-day abnormal return of the new stocks and the annual issued quantity. For instance, in 2002 only 55 companies issued the IPO stocks that were the most among the three years under survey. But the average IPO underpricing rate was only 14.05% in 2002, much less than that in other years when fewer companies issued their IPO stocks. In 2003, the average IPO underpricing rate was 22.99% which was the greatest, but it showed the least number of the companies that issued their IPO stocks.

Table 4 also indicates that the quantity of the companies issuing the IPO stocks in 2003 dropped down a lot, which was less than half of that in 2002. However, among the 25 companies in 2003, there were only five whose stock IPO underpricing rates and abnormal IPO underpricing rates were less than 0. It was less than that in the other years, except 1999. This showed that the investors began to examine stocks in the HKGEM in a rational way through several years' development and adjustment, and that the companies which were going to list in the HKGEM had new considerations under internal and external pressure.

Table 4. Analyses of the IPO underpricing rate and abnormal IPO underpricing rate in different years

Year	IPO underpricing rate				Abnormal IPO underpricing rate			
	Number of samples	Mean	Median	Standard deviation	Number of samples	Mean	Median	Standard deviation
1999	5	27.81%	16.67%	32.84%				
2000	42	25.76%	1.95%	83.25%	34	12.49%	2.57%	58.11%
2001	51	22.55%	7.14%	65.90%	51	22.47%	8.35%	65.79%
2002	55	14.05%	5.45%	32.06%	55	14.34%	4.77%	31.94%
2003	25	23.36%	5.56%	53.43%	25	22.99%	4.67%	53.69%

3.3. Analysis of the IPO underpricing in various industries. According to the Hang Seng Stock Classification System, the new listed stocks can be divided into nine industries (see Table 5).

Table 5. Analyses of IPO underpricing rate and abnormal IPO underpricing rate in different industries

Industry	IPO underpricing rate					Abnormal IPO underpricing rate				
	Number of samples	Percentage	Mean	Median	Standard deviation	Number of samples	Percentage	Mean	Median	Standard deviation
Oil & gas	3	1.69%	10.42%	22.81%	56.79%	2	1.21%	42.05%	42.05%	25.92%

Table 5 (cont.). Analyses of IPO underpricing rate and abnormal IPO underpricing rate in different industries

Industry	IPO underpricing rate					Abnormal IPO underpricing rate				
	Number of samples	Percentage	Mean	Median	Standard deviation	Number of samples	Percentage	Mean	Median	Standard deviation
Industrial goods manufacturing	15	8.43%	6.76%	0%	51.44%	14	8.48%	7.71%	-0.78%	52.67%
Consumables manufacturing	32	17.98%	21.49%	1.22%	58.84%	31	18.79%	21.03%	0.55%	60.39%
Servicing	37	20.79%	29.76%	8.54%	75.67%	35	21.21%	14.76%	6.80%	37.12%
Utility service	2	1.12%	7.58%	7.58%	14.25%	2	1.21%	8.64%	8.64%	13.53%
Finance & insurance	4	2.25%	-19.24%	-21.45%	32.48%	4	2.42%	-16.16%	-20.86%	27.62%
Real estate & construction	1	0.56%	5.26%	5.26%		1	0.61%	5.50%	5.50%	
Information technology	82	46.07%	22.36%	5.51%	56.28%	74	44.85%	21.46%	4.78%	58.26%
Synthetic	2	1.12%	14.54%	14.54%	57.23%	2	1.21%	13.67%	13.67%	55.49%
Total	178	100%	20.94%	5.13%	59.84%	165	100%	17.78%	4.67%	52.70%

Table 5 indicates that, except for finance and insurance industries, the stock IPO underpricing exists in each industry in the HKGEM, but that it appears to different extents in various industries. In the servicing sector, among the information technology and consumables manufacturing industries the average IPO underpricing rates are relatively high: 29.76%, 22.36% and 21.49%, respectively. The industries where the abnormal IPO underpricing rates are ranked in the first three places are the oil and gas, information technology and consumables manufacturing industries. Their abnormal IPO underpricing rates are 42.05%, 21.46% and 21.03%, respectively. The statistical results indicate that for the industry with higher risk, its new stock price discounting is greater; for instance, the information technology industry is represented by the internet and high-tech stocks; and for the emerging industry with a good prospect of market development, its new stock price underpricing is relatively greater, for instance, the servicing industry is represented by the media and publishing companies, and the consumables manufacturing industry is represented by the health and personal care companies. People are optimistic towards these kinds of stocks, which makes their return higher in the initial period of being listed and, thus, their IPO underpricing rate is greater.

3.4. Analysis of the IPO underpricing with venture capital (VC) background. Table 6 presents that since the establishment of the HKGEM at the end of 2003, there are 50 companies with a VC background, which amounts to 28.09% of all of the listed companies in the HKGEM. For those with a VC background, their average IPO underpricing rate and abnormal IPO underpricing rate are 31.14% and 23.07%, respectively, which are much higher than that of those without VC background.

Table 6. Analyses of the IPO underpricing rate and abnormal IPO underpricing rate with or without VC background

	Year	IPO Underpricing Rate			Abnormal IPO Underpricing Rate		
		No. of samples	Percentage	Average IPO underpricing rate	No. of samples	Percentage	Average abnormal IPO underpricing rate
Without VC background	1999	2	1.12%	23.99%			
	2000	31	17.42%	9.72%	25	15.15%	3.11%
	2001	37	20.79%	21.57%	37	22.42%	21.47%
	2002	34	19.10%	12.99%	34	20.61%	13.31%
	2003	24	13.48%	24.20%	24	14.55%	23.80%
	Total	128	71.91%	16.95%	120	72.73%	15.80%
With VC background	1999	3	1.68%	30.36%			
	2000	11	6.18%	70.94%	9	5.45%	38.55%
	2001	14	7.87%	25.14%	14	8.48%	25.11%
	2002	21	11.80%	15.75%	21	12.73%	16.00%
	2003	1	0.56%	3.13%	1	0.61%	3.49%
	Total	50	28.09%	31.14%	45	27.27%	23.07%

This shows that the companies with a VC background are usually taken as ones with better development potential and profit prospects by the investors, which results in their value being evaluated higher in the secondary market. Hence, the venture investors can get a good return through the IPO market.

3.5. Analysis of the IPO underpricing of the companies with their main business in different areas

Table 7. Analyses of the IPO underpricing rate and abnormal IPO underpricing rate of the companies with their main business in different areas

Location of main business	IPO underpricing rate			Abnormal IPO underpricing rate		
	No. of samples	Percentage	Average IPO underpricing rate	No. of samples	Percentage	Average abnormal IPO underpricing rate
China Mainland	92	51.69%	15.40%	87	52.73%	16.75%
Hong Kong	45	25.28%	37.56%	40	24.24%	25.97%
Others	41	23.03%	15.12%	38	23.03%	11.53%
Total	178	100%	20.94%	165	100%	17.78%

It can be seen from Table 7 that the companies from mainland China have become the main force behind the listed ones in the HKGEM. Among the 178 listed companies, there are 92 from mainland China, amounting to 51.69%. The statistics shows that the companies with their main business in Hong Kong have the biggest IPO underpricing rates, with their average IPO underpricing rate and average abnormal IPO underpricing rate being 37.56% and 25.97% respectively. For the listed companies with their main business in Mainland China and other areas, their average IPO underpricing rates are below 20%.

Conclusion

The research indicates that the average IPO underpricing rate and average abnormal underpricing rate of the new stocks in the HKGEM are 20.94% and 17.78%, respectively, which is much less than those in the emerging security markets of the developing nations, but are close to those in the developed security markets.

Other researchers who have examined the IPO underpricing are inclined to look for the explanations from "new stock IPO price too low", which is closely connected with the mature secondary markets and the rational investors. However, ten years have elapsed since the establishment of the HKGEM, whose market location is to facilitate the listing and financing of the medium and small-sized enterprises with accelerated growth and the high-tech enterprises. The high risk and uncertainty constitute its characteristics. Among the samples under research, nearly one third of the new stocks fell below their issuing prices on the first day of the listing, which is unique and never happens in the IPO underpricing research of other security markets. On the other hand, the investors of the HKGEM are not totally rational in avoiding risks and most of them are private or the institutional investors with certain preferences of the risks. Therefore, the actualities in the mature stock markets in the developed nations do not concur with those at the HKGEM, and the reasons for the low IPO underpricing rate in the HKGEM are different from those in the developed countries.

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