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The Impact on IPO Performance of More Stringent Listing Rules with a Pre-listing Earnings Requirement: Evidence from Hong Kong

Wai-yan Cheng

Yan-leung Cheung*

and

Yuen-ching Tse

City University of Hong Kong

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Abstract

This study considers the impact of a change to listing rules covering IPO performance in the Hong Kong stock market. The change, introduced in 1994, imposed a three-year pre-listing earning requirement on new issues. The objective of this research is to screen out a subset of poor IPO performers. We find there is no significant difference in performance between IPOs before and after the regulatory change. We further divide our sample of IPOs registered before the regulatory change into two sub-samples: those that did and those that did not fulfil the earnings requirement. The result shows that there is no significant difference in performance between the two IPO sub-samples. This implies that the existence of pre-listing earnings does not guarantee good long-term IPO performance and the pre-listing earnings of new issues is not an effective screen for 'bad' IPO performers. This study further analyzes the rationale for rule change in the context of recent developments in the Hong Kong stock market and concludes that the rule change is part of the reform programme aimed at introducing a second board market for small companies and at attracting more China-related listings to the main board.

Keywords: IPO, regulatory change, Hong Kong.

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* Corresponding Author: Yan-leung Cheung, Department of Economics and Finance, City University of Hong Kong. Tel: (852) 27887960. Fax: (852)27888040. E-mail: efsteven@cityu.edu.hk

1. Introduction

Initial public offerings (IPOs) are generally underpriced in the short term and underperformers in the long run. The underpricing phenomenon has been well documented in the U.S. market, for example, by Miller and Fisher (1987), Ritter (1984) and many others. IPO long-term underperformance is documented by Ibbotson and Jaffe (1975), Ritter (1991) and Loughran and Ritter (1995). This implies that IPOs are a good investment in the short term and become a poor investment over the long term. For example, Ritter (1991) examines a sample of new U.S. issues listed between 1975 and 1984 and finds that, for a three-year holding period, IPOs underperform a control sample of matching seasoned firms. However, Ritter and Loughran (1995) find negative long-term returns are not as significant if firms are matched. Among the factors that are investigated are firm age and size, industry, underwriter reputation and listing exchange. These two phenomena are also found in other markets. For example, Loughran et al. (1994) present the results of research (done by the authors or others) on the short-run underpricing and long-run performance of IPOs in other markets.

While there are many studies on the *certifying* function of investment bankers in IPO pricing (including those conducted by Carter and Manaster, 1990; Johnson and Miller, 1988; and Carter, Dark and Singh, 1998) few studies mention that the exchanges also provide a *certifying* function by imposing listing requirements on the IPOs. Since only firms that fulfil minimum size, minimum number of years in operation and minimum financial information disclosure requirements can be listed on an exchange, investors expect the exchange to screen new issues. The exchange's approval reveals its satisfaction with the quality and quantity of information supplied by the applicant company. Sanger and McConnell (1986) and Ying *et al.* (1977) observe an increase in shareholder wealth after the listing and conclude that this increase is due to increased liquidity or managerial signalling. However, they ignore the *certifying* function of the listing requirements.

The first part of this study addresses the question of whether listing rules matter. We examine the effect of introducing more stringent listing rules on IPO performance. In 1994, Hong Kong Exchanges and Clearing Ltd. (HKEx), formerly the Stock Exchange of Hong Kong, implemented a major change in its listing rules that required the issuing firms' profit attributable to shareholders to exceed HK\$20 million in the most recent year and be more than a total of HK\$30 million for the previous two years. Prior to the change, there was no explicit earnings requirement in the mandatory three-year business record. This change means that prospective issuers cannot be listed without having generated sufficient pre-listing earnings. The objective of the new regulation is to screen out a subset of 'poor' IPO performers. This study addresses three questions: 1) Does the existence of pre-listing earnings provide an informative signal to investors in IPOs? 2) Do IPO firms with a recorded history of pre-listing earnings have better on-going performance than IPOs that do not have an earnings history? In other words, are pre-listing earnings an effective screen for 'bad' IPO performers? 3) Do the above conclusions change when the requirement for pre-listing earnings is explicitly enforced by HKEx?

Our sample includes 386 IPOs registered on the Hong Kong stock market between 1986 and 1998. To answer the third question, we separate our sample into two sub-samples – one comprising IPOs listed before and the other comprising those listed after the regulatory change – and test the hypothesis that the introduction of more stringent listing requirements screens out poorly-performing IPOs. The results

reveal that there is no significant difference in short-term performance between IPOs registered before and after the regulatory change. We further find that there is no significant difference in long-term performance between IPOs registered before and after the change; however, all IPOs, on average, significantly underperform market indexes. Nevertheless, the phenomenon of IPO long-term underperformance vanishes when we use a matched sample (by industry, market capitalization or book-to-market value) as a performance benchmark. The results show that IPO long-term performance is similar to that for a matched seasoned firm. This may be due to the fact that market indexes are value-weighted indexes which are heavily dominated by large firms and most IPOs are small and medium-sized firms. Our results fail to support the hypothesis that introducing a more stringent listing requirement screens out poorly-performing IPOs.

To address the first two questions, we further divide our sub-sample of IPOs registered before the regulatory change into two additional sub-samples: those that fulfilled the profit requirement (*profit*) and those that did not (*nonprofit*). If investors consider pre-listing earnings to be an important indicator of future performance, then the *profit* IPOs should generate a higher return than the *nonprofit* IPOs and should be as good as those listed after the change in regulation. The results reveal that there is no significant difference in performance between the *profit* and *nonprofit* IPOs. This may imply that the pre-listing earnings of new issues are not an effective screen for 'bad' IPO performers.

This study further analyzes the rationale for the rule change in the context of recent developments in the Hong Kong stock market. We conclude that the change is part of financial market reforms aimed at introducing the second board market for small companies and at attracting more China-related listings to the main board.

The paper is organized as follows. Section 2 gives a review of the literature on IPO long-term underperformance. Section 3 presents background information on the IPO market and listing regulations in Hong Kong. Section 4 describes the IPOs included in the sample. The empirical results are reported in Section 5. Section 6 explores the rationale for the rule change. The final section concludes.

2. Literature Review

IPO research is important since IPOs are one of the major financing methods used by companies around the world. Ritter (1998) and Ritter (2002) give useful summaries of the major research findings. There are three stylized facts that are documented in numerous studies on IPOs: short-term underpricing, hot issues and long-term underperformance. We give a brief description of papers focusing on long-term underperformance. Ritter (1991) first documents the long-term underperformance of IPOs in the U.S. Ritter and Welch (2002) report that IPO stocks have average three-year buy and hold market-adjusted and style-adjusted (size and market-to-book value) returns of -23.4% and -5.1% respectively during the period from 1980 to 2001. Other research reports a similar phenomenon in other countries (Loughran *et al.*, 1995). In Hong Kong, our sample set generates an abnormal negative three-year return of 55% over the period from 1986 to 1996. What causes the underperformance? Miller (1977) and Morris (1996) point to the falling degree of heterogeneity in investors' beliefs. At the outset, when expectations are high, optimistic investors drive up the stock price. As additional information becomes available and is processed, the stock price eventually settles to a rational level at which the IPO's potential is assessed

by the market. Ritter (1991) points out that firms take advantage of the “windows of opportunity.” This is further evidenced by Cai and Wei’s (1997) study on a sample of 180 IPOs listed on the Tokyo Stock Exchange between 1971 and 1992. Brav *et al.* (2000) examine a sample of IPO and seasoned equity offering firms from 1976 to 1992 and show that large and medium-sized IPOs do not underperform much, while small IPOs still exhibit negative long-run performance. Yi (2001) investigates a sample of 705 U.S. IPOs listed between 1987 and 1991 and points out that IPOs making losses at the time they go public generate significantly negative long-run returns. Using calendar-time analysis, Gompers and Lerner (2003) illustrate that, for a sample of 3,661 IPOs made during the period between 1935 and 1972, IPOs yield a return as high as the market return. Ritter and Welch (2002) provide a detailed and updated review of IPO activity, allocation and pricing.

McGuinness (1993) explains IPO underperformance by the fading of initial support from three different groups of investors. The first group comprises the friends and supporters who are lured to subscribing to the IPO because of the initial underpricing. The purpose of this group’s subscription is to create an impression of excess demand and draw the general public’s attention to the offer. The second group comprises market makers who take their profit after deliberate price hikes. This is particularly apparent with small IPOs since there is little institutional investor interest in these stocks. Brav and Gompers (1997) report that venture capitalists are unlikely to support these small IPOs. Lastly, pre-listing shareholders decide to cash out after the capital commitment period. This feature is evident from the work of Field and Hanka (2001), Bradley *et al.* (2001), and Brav and Gompers (2001). Ljungqvist *et al.* (2001) recently proposed a single model to explain all three empirical IPO phenomena: underpricing, hot issues and long-term underperformance.

The impact of regulatory change is an active topic in empirical finance. In the context of asset pricing, Fung and Draper (1999) evaluate the impact of a short-sales constraint on the pricing of future contracts. Considerable attention has been paid to how stringent the listing regulations should be for IPOs. Many countries have more than one exchange and they differ in their listing regulations and/or trading mechanisms. Aggarwal and Angel (1998) explain why companies such as Microsoft and Intel choose to list on the NASDAQ when they could list on the more traditional NYSE. Less stringent listing regulations, however, may be detrimental in the long term as witnessed by the failure of the Amex Emerging Company Marketplace (ECM), a separate board in Amex on which small and growing companies were listed. Aggarwal and Angel (1999) give a comprehensive account of the rise and fall of the ECM. Dewenter and Field (2001) study a relaxation in the listing requirements of the HKEx in 1996 and report no substantial difference in long-term performance since selection bias by reputable investment banks ensures the quality of the listing company. The regulatory change in their study covered infrastructure companies, which are primarily financed by private equity funds. These infrastructure companies usually engage in specific fixed-term projects from the start and hence cannot show a long operational and profitable history to satisfy the normal listing requirement. The regulatory change allows companies with a shorter operational history and profit record to be listed. The sample set in their study contains only seven companies, however, and they acknowledge the difficulty of generalizing their results to other situations.

3. The Hong Kong IPO Market and the 1994 Regulatory Change

The listing of securities on the HKEx main board is mainly regulated by the Rules Governing the Listing of Securities on the HKEx. The current basic requirements for listing equity securities on the HKEx include:

- a minimum track record of not less than three years;
- the profit attributable to shareholders must, for the most recent year, be not less than HK\$20 million and; for the two preceding years, must be in aggregate not less than HK\$30 million;
- the market capitalization must be at least HK\$100 million at the time of listing; and
- the public must hold at least 25% of any class of listed securities. Where issuers have an expected market value of over HK\$4,000 million, the percentage may be lowered to between 10% and 25%.

The most common listing method used in Hong Kong is an offer for subscription, which is the offer of new securities to the public by the issuer or by someone on behalf of the issuer. The subscription must be fully underwritten. The underwriter is responsible for distributing to investors a listing document called the prospectus that contains information on the company. The issuer must inform the public about the offer through newspapers and other media. The application period usually lasts for three to four days. Investors are required to submit their application form along with a bank draft to the underwriter. On average, the underwriter takes around five days to process the applications. If the offer is oversubscribed, the underwriter will be responsible for the share allocation. HKEx must be satisfied that the share allotment procedure is fair so that applications for the same number of securities receive equal treatment. The share allotment result is published in newspapers and trading in the shares of the newly listed companies starts on the exchange shortly afterwards.

The second of the four requirements given above, regarding profit history, was a major regulatory change that became effective from September 15, 1994. Before the change, a company was required to provide only a three-year business record under essentially the same management; however, there was no explicit profit requirement for a listing. We study the long-term performance for companies listed before (Group 1) and after (Group 2) the change. To isolate the impact of the certification effect of an exchange listing from the profit-history requirement, we subdivide Group 1 into companies that fulfilled the profit requirement (Batch B) and companies that did not (Batch A).

4. Sample

During the period from January 1986 to December 1998, 518 IPOs were registered in Hong Kong. We exclude companies that were listed by way of introduction,¹ back-door listing,² demerger, issuing rights offers, and reorganization. Companies with missing data are also excluded. There are a total of 386

¹ According to the Listing Rules, this is an application for the listing of issued securities and no marketing arrangements are required.

² The firm goes public by taking over an existing listed company.

IPOs (75% of the total) with complete information. Our sample includes all red-chips³ and H-share companies.⁴ The offering statistics are obtained from issues of the annual *Fact Book* published by the HKEx and from newly listed companies' prospectuses. Stock returns are retrieved from Data Stream and are adjusted for dividend payment and restructuring. All prices are converted into 1999 prices using Hong Kong's composite price index.

Table 1 presents the distribution of 386 IPOs during the sample period. Few IPOs were registered from 1986 to 1990. The IPO market picked up after 1991. It can also be seen that the number of IPOs declined in 1995 as the market had fallen in 1994. The IPO market reached its peak in 1997 and declined in 1998, probably due to the Asian Financial Crisis. Table 2 gives some descriptive statistics for our sample. There are a total of 219 IPOs before (Group 1) and 167 IPOs after (Group 2) the change in the listing rules. Out of the 219 IPOs in Group 1, 126 (Batch B) fulfilled the new listing requirements while 93 (Batch A) did not. The average amount of funds raised and the market capitalization are HK\$494 million and HK\$2,302 million respectively. After the regulatory change, IPOs are on average larger than before the change. Among the 219 IPOs listed before the change, those that did not fulfil the new listing requirements (Batch A) are smaller than those that did fulfil the requirements (Batch B). The average market capitalization of IPOs in Batches A and B are HK\$493 million and HK\$2,025 million respectively. The size of new issues listed before the change which did fulfil the new requirement (Batch B of Group 1) is similar to those listed after the change (Group 2). A similar result is found for the funds raised by the IPOs. The over-subscription rate for IPOs listed before the change is similar to that for IPOs listed after the change. Batch A (IPOs that did not fulfil the new requirement) had the highest over-subscription rate.

5. Empirical Results

This section examines the short-term and long-term performance of IPOs before and after the regulatory change. Here we compute both the first-day and long-term market-adjusted returns for IPOs, as shown in Table 3. The first-day return measures the investor's gain between the offer price and the closing price on the IPOs' first trading days. Ritter and Welch (2002) document that, in the period between 1980 and 2001, the average first-day return is 18.8% for a sample of 6,249 U.S. IPOs. Loughran *et al.* (1993) find similar evidence for IPOs in other markets. To examine the differential returns in detail before and after the change, the t-test is conducted, as shown in Table 4. The results, which are summarized in Table 3, show that the average first-day return of our sample IPOs is 19%. This is consistent with the findings of Cheung *et al.* (1993). The average first-day returns of the IPOs listed before the change is similar to that of the IPOs listed after the change. As shown in Table 4, the results from t-test evidence that the difference is statistically insignificant, while it is not supported by the t-test at any conventional level. Separating the IPOs before the change into those which did not (Batch A) and those did (Batch B) fulfil the new requirement, we find that there is no significant difference between their first-day returns. The average first-day returns for Batch A and Batch B are 20.07% and 18.38% respectively.

³ A company established and listed in Hong Kong, while controlled by mainland Chinese entities.

⁴ A company incorporated in mainland China which is listed in Hong Kong upon approval from the China Securities Regulatory Commission (CSRC).

Holding periods of one, two and three years are used to evaluate long-term performance. In addition, two investment strategies – buy-and-hold and subscribe-and-hold – are investigated. The first assumes that investors can only buy the new issues at the close price of the first trading day; the second assumes that investors can subscribe for the new issues. The Hang Seng Index (HSI), comprising 33 blue-chip stocks, is used as a proxy for market return. The market-adjusted returns are calculated as the difference between the IPOs' compound returns and the benchmark portfolio's compound returns. The results of the market-adjusted returns for the three holding periods are reported in Table 3.⁵

1. *Buy-and-hold strategy.* For all IPOs, the average market-adjusted returns for the one-year, two-year, and three-year periods are -9.8%, -29.9%, and -58.1% respectively. The result is consistent with suggestions in the literature that the long-term performance of IPOs deteriorates over longer holding periods. IPOs registered after the regulatory change (Group 2) generate negative market-adjusted returns in comparison with those listed before the change (Group 1) for the three periods. For the one-year period, Group 1 generates a negative market-adjusted return of -12.5% and Group 2 has a negative market-adjusted return of -7.0%. The market-adjusted returns for both groups of IPOs drop to -57.4% and -60.6% respectively for the three-year period. When we further differentiate the IPOs registered before the change between those that did not (Batch A) and those that did (Batch B) fulfil the new requirement, it is found that both batches underperform the market for the one-year period – by -15.9% for Batch A and -10% for Batch B. Furthermore, both batches of IPOs underperform the market over longer periods: Batch A and Batch B underperform by -61.9% and -54.1% respectively over the three-year period. It is, however, found that the differences between the market-adjusted returns of the two batches of IPOs are not statistically significant.
2. *Subscribe-and-hold strategy.* The results for the subscribe-and-hold strategy presented in Tables 3 and 4 are similar to those found for the buy-and-hold strategy.

The HSI comprises 33 blue-chip stocks that represent 70% of the total market capitalization. Using the HSI as a benchmark of market performance may under-estimate the long-term performance of IPOs because, by definition, new issues are “new” and they represent small and medium-sized firms rather than blue-clip firms. HKEx introduced the All Ordinary Index (AOI) in 1990: this comprises all listed companies in Hong Kong and is an alternative benchmark for the market. We repeat our analysis using the AOI as the benchmark of market performance for IPOs listed after 1990. The results are reported in Table 5. Using AOI as a performance benchmark, the magnitude of IPO underperformance is less than that reported in Table 3. However, IPOs are still found to underperform the AOI.

Ritter and Welch (2002) point out that IPO long-run performance is sensitive to the selection of performance benchmark. Both market indexes (HSI and AOI) used in this study are value-weighted indexes which are dominated by large firms. Most IPOs are small and medium-sized firms. As an

⁵ There are 31 red-chip and 37 H-share IPOs in our sample. We repeat our analysis excluding the red-chip and H-share IPOs. The results are similar to those reported in Tables 3 and 4.

alternative benchmark for IPO long-run performance, we construct a matched sample of seasoned firms⁶. For each IPO, we select a seasoned firm from the same industry with the closest market capitalization. Table 6 presents the long-run relative performance of IPOs compared with the matched firms for one-year, two-year and three-year periods. All IPOs exhibit a positive abnormal return of 0.95% for the first year and negative abnormal returns of -3.4% and -6.6% for the second and third year after listing respectively. None of the differences is significantly different from zero.

Table 6 also displays the long-run abnormal return of IPOs listed before (Group 1) and after (Group 2) the regulatory change. The long-run abnormal returns of Group 1 and Group 2 are similar. We do not observe any difference in long-run performance between IPOs listed before and after the change. The t-test result also shows there is no significant difference between the two return series over a period of three years after listing. When we separate IPOs listed before the change into two batches – IPOs that did not fulfil (Batch A) and IPOs that did fulfil (Batch B) the earnings requirement – we also find no significant difference in long-run performance between IPOs in the two batches.

The quality of IPOs could be determined by how long they continue to be listed companies. The question is whether their pre-listing profits can be used as a good measure of quality. If HKEx allows *noprofit* IPOs to be listed, it is more likely that they will eventually be delisted. In other words, there should be more delistings for IPOs in Batch A (*noprofit*) than those in Batch B (*profit*). A total of 132 Hong Kong companies were delisted during the period from 1986 to 1998. The reasons for delisting include privatization, merger and acquisition, and voluntary withdrawal. When we consider IPOs listed before the rule change, 14 were delisted during the sample period. Among them, 6 belong to Batch A (*noprofit*) and 8 belong to Batch B (*profit*). On average, they were listed for 4.53 years before their delisting. These results show there is no difference in the number of firms delisted between Batches A and B.

To summarize, the new listing requirements do not affect IPO performance. The results also reveal that there is no difference between *profit* and *noprofit* stocks listed before the regulatory change. This suggests that the screening effect of the new listing rule with a pre-listing earnings requirement imposed by HKEx fails to improve IPO performance. Thus, the introduction of more stringent listing requirements could not screen out poorly-performing IPOs. It is interesting to find that there is no significant difference in performance of IPOs listed before the change in Batches A and B, i.e. between IPOs with a good profit history and those without. This suggests that the value information of pre-listing earnings seems to be incorporated into IPO prices so that the market does not react to the rule change.

Further tests are carried out to see whether our results are related to industry. All IPOs are classified into industrial sectors as specified by HKEx. Results are not reported here and are available upon request. It is found that there is no industry effect in either the short-term or long-term performance of IPOs during our sample period.

⁶ We repeat our analysis using different criteria – the industry and book-to-market value – and obtain similar results, also reported in Table 6.

As documented in the financial literature, many factors contribute to IPO performance, including the issue's size, market capitalization, pre-listing market performance and underwriter reputation. The difference in these factors between the two groups of IPOs might also be important in explaining the above results. We run multivariate regression models of the three-year market-adjusted buy-and-hold returns as the dependent variable with market capitalization, issue size, pre-listing market performance and underwriter reputation as the independent variables. Two dummy variables, D1 and D2, are included as explanatory variables in the model. D1 is unity if the company satisfies the requirements and is listed before the change (Batch B); otherwise it is zero. D2 is unity if the company is listed after the change (Group 2); otherwise it is zero. Table 7 shows that the coefficients of D1 and D2 are insignificantly different from zero, which is consistent with our previous results. This confirms that there is no significant difference between the performance of IPOs before and after the introduction of the more stringent listing rule specifying the pre-listing earnings requirement.

6. Exploring the Rationale for the Rule Change

The objective of the rule change was to screen out a subset of poor IPO performers. However, we find there is no significant difference in performance between IPOs listed before and after the change. This section analyzes the rationale for the rule change. One potential benefit for HKEx of introducing the more stringent listing rule is that the new rule imposes a quality assurance scheme to attract more trading and, in the long term, more quality listings. The exclusion of Batch A IPOs may not cost HKEx much because these listing applicants are smaller companies and are also likely to be illiquid. To assess this impact, we first compare the trading volume of IPOs in Batches A and B during the one-year post-listing period. In our comparison, we adjust the trading volume by the total number of outstanding shares of the listing companies. The result shows that the newly-listed companies in Batch B are traded 5.2% more actively than those in Batch A.⁷ The difference is statistically significant at the 10% level. The results show that, during the one-year post-listing period, trading in IPOs with pre-listing earnings is more active than trading in IPOs without these earnings. Second, we examine whether the rule change brings a long-term benefit, such as generating more fund raising activities, to HKEx. Figure 2 shows the amount of equity funds raised in Hong Kong from 1990 to 1999. The chart shows that there was a drop of 24% in the equity funds raised in 1995 and an increase of 155% and 532% in 1996 and 1997 respectively. In addition, Figure 1 shows there was also a substantial increase in the number of IPOs in 1997 as compared with 1995. The results seem to support the contention that the rule change is effective in screening out illiquid IPOs. This seems to be effective in attracting more listings. However, we should be cautious in interpreting these results because the upsurge in IPO activity could also have been driven by other key factors such as buoyant market conditions and a surge in China-related investment due to the changing political and economic environment in Hong Kong.

The next question is why HKEx wanted to impose a quality assurance system to screen out small and illiquid companies since introducing this rule would definitely reduce the number of listings in the short term and potentially might not be able to attract more listings in the long run. We believe the main

⁷ We have also compared the turnover in value adjusted by the number of outstanding shares between IPOs of Batch A and Batch B. IPOs in Batch B are also more actively traded than those in Batch A. The difference is, however, statistically significant at 10%.

motivation for the rule change is the competition among regional exchanges. On the one hand, every exchange wants more listings (local and international) and a large market capitalization; on the other hand, they also want more participation from institutional investors (particularly foreign investors). These two factors are inter-related because foreign institutional investors may push the exchange for more strict rules before they are willing to trade there. The potential benefits of foreign dual-listing include access to foreign capital, a wider investor base and a reduction in potential domestic risk. Most researchers, however, have been unable to substantiate the potential benefits. Some suggest that the benefit may be small, if any (see, for example, Alexander *et al.*, 1988; Howe and Kelm, 1987; and Lee, 1992). There has been increasing competition among regional exchanges for China-related IPOs. This could be a reason for HKEx boosting its image to attract more China-related enterprises. To cater for small companies that cannot meet the new listing requirement, HKEx subsequently established a second board – Growth Enterprise Market (GEM) – in 1999. This provides fund raising opportunities for small companies with growth potential. The major difference in listing requirement between the main board and GEM is that GEM listings have no pre-listing earning requirement and the minimum size requirement for GEM companies is \$46 million (as compared with HK\$100 million for main board companies). GEM companies, however, have more stringent corporate governance requirements.

Taken together, these two factors seem to suggest that implementation of more stringent listing rules is part of HKEx's general reform programme. The objective is to attract more China-related enterprises to the main board and allow small companies to be listed on the GEM. The evidence also suggests that the change is driven by competition among regional exchanges for more cross-border listings. In fact, Hong Kong has become the most-preferred overseas listing for China-related companies. In 2004, China-related companies accounted for 40% of the total equity fund raised in Hong Kong and 28% of the companies listed in Hong Kong are China-related companies. These enterprises also accounted for 49% of the total market turnover. In addition, in order to project a better image to institutional investors, the regulators may have wanted to reduce the number of companies that would be vulnerable to a systemic shock such as a financial crisis. Small companies could be more vulnerable to a systemic shock that could potentially make the market as a whole more vulnerable.

7. Conclusions

This study documents the short-term and long-term performance of IPOs in Hong Kong from 1986 to 1998. The results show that IPOs generated a return of 19% on the first trading day and significantly underperformed market indexes, including the HSI and AOI, over a period of three years. However, IPO long-run underperformance vanishes when we use a matched sample of seasoned firms as a performance benchmark.

This study investigates the impact of regulatory changes on the short-term and long-term performance of IPOs. The new listing requirements are more stringent than the old ones in that any new applicant needs to have a profitable history before listing. A reasonable expectation would be that the introduction of new listing requirements might have a positive impact on IPO performance: at least the new listing rule could screen out poorly-performing IPOs. However, our findings show that IPOs listed before and after the new requirements took effect generate a similar first-day return. We also find there is no significant difference in long-run performance between IPOs listed before and after the change. The results further

show that there is no significant difference in stock price performance between the *profit* and *nonprofit* IPOs listed before the regulatory change. This implies that pre-listing earnings are incorporated in IPO pricing and the pre-listing earnings of new issues are not an effective screen for 'bad' IPO performers. The conclusion does not change when the pre-listing earnings requirement was explicitly enforced by HKEx in 1994. The findings provide evidence that the HKEx failed to screen out the subset of 'poor' IPO performers with the introduction a more stringent pre-listing requirement for new issues.

Finally, this study examines the rationale for the rule change in the context of recent developments in the Hong Kong stock market and concludes the rule change was probably driven by competition among regional exchanges for China-related IPO business. HKEx subsequently introduced a second board market for small companies and has been successful in attracting China-related listings to its main board.

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Table 1. Histogram of the IPOs in the sample

This graph illustrates the frequency distribution of a sample of 386 IPOs listed on the main board of the Stock Exchange of Hong Kong from 1986-1998.

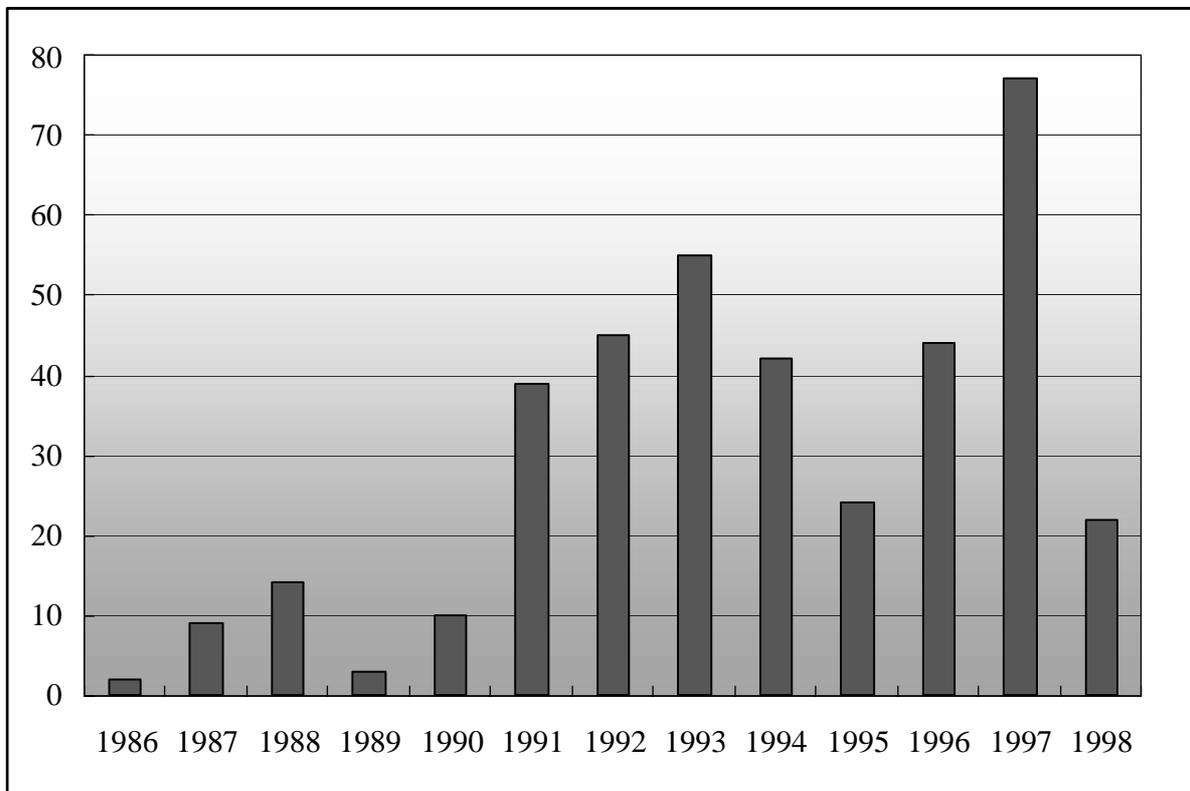


Table 2. Descriptive statistics of the sample IPOs

This table shows the number of IPOs registered in Hong Kong before and after the change to the listing rules. This regulatory change, introduced in 1994, imposed a three-year pre-listing earning requirement on new issues. The sample includes 386 IPOs listed on the Hong Kong stock market between 1986 and 1998. The table also presents the funds raised, market capitalization, and over-subscription rate of the IPOs. Batch A includes IPOs that did not meet new listing requirements. Batch B includes IPOs that could have met the new requirements. Both Batches A and B include IPOs listed before the amendment to the listing rules.

				Batch A	Batch B
		Before Change to the listing rules	After	Did not meet New profit requirement	Did meet
Number of IPOs	386	219	167	93	126
Percentage of the sample		56.74%	43.26%	24.09%	32.64%
Fund raised (in HK\$ million)					
Mean	494.08	345.62	691.12	120.25	511.97
Median	136.06	136.64	134.87	89.56	223.63
Standard derivation	1655.06	733.16	2361.79	108.99	928.98
Market capitalization (in HK\$)					
Mean	2032.01	1374.31	2899.42	492.79	2024.95
Median	544.26	551.34	513.84	358.25	955.44
Standard derivation	8515.80	2772.43	12520.31	645.86	3477.52
Over-subscription rate (times)					
Mean	76.18	76.65	75.59	98.20	60.75
Median	17.97	23.34	10.15	38.92	18.47
Standard derivation	144.41	124.67	167.18	137.68	112.04

Table 3. First-day returns and HSI-adjusted returns of the IPOs

This table presents the first-day and the market-adjusted returns for IPOs in Group 1 (Batches A and B) and Group 2. The Hang Seng Index (HSI) (comprising the 33 largest stocks in Hong Kong) is used as the market index. The 1994 rule change imposed a three-year pre-listing earning requirement on new issues. The sample includes 386 IPOs registered on the Hong Kong stock market between 1986 and 1998. Group 1 includes IPOs listed before the amendment to the listing rules, while Group 2 includes those listed after the amendment. Batch A includes IPOs listed before the amendment that did not meet the new requirements, and Batch B includes those listed before the amendment that met the new requirements. The subscribe-and-hold strategy assumes investors could subscribe for new issues. The buy-and-hold strategy assumes investors could only buy new issues at the end of the first trading day.

	All IPOs	Group 1	Group 2	Batch A	Batch B
		Before Change to the listing rules	After	Did not meet New profit requirement	Did meet
First-day return					
Mean	0.1906	0.1910	0.1892	0.2007	0.1838
Median	0.0834	0.1077	0.0700	0.1389	0.0721
Standard deviation	0.3920	0.3237	0.4683	0.3198	0.3277
Buy-and-hold					
Market adjusted 1-year return					
Mean	-0.0989	-0.1250	-0.0709	-0.1588	-0.1001
Median	-0.1953	-0.1852	-0.2303	-0.2647	-0.1745
Standard deviation	0.5641	0.4344	0.6995	0.4773	0.4000
Market adjusted 2-year return					
Mean	-0.2999	-0.3438	-0.2451	-0.4268	-0.2825
Median	-0.4588	-0.4324	-0.4653	-0.5331	-0.3761
Standard deviation	0.9012	0.6485	1.1524	0.6325	0.6559
Market adjusted 3-year return					
Mean	-0.5819	-0.5742	-0.6065	-0.6188	-0.5412
Median	-0.6935	-0.6432	-0.7664	-0.7099	-0.5790
Standard deviation	0.6395	0.6291	0.6282	0.5772	0.6652
Subscribe-and-hold return					
Market adjusted 1-year return					
Mean	0.0412	0.0397	0.0361	0.0061	0.0646
Median	-0.1161	-0.0878	-0.1230	-0.1516	-0.0515
Standard deviation	0.6656	0.5246	0.8181	0.5738	0.4860
Market adjusted 2-year return					
Mean	-0.2081	-0.2242	-0.1904	-0.3023	-0.1665
Median	-0.3676	-0.3324	-0.4108	-0.4317	-0.1955
Standard deviation	0.9311	0.6654	1.1967	0.6785	0.6523
Market adjusted 3-year return					
Mean	-0.4989	-0.4667	-0.5567	-0.4982	-0.4434
Median	-0.6022	-0.5614	-0.6771	-0.6001	-0.4978
Standard deviation	0.6524	0.6601	0.6138	0.6532	0.6667

Table 4. Significant tests for differences in first-day returns and long-run performance in the sub-samples

This table reports the results of parametric *t*-tests between the first-day and HSI-adjusted returns of Batch A and Batch B, Batch A and Group 2, Batch B and Group 2, and Group 1 and Group 2. The Hang Seng Index (HSI) (comprising the 33 largest stocks in Hong Kong) is used as the market index. The 1994 rule change imposed a three-year pre-listing earning requirement on new issues. The sample includes 386 IPOs listed on the Hong Kong stock market between 1986 and 1998. Group 1 includes IPOs listed before and Group 2 includes those listed after the amendment to the listing rules. Batch A includes IPOs listed before the amendment that did not meet the new requirements. Batch B includes IPOs listed before the amendment that met the new requirements.

	Batch A vs. Batch B <i>t</i> test (<i>t</i>-statistic)	Batch B vs. Group 2 <i>t</i> test (<i>t</i>-statistic)	Batch A vs. Group 2 <i>t</i> test (<i>t</i>-statistic)	Group 1 vs. Group 2 <i>t</i> test (<i>t</i>-statistic)
First-day return	0.67	0.91	0.79	0.95
Buy-and-hold				
Market adjusted 1-year return	0.43	0.65	0.30	0.42
Market adjusted 2-year return	0.12	0.73	0.11	0.33
Market adjusted 3-year return	0.56	0.39	0.86	0.51
Subscribe-and-hold return				
Market adjusted 1-year return	0.52	0.71	0.84	0.90
Market adjusted 2-year return	0.15	0.83	0.36	0.76
Market adjusted 3-year return	0.77	0.13	0.30	0.13

Significance at the 10, 5 and 1 percent levels indicated by 1, 2 and 3 asterisks respectively.

Table 5. First-day returns and AOI-adjusted returns of the IPOs

This table presents the first-day and the market-adjusted returns for IPOs of Group 1 (Batches A and B) and Group 2. The All Ordinary Index (AOI) (comprising all Hong Kong listed companies) is used as the market index. The 1994 rule change imposed a three-year pre-listing earning requirement on new issues. The sample includes 386 IPOs listed on the Hong Kong stock market between 1986 and 1998. Group 1 includes IPOs listed before the amendment to the listing rules, while Group 2 includes those listed after the amendment. Batch A includes IPOs listed before the amendment that did not meet the new requirements, and Batch B includes those listed before the amendment that met the new requirements. The subscribe-and-hold strategy assumes investors could subscribe for new issues. The buy-and-hold strategy assumes investors could only buy new issues at the end of the first trading day.

	All IPOs	Group 1	Group 2	Batch A	Batch B
		Before Change to the listing rules	After	Did not meet New profit requirement	Did meet
First-day return					
Mean	0.1906	0.1976	0.1892	0.2007	0.1838
Median	0.0834	0.0700	0.0700	0.1389	0.0721
Standard deviation	0.3920	0.3396	0.4683	0.3198	0.3277
Buy-and-hold					
Market adjusted 1-year return					
Mean	-0.0634	-0.0871	-0.0362	-0.1248	-0.0588
Median	-0.1642	-0.1502	-0.1707	-0.2463	-0.1355
Standard deviation	0.5678	0.4476	0.6801	0.4899	0.4129
Market adjusted 2-year return					
Mean	-0.2321	-0.3075	-0.1459	-0.3911	-0.2446
Median	-0.3926	-0.4399	-0.3744	-0.5003	-0.3494
Standard deviation	0.9085	0.6518	1.1291	0.6334	0.6611
Market adjusted 3-year return					
Mean	-0.4747	-0.4982	-0.4479	-0.5198	-0.4819
Median	-0.5949	-0.5953	-0.5894	-0.6090	-0.5937
Standard deviation	0.6300	0.6362	0.6235	0.6078	0.6592
Subscribe-and-hold return					
Market adjusted 1-year return					
Mean	0.0702	0.0696	0.0708	0.0373	0.0939
Median	-0.0946	-0.0929	-0.0972	-0.1250	-0.0098
Standard deviation	0.6694	0.5389	0.7945	0.5897	0.4986
Market adjusted 2-year return					
Mean	-0.1527	-0.2066	-0.0912	-0.2818	-0.1500
Median	-0.3096	-0.3123	-0.3048	-0.3908	-0.2305
Standard deviation	0.9274	0.6392	1.1726	0.6552	0.6239
Market adjusted 3-year return					
Mean	-0.4009	-0.4034	-0.3981	-0.4052	-0.4021
Median	-0.4992	-0.4934	-0.5115	-0.4906	-0.5030
Standard deviation	0.6332	0.6571	0.6066	0.6824	0.6406

Table 6. The mean long-run industry- and size-matched returns of the IPOs

This table shows the mean long-run relative returns of IPOs over a matched sample of seasoned firms over a one-year, two-year and three-year period. The 1994 rule change imposed a three-year pre-listing earning requirement on new issues. The sample includes 386 IPOs listed on the Hong Kong stock market between 1986 and 1998. The median long-run relative return is given in parentheses. For each IPO, we select a seasoned firm in the same industry and with the closest market capitalization. The t-test is conducted to test whether the relative return of the IPO is significantly different from zero.

	All IPOs	Group 1	Group 2	Batch A	Batch B
		Before	After	Did not meet	Did meet
		Change to the listing rules		New profit requirement	
One-year return	0.0095 (0.0000)	0.0676 (-0.0690)	-0.0393 (-0.0346)	0.0439 (0.1218)	0.0823 (0.0627)
Two-year return	-0.0344 (-0.0974)	-0.0041 (0.0317)	-0.0369 (0.0665)	-0.0669 (-0.1115)	0.0481 (0.0921)
Three-year return	-0.0661 (-0.0676)	-0.0739 (0.0429)	-0.0631 (-0.0508)	-0.0719 (-0.1049)	-0.0752 (0.1224)

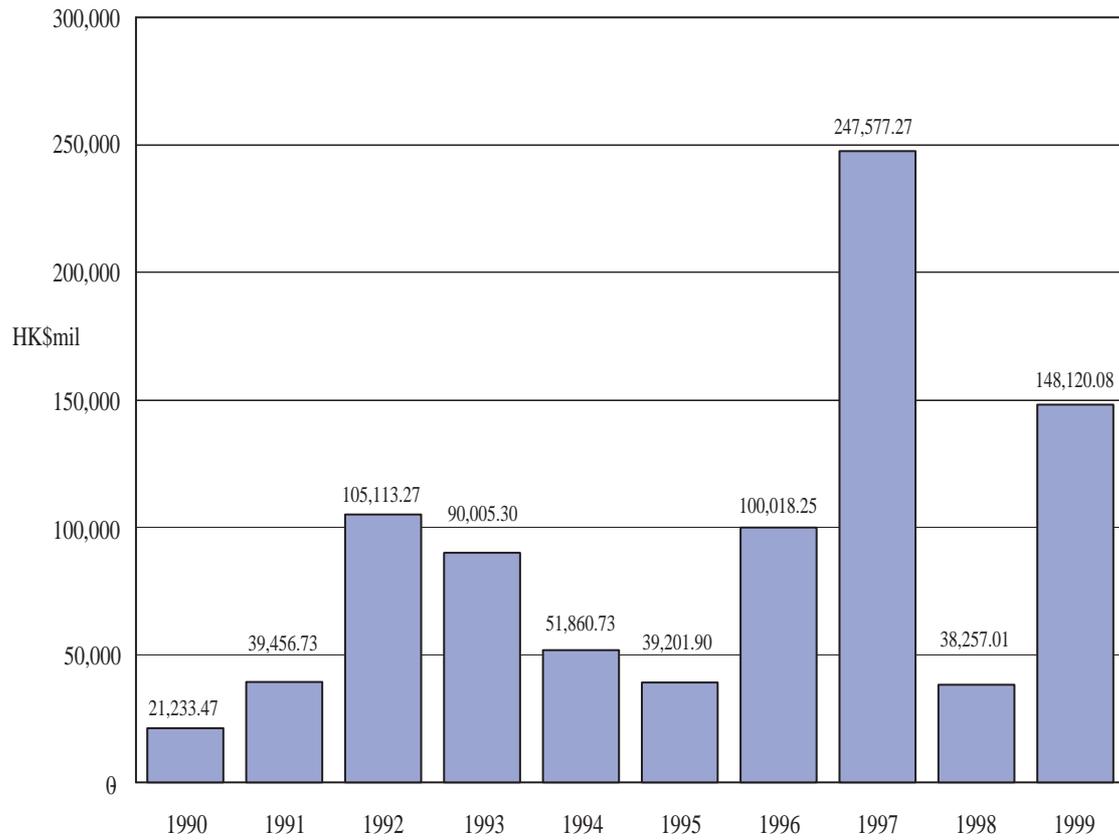
Table 7. Regression analysis results with D1 and D2 dummy variables

This table reports the regression results of three-year market-adjusted buy-and-hold returns for underwriter reputation (DUNALL), market capitalization (MKTCAP), and issue size (FUND) with dummy variables D1 (IPOs were listed before the change and met the profit requirement) and D2 (IPOs were listed after the change) over the period from 1986 to 1998. The Hang Seng Index (comprising the 33 largest stocks) is used to calculate the market-adjusted return. The interaction terms are added for the explanatory variables and D1 and D2 to test for possible relationships between them. The t-statistics are in parentheses.

$$\text{MARKET - ADJUSTED RETURN} = f [\text{MKTCAP}, \text{DUNALL}, \text{FUND}, \text{D1}, \text{D2}]$$

Variables	Three-year
Intercept	0.7602 (-0.65)
DUNALL	-0.0646 (-0.73)
D1	0.0783 (-0.71)
D2	0.1346 (-1.19)
MKTCAP	0.0001 (-0.94)
D1*MKTCAP	-0.0001 (-0.81)
D2*MKTCAP	-0.0001 (-0.66)
FUND	0.0001 (-0.13)
D1*FUND	0.0000 (-0.04)
D2*FUND	-0.0002 (-0.18)
DW	1.4802
AIC	1.8564
Adj R-Sq	0.0116

Significance at the 10, 5 and 1 percent levels indicated by 1, 2 and 3 asterisks respectively.

Figure 1: Equity funds raised in Hong Kong from 1990 to 1999.

The information was obtained in the *Fact Book 1999* published by the HKEx. The figure shows there was a decline in 1995 after the rule change and rises in 1996 and 1997.