The Case for Indexing Chinese IPOs

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ABSTRACT

We apply an event study methodology to the performance of China domiciled companies going public in Hong Kong and abroad between 1995 and 2008 and study the case for indexing the Chinese IPO sector with IPOX, an innovative IPO indexing solution. For a sample of 373 Chinese IPOs, we find substantial initial returns. IPO performance is sensitive to the market condition at the time of going public and IPO issuing characteristics. IPO underperformance appears to be a short to medium term phenomenon and linked to the initial IPO characteristics such as the market condition at the time of going public, initial return, size and listing exchange. In the long-run, we do not find that Chinese IPOs underperform. This is driven by the return of few companies which describes the essence of the IPO market. We underline the case for indexing the performance of this dynamic sector by using IPOX, which has been able to competitively capture the performance of IPOs within a semi-passive and scalable index approach. This study comes at an important juncture in Asian Equity Capital Markets Activity at a time when applications for listings of Chinese domiciled companies in Hong Kong are at an all-time high, promising a potentially large number of new entrants into the IPO sector, generally perceived to be a true proxy for China-linked growth and innovation.

1   Introduction

The interest in global Initial Public Offerings (IPOs) has grown rapidly over the past decade. Much of this interest has focused on empirical patterns associated with IPOs, including the existence of large initial IPO returns, cycles in IPO issuing activity, aftermarket IPO return dynamics and innovative approaches to indexing the performance of IPOs.[2]

In this report, we seek to close the gap by extending the international evidence on global IPOs to include 373 China domiciled companies "going public" in Hong Kong and abroad between 1995 and July 2008. The extension of empirical IPO work responds to a number of fundamental developments which have shaped Asian Financial Markets in recent years. First, the Chinese IPO market has developed as one of the cornerstones of the worldwide IPO market. This has been fostered by privatization programs and increasing "equity culture" in China and by the convergence of global listing and reporting rules and pricing mechanism. Within this setting, Chinese IPO activity has overtaken the Western world in terms of its IPO activity. During much of the past year, for example, more companies went public and more funds were raised by Chinese domiciled companies than by companies domiciled in the United States. Second, global integration of Equity Capital Markets (ECM) and investing activity has been at work for some time now, and the changes brought about by these developments have resulted in dramatic changes in portfolio allocation decisions. As the barriers to cross-border investing have declined and Chinese economic growth has continued unabated, it has become increasingly important to evaluate Chinese IPOs within the perspective of a full set of available investment opportunities across countries.

By taking a focus on these companies, we are able to investigate the performance patterns of a large enough sample of IPOs offered over various market cycles. This allows us to shed more light on the generality of the empirical patterns associated with IPOs and innovative financial solutions that track their performance as a separate part of investor's portfolio allocation. This is important considering that the number of registrations for Chinese IPOs in Hong Kong has reached a record high in recent months, promising a potentially attractive flow of companies to the stock market[3].

This report has the following objectives. First, we study the "underpricing" phenomenon. Here, we are interested in whether initial returns are time-varying and related to company characteristics. We also aim to study the relation between short-run and long-run IPO returns. Recent studies show that IPO underperformance is a time-varying phenomenon or disappears in sub-sample analysis. We study how Chinese IPO returns relate to this evidence. Finally, the sample period has also been characterized by a rise in providing innovative IPO indexing solutions. We are interested in finding out whether returns of IPO benchmarks, specifically the IPOX China Indexes, can provide efficient access to the performance of Chinese IPOs and present alternative benchmarking choices.

In this respect we make a number of observations which appear robust across various methodological choices:

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[2] Chen, Hsuan-Chi and Ho, Keng-Yu (2008): "Do IPO Index Portfolios improve the investment opportunities of Mean-Variance Investors?" Working Paper, University of New Mexico and National Central University, Taiwan.
[3] Bloomberg, August 13th,2008: Hong Kong Exchanges & Clearing Ltd.'s Chief Executive Officer CEO Paul Chow comments on applications for IPOs and plans to introduce trading in new securities.

(1) For the sample of 373 Chinese IPOs offered between 1995 and July 2008, we find considerable initial returns which are time-varying and related to issuing characteristics.

(2) Using a standard empirical event-study methodology, we document a large skewness in equally weighted long-run IPO returns and significant underperformance across shorter measurement horizons. In the long-run, Chinese IPOs did not underperform.

(3) The study emphasizes significant differences in IPO performance of sub-groups of Chinese IPOs. There is evidence to support that aftermarket performance is related to the company's initial return, size, listing exchange and market condition at the time of going public.

(4) The IPOX China Indexes provide a tradable and scaleable semi-passive index solution which addresses the large skewness of long-run returns in Chinese IPOs. These indexes serve as a benchmarking solution for investment managers seeking to enhance returns of traditional equity portfolios and capture the return dynamics of Chinese IPOs as a pure proxy for Chinese growth and innovation.

The rest of this report is organized as follows: The data, sample, methodology and comparative IPO Indexing and benchmark choices are described in Section 2. In Section 3, we turn to the examination of initial and aftermarket performance. Here, we also study aftermarket performance when categorized according to issuing characteristics. Regression results are presented in Section 4. Section 5 concludes the report and discusses the significance of our findings.

2   Data, Sample, Methodology and the IPOX Indexes

2.1   Data

In order to be included in the sample, the relevant companies had to meet the following criteria: (1) the company is domiciled in China, (2) the company is listed on the Hong Kong Stock Exchange or on a respective stock exchange abroad (3) gross proceeds of the equivalent of USD 10 million or more, and (4) the offering being unseasoned involving common stock only. We have excluded listings of American Depository Receipts (ADRs) in favour of the respective local listing. Real Estate Investment Trusts (REITs), investment trust and certificates, and companies that may have transferred from one market segment to another are excluded. The data collection process involved two stages: First, we identified the IPOs by collecting information from the individual stock exchanges and from Bloomberg. This step included the search for full name of the offering company, domicile, address, IPO date and initial listing exchange, total number of shares issued and shares outstanding. For H-share offerings, we use the total number of H-shares as the determinant of market capitalization. Second, we collected daily closing stock prices and benchmark returns from Bloomberg and DataStream. Stock prices are adjusted for dividends, stocks splits or rights offerings and were calibrated to a global trading day calendar and converted into US Dollar. For our sector analysis, we use the Global Industry Classification Standard (GICS).

The resulting IPO sample is comprised of 373 China-domiciled companies that conducted an IPO of common stock between 1995 and July 2008 on one of the following stock exchanges: Hong Kong Stock Exchange (215 companies), NYSE Group (30), NASDAQ OM

Table 1
Sample Distribution and Firm Characteristics

The sample consists of 373 Chinese IPOs going public between 1995 and 2008. The initial return is defined as the percentage change from the offering price to the first-day closing price. Size is defined as the number of shares outstanding times the closing price. For H-shares, we use to total number of H-shares outstanding for the calculation of total market capitalization. We use the Global Industry Classification Standard (GICS) for sector classification.

Panel A: Sample Distribution classified by Sector			
Industry Sector	Sector Code	Frequency	Percentage
Consumer Discretionary	1	72	19.30
Consumer Staples	2	32	8.58
Energy	3	15	4.02
Financials	4	38	10.19
Health Care	6	19	5.09
Industrials	7	77	20.64
Information Technology	8	63	16.89
Materials	13	43	11.53
Telecommunication Services	14	7	1.88
Utilities	15	7	1.88
Total		373	100.0

Panel B: Sample Distribution classified by IPO Year and Calendar Month					
Calendar Year	Frequency	Percentage	Calendar Month	Frequency	Percentage
1995	2	0.54	Jan.	8	2.14
1996	3	0.80	Feb.	25	6.70
1997	18	4.83	Mar.	28	7.51
1998	1	0.27	Apr.	23	6.17
1999	5	1.34	May	30	8.04
2000	14	3.75	Jun.	43	11.53
2001	9	2.41	Jul.	42	11.26
2002	7	1.88	Aug.	19	5.09
2003	20	5.36	Sep.	22	5.90
2004	36	9.65	Oct.	40	10.72
2005	33	8.85	Nov.	39	10.46
2006	64	17.16	Dec.	54	14.48
2007	129	34.58			
2008	32	8.58			
All firms	373	100.0	All firms	373	100.0

Panel C: Sample Distribution classified by Market Condition		
	Frequency	Percentage
"Hot" Market Condition	215	57.64
"Cold Market Condition	158	42.36
All firms	373	100.0

Panel D: Firm Characteristics		
	Mean	Median
Initial Return (percent)	20.62	10.13
Size (USD millions)	1,301.66	301.14

Figure 1

IPO Activity and Stock Market Returns

IPO proceeds are defined as the number of shares offered to the public times the final offering price. Initial Return is defined as the change from the IPO price to the closing price at the end of the first day of trading. The annual stock market return is defined as the annual change in the value-weighted Hang Seng Enterprise Index (HSCEI).
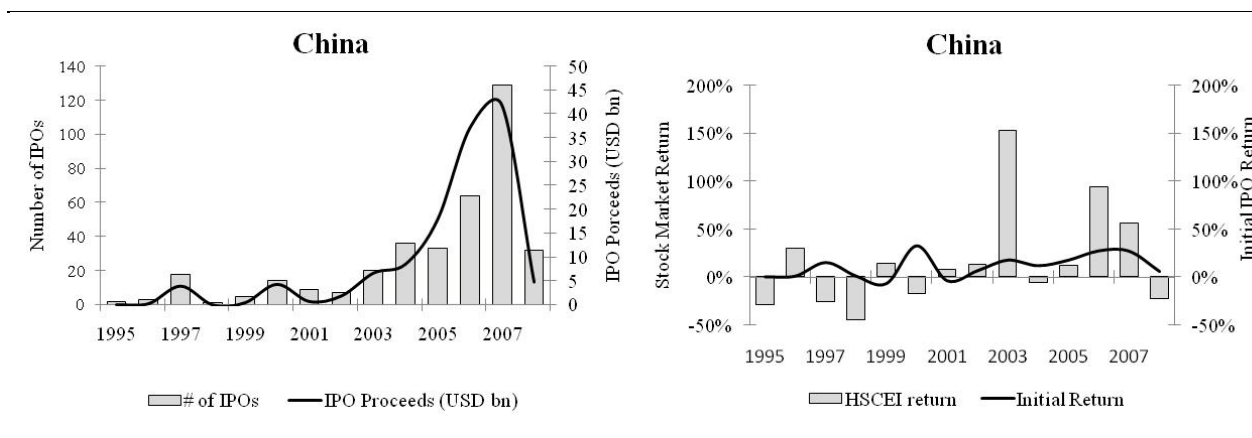
Group (38), Singapore Stock Exchange (81) and others (9). The IPO sample represents at least 95 percent of IPO activity in terms of number and total IPO proceeds between 1995 and July 2008. Because we look at IPOs issued over the period 1995 to July 2008 using stock returns through July 31st, 2008, our sample size reduces to 371 companies when measuring returns over one month and 103 companies when measured over four years.[4]

2.2   Sample

In Table 1, we provide some summary statistics. While presenting evidence for the sample as a whole, we also divide IPOs based on whether they were issued in "hot" or "cold" markets. Because of big fluctuations in the level of the stock market and IPO activity throughout the sample period, this potentially enables us to draw more inferences about the robustness of the patterns associated with Chinese IPOs.

We define "hot" IPO markets based on the level of the initial return. In addition, we also include a proxy for the general level of the stock market into the analysis, using the Hang Seng Enterprise Index. Initially, we define those months with higher average monthly initial returns compared to median initial return for all IPOs as "hot" IPO months; we consider those months during which the average is lower than the median for all IPOs as "cold" IPO months. We apply the same procedure to our proxy for market returns. Months during which the market return exceeds the median for the monthly series between 1995 and July 2008 are defined as "hot" market months. Likewise, months during which the market return is less than the median are considered "cold" months. Finally, we match "hot" ("cold") IPO months with "hot" ("cold") market months to identify "hot" and "cold" IPO market conditions.

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[4] This report is a substantially extended and updated version of a report titled "Initial Return and the Aftermarket Performance of Large-cap Chinese IPOs" distributed by Wing Han Investment Companies, May 2007.

Between 1995 and July 2008, 373 Chinese companies raised a total of USD 149.6 billion on the stock market. The average issuing volume of Chinese IPOs is USD 401.1 million (median: USD 108.0 million), indicating the influence of the large H-share offerings of mainland Chinese companies in Hong Kong. Chinese IPOs are clearly widespread among various industries, with IPOs in the Consumer Discretionary, Industrials, Financials and Information Technology Sector dominating the sample. Table 1 and Figure 1 also underline that the sample composition is equally distributed across calendar months but clustered in certain years, when the return in the level of the stock market is higher.

2.3   Methodology and benchmark choice

For the evaluation of aftermarket IPO returns, our approach is similar to the empirical methodology pioneered by Ritter (1991). However, we extend the performance analysis across several dimensions. Because we are interested in the dynamics of aftermarket performance, we report aftermarket returns over various holding periods. We are also interested in whether issuing characteristics and market condition are related to these performance dynamics. For the summary findings in Table 3, we report wealth relatives (WR) by taking the ratio of one plus the IPO return divided by one plus the chosen benchmark return. A wealth relative less than one indicates that the IPO underperforms the chosen benchmark. Similarly, a wealth relative greater than one indicates that the IPO outperforms the chosen benchmark. Aftermarket returns are reported as raw returns and compared with two alternative size-based benchmarks, all of which are tradeable (float-adjusted) applied market cap weighted benchmarks for respective segments of the Chinese stock market: (1) The Hang Seng Enterprise Index (Bloomberg: HSCEI, Reuters: .HSCEI), which measures the performance of Chinese H-shares traded on the Hong Stock Exchange and (2) the IPOX China 20 Index (Bloomberg: CNI, Reuters: .CNI)[5]. Both indices are trading real-time and have a history dating back to the start of the sample period in January 1995.[6]

When we report aftermarket performance, we show results using buy-and-hold returns (BHRs). We calculate equally-weighted raw- and benchmark-adjusted returns over 1, 3, 12, 24, 36 and 48 months, whereby one month is defined as a consecutive 21-day-trading interval after the close of the first day of trading. In order to eliminate the effect of national holidays across trading venues, stock prices for the national countries were calibrated to a global trading day calendar. If the IPO was delisted before the end of the measurement period, we computed the return until the delisting date. While the estimation of initial returns is less problematic, there are several factors that must be taken into account when estimating returns over longer time horizons. Barber and Lyon (1997) and Kothari and Warner (1997) both highlight the problems associated with calculating long-run abnormal returns using either a reference portfolio or an asset pricing model. Consequently, the interpretation of the results in this report requires caution.

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[5] As of August 31st, 2008 there is some overlap between HSCEI and CNI which currently accounts for 11 companies and 46.77% of total weighting. Because HSCEI constituents have an indefinite holding period, the overlap is expected to substantially decline over the next years, increasing the uniqueness of the IPOX China Indexes as a vehicle to track Chinese IPOs as a pure proxy for growth and innovation in the region. Over the past year, the IPOX China Indexes have displayed similar price and total return performance when compared to HSCEI, albeit at 20% lower risk across all measurements horizons.

[6] The chosen benchmarks form the basis of financial instruments, including structured products and OTC derivatives.

Table 2
Initial Returns of Chinese IPOs

Descriptive statistics for the initial return performance of Chinese IPOs (1995-2008) under alternative market conditions and categorized according to size, sector and exchange venue. The initial return is the difference from the final offering price to the first-day closing price. For example, for the smallest group in "hot" markets, the initial return in percent is 33.91%.

	Year	Market Condition			Number		
Category	1995-2008	Hot	Cold	Hot-Cold	Hot	Cold	All
Small firms	17.23 [a]	33.91 [a]	-0.56	34.47 [a]	64	60	124
Medium firms	18.82 [a]	32.36 [a]	1.25	31.11 [a]	70	54	124
Large firms	25.78 [a]	37.63 [a]	3.95	33.68 [a]	81	44	125
Telecom and IT	25.47 [a]	49.41 [a]	-1.37	50.79 [a]	37	33	70
All (ex. Telecom and IT)	19.50 [a]	31.77 [a]	2.03	29.75 [a]	178	125	303
Hong Kong Stock Exchange	16.90 [a]	30.40 [a]	1.08	29.32 [a]	116	99	215
NYSE Group	15.72 [a]	17.19 [a]	1.38	15.81 [a]	21	9	30
NASDAQ OM Group	27.43 [a]	52.04 [a]	-2.98	55.03 [a]	21	17	38
Singapore Stock Exchange	29.27 [a]	43.35 [a]	2.62	40.74 [a]	53	28	81
Others	14.11 [a]	26.92 [a]	13.29	13.63 [a]	4	5	9
All IPOs (Average)	20.62 [a]	34.81 [a]	1.32	33.49 [a]	215	158	373
All IPOs (Median)	10.12 [a]	25.34 [a]	0.41	24.94 [a]	215	158	373

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

2.4 The IPOX China Indexes

Pioneered by IPOX Schuster LLC, the IPOX China Indexes are market cap weighted rotational indexes tracking the performance of IPOs domiciled in China for the first 1000 trading days (or approximately four publicly traded years)[7]. A holding period of 1000 trading days corresponds to the company's underlying philosophy that the effects of going public are long-run as it takes a substantial period of time to realize the perceived growth opportunities resulting from the IPO.

The IPOX China Indexes are an integral part of the IPOX Global Indexes Series which provide market participants with a scaleable benchmark solution to the empirical patterns and institutional aspects associated with global IPOs. This includes the large skewness in long-run IPO returns with few companies driving the outperformance of a large sample. To the degree that IPOX is able to capture the performance of these overperforming companies from the early beginnings of a company's life on the stock market, it also adds the potential of obtaining additional returns in the event that a respective IPOX Index constituent is being added to a major benchmark index[8].

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[7] On April 25th, 2007, Dow Jones launched the Hong Kong IPO Index (Bloomberg: DJHKIPO, Reuters: .DJHKIPO), a one-year rotational IPO Index. The index has underperformed the IPOX China Indexes under rising and falling markets by a total of approximately 2500 basis points since launch, underlying the effectiveness of IPOX as a vehicle to gain systematic access to Chinese growth companies over market cycles.

[8] An excellent example of the ability of IPOX to track index inclusions see: Bloomberg May 13th, 2008: "Tencent Holding Ltd (700 HK)., China's biggest provider of Internet chat services, rose to a four-month high in Hong Kong

Specifically, the IPOX China 20 Index is an applied market cap weighted index capturing the performance of the largest 20 companies ranked quarterly in the underlying IPOX China Composite Index (Bloomberg: IPXUCHCP, Reuters: .IPXUCHCP), adjusted for equity turnover. The IPOX Composite Index contains both H-shares and offerings of common stock of Chinese companies indifferent of global listing venue which meet certain float, size and initial trading parameters. As of August 31st, 2008, the IPOX China Composite Index captured 215 companies with a total market capitalization of USD 486.7bn, while the large-cap IPOX China 20 Index captured an applied market cap of approximately USD 162 bn.

3   Performance Analysis of Chinese Initial Public Offerings

3.1   Initial Returns

In Table 2, we present evidence in regards to the initial return performance of Chinese IPOs. The average initial return for the 373 Chinese firms that went public between 1995 and July 2008 is 20.62 percent. The median is positive 10.12 percent whereby 90 IPOs (27.9 percent) had a negative opening or did not change from the offering price. Table 2 shows that there is substantial variation in average initial returns when categorizing the sample according to the issuing characteristics. It also underlines that initial returns and issuing activity of Chinese IPOs are sensitive to the general state of the stock market. During the sample period, larger IPOs are underpriced slightly more than smaller IPOs, while the initial return for companies in industries perceived to be more risky (Telecom and Information Technology) is higher than for any other industry group. Evidence from Table 2 also shows that the quantitative relationship between average initial returns is not the same for IPOs issued under "hot" or "cold" markets. We find average underpricing of 34.81 percent in "hot" markets versus 1.32 percent in "cold" markets, a difference of 33.49 percent. This finding is consistent across issuing characteristics, including size, sector or listing exchange.

It is important to put the magnitude of initial returns into perspective, underlining the strong interest of retail and institutional investors in investment strategies linked to Chinese IPOs in general and participation in initial IPO allocations in particular. Chinese companies going public between 1995 and July 2008 left a total of USD 21.4 billion on the table, calculated by multiplying the first-day price gain by the number of shares sold. While the average amount left on the table is USD 57.4 million, the median is only USD 6.8 million. Government privatizations of mainland Chinese Financial companies in the Hong Kong Market had a strong effect on the results: When excluding privatization issues, which accounted for USD 5.6 billion of the "money left on the table", the average amount falls to USD 43.1 million.[9] In general, we attribute the willingness to leave such large "amounts on the table" to Prospect Theory (Loughran and Ritter

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after the stock was named for inclusion in the city's benchmark Hang Seng Index." The company entered the IPOX China universe on June 25th, 2004 at HKD 4.40 and exited IPOX via the June 2008 rebalancing at HKD 62.65. It was included in the HSI Index effective June 10th, 2008.

[9] H-Share IPOs of Financials include Bank of China, Bank of Communications, China Citic Bank, China Life Insurance, China Merchants Bank, Industrial & Commercial Bank of China or Ping An Insurance. The companies raised a total of USD 36.5 bn and returned 15.33% based on the difference between final offering price and first close. The top three companies experiencing record initial returns are Information Technology companies: The August 2005 IPO of Baidu.com recorded an initial return of 353.85%, the March 2000 IPO of AsiaInfo Holdings gained 314.84% and the November 2007 IPO of Alibaba.com rose 192.59% based on their respective final offering prices.

Table 3
The Aftermarket Performance of Chinese IPOs

The sample contains 373 Chinese IPOs between 1995 and 2008. Aftermarket returns are measured as equally-weighted buy-and-hold returns, whereas one month is defined as a consecutive 21-day trading interval from the first closing price, using global trading days. The value-weighted HSCEI Index and the IPOX China 20 Index were used as a proxy for the market benchmark. The wealth relative is the ratio of one plus the average aftermarket period buy-and-hold IPO return, divided by one plus the average aftermarket period benchmark buy-and-hold return. For example, for the month 36 adjustment of IPO returns for the movement in the IPOX China 20 Index for the sample as a whole, $(1+ 0.623)/(1+0.9640) = 0.831$.

Average Aftermarket Performance of Chinese IPOs						
IPO Returns and HSCEI and IPOX- adjusted returns (%)						
Post-IPO	Number	IPO Return	HSCEI	WR	IPOX	WR
Month 1	371	-0.45	2.64 [a]	0.970 [a]	2.58 [a]	0.970 [a]
Month 3	358	1.20	7.92 [a]	0.938 [a]	6.36 [a]	0.951 [a]
Month 12	282	13.80 [a]	31.33 [a]	0.867 [a]	27.52 [a]	0.892 [a]
Month 24	180	46.67 [a]	70.60 [a]	0.860 [b]	60.47 [a]	0.914
Month 36	132	63.23 [a]	104.87 [a]	0.797 [a]	96.40 [a]	0.831 [c]
Month 48	103	106.30 [a]	143.01 [a]	0.849	144.16 [a]	0.845

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

2002), whereby, in most situations, issuers will sum-up the wealth loss from underpricing with the larger wealth gain obtained from the retained shares and – in the case of the large privatization offering – to the governments use of underpricing as a form of compensation to satisfy economic and political objectives.

Table 4
Distribution of unadjusted Buy-And-Hold Returns of Chinese IPOs

Distribution of unadjusted holding period returns, exclusive of the initial returns, for Chinese IPOs between 1995 and July 2008. Returns are measured as unadjusted buy-and-hold returns over various measurement horizons. One month is defined as a consecutive 21-day trading interval after the first closing price using local trading days. Prices are adjusted for dividends, stock splits and rights offerings. (Unadjusted) IPO returns are in percentage.

| Rank	Month1 IPOs	Month 3 IPOs	Month 12 IPOs	Month 24 IPOs	Month 36 IPOs	Month 48 IPOs
(worst IPO)	-65.60	-73.29	-96.25	-98.58	-98.55	-99.81
(25th)	-14.92	-23.49	-44.09	-48.43	-56.36	-56.00
(median IPO)	-2.84	-7.88	-7.39	-1.28	-3.16	-18.18
(75th)	11.31	17.70	46.35	88.50	112.17	121.62
(best IPO)	133.33	188.89	465.87	1371.15	1441.57	2505.62
All (Average)	-0.45	1.20	13.80	46.67	63.23	106.30
Excluding: Top 1%	-1.42	-.58	10.20	35.48	48.20	82.78
Excluding: Top 10%	-5.97	-8.62	-7.00	6.09	11.68	16.82
All % negative	54.72	59.22	54.61	50.00	50.76	54.37

3.2   Aftermarket Returns

In Table 3, we report the buy-and-hold performance for Chinese IPOs issued between 1988 and July 2008 over different holding periods starting from the close of the first day of trading. Here, we report the benchmark-adjusted equally-weighted aftermarket performance for different holding periods, independent of the market condition at the IPO date. The results indicate that the sample of Chinese IPOs underperformed both benchmarks at least up to the second year of aftermarket trading. Over 12 months, for example, Chinese IPOs earned 13.80 percent, on average, while the IPOX China 20 Index earned 27.52 percent, a wealth relative of 0.892. However, the benchmark adjusted wealth relatives display insignificant patterns when measuring IPO performance over a significantly longer period of time in aftermarket trading.

Figure 2 also demonstrates that the Chinese IPO performance picture changes dramatically when looking at the median IPO. A strategy of investing in the median IPO at the end of the first day of trading and holding the company for a three-year period would have left the investor with an unadjusted loss of 3.16%, whereas the average IPO had gained 63.23 percent and the IPOX China 20 index gained 96.40%. This underlines the skewness of the return distribution with only 50.76 percent of the issuers reporting positive unadjusted returns over three years, and some extreme winners dominating the average return picture. Indeed, the results are highly sensitive to the inclusion of Tencent Holdings, China Life Insurance and Ping An Insurance which had gained 1001.69 percent, 885.76 percent and 538.46 percent during the first four publicly traded years on the Hong Kong Stock Exchange[10].

Figure 2
The Average and Median Performance of Chinese IPOs (1995-2008).

Average and median adjusted aftermarket returns of Chinese IPOs (1995-2008), month 1 through 48. One month is defined as a consecutive 21-day trading interval using a global trading day calendar. Three Buy-and-Hold Return series are plotted for each for the first 48 months after the IPO date: 1) equally-weighted raw returns (no adjustment); 2) a value-weighted adjustment using the HSCEI index and 3) a value-weighted adjusted using the IPOX China 20 Index. Returns were calculated on the basis of final closing prices.

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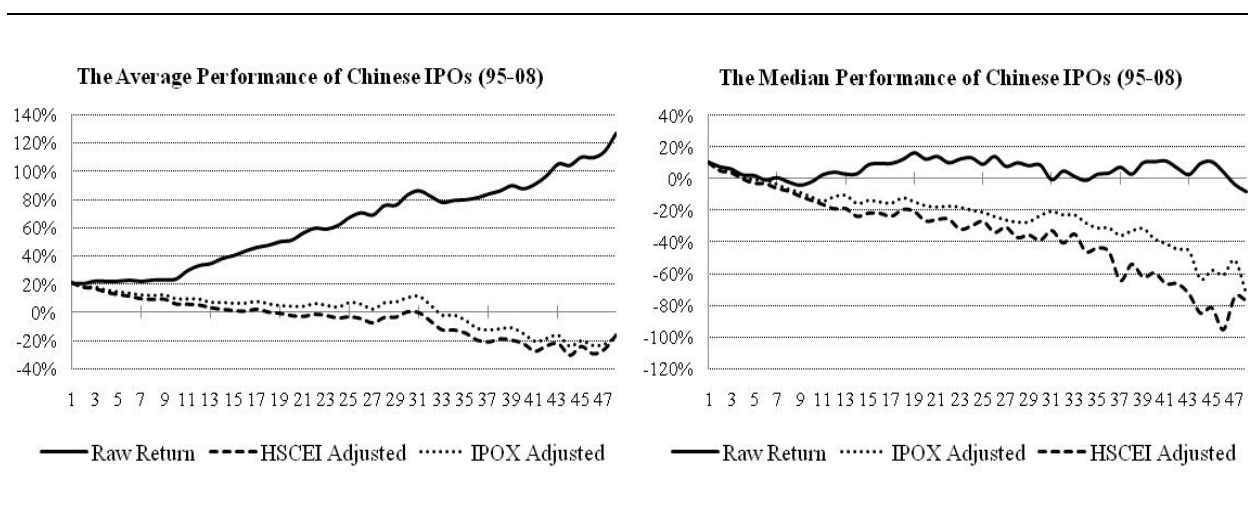
[10] All three companies have been tracked by the IPOX China Indexes since their respective IPO dates.

3.3 Cross-Sectional Results

3.3.1 Performance Categorized by Initial Returns

In order to shed more light on the dynamics of Chinese IPO performance, this section distinguishes firms by issuing characteristic and provides time-series evidence of performance. For each issuing characteristic, we divide the sample into sub-samples and use dummy variables to distinguish each subsamples.In Table 5, firms are segmented by the initial return. The results are categorized according to four initial return categories and across two benchmark choices. Panel A and B reveal that there is a tendency for companies that have the lowest and highest initial returns to have the worst aftermarket performance across all measurement horizons. Companies that have initial returns that lie in the "sweet spot" of a moderate price appreciation between 10% and 33% based on the difference between the final offering price and the first close exhibit the best aftermarket performance. The result extends to all measurement horizons and benchmark choices. Over 36 months, for example, companies exhibiting an initial return between 10% and 33 % display insignificantly different performance when compared to the IPOX China 20 Index while outperforming the IPOX China 20 by 88.17% over four years.

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Table 5

Aftermarket Performance Categorized by Initial Return

$$R_i = \alpha + \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_3 D_{3i} + \varepsilon_i$$

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The model is estimated for each of the return measurement horizons (1, 3, 12, 36 and 48 months) using different benchmarks. R_i is the market-adjusted return. D_{1i}, D_{2i}, and D_{3i} are (0,1) dummy variables taking the value of 1 if the IPO falls into the specified initial return category and 0 otherwise. The initial return is the percentage difference from the final offering price to the first-day closing price and divided into four categories: IPOs with initial returns of not more than 0% ("Negative"), IPOs with more than 0% but less than 10% initial returns ("Low"), IPOs with at least 10% but less than 33% ("Moderate") and IPOs with initial returns of more than 33% ("High").

Panel A: Aftermarket Performance Categorized by Initial Return: HSCEI Adjusted Returns (%)

Aftermarket	R_i	Negative	Low	Moderate	High	Total	Neg.	Low	Mod.	High
Month 1	-3.09 [a]	-6.91 [a]	-2.72	1.84	-3.57	371	102	82	83	104
Month 3	-6.72 [a]	-9.09 [b]	-1.32	-0.12	-13.88 [a]	358	95	78	82	103
Month 12	-17.53 [a]	-9.61	-15.01 [c]	2.98	-44.26 [a]	282	72	61	69	80
Month 24	-23.93 [b]	-36.87 [b]	5.80	-10.23	-54.03 [a]	180	57	42	44	37
Month 36	-41.64 [b]	-57.17 [b]	-59.99 [b]	6.06	-44.61	132	47	35	30	20
Month 48	-36.71	-105.65 [a]	-79.64 [c]	80.54	17.32	103	35	28	23	17

Panel B: Aftermarket Performance Categorized by Initial Return: IPOX Adjusted Returns (%)

Aftermarket	R_i	Negative	Low	Moderate	High	Total	Neg.	Low	Mod.	High
Month 1	-3.03 [a]	-7.01 [a]	-3.05	2.29	-3.36	371	102	82	83	104
Month 3	-5.16 [a]	-7.18 [c]	-1.16	2.05	-12.07 [a]	358	95	78	82	103
Month 12	-13.72 [a]	-4.24	-15.36	6.39	-38.36 [a]	282	72	61	69	80
Month 24	-13.80	-27.84 [c]	6.69	6.23	-39.27 [a]	180	57	42	44	37
Month 36	-33.17 [b]	-50.18 [b]	-59.59 [c]	21.00	-28.20	132	47	35	30	20
Month 48	-37.86	-126.84 [a]	-84.69 [c]	88.17	51.95	103	35	28	23	17

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

The equally-weighted aftermarket underperformance of Chinese IPOs is most pervasive in the category of IPOs with low or negative initial returns. In this category, IPOs underperformed the IPOX China 20 Index by 50.18 percent over three years and 126.84 percent over four years, respectively.

The findings reveal a number of interesting patterns: When considering the short-run dynamics, the result indicates a clearly significant relation between underpricing and performance. Low initial returns indeed seem to induce sentiment-driven short-run negative feedback strategies (Rajan and Servaes (1993)). Because IPOs with negative initial returns perform worst in the short run, the findings do not correspond to the desire of issuers to avoid future lawsuits by underpricing (Tinic (1988)). Further, the results do support the various signaling theories of underpricing (Allen and Faulhaber (1989) or Grinblatt and Hwang (1989)). Here, underpricing separates low-quality firms from high-quality firms, since only high quality firms are expected to recoup the initial loss of underpricing once their true value is revealed.

Table 6
Aftermarket Performance Categorized by Size

$$R_i = \alpha + \beta_1 D_{1i} + \beta_2 D_{2i} + \varepsilon_i$$

The model is estimated for each of the return measurement horizons (1, 3, 12, 24, 36 and 48 months) and for different benchmarks. R_i is the adjusted returns. D_{1i} and D_{2i} a (0,1) dummy variables taking the value of 1 if the IPO falls into the specified size category and 0 otherwise. Size/Market Capitalization in USD m is the number of shares issued times the final offer price. Observations for size are divided into three categories: Firms with a first day market capitalization less than USD 100m ("Small"), between USD 100 and USD 500m ("Medium") and exceeding USD 500m ("Large").

Panel A: Aftermarket Performance Categorized by Size: HSCEI Adjusted Returns (%)

Aftermarket	All	Small	Medium	Large	Number of Issues			
					Total	Small	Medium	Large
Month 1	-3.09 [a]	-5.25	-4.25 [b]	0.17	371	123	123	125
Month 3	-6.72 [a]	-8.01	-9.44 [a]	-2.80	358	119	118	121
Month 12	-17.53 [a]	-13.49	-24.67 [a]	-14.13	282	102	97	83
Month 24	-23.93 [b]	-16.56	-32.98	-24.47	180	79	62	39
Month 36	-41.64 [b]	-30.12	-81.70 [a]	1.43	132	59	46	27
Month 48	-36.71	-11.63	-84.93 [a]	0.97	103	49	37	17

Panel B: Aftermarket Performance Categorized by Size: IPOX Adjusted Returns (%)

Aftermarket	All	Small	Medium	Large	Number of Issues			
					Total	Small	Medium	Large
Month 1	-3.03 [a]	-5.37	-3.96 [b]	0.19	371	123	123	125
Month 3	-5.16 [a]	-6.95	-7.90 [b]	-0.73	358	119	118	121
Month 12	-13.72 [a]	-13.60	-20.53 [b]	-5.92	282	102	97	83
Month 24	-13.80	-13.00	-20.87	-4.20	180	79	62	39
Month 36	-33.17 [b]	-38.69	-61.59 [a]	27.31	132	59	46	27
Month 48	-37.86	-23.22	-74.07 [a]	-1.26	103	49	37	17

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

3.3.2   Performance Categorized by Size

In Table 6, firms are segmented by market capitalization at the IPO date into three size categories. As shown in Table 3, larger offerings have slightly higher initial returns.

Table 6 discloses that larger offerings tend to have the best long-run performance. For example, the small and medium sized IPOs with a market capitalization below USD 500 million displayed substantial aftermarket underperformance versus the IPOX China 20 Index and across all measurement periods. For example, companies with a market capitalization larger than USD 500 million displayed insignificantly different aftermarket performance compared to the benchmarks used. Because small and medium sized offerings typically have a relatively small public float and are not systematically tracked in benchmark indexes for much of the first few years in trading, they may be particularly susceptible to institutional frictions prevailing in the IPO aftermarket which may be exacerbated by the lack of analyst coverage.

3.3.3   Performance Categorized by Listing Exchange

The sample period has been characterized by an unprecedented change in competition for international listings, enforced by the convergence of listing standards, offering mechanism and global capital flows and underpinned by the increasing role of information and communications technologies. In our next analysis of cross-sectional offerings characteristics, we study any potential link between the aftermarket performance of Chinese IPOs and the choice of listing venue.

For this purpose, we segment firms according to the primary listing exchange. For dual listings, we use the applicable local listing. Here, we pool all companies going public on the Hong Kong Stock Exchange, NYSE Group, NASDAQ OM Group, London Stock Exchange, Singapore Stock Exchange and others. Table 2 displays significant differences in terms in underpricing of companies amongst listing venues. Table 7 reveals some interesting findings. Companies initially listed on the Hong Kong Stock Exchange significantly outperform the market as well as their peers in the long-run in relative and absolute terms. The long-run return differences are pervasive. For example, an equally-weighted sample of Chinese IPOs with their primary listing in Hong Kong displayed an IPOX China 20 adjusted return of negative 1.88 percent over four years, while listings abroad underperform the index by 117.70 percent over the same time period. Associated statistics underline the significance of the results. Over the first twelve months of trading, however, the magnitude of the performance differences is not significant. This may be indicative of Chinese domestic companies taking advantage of temporary "windows of opportunity" in selected sectors particularly susceptible to investor sentiment which may be more pervasive in overseas markets, such as the IPOs of Chinese alternative energy companies in the United States.

Table 7
Aftermarket Performance Categorized by Listing Exchange

$$R_i = \alpha + \beta D_i + \varepsilon_i$$

The model is estimated for each of the return measurement horizons (1, 3, 12, 36 and 48 months) and for different benchmarks. R_i is the market-adjusted return. D_i is a (0,1) dummy variable taking the value of 0 if the firm had its primary initial listing on the Hong Kong Stock Exchange and 1 otherwise.

Panel A: Aftermarket Performance   Categorized by Listing Exchange: HSCEI adjusted Returns (%)

| | | | | | Number of Issues | |
Aftermarket	R_i	Hong Kong	Others	Total	Hong Kong	Others
Month 1	-3.09 [a]	-1.70	-5.01 [a]	371	215	156
Month 3	-6.72 [a]	-6.14 [a]	-7.50 [b]	358	205	153
Month 12	-17.53 [a]	-13.72 [b]	-22.66	282	162	120
Month 24	-23.93 [b]	-12.17	-41.17 [a]	180	107	73
Month 36	-41.64 [b]	-7.11	-100.13 [a]	132	83	49
Month 48	-36.71	8.90	-137.89 [a]	103	71	32

Panel B: Aftermarket Performance Categorized by Listing Exchange: IPOX-adjusted Returns (%)

| | | | | | Number of Issues | |
Aftermarket	R_i	Hong Kong	Others	Total	Hong Kong	Others
Month 1	-3.03 [a]	-1.97	-4.49 [b]	371	215	156
Month 3	-5.16 [a]	-5.16 [b]	-5.16	358	205	153
Month 12	-13.72 [a]	-13.48 [b]	-14.06	282	162	120
Month 24	-13.80	-11.40	-17.33 [b]	180	107	73
Month 36	-33.17 [b]	-11.28	-70.25 [a]	132	83	49
Month 48	-37.86	-1.88	-117.70 [a]	103	71	32

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

3.3.4   Performance Categorized by Market Condition

In the final analysis of cross-sectional issuing characteristics, we investigate the aftermarket performance of IPOs based on the market condition at the time of going public. As we have seen in Table 2, the initial return of companies in "hot" markets, during which average and median initial returns and benchmark returns exceed the monthly medians, differs significantly across issuing characteristics. We can make similar inferences about the aftermarket performance dynamics.

Panel A of Table 8 shows that Chinese IPO performance is sensitive to the market condition at the time of the IPO. We find that the absolute and relative short-run performance of IPOs issued in "hot" markets is significantly worse than in "cold" markets pointing to the effect of more stringent initial pricing conditions in more challenging market environments for issuers. For example, investing in the average sample of IPOs in "hot" markets at the first close would have left the investor with only USD 0.834 relative to each USD invested in the IPOX China 20 Index over the first twelve months, while rendering USD 0.992 if invested during a "cold" market period. In the long-run, however, the performance of companies offered in 'hot' markets is substantially better than for their "cold" markets peers.

Table 8
Aftermarket Performance Categorized by Market Condition

$$R_i = \alpha + \beta D_i + \varepsilon_i$$

The model is estimated for each of the return measurement horizons (1, 3, 12, 36 and 48 months) and for different benchmarks. R_i is the market-adjusted return. D_i is a (0,1) dummy variable taking the value of 0 if the firm was issued during a "hot" market condition and 1 otherwise.

Panel A: Aftermarket Performance   Categorized by Market Condition: HSCEI adjusted Returns (%)

					Number of Issues	
Aftermarket	R_i	Cold	Hot	Total	Cold	Hot
Month 1	-3.09 [a]	-0.66	-4.86 [a]	372	156	216
Month 3	-6.72 [a]	-1.36	-10.29 [a]	359	143	216
Month 12	-17.53 [a]	-2.03	-27.58 [a]	283	111	172
Month 24	-23.93 [b]	-21.87	-26.39 [b]	181	98	83
Month 36	-41.64 [b]	-56.87 [a]	-17.46	133	81	52
Month 48	-36.71	-72.11 [a]	14.71	104	61	43

Panel B: Aftermarket Performance Categorized by Market Condition: IPOX-adjusted Returns (%)

					Number of Issues	
Aftermarket	R_i	Cold	Hot	Total	Cold	Hot
Month 1	-3.03 [a]	-0.88	-4.59 [a]	372	156	216
Month 3	-5.16 [a]	0.00	-8.60 [a]	359	143	216
Month 12	-13.72 [a]	-1.01	-21.97 [a]	283	111	172
Month 24	-13.80	-15.20	-12.14	181	98	83
Month 36	-33.17 [b]	-51.88 [a]	-3.46	133	81	52
Month 48	-37.86	-93.64 [a]	43.15	104	61	43

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test.

4   Regression Results

Our previous analysis shows that the benchmark-adjusted cross-sectional patterns in Chinese IPOs are not mutually exclusive. For example, large Chinese IPOs experienced the highest initial returns, and also recorded higher returns across all measurement horizons compared their medium sized peers. On the other hand, Chinese IPOs with moderately high initial return in the range between 10 percent to 33 percent are significantly outperforming all other IPOs. To disentangle these observations, we perform univariate regression analysis using the raw return of the IPOs as the dependent variable. The explanatory variables are the unadjusted aftermarket return of the HSCEI Index (Panel A) and IPOX China 20 (Panel B) Index, the Initial Return, the logarithm of one plus size, the logarithm of one plus size, a (0,1) dummy variable for the listing venue and a (0,1) dummy variable representing for the market condition at the IPO date. The results are displayed in Table 9. The parameter estimates support the conclusions that were obtained earlier. The initial return category is correlated with the aftermarket performance of IPOs with all signs being negative across measurement horizons. Moreover, short-run performance is linked to the market condition at the time of going public. There is also strong evidence of the influence of the choice of listing venue for the long-run performance of Chinese IPOs.

Table 9

OLS Regression Results for Aftermarket Performance

$$R_t = \alpha + \beta_1 Market_i + \beta_2 IR_t + \beta_3 Log(Size_i) + \beta_4 D_{1i} + \beta_5 D_{2i} + \varepsilon_t$$

R_t is the raw return (not reported separately), measured from the first closing price. $Market_i$ is the return on the value-weighted HSCEI Index or the value weighted IPOX China 20 Index. IR_t is the initial return, defined as the difference between the first closing price and the offering price. $Log(Size_i)$ is the natural logarithm of inflation adjusted size/market capitalization, defined as the total number of shares issued times the first closing price. D_{1i} is a (0,1) Dummy variable taking on the value of 0 if the issuing firm was initially listed on the Hong Kong Stock exchange, and 1 otherwise. D_{2i} is a (0,1) Dummy variable taking on the value of 0 if the issuing firm was issued during a "hot" market condition, and 1 otherwise.

Panel A: Aftermarket Performance: HSCEI adjusted							
Aftermarket	α	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	$\hat{\beta}_4$	$\hat{\beta}_5$	R^2	N
Month 1	-0.2196	0.7821[a]	-0.0205	0.0105	0.0246	-0.0379	0.1276	366
Month 3	-0.1672	0.7187[c]	-0.1136[b]	0.0093	-0.0120	-0.0475	0.1985	353
Month 12	-0.1073	0.7951[a]	-0.2560[b]	0.0057	0.0355	-0.1323	0.2086	277
Month 24	0.1223	0.9275[a]	-0.2094	-0.2320	0.2424	0.0519	0.1947	175
Month 36	-2.4363	0.3709[b]	-0.2898	0.2589	0.6118[c]	0.5888	0.0657	127
Month 48	-1.0527	0.8885[a]	-0.3051	-0.0312	1.4612[c]	1.1504	0.1532	98

Panel A: Aftermarket Performance: IPOX adjusted							
Aftermarket	α	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	$\hat{\beta}_4$	$\hat{\beta}_5$	R^2	N
Month 1	-0.2461[c]	0.9122[a]	-0.0123	0.0118	0.0180	-0.0367	0.1607	366
Month 3	-0.2212	0.8084[a]	-0.1048[b]	0.0126	-0.0205	-0.0525	0.2275	353
Month 12	-0.3687	0.6347[a]	-0.2668[b]	0.0234	-0.0253	-0.0856	0.1681	277
Month 24	-0.1792	0.7204[a]	-0.1960	0.0107	0.0205	0.0549	0.1191	175
Month 36	-2.3983	0.5921[a]	-0.2486	0.2051	0.8330[b]	0.5842	0.1158	127
Month 48	0.2606	0.4584[c]	-0.4111	-0.0648	1.1281[c]	1.5806	0.0897	98

[a,b,c] denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a simple t-test

5   Summary and Conclusion

The Chinese IPO market has gone through a period of unprecedented change. This process was facilitated by rising stock markets and the spectacular success of some listings of mainland Chinese IPOs. This report has focused on the relative and benchmark-adjusted investment performance of a large sample of Chinese IPOs in Hong Kong and abroad during the period 1995 and July 2008. It comes at an interesting juncture in the Chinese IPO cycle at a time when applications or new listings on the Hong Kong Stock exchange have reached a record high. The analysis has been pursued using two benchmark choices, the Hang Seng Enterprise Index (HSCEI). Further, we use the IPOX China 20 Index (CNI), a rotational and scaleable index choice which pursues the systematic indexing of large IPOs from an asset allocation perspective and facilitates capturing the essence of the IPO market, i.e. the ability to have exposure to the well-performing IPOs which have the ability to substantially outperform benchmarks.

We have split the research agenda into two units: the examination of initial returns and the examination of aftermarket performance. Not surprisingly, we find significant underpricing across issuing characteristics. We attribute the large amounts of money left on the table partially to some of the large and highly successful offerings of mainland Chinese Financial companies on the Hong Kong marketplace. The results were also presented for the sample as a whole and also under two alternative market conditions: for IPOs issued in "hot" markets, when initial returns are high and the general level of the stock market is increasing; and for IPOs issued in "cold" markets, when initial returns are low and the general stock market level is stable or declining.

While we present evidence of short-term underperformace, the results do not indicate that Chinese IPOs underperform in the long-run. However, the results on aftermarket performance worsen substantially when looking at the median performance of Chinese IPOs, with some extreme returns driving the performance. In order to shed some light on the underlying dynamics of aftermarket performance, we categorize returns according to a set of issuing characteristics. We find a strong impact of the initial return category. Here, companies with moderately high initial returns fare best in the long-run. Companies with negative or low initial returns fare worst, underlining the role of underpricing as a signal of firm quality. The evidence also points to the link between size and long-run performance: Larger Companies which chose Hong Kong as their listing venues displayed the best long-run performance.

The findings in this report provide strong support for pioneering IPO indexing and investment solutions which seek to address the empirical patterns of Chinese IPOs and which offer investors a unique tool to address the inherent risk in the skewness of long-run IPO returns, while expanding the investor's opportunity set. We show that the IPOX China Indexes have substantial merit when seeking to capture the well-performing IPO companies within a scaleable index with relatively little overlap to existing benchmarks while – at the same time – displaying highly competitive risk and return properties. An allocation may be particularly applicable in respect to the potential opportunities arriving from the current listings pipeline. Its dynamic nature may also help investors to steer clear from capturing performance issues resulting from the large potential "overhang" of corporate actions associated with established A shares trading on mainland Chinese markets and their respective H-share listings in Hong Kong[11].

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[11] See Bloomberg Jan 21st, 2008: "Ping An Falls on Plans to Place 1.2 Billion Shares" and Financial Times, August 19th, 2008: "Ping An Insurance, China's second largest insurer, is considering raising money in Hong Kong, Louis Cheung, group president, told the FT, after plunging Chinese share prices and government disapproval postponed its earlier plan to sell stock and convertible bonds worth more than $20bn. "

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