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INITIAL PUBLIC OFFERING AND CORPORATE GOVERNANCE IN CHINA'S TRANSITIONAL ECONOMY

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ABSTRACT

This paper empirically investigates the performance of Chinese initial public offerings (IPOs). The data used covers the period from mid-1995 to mid-1999 with the sample including 884 companies (both in the A- and B-share markets). In an examination of growth, profitability and stability of listed companies either individually or as a combination, it can be seen that the only industries in which listed companies in China display strong performance are public utilities, transportation and finance.

If one examines the changes in listed companies' financial indicators following the IPO, it becomes apparent that with the exception of earnings related indicators (EPS and ROE) there are no significant changes. What's more, the financial indicators tend to fall rapidly year on year. This means that the IPO is of little obvious help to companies' operational performance, and may actually make things worse. One of the reasons for this is that in order to implement the IPO and secure stock market listing, companies tend to submit inflated figures in the financial statements that they are required to provide. Another possible factor is the poor corporate governance characteristics of Chinese enterprises.

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1. Introduction

During a period of institutional transformation, since informal constraints such as culture, rules and values are difficult to change once formed, if the transformation takes the form of the development of an inefficient system, they could become an obstacle to institutional transformation, locking the institution into the original path of evolution. Other institutions displaying better performance would consequently be unable to emerge (North, 1991, 1994). An efficient institution can be beneficial to institutional transformation and the spontaneous evolution of society (Hayek, 1960).

In the process of institutional transformation, whereby China has moved gradually away from a centrally-planned economy towards a market economy, the emphasis has been on the establishment of a sound system of property rights and a stable financial system; the reform of the financial system has attracted the most attention. The financial system is closely bound up with the reform of state-owned enterprises (SOEs) and of the fiscal system; thus the reform of the financial system will have a significant impact on the institutional transformation of China's economy as a whole. The establishment of the Shanghai Stock Exchange in December 1990 was a landmark in the development of the stock market in China. As the necessary infrastructure was established, the calls for a direct financing market grew louder. The stock market began to blossom, and there was rapid development within a relatively short space of time.

The types of shares traded in China's stock market can be divided into three main categories: A-, B- and H-shares. A-shares are available to domestic holders, B-shares are available exclusively to foreign investors and certain authorized domestic securities firms, and H-shares are listed on the Hong Kong Stock Exchange.[1] Since 1987, A-shares have steadily become more popular; as at December 2000, the total amount raised

[1] From 20 February 2001, B-shares were made available to domestic residents.

through the issuing of new shares and allotment shares came to Renminbi (RMB) 324.213 billion. As regards B-shares, since they were first issued in 1992, they have become one of the main means by which China secures its foreign investment. However, the amount of money raised through B-shares has been less than the amount raised from A-, H- or N-shares (N-shares are listed on the New York Stock Exchange).

H-shares were first issued in 1993 as another means by which the stock markets could secure foreign capital. By 2000, the total amount of funds secured by the issuing of new shares and allotment shares came to RMB 225.226 billion (see China Securities Regulatory Commission Website).[2]

Several recent empirical studies have provided evidence of the performance of initial public offerings (IPOs) for China's stock markets, for example Mok and Hui (1998) found that A-share IPOs in Shanghai were 289% underpriced between 19 December 1990 and 31 December 1993, due to the excessive demand for the limited supply of negotiable shares. B-share IPOs were only 26% underpriced. Different ownership structures, a long time-lag between offering and listing, and information asymmetry all contributed to IPO under pricing. Using data on 308 firm-commitment IPOs from 1 January 1987 through to 31 December 1995, Su and Fleisher (1999) found IPO underpricing was a strategy for firms to signal their value to investors. From a sample of 83 IPOs completed between 1992 and 1995, Aharony *et al.* (2000) found that the median firm return on assets (ROA) peaked in the IPO year and declined thereafter. The post-IPO decline in ROA is statistically insignificant in protected industries such as petrochemicals, energy and raw materials; firms in the protected industries are favored by the Chinese government in the selection process. Chen *et al.* (2000) considered 277 A-share and 65 B-share IPOs during the 1992-1995 period, with their results showing

[2] Xu (2000) indicates there is no significant evidence of any causal relationship between volume and volatility for Shanghai B-shares. Sun and Tong (2000) also find foreign investors are more sensitive to currency risk.

that B-share IPOs underperformed A-share IPOs during the post-issue periods for up to three years.

In this paper, we extend the prior works on Chinese IPOs and empirically examine the IPO performance. Our sample consists of 437 companies listed on the Shanghai stock exchange, and 447 companies listed on the Shenzhen exchange, for a longer time period, from 1995 to 1999. Investigation of China's IPOs is appealing and timely, since most of the listed companies are SOEs, and establishing effective corporate governance of SOEs has become a key priority for China's policy makers during the transitional period.

The remainder of the paper is organized as follows. Section 2 contains a discussion on equity structure and the corporate governance mechanism. Section 3 establishes financial indicators to evaluate the operational performance of listed companies. The empirical results of IPOs performance are reported in Section 4, with Section 5 providing concluding remarks to this study.

2. Equity Structure and Corporate Governance

The methods by which stocks are listed and shares issued in China's stock markets violate the market principle. Equity in listed companies is artificially divided into different categories of shares in the same stock that have different rights - state shares, legal person shares, public shares and internal employee shares. State shares are held by the state and its varied ministries, bureaus and regional governments, legal personal shares are kept by other SOEs, public shares are retained by individuals or private entities, and internal employee shares are maintained by managers and employees. For example, holders of state shares can transfer their allotment rights in part or in whole to the holders of public shares, whilst holders of state shares can maintain their right to share in the benefits from share allotment, or choose not to participate in share allotment, thereby transferring the risk onto the shoulders of the holders of public shares. By

contrast, the holders of public shares can only buy and sell shares on the secondary market.

Table 1 provides details of the equity structure of listed companies in China and the changes to that structure. During the period from the end of 1992 to the end of 2000, the equity structure of listed companies was as follows:

Table 1 Equity structure of stocks listed on China's stock markets

Share Type	end 1992		end 1997		end 1998		end 1999		end 2000	
	billion shares	%	billion shares	%	billion shares	%	billion shares	%	billion shares	%
I. Shares not yet in circulation	4.769	69.25	127.124	65.44	166.485	65.89	200.71	65.02	243.743	64.28
1. Founder's stock	4.035	58.59	107.826	55.50	142.934	56.57	174.709	56.60	216.54	57.11
a. State shares	2.850	41.38	61.228	31.52	86.551	34.25	111.607	36.16	147.513	38.90
b. Domestic legal person shares	0.905	13.14	43.991	22.64	52.806	20.90	59.051	19.13	64.255	16.94
c. Foreign legal person shares	0.280	4.07	2.607	1.34	3.577	1.42	4.051	1.31	4.62	1.22
2. Fund-raising legal person shares	0.649	9.42	13.049	6.72	15.234	6.03	19.01	6.16	21.421	5.65
3. Internal employee shares	0.085	1.23	3.962	2.04	5.170	2.05	3.671	1.19	2.429	0.64
4. Other (transferred allotment)	0.00	0.00	2.287	1.18	3.147	1.25	3.32	1.08	2.462	0.65
II. Shares in circulation	2.118	30.75	67.144	34.56	86.194	34.11	107.965	34.98	135.427	35.72
1. Domestically listed Renminbi shares (A-shares)	1.093	15.87	44.268	22.79	60.803	24.06	81.318	26.34	107.817	28.44
2. Domestically-listed foreign capital shares (B-shares)	1.025	14.88	11.731	6.04	13.396	5.30	14.192	4.60	15.157	4.00
3. Overseas-listed foreign capital shares (H-shares)	0.00	0.00	11.145	5.74	11.995	4.75	12.454	4.03	12.454	3.28

Note: Each share has a face value of RMB1.00.

Sources: China Securities and Futures Statistical Yearbook 2000,p.189.
China Securities Regulatory Commission Website.

State shares remained the dominant proportion of total shares, but the proportion of state shares in the equity structure of listed companies fell from 41.38% to 38.9%, a decrease of 2.48%. The reasons for this decline were as follows: (i) owing to the fall in central government revenue, China stopped increasing the capitalization of SOEs; however, listed companies were constantly implementing capital increments to increase

the proportion of public shares, which therefore caused the proportion of state shares to fall; and (ii) in the last few years there has been a series of cases of state shares being privately transferred to legal persons, which has increased the proportion of legal person shares.

The reform of SOEs is nevertheless still making use mainly of state-owned holding companies, with the government insisting that listed companies must still be subsidiaries of a state-owned holding company. The reform of the SOEs therefore does not involve wholesale privatization, and state shares therefore continue to play an important role.

As far as founders' stocks are concerned, the proportion of domestic legal person shares has risen from 13.14% to 16.94%, an increase of 3.8%, whilst the proportion of fund-raising legal person shares has fallen from 9.42% to 5.65%, a decrease of 3.77%. The reasons for this are as follows: (i) most listed companies have been transformed from SOEs; listing is usually implemented as part of the restructuring of SOEs, and the proportion of total capitalization accounted for by the former SOE's internal reserves is defined as founder's stock after listing; (ii) many listed companies are the profitable parts of SOEs which were spun off, with the SOEs retaining founder's stock; this has led to a significant increase in the proportion of founder's stock; and (iii) owing to the general decline in enterprise performance over the last few years, and the restrictions on the circulation of legal person shares, the market for legal person shares is not sufficiently lively and market prices are unattractively low; as a result, there has been a general decrease in mutual investment between unrelated legal persons, so that the proportion of fund-raising legal person shares has gradually fallen.

The proportion of employee shares in unlisted companies rose from 1.23% to 2.04%, and then declined to 0.64%. This reflects the way in which, during the process of institutional transformation, enterprises have used employee stock options as a means of improving employee welfare.

With regard to the proportion of total equity accounted for by the various types of shares, the continual implementation of capital increments to increase the number of public shares and the private transfer of state shares to legal persons has caused the proportion of listed company equity accounted for by state shares to fall from 41.38% in 1992, to 38.9% in 2000. State shares are, however, still the most numerous categories of shares. At the same time, because shares that cannot be traded freely (including state shares) account for 60% of total equity, company managers do not have to worry that poor management may cause their enterprise's stock price to fall, or that their company will be faced with the threat of being taken over. In other words, holders of public shares cannot 'vote with their feet' and managers are not concerned about the rights of public shareholders (Xu and Wang, 1999).

In 2000, the Chinese government began undertaking reform of its SOEs in the petrochemical,[3] communications,[4] rail transport and electric power sectors, seeking to reorganize the entire industry and establish a regulated company system. The aim was to have these reorganized companies listed on the domestic and overseas stock markets, establishing a regulated framework for corporate governance and turning the old SOEs into real businesses.

The developing capital markets can, on the one hand, enable enterprises to increase their capitalization, whilst at the same time the change in enterprises' equity and corporate governance structures can be used to create a solid foundation for dealing with the underlying causes of indebtedness. However, China's capital markets have not had long to develop, and their overall level of development is still low. Too little in-depth

[3] China Petroleum and Natural Gas Ltd. implemented an initial public offering using H-Shares and ADR in both Hong Kong and New York in March 2000, after which the state shares in the company held by its parent company, CNPC, was reduced to 90% (Wu, 2001).

[4] In June 2000, following reorganization, Zhong Lian Tung secured stock market listing in both Hong Kong and New York using 'Red Chip' shares and ADR. The amount of capital raised was US$6.278 billion, making this the largest IPO ever involving an Asian company (other than Japanese companies). Following the IPO, the shares in Zhong Lian Tung held by the state fell by 80% (Wu, 2001).

thinking has gone into directing the course of their development and various levels of disparity exist in certain areas. Furthermore, theoretically speaking, the corporate governance structure requires a separation between investors and managers; a set of incentive mechanisms and restrictive mechanisms need to be developed to reduce agency costs and ensure that the investors receive a return on their investment. However, there are inherent weaknesses in the governance structure of China's SOEs. First of all, as far as incentive mechanisms are concerned, despite 20 years of reform, there has been no systematic improvement in the incentive mechanisms of China's SOEs and their attempts to imitate the incentive mechanisms of private enterprises have run into two major problems. First of all, it is very difficult to find suitable indicators for implementing rewards and punishments in SOEs, wherein both the starting point and the policy burden are different; and secondly, there is a lack of faith in the commitments made. The SOEs' restrictive mechanisms are characterized by excessive administrative interference and the simultaneous existence of excessive internal controls.[5] As a result, enterprise management tends to become divorced from the owners' interest. It is therefore not enough to rely on the capital markets alone to transform the SOEs; a strategic withdrawal is needed from state involvement in the economy, and a favorable environment for privatization has to be created. This is the only way in which the reform of the SOEs can really be facilitated (Wu and Zhao, 2000).

3. The Operational Performance of Listed Companies

We will explore the operational performance of listed companies in China in terms of the growth, profitability and stability of these companies, taking into consideration differences between stock exchanges and industries. The selection of financial indicators

[5] One example is Zhonguo Yituo Ltd. in Henan Province. Although Zhonguo Yituo succeeded in securing RMB 1.6 billion through the stock market in 1997, the lack of sound management mechanisms led to errors being made with respect to the company's expansion, and consequently, the company's operational performance was poor.

is based on: (i) the use of listed companies' operating revenue and net profit growth rates to explore the performance of listed companies in terms of growth, as well as the differences between stock exchanges and industries; (ii) the use of listed companies' earnings per share (EPS) and return on equity (ROE) (net profit/shareholders' equity) to explore listed companies' performance in terms of profitability, as well as the differences between stock exchanges and industries; and (iii) the use of listed companies' quick ratios ([current asset – inventory] /current ratio) and current ratio (current asset/current liability) to explore listed companies' performance in terms of stability, as well as the differences between stock exchanges and industries. Empirical verification was then undertaken with regard to the impact of IPOs on the operational performance of listed companies, to determine the impact of the stock market on China's economic development as it progresses through this period of institutional transformation.

Data description and methodology

Listed companies' interim financial reports for 1999 published by China Securities Regulatory Commission (CSRC) were used for empirical estimation, the data given covered the period from mid-1995 to mid-1999. CSRC data include listed companies' operating revenue, net profit rates, earnings per share (EPS), return on equity (ROE), quick ratio and current ratio. The sample included 884 companies (including both A-Shares and B-Shares); 437 of the companies were listed on the Shanghai Stock Market, and 447 were listed on the Shenzhen Stock Market.

As regards industry classification, the Shanghai Stock Market divides all listed companies into five categories – industrial, commercial, real estate, public utilities and general. The Shenzhen Stock Market divides all listed companies into six categories – industrial, commercial, financial, real estate, public utilities and general. Such a classification is inappropriate, partly because the two stock exchanges use different

classification systems, and partly because the classification is not sufficiently precise. If the industry data produced by the Shanghai and Shenzhen stock markets is used, not only is the classification too precise, the disparity between the numbers of enterprises in each category is too obvious. To facilitate comparison, for the purposes of this study all listed companies were divided into 21 industries: agriculture; mining; food; textiles and garments; printing and papermaking; metals and metal products; chemicals; pharmaceuticals; construction materials; machinery; electronics and electrical appliances; precision instruments; vehicles; miscellaneous; public utilities; transportation; finance; real estate and construction; travel and hotels; commercial; trade; and information (see Table 2).

Table 2 Sample data industry categories

Industry Category	Original Category	Industry Category	Original Category
Agriculture	Agriculture Forestry Fisheries Livestock	Commerce	Commerce Rental Packaging General
Mining	Mining	Information	Computers Communications
Machinery	Agricultural machinery Machinery Milling machines & materials Textile machinery	Foreign trade	Trade
Electronics and electrical appliances	Electromechanical Electronic appliances Wire and cable Refrigeration equipment Home appliances	Food, textiles & garments	Food Textiles Garments
Precision instruments	Instruments and meters Medical instruments	Printing and papermaking	Printing Paper industry
Vehicles	Bicycles Motorcycles Auto accessories Auto manufacturing Shipbuilding Aircraft manufacturing	Chemical industry	Chemicals Artificial fiber Paints
Metals and metal products	Iron and steel Metallurgy	Construction materials	Glass Construction materials Cement
Pharmaceuticals	Pharmaceuticals Biotechnology	Real estate and construction	Materials Ceramics Basic construction Highway construction Harbor construction
Miscellaneous	Pens Toys Jewelry Sports Industrial	Public utilities	Industrial districts Real estate Building contractors Public utilities Energy Water supply
Travel and hotels	Travel Hotels Brewing	Transportation	Warehousing Transportation Containers
		Finance	Finance

The data covers the period 1995 – 1999, during which both the Asian financial crisis and China's economic recovery have occurred; it is therefore inappropriate to compare the data for different years. In addition, as regards the comparison of financial indicators between listed companies, as a reasonable level of comprehension has already been achieved with respect to listed companies' financial statements, the main emphasis in the following analysis will be on the comparison of industry performance in each year and on industry performance within the sample as a whole.

The industries to which listed companies belong are then grouped into five categories: (i) those industries which have performed very well by comparison with the average for all industries (e.g., the financial indicator for the industry in question was 50% higher than the average for all industries for that year or period); (ii) those industries which performed better than the average for all industries (e.g., the financial indicator for the industry in question was higher than, but less than 50% higher than, the average for all industries for that year or period); (iii) those industries which performed worse than the average for all industries (e.g., the financial indicator for the industry in question was lower than, but less than 50% lower than, the average for all industries for that year or period); (iv) those industries which performed significantly worse than the average for all industries (e.g., the financial indicator for the industry in question was less than 0.5% of the average for all industries for that year or period); (v) those industries which performed markedly worse than the average for all industries (e.g., the financial indicator for the industry in question was less than 0.1% of the average for all industries for that year or period).

To assess the pre- and post-IPO operational performance of listed companies, according to Greene (1993), the analysis of variance (ANOVA) tests the null hypothesis that all coefficients of the regression other than the intercept are zero; the ANOVA test rather than regression method can be used to conduct empirical assessment. Therefore,

the ANOVA method was utilized to verify the impact of the IPO on the operational performance of listed companies, to determine whether the null hypothesis could be accepted – the null hypothesis was that a listed company's operational performance would not change after initial public offering, namely, there would be no difference to the financial indicators between the average values of the IPO year and the average values of the subsequent three years.

We will begin by analyzing the overall operational performance of the industries to which China's listed companies belong, from the points of view of growth, profitability and stability. First, we will conduct combined analysis of operating revenue and profitability by industry. We will then calculate the overall financial indicator ratings for each stock exchange and each industry, in order to evaluate the overall relative operational performance of listed companies in China.

Regarding the analysis of overall industry operating revenue and profitability, the financial indicators which can best represent a listed company's operating revenue and profitability are the operating revenue growth rate and return on equity (ROE) (Li, 1999). The industry's growth rate in operating revenue is taken as the horizontal axis, with return on equity (ROE) as the vertical axis, and the relevant values from the Shanghai and Shenzhen stock exchanges are then plotted on the graph. The average value for all companies listed on the two exchanges is taken as the demarcation point, and all industries divided into four categories; (1) industries with high growth and high profits (the first quadrant on the graph); (2) industries with low growth but high profits (the second quadrant); (3) industries with low growth but low profits (the third quadrant); and (4) industries with high growth and low profits (the fourth quadrant). Those industries with high growth and high profits have the highest overall revenue and profitability; those industries with low growth and low profits have the lowest overall revenue and profitability; those industries with high growth and low profits or low growth and high

profits lie between the two (see Figures 1 and 2).

(1) Industries with high growth and high profitability

This category includes public utilities and trade. Their chief characteristics are that they have a large potential market and good development potential.

(2) Industries with low growth and high profitability

This category includes transportation, pharmaceuticals, agriculture and mining. These industries have stable market prices, and while they do experience temporary slumps, overall they are stable, mature industries with high profitability.

(3) Industries with high growth and low profitability

On the Shanghai Stock Exchange, this category includes a total of six industries: precision instruments; information; electronics and electrical appliances; the chemical industry; commerce and miscellaneous. On the Shenzhen Stock Exchange it includes a total of five industries: food; textiles and garments; pharmaceuticals; printing and papermaking; machinery and information. The chief characteristic of these industries is that competition is very fierce within each industry. Although overall demand is still increasing, the rate of increase in supply is far higher than the rate of increase in demand. As a result, price-cutting competition is causing earnings to fall, and there is market polarization in the performance of companies in the industry. However, the pr ospects for the industry as a whole are still good, and there is considerable potential for development in the medium and long term.

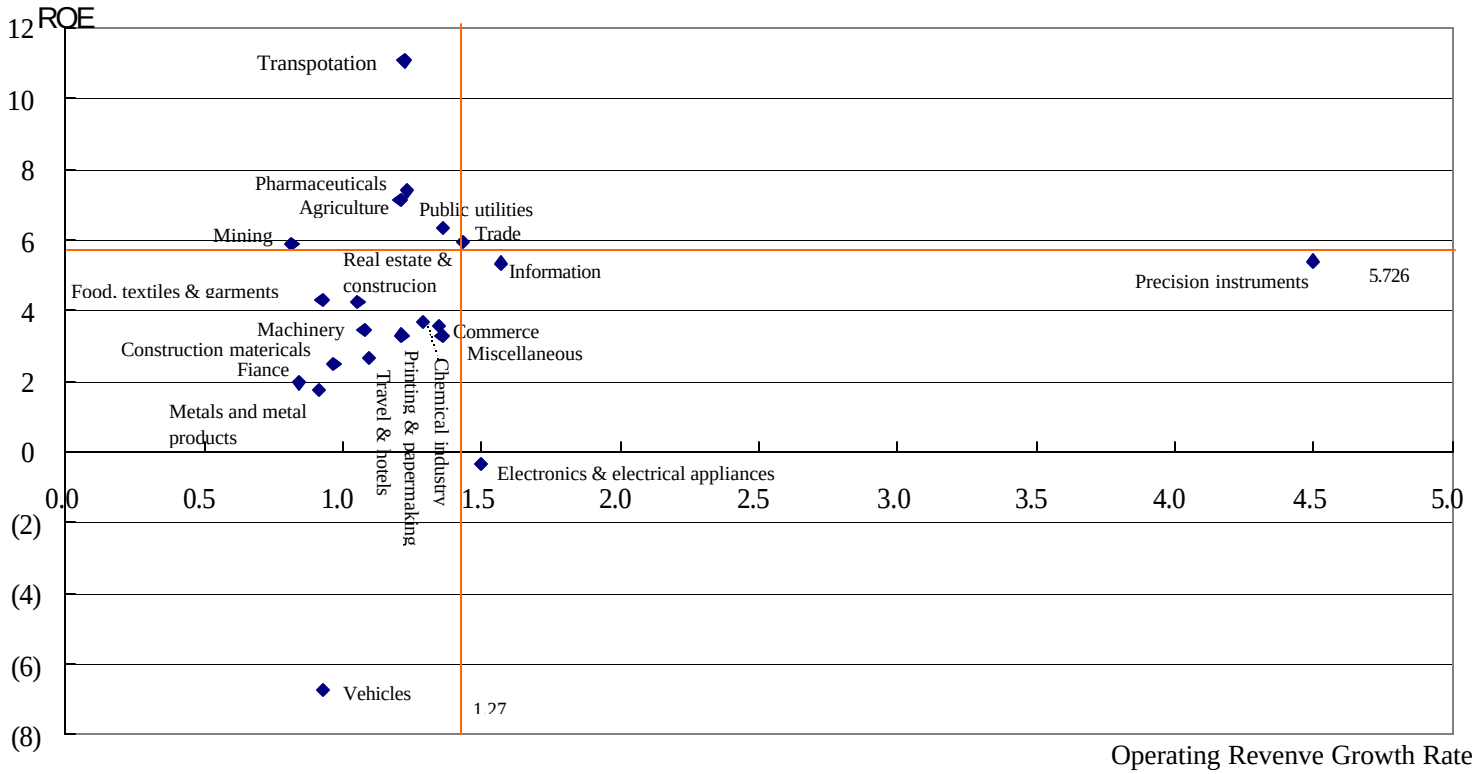

Figure 1 Distribution of ROE and operating revenue growth rate for companies listed on the Shanghai Stock Exchange, by industry

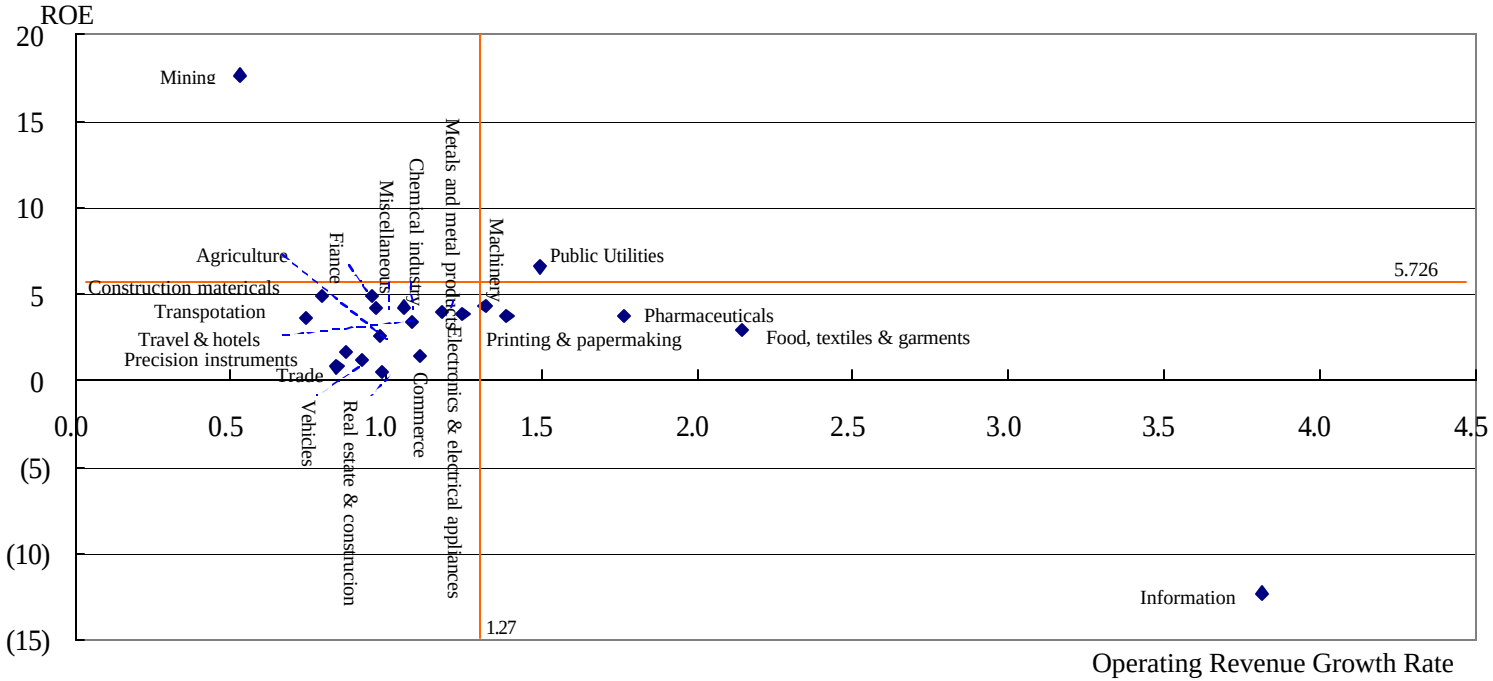

Figure 2 Distribution of ROE and operating revenue growth rate for companies listed on the Shenzhen Stock Exchange, by industry

(4) Industries with low growth and low profits

On the Shanghai Stock Exchange this category includes a total of nine industries: real estate and construction; travel and hotels; construction materials; metals and metal products; finance; vehicles; machinery; food; textiles and garments; and printing and papermaking. On the Shenzhen Stock Exchange, it includes a total of 14 industries: real estate and construction; travel and hotels; construction materials; metals and metal products; finance; vehicles; electronics and electrical appliances; the chemical industry; commerce; miscellaneous; agriculture; precision instruments; trade; and transportation. The main characteristic of these industries is that many of them are primary industries. In recent years, the price of raw materials and energy in China has risen, but the price of finished products has fallen. As a result, the market has contracted, competition has become much fiercer, and overall industry performance has fallen.

Finally, we will calculate the overall financial indicator scores for each stock exchange and each industry in order to evaluate the overall relative operational performance of listed companies in China. The standard for evaluation will be based on the principles of analysis described above. Those industries displaying good performance are awarded five points, those displaying acceptable performance are awarded four points, those displaying relatively poor performance are awarded three points, those displaying bad performance are awarded two points, and those displaying very bad performance are awarded just one point.

The only industries to display good overall performance (with a total score of four or higher) were the public utilities, transportation and finance industries. In terms of stock exchange, for the Shanghai Stock Exchange those industries which displayed relatively good performance were the public utilities, chemical, trade and precision instruments industries; for the Shenzhen Stock Exchange they were the transportation

and finance industries. Clearly, the overall operational performance of most industries is poor, and those that demonstrate better performance are China's 'sunrise' industries.

Furthermore, of the companies listed on the Shanghai Stock Exchange, the overall performance of those in the agriculture, food, textiles and garments, metals and metal products, chemical, pharmaceuticals, precision instruments, miscellaneous, public utilities, real estate, commerce, trade and information industries was superior to that of those listed on the Shenzhen Stock Exchange (see Tables 3 – 5).

Table 3 Overall financial indicator ratings, listed companies in China

Name of Industry	Operating Revenue	Net Profit Rate	ROE	EPS	Quick Ratio	Current Ratio	Average
Agriculture	3	3	3	3	4	4	3.33
Mining	2	3	5	4	4	3	3.50
Food, textiles and garments	2	3	3	3	4	4	3.17
Printing and papermaking	2	3	3	3	4	4	3.17
Metals and metal products	5	4	3	3	3	3	3.50
Chemical industry	4	4	3	3	4	4	3.67
Pharmaceuticals	3	3	3	3	4	3	3.17
Construction materials	2	3	3	3	3	3	2.83
Machinery	3	3	3	3	3	4	3.17
Electronics and electrical appliances	5	5	3	4	3	3	3.83
Precision instruments	2	4	3	5	4	4	3.67
Vehicles	5	3	2	3	3	3	3.17
Miscellaneous	2	3	4	4	4	4	3.50
Public utilities	3	5	4	4	4	4	4.00
Transportation	4	3	4	4	5	5	4.17
Finance	4	5	4	5	3	3	4.00
Real estate and construction	3	4	3	3	3	3	3.17
Travel and hotels	3	4	3	4	4	4	3.67
Commerce	3	3	5	3	3	3	3.33
Trade	5	3	3	4	4	4	3.83
Information	3	4	2	4	4	4	3.50

Note: Those industries displaying superior performance are given five points, those displaying reasonable performance are given four points, those displaying relatively poor performance are given three points, those displaying poor performance are given two points, and those displaying very bad performance are given one point.

Table 4 Overall financial indicator ratings, companies listed on the Shanghai stock exchange

Name of Industry	Operating Revenue	Net Profit Rate	ROE	EPS	Quick Ratio	Current Ratio	Average
Agriculture	3	4	4	4	4	4	3.83
Mining	2	3	4	3	3	3	3.00
Food, textiles and garments	2	3	4	4	4	4	3.50
Printing and papermaking	2	3	3	3	3	3	2.83
Metals and metal products	5	4	3	3	3	3	3.50
Chemical industry	5	5	4	3	4	4	4.17
Pharmaceuticals	3	3	4	4	3	3	3.33
Construction materials	2	2	3	2	3	3	2.50
Machinery	3	3	3	3	3	4	3.17
Electronics and electrical appliances	4	4	3	4	3	3	3.50
Precision instruments	3	3	4	4	5	5	4.00
Vehicles	4	3	2	3	3	3	3.00
Miscellaneous	2	3	4	4	4	4	3.50
Public utilities	3	5	5	4	4	4	4.17
Transportation	3	3	5	4	4	4	3.83
Finance	2	5	4	5	3	3	3.67
Real estate and construction	3	4	4	4	3	3	3.50
Travel and hotels	2	3	3	3	4	4	3.17
Commerce	3	3	4	4	3	3	3.33
Trade	5	4	4	5	4	4	4.33
Information	3	4	4	4	3	3	3.50

Note: See Table 3.

Table 5 Overall financial indicator ratings, companies listed on the Shenzhen stock exchange

Name of Industry	Operating Revenue	Net Profit Rate	ROE	EPS	Quick Ratio	Current Ratio	Average
Agriculture	3	2	2	3	4	4	3.00
Mining	2	3	5	4	5	4	3.83
Food, textiles and garments	2	2	2	2	3	3	2.33
Printing and papermaking	3	3	2	3	4	4	3.17
Metals and metal products	5	4	2	3	3	3	3.33
Chemical industry	4	3	3	3	3	3	3.17
Pharmaceuticals	3	2	2	3	4	4	3.00
Construction materials	3	3	3	4	4	4	3.50
Machinery	4	3	3	4	3	4	3.50
Electronics and electrical appliances	5	5	3	4	3	3	3.83
Precision instruments	2	4	2	5	4	4	3.50
Vehicles	5	4	2	3	3	3	3.33
Miscellaneous	2	3	4	5	3	3	3.33
Public utilities	3	5	3	4	4	4	3.83
Transportation	4	4	3	4	5	5	4.17
Finance	5	5	4	4	3	3	4.00
Real estate and construction	3	4	2	3	3	3	3.00
Travel and hotels	3	5	3	4	4	4	3.83
Commerce	3	2	5	3	3	3	3.17
Trade	3	2	2	2	3	3	2.50
Information	3	4	1	4	4	4	3.33

Note: See Table 3

4. The Impact of IPO on Listed Companies

In the previous section, we undertook structural analysis of the financial indicators of listed companies in China. However, more analysis is needed to determine whether an

IPO does in fact have a positive impact on a company's operations.[6] In this study, we use the ANOVA method, which is applied to the data for the year of IPO and the subsequent three years, to undertake mean value parity assumption verification analysis with respect to companies' operating revenue growth rate, net profit growth rate, EPS and ROE. The results are shown in Table 6. The results of the ANOVA analysis show that following initial public offering, the only financial indicators in which there is any statistically significant change are ROE and EPS (for companies listed on the Shanghai Stock Exchange only); in other words, it is only in the profitability indicators where there is any change.

Table 6 Empirical results of ANOVA by stock exchanges

Financial Indicator	Shanghai		Shenzhen	
	F value	Pr > F value	F value	Pr > F value
Operating revenue growth rate	0.16	0.926	0.86	0.46
Net profit growth rate	0.16	0.926	1.07	0.3602
EPS	8.1	0.0001*	1.15	0.334
ROE	9.12	0.0001*	10.55	0.0001*

Note: * Indicates significance at 1% level.

We further classify the industry into six sub-categories: agriculture, manufacturing, public utilities, real estate and construction, finance and commerce, and general. The results of ANOVA in Table 7 indicate that following initial public offering, the financial indicators in which there are statistically significant changes are ROE for manufacturing and finance and commerce, since they are state monopolies. If the listed companies are grouped by share classes, the results of ANOVA in Table 8 indicate that only ROE has any significant change for both A-shares and B-shares.

[6] According to Chinese Company Law, the stock shares of listed companies shall not be less than 5,000 shares. If they reach 5,000 shares, there is no need to issue new shares; therefore, dilution effect by IPOs does not exist. Otherwise, if there were less than 5,000 shares, dilution effect may be pervasive.

Table 7 Empirical results of ANOVA by industry

Financial Indicator	Agriculture		Manufacture		Public utilities		Real estate and construction		Finance and Commerce		General	
	F	Pr > F	F	F	Pr > F	F	Pr > F	Pr > F	F	Pr > F	F	Pr > F
Operating revenue growth rate	3.34	0.048	1.26	0.286	0.43	0.732	0.51	0.677	0.236	0.878	0.06	0.981
Net profit growth rate	0.75	0.48	0.5	0.657	1.28	0.297	0.91	0.442	0.79	0.502	0.41	0.743
EPS	1.51	0.229	0.82	0.485	1.79	0.162	4.01	0.011	1.5	0.215	2.83	0.042
ROE	1.24	0.31	10.59	0.0001*	0.78	0.511	3.64	0.017	5.47	0.001*	0.07	0.977

Notes: [1] * Indicates that the null hypothesis is rejected within a 1% level of significance

[2] Agriculture includes Agriculture, Forestry, Fisheries, and Livestock sectors; Manufacture includes Mining, Food, Textiles and garments, Printing and papermaking Chemical industry, Pharmaceuticals, Construction materials, Machinery, Electronics and electrical appliances, Precision instruments, Vehicles, Metals and metal products, Information, and Miscellaneous sectors; General includes Transportation, Travel and hotels, and Foreign trade sectors.

Table 8 Empirical results of ANOVA by share classes

Financial Indicator	A-share		B-share	
	F	Pr > F	F	Pr > F
Operating revenue growth rate	0.83	0.478	0.53	0.595
Net profit growth rate	1.55	0.2	0.61	0.552
EPS	2.49	0.059	3.2	0.034
ROE	15.93	0.001*	6.83	0.001*

Note: * indicates that the null hypothesis is rejected within a 1% level of significance

If the financial indicators for listed companies before and after IPO are grouped in sets of two years, regardless of whether the company is listed on the Shanghai or Shenzhen stock exchanges, we can then see from these results that: (i) operating revenue growth rate tends to decline sharply after IPO with a clear disparity here with the annual statistics reported at the time of IPO; (ii) net profit growth rate tends to decline sharply after IPO with a clear disparity here with the annual statistics reported at the time of IPO; (iii) return on equity tends to fall sharply after IPO with a clear disparity here with the financial statements submitted at the time of IPO; and (iv) earnings per share tend to fall sharply after IPO; in the case of companies listed on the Shanghai stock exchange, there was a clear disparity with the financial statements submitted at the time of IPO, whilst for companies listed on the Shenzhen stock exchange this was not the case, and some improvement could be seen in the tendency

for earnings per share to fall.

The above analysis shows that for enterprises in China's stock markets, IPO does not present any marked benefits with respect to their operational performance, and in fact performance tends to worsen. One of the reasons for this is that in order to implement the initial public offering and secure stock market listing, companies tend to submit inflated figures in the financial statements that they are required to provide; the real situation is gradually reflected after the company has secured listing. In addition, the state still retains a majority shareholding in most listed SOEs in China, thus, the fundamental character of these enterprises is unchanged and the influence of the original SOEs systems and structures has not been erased. In particular, the government still directly appoints, or interferes in the appointment of senior managers for some companies; a company chairman or president is frequently appointed by government authorities. In their governance structure, therefore, many listed companies retain an agency relationship within the company, rather than a property ownership relationship. At best, governance in these companies is a mixture of political interest and economic interest. What's more, the control which holders of 'state shares' exercise over the company tends to be weak in economic terms but strong in political terms. As a result, in their role as 'agents,' the managers tend to be opportunistic with respect to political matters, and to be affected by moral hazard with respect to economic matters. Using firm level data from over 300 stock companies from 1993 to 1995, Xu and Wang (1999) found that there was a relationship between ownership structure and corporate performance, indicating the positive role of legal person shares and the negative role of state shares. Chen (2001) used a sample of 434 manufacturing firms listed on the Chinese stock exchange; his findings showed that state shares play a negative role in corporate governance, whilst domestic institutional and managerial shareholdings improve firm's performance.

Owing to the dual identity of the manager/agent, the mechanism for encouragement and sanction by the company's managers cannot lead to the maximization of benefits for the company. There are further serious problems, such as the fact that internal control of company personnel is not kept within reasonable limits (Li and Huang, 1999). In other words, the inherent defects of the governance structure of Chinese companies lead to poor operational performance (He and Liu, 2000; Wu and Zhao, 2000). For example, it is unclear how much control the ownership of 'state shares' confers, there is too much insider trading, the responsibilities of the board of directors are not sufficiently defined, there is too much administrative interference, too many problems of internal control, and so on. As a result, although working capital may have increased after listing, there has been no corresponding improvement in operational management. Consequently, the improvement in the company's operational performance as a result of IPO is not that dramatic. Of course, operational performance is also affected by other factors not directly related to the company itself, such as the business cycle, the government's industrial policy, and developments in related industries, that is to say, the fact that the Asian financial crisis and a weakening of demand in China occurred during the period covered by the sample is another reason for the sudden fall in the financial indicators.

5. Conclusions

Whether one looks at growth, profitability and stability either individually or altogether, it can be seen that the only industries in China in which listed companies display strong performance are the public utilities, transportation and finance; that is to say, China's 'sunrise' industries. The overall operational performance of all other industries is clearly unsatisfactory, and poor performance is particularly widespread with respect to growth. Owing to the weak demand within China, there is excessive supply,

intra-industry competition has become increasingly fierce and enterprises' profit margins have been squeezed. In reality, the majority of enterprises in most industries have lost their ability to secure further financing, making it difficult for them to develop their operations further. In other words, listed companies have been willing to trade reduced profits for increased operating revenue and market share, which has affected their ability to secure financing.

An examination of the changes in listed companies' financial indicators following IPO reveals that, with the exception of earnings related indicators (EPS and ROE), there is no significant change. What's more, the financial indicators tend to fall rapidly year on year. This means that the IPO is of little obvious help to companies' operational performance, and may actually make it worse. One of the reasons for this is that, in order to implement the initial public offering and secure stock market listing, companies tend to submit inflated figures in the financial statements they are required to provide; the real situation is only gradually reflected after the company has secured listing. Another possible factor is the poor corporate governance characteristics of Chinese enterprises. For example, it is unclear how much control the ownership of 'state shares' confers, there is too much insider trading, the responsibilities of the board of directors are not sufficiently defined, there is too much administrative interference and too many problems of internal control. As a result, although working capital may increase after listing, there is no corresponding improvement in operational management. Consequently, the improvement in the company's operational performance as a result of IPO is not that dramatic. Of course, another factor causing the financial indicators to fall rapidly is the fact that the Asian financial crisis and a falling off in domestic demand occurred during the period covered by the sample.

The quality of listed companies is a prerequisite and a foundation for the development of capital markets. Only when listed companies display strong

performance and growth can the ongoing development of the market be maintained. One of the things that needs to be done in order to improve the quality of listed companies is to select for listing those companies which display strong performance, have strong development potential and occupy a leading or advantageous position within their industry, encouraging hi-tech enterprises and companies in other emerging industries to make use of the capital markets. The second task is to ensure that the capital raised through IPO is used more efficiently; companies' listing plans should be in conformity with their inventory and asset adjustment and their technology upgrading. Thirdly, listed companies need to thoroughly transform their management mechanisms, establishing an efficient corporate governance structure and corresponding stock option incentive mechanisms. Furthermore, the operations of listed companies need to be improved. Support can be provided for listed companies to improve their asset and liability structure through debt-for-equity swaps and refinancing, and the Chinese government could encourage inter-regional, cross-industry mergers, acquisitions and asset reorganization between listed companies as well as between listed and non-listed companies, and between companies with different ownership structures. In this way, it will be possible to improve the operational efficiency of listed companies, cultivating a group of large listed companies with strong capabilities that will be competitive in international markets, making listed companies the core element in the market and allowing them to exercise the function of market stabilization.

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