The Efficiency of the Chinese Stock Markets: Some Unfinished Business on the Road to Economic Transformation

by

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In his William S. Vickrey address to the International Atlantic Economic association in 2005, Franklin Allen examined the question of how China has managed to grow rapidly in the absence of many of the factors usually considered essential to economic expansion in Western economies. China had no tradition of the rule of law, corruption was rampant, and the financial institutions that could facilitate growth were inadequate and/or dysfunctional. In particular, the stock and bond markets in China were undeveloped and the banking system did not serve as an institution that could effectively channel individual savings into those companies with the highest potential investment opportunities.

Conventional Western wisdom normally suggests that economic growth requires a well functioning financial system, supported by a strong legal system and by proper corporate governance. As Allen argued, however, China possessed none of the above. The stock market was undeveloped and did not serve as an important source of business financing. The banking system appeared dysfunctional. Little credit was offered to the private sector, and there were large nonperforming loans to inefficient state-owned enterprises.

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How, then, did China manage to achieve real growth rates close to ten percent during the period from the late 1980's through 2005? Allen's explanation was that China relied on non-standard and non-Western financing channels and governance mechanisms that were uniquely Chinese. Self-fundraising provided a large fraction of the total capital needs of private firms as well as state or quasi-state owned companies. Seed finance was often obtained from (extended) family and friends, from foreign direct investment in enterprises, and even from illegal activities. According to Allen, Qian and Qian (2007), self-fundraising far exceeded domestic bank financing for private Chinese firms, and equity and bond issuance accounted for only a tiny fraction of the funds raised, at least through 2005. Even for state-owned enterprises, self-fundraising accounted for about half of total funds raised.

This paper describes the striking changes in China's financial markets since 2005. After noting changes in the banking system, it focuses on the remarkable growth in the Chinese stock markets. While there has been significant progress, the local stock markets appear still to be relatively inefficient, and the banking system has much further to go if China is to continue its transformation to a market economy. The concluding section of the paper, addresses suggested further changes in the financial system that should facilitate continued rapid growth for the Chinese economy.

The Growth of the Chinese Stock Markets

When Allen addressed these meetings in 2005, the capitalization of all the shares traded on the Shanghai and Shenzhen stock exchanges was very small relative to China's GDP and the capital markets of Western economies. The total capitalization of the entire Chinese stock market was less than that of General Electric, Exxon-Mobil, and AT&T in

the United States. Allen was certainly correct in concluding that the public stock markets played an insignificant role in the financing of Chinese businesses.

Over the next two years, however, the market capitalization of the Chinese stock markets increased significantly – due partly to a sharp rise in stock valuations, and partly to increased share issuance for new capital from private as well as state-owned enterprises.

It is important to understand that there is literally an alphabet soup of different kinds of Chinese shares. Here we will concentrate on three of the most important categories. So-called "A" shares are available for purchase by Chinese nationals, but only to a very limited extent by foreign nationals who have acquired a QFII (Qualified Foreign Institutional Investor) quota. Thus, the A-share market has been essentially closed off to foreign investors and prices are largely determined by the actions of individual Chinese investors. A shares are traded on the Shanghai and Shenzhen stock exchanges. So-called "H" shares are the stocks of Chinese companies that list on the Hong Kong Stock Exchange and agree to present their accounting statements in accordance with international accounting standards. These shares are available to the international investing community. Another category is called "N" shares that trade (in New York) on either the New York Stock Exchange or the NASDAQ market. Other smaller share types are "L" shares traded on the London Stock Exchange, "S" shares traded on the Singapore Stock Exchange, etc. While the Chinese have loosened restrictions to some extent, there is only limited opportunity for Chinese nationals to invest in foreign markets and for international investors to transact in the A-share markets.

It appears that the financing of Chinese firms has changed significantly since 2005 and that stock markets have begun to play a meaningful role in corporate finance and in the allocation of capital. During 2006 and 2007 there has been remarkable growth in the Chinese equity markets. The total capitalization of all Chinese equities traded on the Shanghai and Shenzhen stock exchanges (including shares held by the government) grew from about $1 trillion at the end of 2005 to almost $3 trillion in August 2007, as is shown in Exhibit 1. The Exhibit also shows a sharp rise in the number of listed companies. In addition over $1 trillion of Chinese company shares were traded on the Hong Kong Stock Exchange, as is shown in Exhibit 2. While the domestic stock market has traditionally been a very small source of financing the growth of Chinese firms, new issue activity was substantial in 2006 and 2007. Exhibit 3 displays a more than tripling of activity in the market for initial public offerings (IPOs). Indeed, China became the biggest capital raiser in 2007, with over USD $60 billion in new listings expected. New listings include the sale of shares in China's major government-owned commercial banks. We will need to ask however, how efficiently the stock market performs its role.

Exhibit1

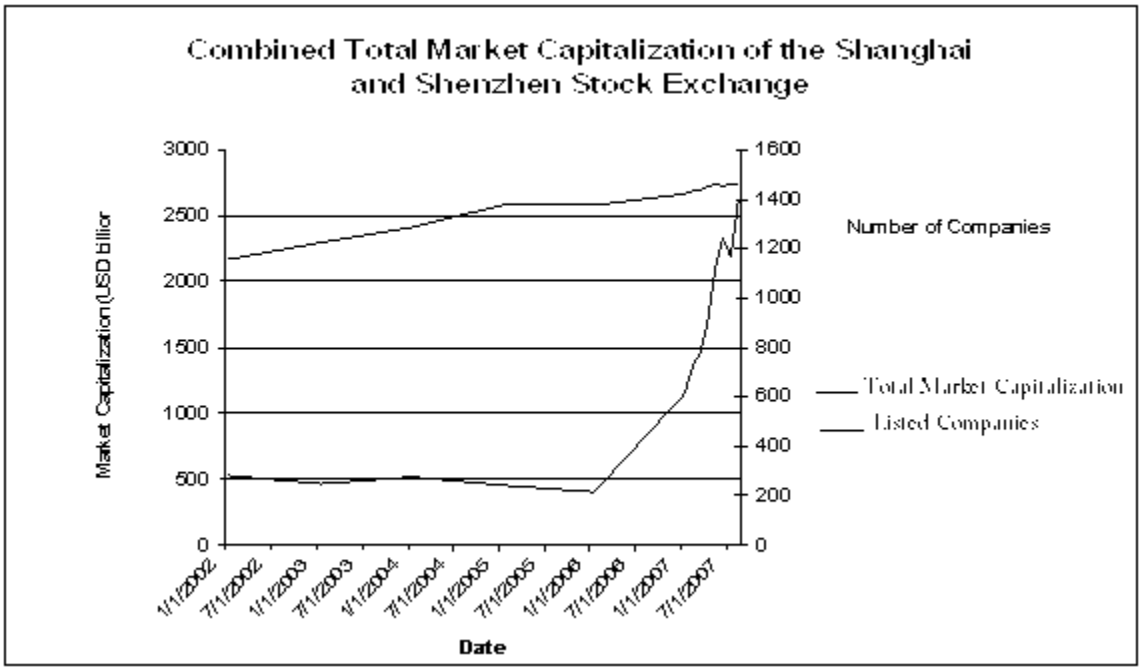


Exhibit 2

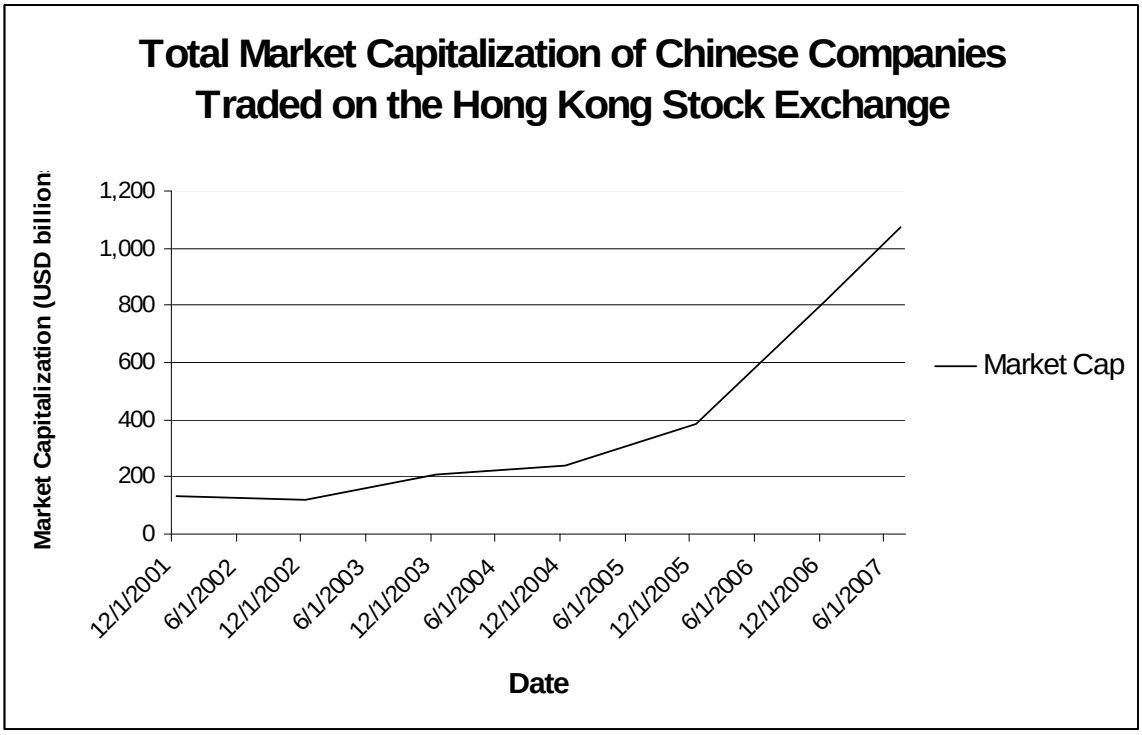
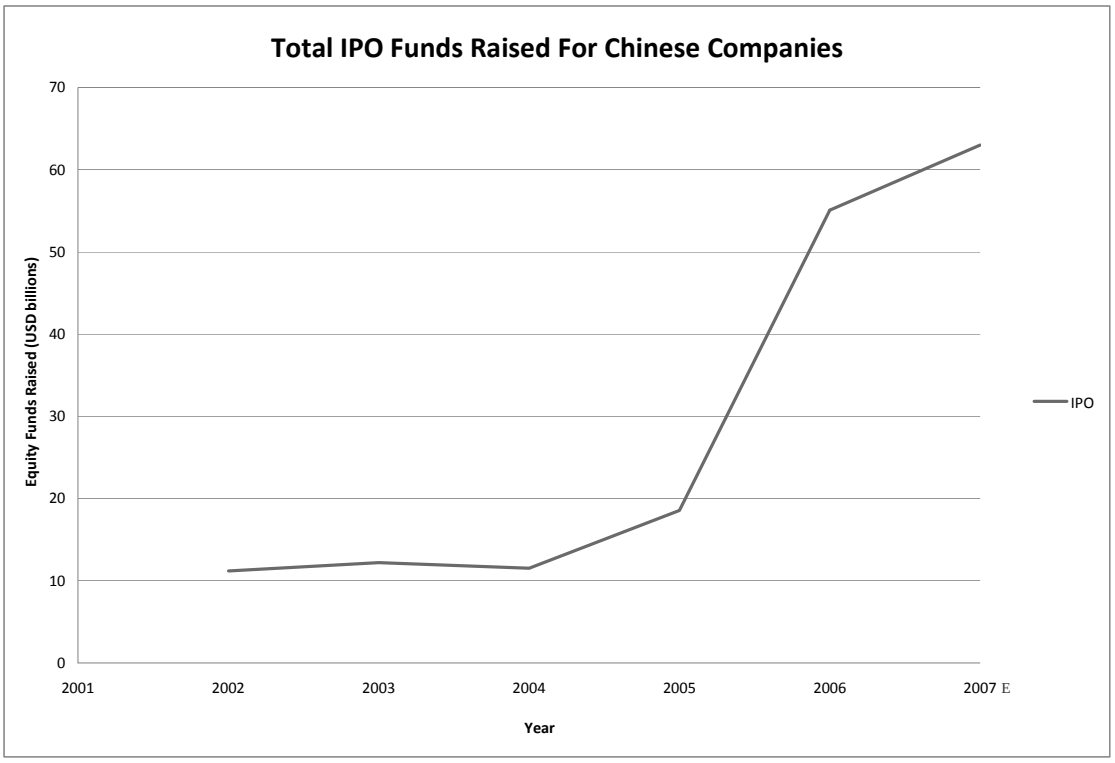


Exhibit 3



Changes in the Banking System

As Allen noted, the banking system in China has long been devoted to channeling funds to favored SOEs, rather than to users who might make more productive use of the funds. As a result, the major Chinese commercial banks accumulated a mountain of "non-performing loans" (NPLs). Since China was required to open its banking system to foreign competition as a condition for its membership in the World Trade Organization, the government understood that two reforms were urgently required: 1) the banks would need to clean up their balance sheets and remove substantial amounts of NPLs, and 2) the banks would need to find new sources of capital funds and thus would need to move toward a system where all the shares of bank stock would become fully tradable and distributed to the public.

To these ends, the government created and funded special asset management companies to take over many of the NPLs from the banks. Moreover, the government allowed the major commercial banks to "go public" and raise substantial amounts of capital from private investors. In addition, the government pledged to make all the government-owned shares of these banks tradable and planned to have them gradually released into the market over time. As a result, the proportion of total loans represented by NPLs declined sharply for the four largest commercial banks in China, as is shown in Table 1. The problem is far from solved, however, and some real estate loans could become nonperforming if China's real estate boom cools. Moreover, the banks are still majority owned by the state, and the release of shares may have been slower than necessary. Nevertheless, considerable progress has been made in moving China's banking system in a direction where bank loans can be made on the basis of sound economic principles rather than by government fiat.

Table 1

NON-PERFORMING LOANS TO TOTAL LOANS OF

THE BIG FOUR CHINESE BANKS

	2001	2002	2003	2004	2005	2006
Agricultural Bank of China	41.4	36.7	30.7	26.7	26.2	23.4
Industrial and Commercial Bank of China	29.8	25.5	24.2	21.2	4.7	3.8
Bank of China	19.4	15.4	16.3	5.1	4.6	4.0
China Construction Bank	NA	17.0	4.3	3.9	3.8	3.3

Source: Annual Reports

The Role of the Stock Market in a Market Economy

The allocation of capital resources plays a critical role in any economy's ability to sustain real economic growth. If capital is not made available to those enterprises and industries capable of increasing both productivity and production, the economic growth rate will suffer. The flexibility and speed of the capital allocation process is essential to ensure the adaptability of the economy's productive process and thus its long-run rate of growth.

Stock markets can offer important signals to corporate management about the cost of investment capital, which is vital to ensuring that an optimal amount of real investment in plant and equipment is undertaken. During China's Mao years from 1949 through 1977, there were no stock markets and the country was almost completely at the planned end of the economic spectrum. State-owned enterprises (SOEs) accounted for more than 97 percent of GDP. These enterprises were not disciplined by the profit motive, and they invested in large numbers of non-productive projects.

With the institution of economic reforms under Deng Xiaoping, China came to recognize that a stock market could play an important role in the restructuring of its hopelessly inefficient SOEs. The country's new leaders understood the principle that the privatization of the SOEs through stock ownership could provide both the financial discipline and the hard constraints that force managers to act in the interest of shareholders rather than in the interest of the state or the managers themselves. In this way, a stock market can help to improve corporate governance. At its best, it can help to correct the poor management, lack of accountability, and widespread corruption associated with many of the SOEs.

Efficiently functioning stock markets also offer easy-to-understand evaluations of the financial conditions of individual companies as well as their future prospects. Finally, stock markets perform what William J. Baumol has called "an act of magic" by permitting long-term investments to be financed by funds from individual savers who may tend to hold those investments for only limited periods of time. In the case of China, stock markets are particularly important since they offer investment outlets for the substantial amounts of individual savings as well as for Chinese institutional investors. This provision of liquidity tends to lower the cost of capital funds and facilitates the low-cost financing of long-term investments. As Baumol concludes in his book The Stock Market and Economic Efficiency (1965), "one is readily inclined toward the view that the stock market constitutes an allocative mechanism of remarkable efficiency." How effectively the Chinese stock market fulfills these expectations of efficiency is the subject to which we turn next.

The Efficiency of the Local Chinese Stock Markets

While the stock market has the potential to be an effective allocator of capital, it will do the job well only if it is reasonably efficient. By efficient we mean that stocks can be bought and sold in reasonable volume at prices that roughly reflect their intrinsic values. Eugene Fama (1970) has argued that efficient stock markets accurately reflect all available information at all times. He also distinguished different types of efficiency depending upon the information set considered. Weak-form efficiency implies that current prices reflect all historical price information. In a weak-form efficient market prices will adjust to news without delay and therefore no excess returns can be earned by

studying the past pattern of price changes. Weak-form efficiency is often associated with the random-walk hypothesis, where future price changes are independent of price changes in the past. If new information is only slowly reflected in stock prices, however, then we would expect stocks to move in the same direction for periods of time. Thus, in an inefficient market, various chart patterns may enable traders to earn excess returns. Moreover, there will generally be strong evidence of momentum in share prices, and various anomalies such as seasonal and day-of-the week effects may be present.

Fama also considered tests of stronger forms of efficiency where the information sets to be reflected in share prices included all the public and private information about earnings, book values, investment opportunities, etc. In the semi-strong form of the theory, all public information would be fully reflected in market prices. In the strongest form of the theory, even private (insider) information would already be incorporated into market prices. In a strong or semi-strong form efficient market, professional security analysts and portfolio managers would not be able to outperform a simple index fund that bought and held a broad index, including all the stocks traded in the market.

Weak-Form Efficiency of the Chinese Stock Markets

A substantial number of studies have attempted to determine the extent to which the Chinese stock market is weak-form efficient.[1] It is difficult to draw definitive conclusions from this work for several reasons. First, many of the studies were performed using data from the pre-2006 period, when the total capitalization of the Chinese markets was very small. Much more time will be needed to assess how the

[1]See Groenewold et. al (2004), Ma (2004), Zheng (2006) and Massey (2007).

substantial increase in both market capitalization and trading volume has affected the efficiency of the market. Second, as noted above, there are several types of Chinese shares, and there is reason to believe that the efficiency of markets open to the international investing community such as the H-share market will behave differently from the A-share market that is largely restricted to local residents. Finally, the results of some studies are conflicting, and in other analyses the results were somewhat ambiguous. Despite these difficulties, I think it is possible to draw some tentative conclusions.

The A-share market does not appear to be weak-form efficient. In many tests the random-walk hypothesis is strongly rejected, and a large number of non-parametric tests also suggest inefficiency. Most studies have found particularly strong seasonal and day-of–the-week patterns, and in some analyses it appeared that traders could fashion trading techniques that could outperform a buy-and-hold investment strategy. Statistical findings of weak-form efficiency are buttressed by numerous anecdotal examples of stock price manipulation through wash sales and other manipulative techniques.[2]

There is also evidence that the H-share market has not been efficient in the past, especially earlier in the 1990s and during the SARS epidemic in 2003. Students of mine have found using more recent price data, however, that the H-share market has become more weak-form efficient over time.[3]

Broad-Form Efficiency of the Chinese Stock Market

As indicated above, the semi-strong and strong forms of the efficient market hypothesis broaden the types of information that should be reflected in stock prices to

[2] See, for example Wu (2004).
[3] See Zeng (2006) and Massey (2007)

include “fundamental” information about the economy and about individual companies. For semi-strong efficiency, stock prices should reflect all public information. Strong-form efficiency requires that even private information should be reflected in stock prices. Hence not even professional investors or insiders would be able to earn “excess” risk-adjusted returns.

We will examine three kinds of evidence in assessing the degree to which the Chinese stock markets are broad-form efficient. First, we will examine event studies that test whether important news announcements become incorporated into stock prices without delay. As a second test, we will examine the prices of stocks that are multiply listed on the Shanghai stock exchange as well as in Hong Kong and in New York. We will determine whether “The Law of One Price” is violated. Finally, we will examine some of the simplest, yet, in my judgment, the most convincing evidence of efficiency or lack thereof. Do professional investors tend to outperform broad-based index funds? The more inefficient the market, the more likely it is that professional investors, especially those with useful connections, will earn higher risk-adjusted returns than index-fund investors.

A) Event Studies

Studies have been conducted of the reaction of Chinese stock prices to various important news announcements such as dividend increases or cuts and bonus and rights issues. In an efficient market we should see stock prices react immediately and fully to the news announcement. In an inefficient market we would observe abnormal returns following the announcement, indicating an incomplete adjustment to news. While there

appears to be different reactions to different types of news, the predominant finding is one of incomplete and inefficient adjustment, Ma (2004) concludes that event studies indicate that China's stock market is not semi-strong efficient.

B) Violations of the Law of One Price

Another method of evaluating the efficiency of markets is to examine whether stocks traded in different markets sell at the same price[4]. For example, the price of BP PLC stock traded on the London Stock Exchange should be the same as the price of the BP shares traded on the New York Stock Exchange. Any discrepancy would be corrected by arbitrage, and indeed the Law of One Price is validated in the New York and London markets.

The Law of One Price is violated, however, in the A-Share Chinese market. Table 2 shows the closing prices for a share of Sinopec, the large Chinese chemical and petroleum company, on January 18, 2007 in Shanghai, Hong Kong, and New York. The closing prices in Hong Kong and New York are not identical, but they represent trades 13 hours apart in time. Since arbitrage is possible, substantial discrepancies would be corrected. But the prices in Shanghai and Hong Kong (which are in equivalent time zones) are substantially different. Nor is this aberration a one-day phenomenon. Exhibit 4 shows that large and variable discrepancies were observed throughout the first half of 2007. Such differences remain because currency and other restrictions prevent profitable arbitrage from taking place. If these restrictions are eliminated in the future, such anomalies are unlikely to be sustained.

[4] See, For example, Lamont and Thaler (2003)

Table 2

Violation of the Law of One Price

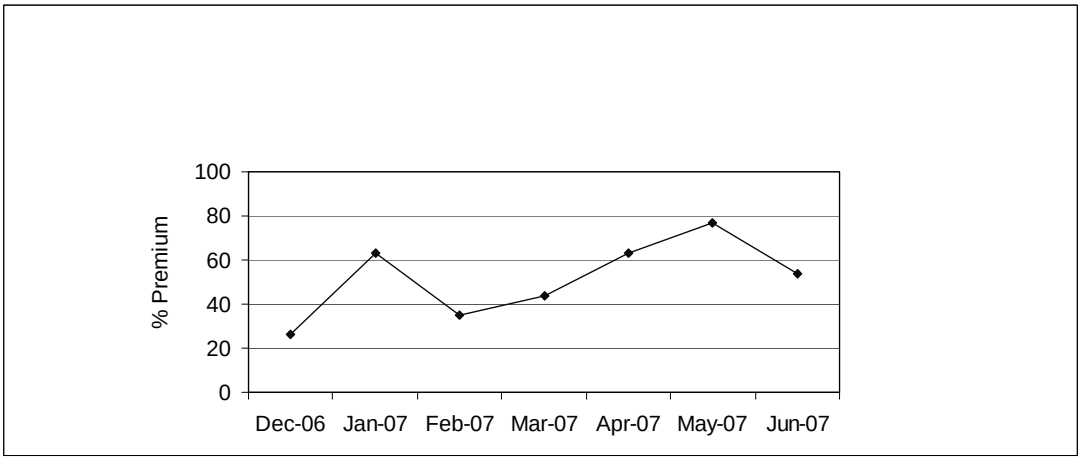
Data for January 18, 2007

Adjusted into U.S. Dollars

	Price in Shanghai	Price in Hong Kong	Price in New York
China Life	$83.91	$46.97	$47.69
Sinopec	$118.40	$81.71	$80.92

Exhibit 4

The A Share Premium December 2006 – June 2007 Sinopec
(Sinopec shares price premium on Shanghai Stock Exchange versus New York Stock Exchange)



C) Professional Investors vs. Market Indexes

In an efficient market stock prices reflect unbiased estimates of the intrinsic values of the securities traded. In such a market professional investors are unlikely to outperform a market index before costs and will tend to underperform the market after

investment costs. Studies by Jensen (1969) and Malkiel (1995) suggest that in the reasonably efficient United States stock market, professionally managed mutual funds tend to underperform broad-based index funds after expenses. In China, however, professional mutual fund managers substantially outperform market indexes even after expenses.

An examination of the investment results of all equity fund managers in China is shown in Table 3. Because funds operate under a variety of restrictions, including the proportion of the fund that can be invested in equities, only the equity portion of the fund returns were included in the analysis. All open and closed end fund manager results were included. As the table shows, from the period 1998 through 2006, managed fund investments in equities substantially outperformed both the Shanghai and Shenzhen stock indexes. While it was not possible to adjust the results for risk, it is highly likely that the risk-adjusted differential would have been even greater. Managed funds tend to hold larger investment grade stocks in their portfolios rather than the more speculative smaller issues.

Several tests of broad-form efficiency lead to the same conclusion. The A-share market for the equities of Chinese companies does not appear to be efficient.

Active Management vs. Indexing in the H-Share Market

Data are readily available to test whether active managers of funds investing in H shares are able to outperform an H-share index. There is a well known and investable index of Chinese company H shares called the FTSE/Xinhua 25 Stock Index; an active exchange-traded fund that tracks the index trades on the New York Stock Exchange under ticker symbol FXI. We can examine the records of mutual funds domiciled in the

Table 3

Managed Equity Funds in China Compared with Local A-Share Indexes

1998 – 2006	Return of Managed Funds* (%)	Return of Shanghai Stock Index** (%)	Return of Shenzhen Stock Index** (%)
Average Annual Return	20.75	16.20	16.20

* Return is measured by the return of the equity portion of the managed fund portfolio. Included in the calculation are the returns from all open- and closed-end funds that are restricted to buying local shares.

**These differences of over 450 basis points may be overstated by as much as 150 basis points since the returns from the indexes measure only price changes while the returns from the managed funds are total returns including dividend payments.

SOURCE: Bosera Asset Management Co.

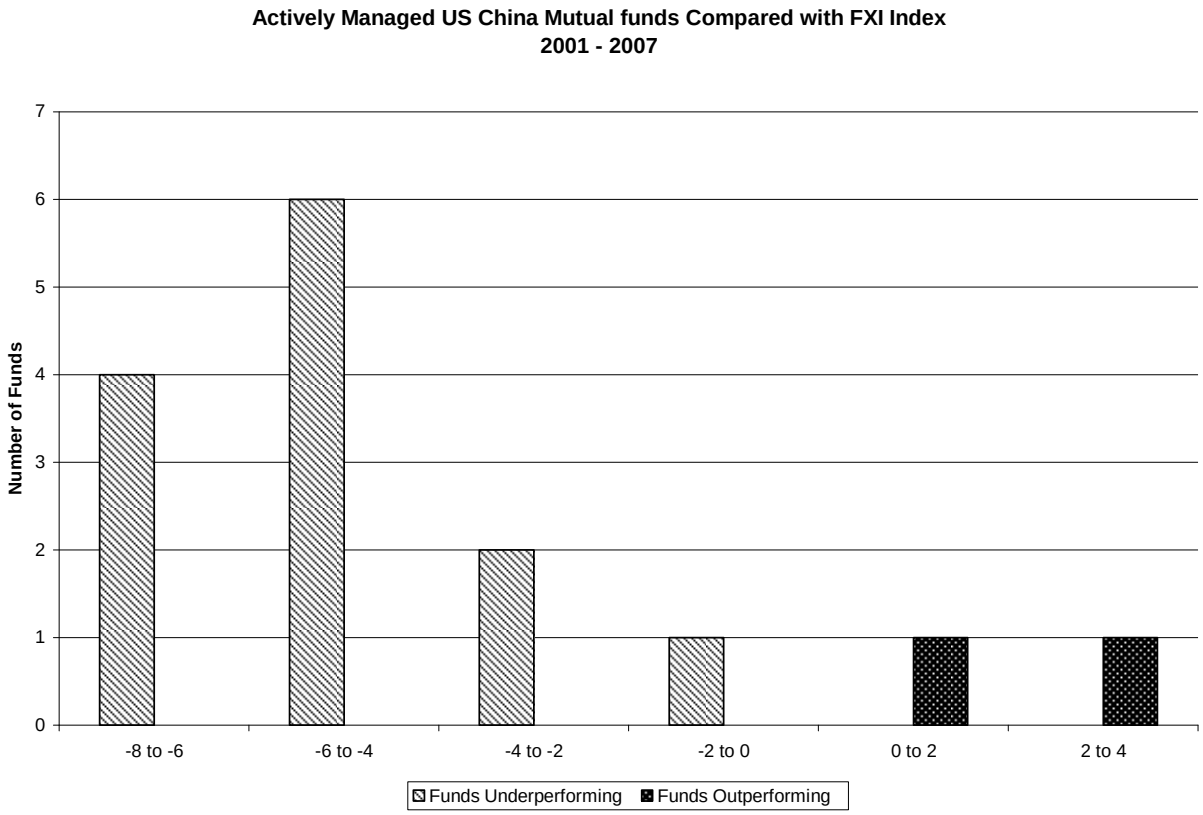
United States as well as those domiciled in Hong Kong. Data are available for U.S. managers from 2001 through June 30, 2007. Data are only available for Hong Kong domiciled equity funds for a shorter period. Both groups were tested to ascertain whether the local managers were able to achieve different results from the foreign managers. Since most U.S. managers spend considerable amounts of time in China, however, there may be little difference in the results of the two groups.

Exhibit 5 presents the performance of all the mutual funds in the United States that invest in Chinese companies available to international investors. Only two of the actively-managed funds outperformed the FXI Exchange traded fund (ETF).[5] Most

[5] Both the FXI ETF and the managed-fund returns were measured after management expenses. The management expense of the ETF was substantially below the expense for the actively-managed funds.

actively-managed U.S. mutual funds underperformed FXI during the period from 2001 through June 2007

Exhibit 5
Excess Return



We can also examine the risk-adjusted performance of U.S. China mutual funds by calculating each fund's Sharpe Ratio and comparing the results with the Sharpe Ratio for the FXI index. This is done in Exhibit 6. The Sharpe Ratio for the FXI index was approximately 1.1 during the period of the study. Again, only two U.S. mutual funds had higher ratios, indicating superior risk-adjusted performance. Most of the funds had Sharpe Ratios lower than that of the index.

Exhibit 6

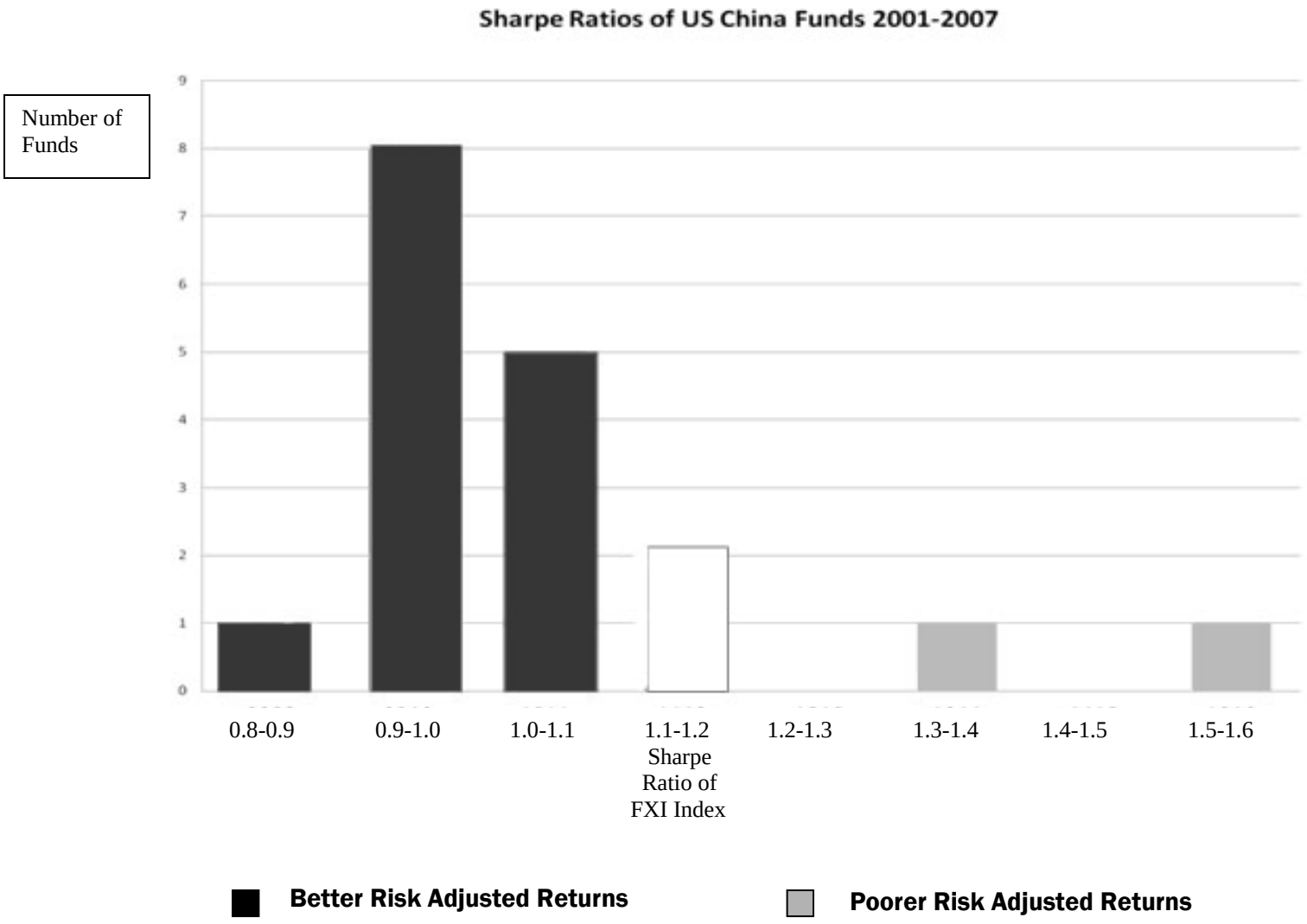
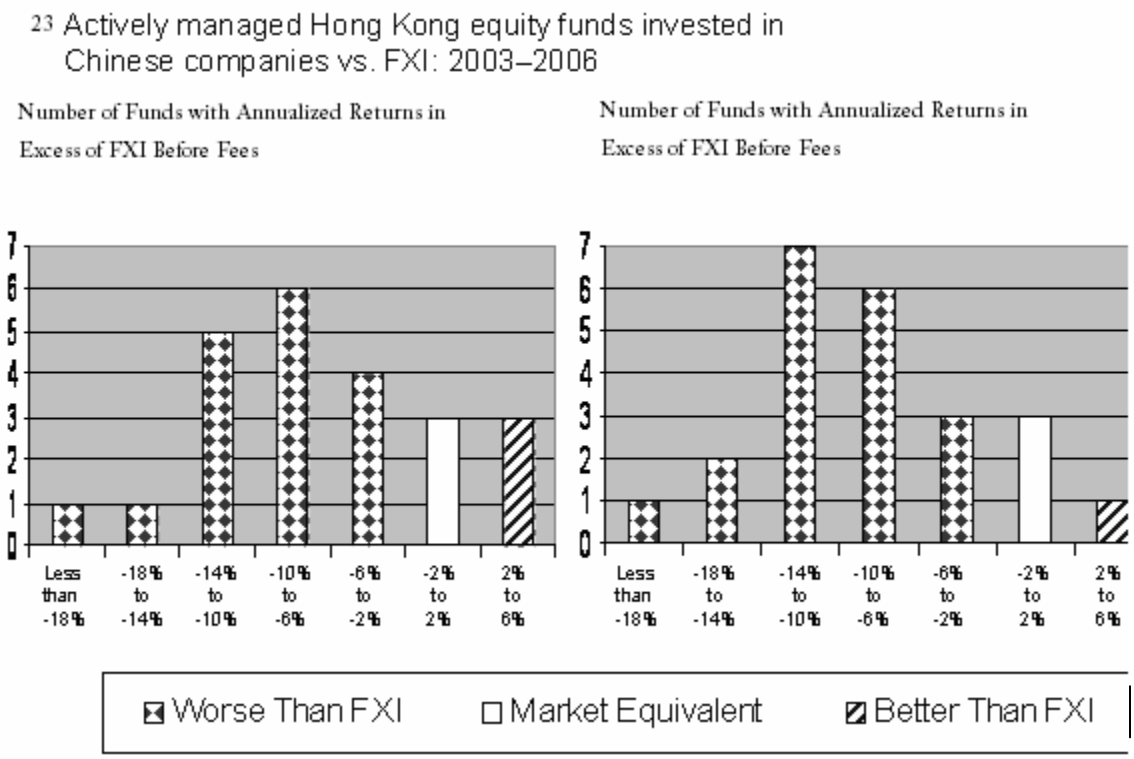


Exhibit 7 presents the results for the Hong Kong mutual funds. Again we see that the active-managers are not able to outperform the FXI exchange-traded index fund, either before or after management fees. It appears that the prices of H shares are more closely related to the intrinsic value of the shares and that the H-share market is more efficient than the A-share market. We attribute the difference to two factors. First, the shares listed in Hong Kong have more stringent disclosure requirements and fully conform to international accounting standards. In addition, there is a strong presence of

sophisticated institutional investors in the Hong Kong market. The A-share market has yet to develop a strong institutional presence, and prices are likely to be more susceptible to the whims of individual investors.

Exhibit 7



In summary, it appears that the Chinese A-share market is neither narrow-form nor broad-form efficient. It is also an extraordinarily volatile market – even when compared with other volatile emerging markets such as Brazil. It would be difficult then to conclude that the local market can be relied upon to give proper signals to corporations to ensure an efficient allocation of capital. Despite the growth in the market's total capitalization and its emergence as an important source of equity finance, China still has far to go to satisfy the Baumol criterion for the stock market to be a capital allocator par excellence.

But China does have on its shores a market in Hong Kong that appears to be reasonably efficient. Hong Kong also is home to banking institutions that are free from government control. As China continues its remarkable transformation, are there steps the government can take now that will make better use of market incentives? I believe that the answer is yes. The last section of this paper turns to the logical next steps that will help China to continue to grow and prosper.

Some Useful Next Steps for the Chinese Economy

China has clearly made considerable progress in strengthening its financial system during the 2005 – 2007 period. But there is also substantial unfinished business on the road to financial reform. Here I will outline a few suggestions that would help hasten China's transformation and facilitate its future growth.

Most Chinese firms are still majority owned by the state. As long as this remains the case, there will be severe governance problems. The state has little or no interest in the price of the shares and thus in taking actions that benefit the private shareholders. The non-performing loan problem is one manifestation of this arrangement. The state may want to keep essentially bankrupt state-owned enterprises alive through loans, especially companies that employ numerous workers, even though the private shareholders of the bank would prefer that such loans not be made. Governance reform and a reduction in agency problems will never be successful until the majority of the outstanding shares are in the hands of non-government shareholders. Moreover, limited float makes price manipulation more feasible. The privatization of state-owned

companies and banks is an urgent imperative that will benefit the Chinese economy and facilitate its ability to continue its rapid growth.

China has moved to make the previously non-tradable government-owned shares tradable on the stock exchanges. By the start of 2007, all companies on the Chinese stock markets had either announced or had already completed a program to make their restricted shares tradable. But making the shares tradable and actually releasing the shares to private ownership are two different things. While the government has sold some shares through public offerings, most of the shares of Chinese companies (including financial institutions) are still in the hands of the government and only limited amounts will be sold to the public over time. A more rapid release of the shares would not only speed up the reform process, but also could cool off the rampant speculation in the market. The A-share markets rose by 130 percent in 2006 and by September 2007 share prices had doubled again. Turnover in the market was approximately 75 percent per month in the summer of 2007. A bubble in stock prices that later bursts is certainly not in the interest of sustaining economic growth.

The full privatization of China's banks and corporations can not be undertaken independently of China making more progress in closing down the money losing and highly inefficient state-owned enterprises (SOEs). Some SOEs have been successfully reformed but others are truly "zombie enterprises" that will require continued infusions of cash. China then faces a delicate balancing act. China must continue to encourage the vibrant private sector of the economy while cushioning the fallout from the gradual closing of the most inefficient of the SOEs.

There is much more that needs to be done to make the Chinese stock markets more rational. Functioning financial markets require objective and independent accounting. It is widely believed that Chinese firms traditionally carried four sets of books – one for the government, one for official company records, one for foreigners, and one (obviously not widely available) for what was actually going on.

As of January 1, 2007, China's Ministry of Finance now requires all companies listed on the Shanghai and Shenzhen stock exchanges to report their annual performance in terms of International Financial Reporting Standards (IFRS). This is an enormously ambitious project, since many Chinese companies consist of numerous subsidiaries, and there is a woeful lack of qualified accountants to process and clarify the raw numbers. (The Chinese accounting profession is still recovering from having been sent, lock, stock, and barrel, to the countryside to be reeducated during the Mao years.) To give some idea of the task facing the listed companies, it has typically taken three years for expectant Chinese corporations to meet the listing requirements consistent with the IFRS and mandated by the Hong Kong Stock Exchange. While progress has been slow, the new requirement is clearly a step in the right direction.

China also needs to relax the cumbersome restrictions that have kept the Chinese A-share market separated from world financial markets. To be sure, some very small steps have been taken. The Qualified Foreign Investor Program (QFII), begun in November 2002, permits a limited number of qualified institutional investors, on an annual renewal basis, to participate directly in China's domestic stock markets. Although the quotas have been expanded over time, they are still relatively small. Moreover, there are limits to the number of A shares that QFIIs may acquire in any single company, and

the program does not permit the unrestricted repatriation of the funds. The regulatory authorities were worried that since the total capitalization of the domestic market was very small, it would be overwhelmed if foreign investors were given full access. That argument is not tenable now. A vastly liberalized QFII program could bring a much-needed international institutional presence to the market and could help in eliminating some of the anomalies in the A-share market.

In July 2006, the government introduced the Qualified Domestic Institutional Investing (QDII) program. Similar to the QFII program, it allowed local institutions to exchange limited amounts of Yuan into foreign currencies in order to buy shares on international exchanges. In August of 2007 the government announced further steps – called a trial effort – to make it easier for Chinese citizens to invest in the Hong Kong market. It is not yet clear how this plan will be implemented. Until Chinese citizens can easily and freely exchange their currency for Hong Kong dollars without limit (and vice versa), the A-share market is likely to remain inefficient. Perhaps an even more important advantage for the Chinese is the effect on the exchange rate. Allowing their citizens freedom to buy foreign currencies, would tend to limit the appreciation of the Yuan and help keep Chinese exports highly competitive in the world markets. Financial economists in Asia are rightly concerned that a repeat of the Asian financial crisis of the late 1990s would be devastating for China. But with China holding almost one and one-half trillion dollars of reserves and with a currency that is extremely attractive on a purchasing power basis, fears that loosening restrictions on currency movements will lead to a run against the Yuan seem highly unrealistic.

Concluding Comments

China has come a long way transforming its economy from one almost completely controlled by the state to an economy where market incentives increasingly control the patterns of investment, production, and consumption. But a maze of financial market restrictions remain that will, I believe, interfere with an efficient allocation of future investment resources. This paper has suggested a number of reforms that represent unfinished business on the road to full economic transformation.

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