Law, Finance, and Administrative Governance: Evidence from Chinese Stock Markets
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I. Introduction

It has been noticed that China's remarkable economic and financial development are associated with poor formal legal institutions (Allen et al. 2004; Ohnesorg, 2003; Pistor and Xu, 2004b). China had a very weak legal basis when it began to develop financial markets in the early 1990s. Moreover, courts were weak, and have in fact did not play an important role in enforcing investor rights to this day. Yet, China has been remarkably successful in developing equity markets over the past decade.

These observations seem to put China into a contradiction to a documented worldwide trend that law and related governance mechanisms are important determinants for financial market development. This trend appeared in cross-country studies shows the importance of legal institutions for financial market development, such as formal minority shareholder rights (La Porta et al., 1997; La Porta et al., 1998), formal mandatory disclosure rules and their enforcement (La Porta, et al. 2002), the effectiveness of legal institutions (Pistor et al. 2000), and the legacy of legal development in countries being studied (Berkowitz et al. 2003).

Concerning transition economies including China, they may suffer more from severe enforcement failures, which include deterrence failure and regulatory failure. The consequences of enforcement failures to financial market development are identified in the literature (Xu and Pistor, 2004). Thus, any mainstream wisdom of law and finance would predict that financial market development in most transition economies would be retarded. However, it seems China defies the above prediction.

Pistor and Xu (2004b) suggest that administrative governance institutions deployed in Chinese financial markets may explain this paradoxical phenomenon. However, systematic econometric evidence is yet to be established. This paper

provides the first econometric evidence that quota system provides incentives to regional governments to select better firms. Specifically, by constructing a panel data of 31 regions over the period of 1994 to 2002, our evidence suggests that the allocation of quotas to each region was determined by the earlier aggregate performances of the listed firms from the region. That implies that regional governments that selected better performing firms at IPO in pervious periods had been rewarded by gaining more quotas later; and vice versa. By doing so, that governance structure has mitigated the problems of deterrence and regulatory failure. To summarize, this system effectively enlisted pre-existing institutions of state and party governance in the selection of companies for listing on a stock exchange. It was based on existing regional competition and it created further competition among regions for access to centrally controlled equity market entry. It tapped into the insider knowledge about firms by state bureaucrats at companies and/or local governments, which was not accessible by other means.

Given that the quota system put binding constraints for regional financial development, if it is a proper governance system it should not fundamentally distort regional financial development. For this purpose, we provide evidence on the Chinese cross-region financial development; and compare it with the cross-country financial development literature. Our panel data evidence shows that the regional financial development (in equity markets) in China is positively correlated with levels of regional economic development and internalization. This is consistent with the trend discovered in the cross-country studies (e.g. Claessens, et al. 2002). This suggests that this governance structure does not seriously distort regional financial developments.

Our paper focuses on explaining the success of the initial stage of jumping start stock markets in China. However, we also point out that quota system based administrative governance is not a long run solution for financial regulation. It does not work effectively for non-state owned firms. And it is failing to monitor companies once they are listed on the market. Therefore, although the quota system may have helped successfully in jumping start the financial market, in the long run it is essential for China to strengthen standard law enforcement mechanisms.

The rest of the paper is organized as follows. Section II discusses why enforcement failures are inevitable for China and provides evidence on that. Section III explains briefly why facing severe enforcement failure China can still develop its financial markets rapidly. Section IV provides evidence that the quota system operates as an incentive system to improve information at IPO stage. Section V provides evidence that regional financial development as a consequence of the quota system is not too seriously distorted. Finally Section VI discusses problems of the quota system and concludes.

II. Deterrence and Regulatory Failure Faced by Chinese Financial Development

The formal law enforcement institutions governing financial markets in most developed economies include courts and regulators. The law enforcement literature (Becker, 1968; Stigler, 1970; Polinsky and Shavell, 2000) identifies the main task of courts as deterrence against violations. However, courts may fail to deter violations due to incomplete law (Xu and Pistor, 2004). Given the scale and scope of economic and legal reforms that are taking place concurrently, law in transition countries is bound to be highly incomplete, i.e. its meaning and application to specific cases is largely untested and the scope of liability is therefore uncertain. This is particularly

acute in transition economies including China because the incompleteness of law problem is more severe than in developed market economies. Moreover, the level of incompleteness of the law may exacerbate the problem of judicial corruption, as judges may more easily distort the purpose of an untested legal rule than one the meaning and application of which has long been established.

It is useful to compare briefly China's early development of financial markets with experiences of developed economies in their early developments of financial markets. When England's stock market, the first large scale stock market in the world history, soared in the nineteenth century during the railway mania, there were no securities laws or regulators that would monitor the amount or type of information companies disclosed when issuing shares to the public. But there was a highly developed contract and tort law at hand (Pistor and Xu, 2003). A sufficiently large body of case law was available to determine how these principles should be applied to the newly arising securities fraud and misrepresentation of information cases. Although court enforcement ultimately proved to be insufficient for dealing with the problem of law enforcement in securities matters, courts nevertheless played an important role in dealing with stock fraud schemes and imposing civil and criminal liability. Moreover, the legislature closely observed case law and readily intervened whenever it saw reasons to fill gaps left by the courts or to correct decisions made by them.

However, the formerly centralized economies in general and China in particular did not inherit a developed contract or tort law to build on for addressing problems related to misrepresentation of information on securities markets. China was home to a flourishing stock exchange in the 1920s and enacted a basic set of codes based primarily on German models at the time (Kirby, 1995). However, this legal

framework was systematically dismantled since 1950. Only with the introduction of economic reforms did China embark on the creation of a new formal legal framework for economic transactions. The most important pieces of legislation for dealing with securities fraud include the 1986 Principles of Civil Law, the 1991 Civil Procedure Law, the 1994 Corporate Law, and the 1999 Securities Law, which will be discussed in greater detail below.

When there are severe deterrence failures, regulators may be introduced to address law enforcement problem (Xu and Pistor, 2004). This is because regulators combine flexible lawmaking with proactive law enforcement powers, which distinguishes them from courts. The proactive enforcement power allows regulators to enforce law ex ante by screening and monitoring companies in order to prevent actions that have the potential of causing harm. In the context of financial market regulation, the core of the regulation is the mandatory disclosure rule. The efficacy of these regulatory tools, however, depends crucially on the quality of company specific information. The stylized enforcement of a disclosure rule works as follows. First, the regulator requires potential issuers to reveal a set of standardized information. Second, it would use this information to perform a "smell test" (Coffee, 1999) in order to determine whether the public issue can go forward, or whether additional information should be requested. Once the additional information is revealed, the regulator decides whether the company may or may not go forward with the issuance.

However, if the information that is submitted is noisy or manipulated, the smell test and the final decision will have a large margin of error. By implication, in an environment where information is unreliable, a regulator lacks the necessary ingredient (reliable information) for effective proactive enforcement. The result is regulatory failure. In transition economies, such as China, reliable company specific

information is difficult to obtain and standard practices, such as disclosure of financial information may be more misleading than reflecting the true underlying value of a company. State owned enterprises are especially affected, as their accounts were created on the basis of socialist book-keeping with little relation to market principles (Bailey, 1995). The balance sheets of firms listed on China's stock exchanges to this day have double entries: one for the value of company assets according to legal accounting principles, which may be legal, but do not present the intrinsic value of the firm and another with re-evaluation estimates, which may be closer to the actual market value, but remain guesswork in an environment where markets for many assets remain underdeveloped (Fang, 1995). The information problem is aggravated by the absence of reliable independent sources of information or experts.

In this environment, proactive law enforcement by regulators will fail to work effectively. Given the severity of the information problem in China, regulatory failure is likely to be severe. The result may be either the failure of markets to take off, or the collapse of a market after it reached a critical threshold given the constraints of highly incomplete law and severe information problems. Indeed, it is documented that formal legal institutions in China did not play much role in protecting minority shareholders interests; and did not play much role in enforcing mandatory disclosure rules (Chen, 2003; Allen et al., 2004; Pistor and Xu, 2004b).

III. Administrative Governance of Financial Markets

Although China has only slowly developed a legal framework for stock markets and has a very weak law enforcement record, standard measures for stock market performance suggest that China is performing better than most other transition economies both when compared on a country by country basis, or when comparing all

other transition economies taken together with China. Particularly, China has outperformed all other transition economies on what might be the most important aspect – the ability of listed firms to raise funds. China has the most liquid of all stock markets, with only Hungary coming close. Companies in Central and Eastern Europe have only rarely used IPOs to raise capital except Poland with 47 IPOs between 1994 and 2001. By contrast, in the same period of time, there were 873 IPOs in China. Between 1998 and 2001 alone China witnessed 414 IPOs with firms raising a total of 508.6 billion RMB (or 61.6 billion US$). No other transition economy is even close (Pistor and Xu, 2004b).

A weak legal institution on the one hand and a strong performance on jumping start stock market on the other hand make China a puzzling case in law and finance literature. We argue that China's financial market development was based on an administrative governance regime, which partially substituted formal legal institutions and prevented the worst enforcement failures. The core of it was the so-called quota system. The quota system was officially in place from 1993 and 2000. De facto it governed financial markets up to the end of 2002 or further.

The quota system functioned to promote decentralized information collection in an environment that faced information problems that far exceeded those commonly known in developed financial markets. Investors as well as regulators face substantial information problems, particularly for companies that launch their initial public share offering (IPO), as little information about them is known to the market. In Western markets, mandatory disclosure rules seek to reduce information problems. Conditions for the efficacy of mandatory disclosure rules, however, were not present in China. Under centrally planned system state owned companies operated according to accounting standards that contained little information relevant for evaluating their

market values. Even when books were converted by applying international accounting standards, the conversion process was subject to a substantial margin of error (Fang, 1995). Professional market watchdogs capable of and willing to verify accounts were only beginning to emerge and the creation of an effective governance structure for these intermediaries lacked even further behind. Absent effective governance, accountants, auditors, and securities analysts often participated in fraud (Green, 2003). Against this background, disclosure rules could not be credibly enforced and therefore were ineffective in resolving the severe information problem investors and regulators faced. Instead, mechanisms were needed to induce insiders to reveal critical information that could be used for a meaningful selection of companies for public offerings.

Under the particular Chinese conditions, the quota system created an incentive structure that helped solve informational problems at the IPO stage. Regional competition has been essential in Chinese reforms. That competition among regions has developed vested interests for regional government officials in their regions' economic performance, which became a critical factor for their own career advancement (Qian and Xu, 1993; Maskin, Qian and Xu, 2000).

Moreover, the performance of regional companies on the two major stock exchanges is directly linked to the region's economic performance, as listed companies gained access to equity finance at a time when central credit allocations were curtailed. In addition, these firms also became less dependent on regional budgets and apparently gained access to bank financing from other regions.

IV. Quota as an Incentive System to Regional Governments: Province-Level Evidence

Quotas have been a basic feature of state and regional economic management in China prior to and during the transition period, in particular for allocating critical resources among regions[1]. The annual quota for each region was established in an intense bargaining between regional governments and relevant central agencies (i.e. the ministry for energy, or the central bank). The primary purpose for extending the quota system to China's fledging stock markets was to maintain control over its size and stability (Fang, 1995). In its practical application, however, it is related to the existing regional competition; and it created further regional competition for the allocation of quotas, which in turn fostered a selection and information collection process that facilitated market development during the crucial start-up period.

Each year the PBoC established the amount of shares firms were allowed to issue to the public. In 1993, the first year when the quota system was in full operation, 5 billion shares were made available at the national level. Individual regions received quotas in the amount of 50 million to 500 million shares (Fang, 1995). Governments at the provincial level negotiated the size of the quota for that region with the respective provincial branch of the CSRC. When they had reached an agreement, the request together with information about the companies the province wanted to bring to the market was submitted to the center. The CSRC decided over the allocation of quotas to different provinces and ministries on the basis of the information it had received and within the quantity constraint established by the PBoC. As we will further argue below, this promoted competition among the regions and induced them to collect and reveal critical information about the relative quality of companies operating in each region.

[1] For the purpose of this paper, we use the term "region" to refer to administrative sub-division at the provincial level.

After the regional quota had been allocated, the selected companies had to go through an individual approval process. At this stage the applicants were vetted for compliance with the formal merit and disclosure requirements set forth in relevant statutes and regulations (Fang, 1995).

The quota system de facto served as an important administrative governance device, which consisted of incentives for decentralized information collection. That limited serious fraud at the stage of IPO. Specifically, the quota system imposed a 'quantity constraint' to provinces. With competition among provinces, this created incentives for local governments to select companies that would enhance the province's future access to quotas. By involving regional governments as the owners of regional state-owned firms the quota system also tapped into insiders' knowledge and thereby reduced the information problem.

If the operation of the quota system provides incentives, we should observe that future allocations of quotas to a region are related to past performance of companies from that region. That is, quota allocations to regions should be positively correlated with past performances of listed companies from corresponding regions.

Quota allocated to each region is the total number of shares allowed to be issued from the region. However, time series information about the size of the quota allocated to different regions is not publicly available. The best proxy for the size of a region's quota we can find is the number of shares issued by firms from different provinces.[2] We use the rate of increase in the number of shares issued to control for the variation in the size of regions. To account for the time lag between the allocation of shares to a province and the actual public offering, we use changes over a three year period. Specifically, the rate of increase in quota for region i at period t is

[2] In reality there is usually a time lag between quota allocation and the listing of a firm.

measured as (Total Shares of Region i in Year t – Total Shares of Region i in Year t-3)/Total Shares of Region i in Year t-3, where t ranges from 1995 to 2003. To link quota to regional performance of listed companies, we employ several measures for the performance of listed companies as independent variables, which encompass indicators such as total and tradable market capitalization, price/book-value ratio, turnover ratio, and net profits, respectively. We also use the rate of increase in these variables over a three-year period in our regression analysis.

We form a panel dataset that consists of a time series of nine years (1995-2003) of a cross-section of 31 Chinese provinces and provincial level municipalities[3]. Regressions are estimated by controlling for using both province fixed effects and random effects.

The fixed effects regression model is specified as $y_{it} = \alpha_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where i indicates provinces, t denotes year, α_i is province-specific fixed effects, γ_t is year fixed effects, and ε_{it} is random error.

The random effects regression model takes the form $y_{it} = \theta + u_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where u_i is the random disturbance characterizing the i-th province and is constant through time (random effects), γ_t is the constant year effects, θ is constant term, and ε_{it} is random error.

The major independent variable, X_{it}, is Performance Indicators for Listed Companies from Region i in period t. That includes the three-year growth rates of market capitalization of total tradable shares of listed companies, of the market capitalization of tradable shares, of the P/E ratio, of the P/B ratio, of the turnover ratio, of the net profits and of the earnings per share. In regressions, the performance

[3] If we stretch the beginning year of the sample to 1994 or 1993, the calculation of quota requires data on shares issued in year 1991 or 1990. However, very few provinces were allowed to put firms onto stock exchanges at that time so that we cannot conduct meaningful statistical analysis.

indices are lagged by one year, that is, (Regional Performance in Year t-1 – Regional Performance in Year t-4)/Regional Performance in Year t-4.

Table 1 reports regression results. We can see that for both regression models, market capitalization of total shares and of tradable shares are positive and significant at 1% level; P/B ratio and net profits are also positive and significant. Market turnover is positive and significant in the random effect model, but insignificant in fixed effect model. Finally, for P/E ratio and earnings per share are positive but insignificant in both regression models. To test the robustness of our results, we run regressions with different year lags between quota allocation and performances; and different lengths for each period. All results are qualitatively similar and to save space we do not report them here.

Table 1

Estimation Method	FE	RE	FE	RE	FE	RE	FE	RE
Growth in Market Cap	0.11 [a] (0.025)	0.14 [a] (0.023)						
Growth in Tradable Market Cap			0.10 [a] (0.025)	0.13 [a] (0.023)				
Growth in P/E Ratio					0.015 (0.012)	0.011 (0.011)		
Growth in P/B Ratio							0.049 [b] (0.024)	0.059 [a] (0.023)
No. of Obs.	212	212	212	212	212	212	212	212
No. of Provinces	31	31	31	31	31	31	31	31
p-value of F-test of all fixed Error=0	0.0003		0.0001		0.00		0.00	
p-value of Breusch-Pagan Test		0.00		0.00		0.00		0.00
R^2	0.53	0.49	0.53	0.47	0.49	0.36	0.50	0.39

Estimation Method	FE	RE	FE	RE	FE	RE
Growth in Market Turnover	0.0014 (0.0013)	0.0043 [a] (0.0013)				
Growth in Net Profits			0.17 [c] (0.091)	0.24 [a] (0.089)		
Growth in Earnings per share					0.025 (0.038)	0.041 (0.037)
No. of Obs.	212	212	212	212	212	212
No. of Provinces	31	31	31	31	31	31
p-value of F-test of all fixed error=0	0.00		0.00		0.00	
p-value of Breush-Pagan Test		0.00		0.00		0.00
R^2	0.49	0.40	0.50	0.40	0.48	0.37

Note: Regressions are estimated by Fixed Effects (FE) and Random Effects (RE) models. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Year dummies and constant term are not reported to save space.

In Table 2, we change the major independent variable in the regression models, X_{it}, from individual performance indicators into performance indices of listed companies from region i at period t. We classify these individual performance indicators into two broad categories. One group is based on stock market performance, while the other group is built upon the accounting data. We thus construct three categories of indices in our two regression models: Overall Performance Index, Market Performance Index and Accounting Performance Index. Market Performance Index is calculated as the simple average of the three-year growth rates in regional aggregate levels of market capitalization of total shares of listed companies, the market capitalization of tradable shares, the P/E ratio, the P/B ratio, and the turnover for each region. Accounting Performance Index is the simple average of the three-

year growth rates in regional average levels of net profits and earnings per share. Overall Performance Index is constructed as the simple average of the three-year growth rates in market capitalization of listed companies, the market capitalization of tradable shares, the P/E ratio, the P/B ratio, the turnover, the net profits and the earnings per share for each region. In regressions, the performance indices are lagged by one year, that is, (Regional Performance in Year t-1 – Regional Performance in Year t-4)/Regional Performance in Year t-4.

From Table 2, we can see that for both regression models, Overall Performance and Market Performance indices are positive and significant; and Accounting Performance Index is positive and significant for Random Effect model but insignificant for the Fixed Effect model.

Table 2

Estimation Method	FE	RE	FE	RE	FE	RE
Overall Performance Index	0.015 [c] (0.0086)	0.038 [a] (0.0089)				
Market Performance Index			0.011 [c] (0.0061)	0.027 [a] (0.0064		
Accounting Performance Index					0.082 (0.066)	0.13 [b] (0.065)
No. of Obs.	212	212	212	212	212	212
No. of Provinces	31	31	31	31	31	31
p-value of F-test of all fixed error=0	0.00		0.00		0.00	
p-value of Breush-Pagan Test		0.00		0.00		0.00
R^2	0.49	0.42	0.49	0.42	0.49	0.38

Note: Regressions are estimated by Fixed Effects (FE) and Random Effects (RE) models. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Year dummies and constant term are not reported to save space.

Our panel data regressions help us mitigate the concern for the potential endogeneity in regression analysis. One possible issue is the reverse causality, that is, the quota allocation may affect the market performance of stocks from different regions. It may even cast impact on the corporate operations and thus the accounting earnings data. The panel data regressions can relieve this concern to a large extent. Furthermore, the fixed effects regressions can not only address the potential concern of reverse causality but also relieve us of the worry that the relationship between quota allocation and corporate performance in different provinces could be driven by some unspecified exogenous variable that we have not captured.

To further address the issue of endogeneity, we present in Table 3 some cross-section regressions based on the early stage of the stock market development and quota system in China. When the stock market and the quota system were initially established, the quota allocation is more likely to be affected by corporate performance than the other way round.

The quota system was initiated in 1993, and only in 1994 and 1995 most of the Chinese provinces (29 provinces) began to have corporations listed in Shanghai or Shenzhen stock exchanges. The number of shares issued in these initial years reflects the initial allocation of quota for almost all provinces. It provides a starting point for us to analyse how the allocation of quotas in subsequent periods responds to regional variation in corporate performance. In other words, only until 1994 and 1995, most provinces successfully put their firms onto the stock market. Then they ran a horse race to compete for quota allocation by presenting their best firms.

In Table 3, we examine how the quota allocation in the period 1995-98 responds to the changes in the provincial corporate performance indicators. In other words, we run cross section regressions, where the dependent variable is the three-

year growth rate in the total number of shares from 1995 to 1998. The independent variables are growth rates in the performance indicators over the period 1994-1997.

Table 3

Growth in Market Cap	0.31 [a] (0.060)						
Growth in Tradable Market Capitalization		0.32 [a] (0.053)					
Growth in P/E Ratio			0.031 [a] (0.010)				
Growth in P/B Ratio				0.17 [b] (0.068)			
Growth in Market Turnover					0.14 (0.27)		
Growth in Net Profits						1.78 [d] (1.08)	
Growth in Earnings per Share							2.01 [b] (1.05)
No. of Obs.	29	29	29	29	29	29	29
Adjusted R^2	0.49	0.58	0.0019	0.14	-0.027	0.11	0.12

Total Performance Index	0.40 [a] (0.11)			
Market Performance Index		0.29 [a] (0.076)		
Accounting Performance Index			3.29 [b] (1.27)	
No. of Obs.	29	29	29	
Adjusted R^2	0.32	0.31	0.20	

Note: The regressions are estimated by OLS estimation method. Robust standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. Constant terms are included in the regressions but not reported to save space.

We see that all the individual performance indicators except the growth in turnover ratio exhibit statistically significant positive association with the growth in quota allocation. When we look at the performance indices, the regression results offer consistently strong support to our prediction.

This cross-section regression in the early stage of quota system implementation further relieves us of the concern for reverse causality.

V. Quota as an Incentive System to Regional Governments: Firm-Level Evidence

So far, our empirical analysis has focused on the relationship between province-level quota and regional stock market performance. As quota in stock issuance for each region is finally reflected in and realized by the number of shares each listed company in each province is able to issue, we would like to see whether the regional average performance of listed companies affects the quota allocated to individual listed companies in each region.

Similar to the method of making proxy for quota at the province level, we use the rate of increase in the number of outstanding shares for each firm over three years as the measure of quota at the firm level. To incorporate the stock issuance from both initial public offerings and seasoned equity offerings, we set the number of shares of each listed company in the year prior to the IPO year to be zero. Correspondingly, we calculate the growth rate in the number of shares for firm j in region i at period t as (Total Shares of Firm j in Region i in Year t – Total Shares of Firm j in Region i in Year t-3)/Total Assets of Firm j in Region i in Year t-3, where t ranges from 1995 to 2003. Employing this firm-level quota as the dependent variable, we are investigating whether the regional average performance measures help determine the individual firms' ability in raising equity finance in stock markets.

We form a panel dataset consisting of a time series of nine years (1995-2003) of a cross-section of 1148 Chinese listed companies. [4] Regressions are estimated by controlling for firm fixed effects and firm random effects.

In fixed effects regressions, our regression model is specified as $y_{jit} = \alpha_j + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where j represents firm, i indicates province, t denotes year, α_j is firm-specific fixed effects, γ_t is year fixed effects, and ε_{it} is random error.

The random effects model is specified as $y_{jit} = \theta + u_j + v_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where u_i is the random disturbance characterizing the j-th firm and is constant through time (firm-specific random effects), v_i indicates the province-specific fixed effects, γ_t is the constant year effects, θ is constant term, and ε_{it} is random error.

As before, the major independent variable, X_{it}, includes various market-based and accounting-based performance indicators as mentioned earlier, and they are again lagged by one year taking the form of growth rate over year t-4 to year t-1.

Table 4 provides quite strong and consistent evidence that companies from regions with stronger market-based and accounting-based performance indicators were rewarded with a larger quota of stock issuance in their IPO and SEO.

Table 4

Estimation Method	FE	RE	FE	RE	FE	RE	FE	RE
Growth in Market Cap	0.0057 [a]	0.0070 [a]						
	(0.00092)	(0.00083)						
Growth in Tradable Market Cap			0.0087 [a]	0.011 [a]				
			(0.0010)	(0.00093)				
Growth in P/E Ratio					0.00036	0.0010 [b]		
					(0.00041)	(.00041)		
Growth in P/B Ratio							0.0049 [a]	0.0054 [a]
							(0.00072)	(0.00070)

[4] This is an unbalanced panel dataset as many firms started IPO in a year later than 1995. We end up with 5664 firm-year observations.

No. of Obs.	5664	5664	5664	5664	5664	5664	5664	5664
No. of Firms	1148	1148	1148	1148	1148	1148	1148	1148
No. of Provinces	31	31	31	31	31	31	31	31
p-value of F-test of all Fixed error =0	0.00		0.00		0.00		0.00	
p-value of Breusch-Pagan Test		0.00		0.00		0.00		0.00
R^2	0.21	0.10	0.21	0.11	0.20	0.090	0.21	0.098

Estimation Method	FE	RE	FE	RE	FE	RE
Growth in Market Turnover	0.00019 [a] (0.000059)	0.00018 [a] (0.000061)				
Growth in Net Profits			0.0057 [c] (0.0030)	0.013 [a] (0.0027)		
Growth in Earnings per share					0.0044 [a] (0.00092)	0.0048 [a] (0.00095)
No. of Obs.	5664	5664	5664	5664	5664	5664
No. of Firms	1148	1148	1148	1148	1148	1148
No. of Provinces	31	31	31	31	31	31
p-value of F-test of all fixed error =0	0.00		0.00		0.00	
p-value of Breush-Pagan Test		0.00		0.00		0.00
R^2	0.20	0.090	0.20	0.093	0.21	0.092

Note: Regressions are estimated by Firm Fixed Effects (FE) and Firm Random Effects (RE) models. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Both FE and RE models include year dummies and constant term; RE model also includes province dummies; the estimated coefficients are not reported to save space.

In Table 5, we use the three regional performance indexes as the independent variables. The regression results again lend strong support to the incentive effect of quota system at the firm level.

Tables 4 and 5 not only provide evidence in support of our claim that quota system worked as an incentive system to regional governments, but also further help us mitigate the concern of reverse causality. Given that each province has a sufficiently large number of listed companies, we believe it is unlikely that any individual company's quota allocation will be able to affect the average listed company performance in the whole region.

Table 5

Estimation Method	FE	RE	FE	RE	FE	RE
Overall Performance Index	0.0020 [a]	0.0014 [a]				
	(0.00040)	(0.00041)				
Market Performance Index			0.0014 [a]	0.00095 [a]		
			(0.00029)	(0.00030)		
Accounting Performance Index					0.0089 [a]	0.0074 [a]
					(0.0018)	(0.0018)
No. of Obs.	5664	5664	5664	5664	5664	5664
No. of Firms	1148	1148	1148	1148	1148	1148
No. of Provinces	31	31	31	31	31	31
p-value of F-test of all fixed error=0	0.00		0.00		0.00	
p-value of Breush-Pagan Test		0.00		0.00		0.00
R^2	0.21	0.12	0.21	0.12	0.21	0.13

Note: Regressions are estimated by Firm Fixed Effects (FE) and Firm Random Effects (RE) models. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Both FE and RE models include year dummies and constant term; RE model also includes province dummies; the estimated coefficients are not reported to save space.

VI. Quota System and Regional Government's Information Production

Our main argument for the strength of the quota system lies in that it provides incentives to regional governments to tap into the local companies under their jurisdiction and select those better-performing companies to go public. One implication directly follows from this theoretical argument: if the quota system is successful in encouraging regional governments to assess and select regional companies by detecting truthful company-specific information, the company stocks belonging to the provinces whose governments are more actively involved in information production should exhibit a higher level of informational efficiency, i.e., the stock price movement should be driven more by firm-specific information than by non-firm-related information. Furthermore, if the quota system is incentive-compatible, we should observe that regions where listed companies had higher levels of informational efficiency in earlier periods would be rewarded with larger quota in subsequent periods.

To measure the informational efficiency of individual company stocks, we adopt the methodology of Morck, Yeung and Yu (2000) and Li, Morck, Yang and Yeung (2003) by measuring the synchronicity of stock price movement in each province or the average magnitude of firm-specific variation in stock returns in each region. A higher degree of synchronicity of stock price movement indicates a smaller amount of firm-specific variation in stock return, and thus a lower level of informational efficiency of stock price.

Since we are interested in investigating the effect of the average level of informational efficiency of listed companies in each region on the quota allocation to listed companies in that region, we need to calculate the regional average synchronicity of stock price movement or regional average magnitude of firm-specific

variation in stock return. To do so, we start by assessing the synchronicity of individual stock i in year t. We use the following model:

$$r_{jt} = \alpha_j + \beta_{1j} r_{mt,}^{Shanghai} + \beta_{2j} r_{mt}^{Shenzhen} + \beta_{3j}[r_{US,t} + e_{US,t}] + \beta_{4j}[r_{HK,t} + e_{HK,t}] + \varepsilon_{jt}$$

where r_{jt} is firm j's return in period t, $r_{m,t}^{Shanghai}$ and $r_{mt}^{Shenzhen}$ are Shanghai and Shenzhen stock market index return in period t respectively, $r_{US,t}$ and $r_{HK,t}$ are U.S. and Hong Kong stock market index return respectively[5], $e_{US,t}$ and $e_{HK,t}$ are the rate of change in the exchange rate between Chinese Yuan and US dollar or Hong Kong dollar respectively, and ε_{jt} is the disturbance term. For each year, we use the weekly data on individual stock return, stock market index return and exchange rate change to conduct regressions. In calculating the stock market From this regression for firm j in year t, we can obtain R_j^2 and SST_j.

Following this method, we can derive R^2 and SST for all companies from one particular province i. Then we can calculate the province-level R^2_i measure of stock comovement for province *I* in year t. More concretely, the province-level measure of stock price synchronicity for province i is derived as $R_i^2=(\sum_j R_{ji}^2 * SST_{ji})/(\sum_j SST_{ji})$.

Table 6 exhibits the regional average R^2 for all provinces in the period 1994-2003.

Table 6 R-squared for Individual Provinces in Different Years

Provinces	1994	1995	1996	1997	1998	1999	2000	2001	2002
Anhui	**0.791**	**0.680**	**0.658**	**0.472**	**0.487**	**0.420**	**0.254**	**0.593**	**0.577**
Beijing	**0.756**	**0.471**	**0.729**	**0.462**	**0.326**	**0.389**	**0.468**	**0.444**	**0.579**
Chongqing	**0.715**	**0.547**	**0.549**	**0.484**	**0.415**	**0.396**	**0.407**	**0.400**	**0.609**
Fujian	**0.741**	**0.692**	**0.624**	**0.437**	**0.358**	**0.406**	**0.402**	**0.420**	**0.637**
Gansu	**0.894**	**0.626**	**0.347**	**0.314**	**0.460**	**0.400**	**0.437**	**0.669**	**0.351**
Guangdong	**0.768**	**0.644**	**0.615**	**0.408**	**0.329**	**0.392**	**0.342**	**0.455**	**0.689**
Guangxi	**0.679**	**0.799**	**0.698**	**0.427**	**0.535**	**0.356**	**0.355**	**0.534**	**0.732**
Guizhou	**0.761**	**0.788**	**0.607**	**0.454**	**0.371**	**0.442**	**0.388**	**0.495**	**0.677**
Hainan	**0.813**	**0.627**	**0.648**	**0.441**	**0.383**	**0.339**	**0.319**	**0.510**	**0.738**
Hebei			**0.598**	**0.464**	**0.337**	**0.415**	**0.316**	**0.484**	**0.683**
Heilongjiang	**0.779**	**0.811**	**0.685**	**0.485**	**0.412**	**0.436**	**0.419**	**0.456**	**0.584**

[5] We lag the US market return by one day to accommodate the time zone difference in trading.

Henan	**0.737**	**0.570**	**0.681**	**0.523**	**0.405**	**0.290**	**0.303**	**0.380**	**0.597**
Hubei	**0.772**	**0.755**	**0.548**	**0.400**	**0.309**	**0.369**	**0.354**	**0.443**	**0.676**
Hunan	**0.505**	**0.611**	**0.311**	**0.419**	**0.363**	**0.401**	**0.418**	**0.620**	**0.397**
InnerMongolia	**0.894**	**0.931**	**0.519**	**0.442**	**0.271**	**0.409**	**0.435**	**0.563**	**0.694**
Jiangsu	**0.766**	**0.659**	**0.608**	**0.391**	**0.304**	**0.357**	**0.349**	**0.447**	**0.580**
Jiangxi	**0.882**	**0.284**	**0.612**	**0.338**	**0.336**	**0.467**	**0.336**	**0.296**	**0.669**
Jilin	**0.799**	**0.767**	**0.664**	**0.409**	**0.362**	**0.371**	**0.384**	**0.495**	**0.690**
Liaoning	**0.754**	**0.480**	**0.602**	**0.453**	**0.329**	**0.385**	**0.393**	**0.394**	**0.668**
Ningxia	**0.882**	**0.538**	**0.520**	**0.487**	**0.307**	**0.362**	**0.377**	**0.466**	**0.663**
Qinghai		**0.613**	**0.794**	**0.432**	**0.404**	**0.232**	**0.527**	**0.431**	**0.620**
Shaanxi	**0.758**	**0.759**	**0.618**	**0.371**	**0.307**	**0.340**	**0.482**	**0.333**	**0.753**
Shandong	**0.785**	**0.635**	**0.593**	**0.367**	**0.326**	**0.397**	**0.311**	**0.421**	**0.616**
Shanghai	**0.796**	**0.718**	**0.602**	**0.435**	**0.410**	**0.374**	**0.391**	**0.394**	**0.636**
Shanxi	**0.917**	**0.445**	**0.487**	**0.384**	**0.418**	**0.312**	**0.467**	**0.620**	**0.743**
Sichuan	**0.769**	**0.597**	**0.580**	**0.446**	**0.344**	**0.380**	**0.325**	**0.370**	**0.648**
Tianjin	**0.881**	**0.669**	**0.746**	**0.437**	**0.314**	**0.397**	**0.418**	**0.370**	**0.623**
Tibet				**0.291**	**0.299**	**0.180**	**0.350**	**0.442**	**0.523**
Xinjiang	**0.899**	**0.757**	**0.673**	**0.428**	**0.308**	**0.328**	**0.330**	**0.466**	**0.618**
Yunnan	**0.846**	**0.733**	**0.722**	**0.420**	**0.375**	**0.340**	**0.339**	**0.429**	**0.612**
Zhejiang	**0.764**	**0.704**	**0.526**	**0.396**	**0.365**	**0.348**	**0.403**	**0.433**	**0.606**

To better capture the differentiation in R^2 across provinces and the relative standing of each province in the cross-provincial comparison of stock market price synchronicity, we calculate the difference between regional R^2 and national average R^2 in each year, and we call it the relative regional stock synchronicity indicator. The larger the value of this indicator, the less informational efficiency the listed companies in that region have achieved. In deriving the national average R^2, we calculate $R_N^2=(\sum_j R_j^2 * SST_j)/(\sum_j SST_j)$ in the universe of China's listed companies for each year.

We conduct two types of regression analysis. First, we examine the effects of the relative regional stock synchronicity indicator on regional stock quota allocation by employing a panel dataset that consists of a time series of seven years (1997-2003) of a cross-section of 31 Chinese provinces and municipalities. As before, we carry out both fixed effects and random effects regressions. In terms of fixed effects regressions, we specify two models. The first one is $y_{it} = \gamma_t + \beta' X_{it} + \varepsilon_{it}$, while the second one is $y_{it} = \alpha_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where i indicates provinces, t denotes year, α_i

is province-specific fixed effects, γ_t is year fixed effects, and ε_{it} is random error. Clearly, the first specification only controls for year fixed effects, whereas the second specification controls for province-specific fixed effects as well as year fixed effects. The random effects regression model is specified as: $y_{it} = \theta + u_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where u_i is the random disturbance characterizing the i-th province and is constant through time (random effects), γ_t is the constant year effects, θ is constant term, and ε_{it} is random error. The dependent variable (y_{it}) is regional flow of quota measured as the three-year growth rate in the number of total shares issued by listed companies in each province, that is, (Total Shares in Year t – Total Shares in Year t-3) / Total Shares in Year t-3, where t ranges from 1997 to 2003. The major independent variable (X_{it}) is the three-year average of the relative regional stock synchronicity indicator, i.e., three-year average of the difference between individual province's average R^2 and the national average R^2. In regressions, this difference measure is lagged by one year, that is, it is the average over year t-3 to t-1.

Table 7 presents the regression results. In column 2, we only control for year fixed effects, whereas in columns 3 and 4 we control for province fixed effects and province random effects as well as year fixed effects respectively. All regressions produce strong evidence that regions with higher relative regional stock synchronicity indicators in the earlier period tend to have smaller regional flow of quota allocation in the subsequent period.

Table 7

Three-year average of difference between provincial R^2 and national average	-4.97 [d] (3.10)	-7.94 [b] (3.23)	-6.83 [b] (3.02)
Province fixed effects	No	Yes	No

Province random effects	No	No	Yes
Year fixed effects	Yes	Yes	Yes
No. of Provinces	31	31	31
No. of Observations	215	215	215
p-value of F-test of all fixed error =0		0.00	
p-value of Breusch-Pagen Test			0.00
R^2	0.40	0.40	0.40

Note: Regressions are estimated using Fixed Effects (FE) model and Random Effects (RE) model. Robust standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Year dummies and constant term are included in the regressions but not reported to save space. See data appendix for detailed variable definitions and sources.

Second, we conduct regressions to examine the impact of regional listed company informational efficiency on individual firms' quota allocation in that region. We form a panel dataset consisting of a time series of seven years (1997-2003) of a cross-section of 1148 firms in 31 Chinese provinces and municipalities. We specify the fixed effects regression model in two ways. The first one is $y_{jt} = \delta_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, whereas the second one is $y_{jt} = \alpha_j + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where j indicates individual firms, t denotes year, α_j is firm-specific fixed effects, δ_i is province-specific fixed effects, γ_t is year fixed effects, and ε_{it} is random error. The random effects regression model is specified as $y_{jt} = \theta + u_j + \delta_p + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where u_j is the random disturbance characterizing the j-th firm and is constant through time (random effects), δ_p is the province-specific fixed effects, γ_t is the constant year effects, θ is constant term, and ε_{it} is random error. The dependent variable (y_{jt}) is the firm-level flow of quota measured as the three-year growth rate in the number of total shares issued by each listed company in each province, that is, (Total Shares in Year t – Total Shares in Year t-3) / Total Assets in Year t-3, where t ranges from 1997 to 2003. The

observation in the year prior to the IPO year is set to zero. So, the quota measure covers both IPOs and SEOs. The major independent variable (X_{it}) is the relative regional stock synchronicity indicator, i.e., the province-level three-year average of the difference between individual province's average R^2 and national average R^2. In regressions, this difference measure is lagged by one year, that is, it is the average over year t-3 to t-1.

In Table 8, we present the regression results. In column 2, we only control for province fixed effects and year fixed effects, whereas in Columns 3 and 4 we control for firm fixed effects and firm random effects as well as province and year fixed effects respectively. The estimation results show strongly that listed companies in those regions with higher relative regional stock synchronicity indicator have a smaller flow of quota in the following periods.

Table 8

Three-year average of difference between provincial R^2 and national average	-0.27 [c] (0.15)	-0.37 [a] (0.12)	-0.30 [b] (0.12)
Firm fixed effects	No	Yes	No
Firm random effects	No	No	Yes
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
No. of firms	1148	1148	1148
No. of provinces	31	31	31
No. of Observations	5498	5498	5498
p-value of F-test of all fixed error =0		0.00	
p-value of Breusch-Pagen			0.00

Test			
R^2	0.15	0.10	0.15

Note: Regressions are estimated using Fixed Effects (FE) model and Random Effects (RE) model. Robust standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-values for F-tests of fixed effects and Breusch and Pagan Lagragian multiplier tests for random effects are reported. Year dummies and constant term are included in the regressions but not reported to save space. See data appendix for detailed variable definitions and sources.

Overall, our statistical results indicate that the stock market informational efficiency of listed companies in each region plays an important role in affecting the central government's allocation of quota to each region and listed companies in each region. It suggests that those regional governments that are more effective in producing firm-specific information are rewarded with a larger amount of stock quota.

VII. Regional Financial Development: Evidence

Tables 1-8 suggest that regions with better-performed firms in stock markets are more likely to get more quota allocation in the future. Given the scarcity and value of quotas for issuing shares in stock markets, this implies that the quota system was a de facto incentive scheme to motivate regional governments to select better firms at IPO stages. Since quota allocation is a binding constraint for regional financial development (equity market) in China, if this implication is true, we should observe that the regional distribution of financial development is correlated with regional development in general. Before going to systematic regressions, we try to gain a visual impression by plotting regional (provincial) per capita GDP against regional market capitalization over GDP ratio in 2002. The following Figure 1 suggests that the regional distributions of the two indicators are positively correlated.

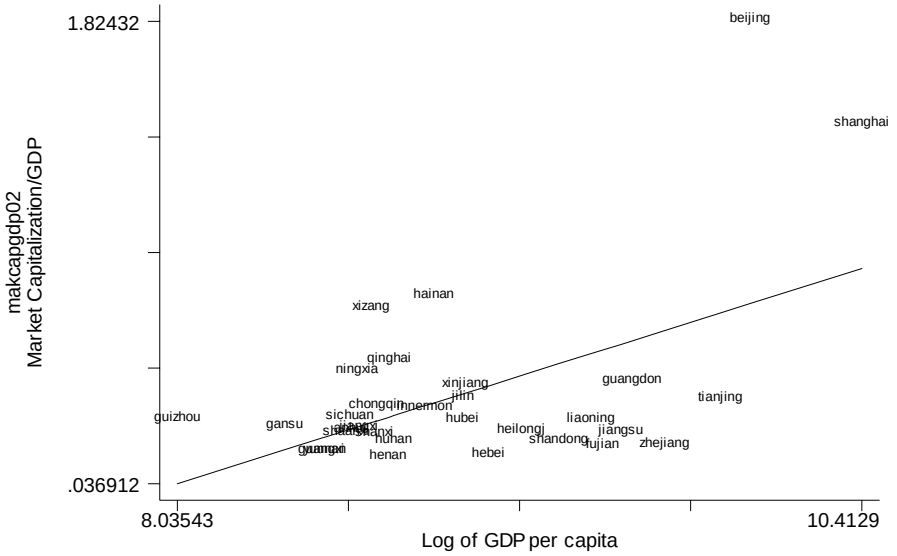

Figure 1. GDP per capita vs. Market Capitalization/GDP in 2002

Table 9

This table shows the summary statistics of the ratio of market capitalization over GDP, the ratio of tradable A-share market value over GDP, and Aggregate market turnover ratio at two points in time (year 1994 and year 2002). The series are averages across provinces that are grouped into three regions --- the east coast region, the central region, and the western region. East coast region includes Beijing, Fujian, Guangdong, Hainan, Hebei, Jiangsu, Liaoning, Shandong, Shanghai, Tianjin, and Zhejiang. Provinces such as Anhui, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, and Shanxi are classified into the central region. The western region encompasses Chongqing, Gansu, Guangxi, Guizhou, Inner Mongolia, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang (Tibet), Xinjiang, and Yunnan. (Guangxi and Inner Mongolia are centrally located, but they participate in western development scheme.)

		1994						**2002**				
		Market	**Cap /**	**GDP**				**Market**	**Cap /**	**GDP**		
	No. Obs.	Mean	Median	Max	Min	Std.Dev.	No.Obs	Mean	Median	Max	Min	Std. Dev.
East Coast Region	11	0.16	0.021	1.14	0.0098	0.33	11	0.54	0.27	1.82	0.14	0.57
Middle Region	8	0.029	0.021	0.098	0.0059	0.029	8	0.23	0.23	0.36	0.13	0.065
Western Region	9	0.021	0.016	0.043	0.0070	0.013	12	0.34	0.30	0.71	0.16	0.16
		Tradable	**A-Share**	**Market**	**Value/**	**GDP**		**Tradable**	**A-Share**	**Market**	**Value/**	**GDP**
	No. Obs.	Mean	Median	Max	Min	Std.Dev.	No.Obs	Mean	Median	Max	Min	Std. Dev.
East Coast Region	11	0.031	0.0080	0.15	0.0017	0.047	11	0.14	0.091	0.34	0.044	0.024
Middle Region	8	0.0066	0.0063	0.012	0.0023	0.0042	8	0.082	0.082	0.13	0.043	0.064
Western Region	9	0.0067	0.0044	0.015	0.0021	0.0052	12	0.13	0.11	0.27	0.053	0.064
		Aggregate	**Market**	**Turnover**	**Ratio**	**(%)**		**Aggregate**	**Market**	**Turnover**	**Ratio**	**(%)**
	No. Obs.	Mean	Median	Max	Min	Std.Dev.	No.Obs	Mean	Median	Max	Min	Std. Dev.
East Coast Region	11	20156.45	8263.84	115231.80	2651.04	33116.25	11	13627.51	11928.5	35178.16	3769.87	10294.74
Middle Region	8	3414.79	2350.12	8034.55	618.03	2677.17	8	6804.95	6799.63	11333.79	2866.84	2355.79
Western Region	10	3604.70	1657.50	14839.64	848.64	4361.98	12	4466.93	3336.35	13177.62	1930.96	3059.26

To gain a further insight into the relationship between geographical distribution of quota and economic development, we group all provinces and province-level municipalities into three broad regions --- the east coast region, the central region, and the western region. The general consensus is that the socio-economic development level is the highest in the east coast region and declines gradually in going to the central and western regions respectively. In Table 9, we present some summary statistics for the financial market development in the three broad regions in two years --- 1994 and 2002. The indicators of financial development that we look at comprise market capitalization/GDP, tradable A-share market value/GDP, and aggregate market turnover ratio. Consistent with our expectation, the east coast region clearly enjoys a substantially higher level of financial development, registering a larger value of these three indicators than the central and western regions in the year 1994. Though the gap shrinks in 2002, the east coast region still claims the highest value of these three indicators of financial market development. However, there is no clear difference in the level of financial development between the central and the western regions. This is probably because the east coast region leads the nation in stock market development and corporatization, while both the central and western regions are lagging behind and lying at similar levels.

In the following we investigate that aspect in a more systematic way. We measure regional financial development by two indicators: per capita shares (number of shares issued per capita in each province) and market capitalization over GDP ratio in a province. In our first group of regressions, we set the dependent variable (y_{it}), as the logarithm of total shares per capita in region i for period t. We use the yearly data of this variable over the period 1994-2002 to form a panel dataset. The major independent variable, X_{it}, Development Indicators, includes logarithm of GDP per

capita, total foreign trade value/GDP, industrial output/GDP, and foreign direct investment value (FDI)/GDP. Development Indicators represent provinces' levels of development and internationalization. They can be put into regressions separately or together.

Before we conduct panel data regressions, we take a look at the property of our independent variables --- development indicators. Over this relatively short sample period, the level of economic development and internationalisation doesn't show noticeable variation across provinces. As a matter of fact, the development indicators exhibit a high degree of autocorrelation. If we simply look at the pairwise correlation of any development indicator of any two years within this period, the correlation coefficient is always larger than 0.90, and for some variables, it amounts to near 1.0. This suggests that the value of each development indicator and the cross-province ranking in each development indicator are rather constant over this period. Given this nature of our measures of provincial development and internationalisation levels, the fixed effects model may not be suitable. We thus choose random effects model to conduct regressions on this panel dataset.

The random effects regression model is specified as: $y_{it} = \theta + u_i + \gamma_t + \beta' X_{it} + \varepsilon_{it}$, where u_i is the random disturbance characterizing the i-th province and is constant through time (random effects), γ_t is the constant year effects, θ is constant term, and ε_{it} is random error.

The following Table 10 shows that when Development Indicators are used individually in the regression, all of them are positive and significant. When all the Development Indicators are used jointly, all of them except Total Foreign Trade Value/GDP ratio are positive and significant. Regression results from two cross

section data for 1994 and 2002 gave qualitatively similar estimations that most Development Indicators are positive and significant.

Table 10

Log of GDP per Capita	1.28 [a] (0.19)				1.07 [a] (0.21)
Total Foreign Trade Value/GDP		0.50 [a] (0.17)			0.22 (0.17)
Industrial Output/ GDP			0.27 [b] (0.14)		0.42 [a] (0.15)
FDI/GDP				3.88 [a] (1.06)	3.23 [a] (0.96)
# of Observations	273	270	273	262	262
# of Provinces	31	31	31	30	30
p-value of Breusch-Pagan Test	0.00	0.00	0.00	0.00	0.00
R^2	0.75	0.53	0.45	0.46	0.78

Note: Regressions are estimated using Random Effects (RE) model by controlling for regional random effects and constant year effects. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-value of Breusch and Pagan Lagrangian multiplier test for random effects are reported. Year dummies and constant term are not reported to save space.

In our second set of regressions, we measure regional financial development by market capitalization of total shares over GDP ratio. We adopt the same regression model as above but set the dependent variable (y_{it}) as the logarithm of market capitalization/GDP for region i at period t. We use the yearly data of this variable over the period 1994-2002 to form a panel dataset. The regression results are shown in Table 11. When Development Indicators are used individually, results are

similar to the results in Table 10 that all individual Development variables are positive and significant. When all Development Indicators are estimated jointly they are all positive but only Industrial Output/GDP ratio and FDI/GDP ratio are significant, the other two are insignificant.

Table 11

Log of GDP per Capita	0.37 [c] (0.19)				0.20 (0.21)
Total Trade Value/ GDP		0.36 [b] (0.17)			0.093 (0.18)
Industrial Output/ GDP			0.22 [d] (0.14)		0.42 [a] (0.15)
FDI/GDP				3.78 [a] (0.99)	3.72 [a] (0.98)
# of Observations	273	270	273	262	262
# of Provinces	31	31	31	30	30
p-value of Breusch-Pagan Test	0.00	0.00	0.00	0.00	0.00
R^2	0.67	0.68	0.62	0.65	0.70

Note: Dependent variable is log of market capitalization/GDP. Regressions are estimated using Random Effects (RE) model by controlling for regional random effects and constant year effects. Standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. p-value of Breusch and Pagan Lagrangian multiplier test for random effects are reported. Year dummies and constant term are not reported to save space.

It is likely that provincial financial development may improve regional economic development and internationalisation. Although our panel data regressions, especially fixed effects regressions, can largely mitigate this kind of concern, we also conduct some cross-section regressions for the initial period of quota system. In table 12, we use the logarithm of number of shares per capita or that of market capitalization/GDP in year 1994 (the first year when almost all provinces had listed

companies) as the dependent variables. We employ the provincial Development Indicators in the year 1990 as independent variables. The Chinese stock market just started in 1990, and it presumably should not have had any appreciable effect on the Development Indicators in that year. Because we cannot find compatible data on foreign trade value, we don't include the ratio of foreign trade value/GDP as an independent variable.

The regressions in the two panels in Table 12 show that log of GDP per capita, FDI/GDP and industrial output/GDP, particularly the former two, cast statistically significant positive effects on the initial quota allocations and thus financial market development. This also further relieves us of the concern for endogeneity in regression analysis.

Table 12

Panel 1

Log of GDP per Capita	2.25 [a] (0.50)			1.84 [a] (0.55)
Industrial Output/ GDP		0.0065 (0.013)		0.0017 (0.0081)
FDI/GDP			48..48 [a] (13.38)	23.87 [a] (5.54)
# of Observations	28	27	27	27
Adjusted R^2	0.53	-0.038	0.32	0.56

Panel 2

Log of GDP per Capita	1.41 [a] (0.55)			0.97 [d] (0.60)
Industrial Output/ GDP		0.017 [c] (0.0094)		0.0072 (0.0081)
FDI/GDP			40..14 [a] (10.72)	26.20 [a] (6.03)
# of Observations	28	27	27	27
Adjusted R^2	0.30	-0.021	0.34	0.40

Note: The regression estimated is: $Y = \alpha + \beta X + \varepsilon$, where the independent variable, X, includes logarithm of GDP per capita, industrial output/GDP, and foreign direct investment value (FDI)/GDP. They take the value of 1990. They can be put into regressions separately or together. They reflect the general level of economic development and economic openness. In Panel 1, the dependent variable, Y, is the logarithm of total shares per capita. It is constructed as the logarithm of the total number of shares divided by the population in each province. It reflects the size of quota per capita at the early stage of stock market development in each province and takes the value for year 1994, the initial year of the sample. In Panel 2, the dependent variable is the logarithm of market capitalization/GDP. It takes the value of year 1994. The regressions are estimated by OLS estimation method. Robust standard errors are given in parentheses. Superscripts a, b, c and d indicate statistical significance at the 1%, 5%, 10%, and 15% levels respectively. Constant terms are included in the regressions but not reported to save space.

VIII Problems Associated with the Quota System

Our analysis of the quota system as an alternative governance device to allow ex ante screening in an environment that is hampered by lack of information and

effective ex post law enforcement does not account for how markets were governed in the post-listing stage. It is becoming increasingly clear that the quota system is ill-suited for dealing with problems of continuous disclosure or market manipulation. Moreover, the CSRC is not well placed to use law enforcement mechanisms against companies that have the entire backing from the regional authorities, because even though it is a central government agency, it is not formally superior to provincial governments. In the public offering stage, this was less of a problem, because the CSRC could play regions off against each other and thus leverage the fact that regions were competing with each other. However, these governance devices are significantly weaker in the post-listing world.

Violations by firms that have been already listed have become rampant in recent years. Summarizing data collected by the CSRC, Table 13 indicates that more than 90% of all violations by firms listed in Shanghai and Shenzhen Stock Exchanges were related to violation of continuous, that is post-listing, disclosure, of which 64% concerned violations of ad hoc disclosure requirements.

Table 13 Violations on Shanghai and Shenzhen Stock Exchanges (1993-2001)

	Type of Information	Type of Disclosure Violation	# of violations	Share as % of Total	Share as % of Total
Violation of disclosure requirements at public offering	IPO	False Information Disclosure re listing	9	3.6	
	Stocks distributed to employees	False Information Disclosure re employee held shares	1	0.4	4
Violation of continuous disclosure requirements	Periodic Disclosure (Annual Report)	Non-disclosure in Annual Report	34	13.6	
		False Disclosure in Annual Report	14	5.6	
		Other Annual Report Disclosure Violations	24	9.6	28.80
	Periodic Disclosure (Midyear Report)	Non-disclosure in Midyear Report	3	1.2	
		False Disclosure in Midyear Report	7	2.8	4
	Interim Information Disclosure	M&A Information Disclosure	2	0.8	
		Non-disclosure of Major Investments	3	1.2	
		Non-disclosure of Guarantees	12	4.8	
		Non-disclosure of Major Transactions	13	5.2	
		Non-Disclosure of Major Litigations	15	6	
		Non-Disclosure of Connected (Related) Transactions	18	7.2	
		Non-disclosure of Predicted Losses	31	12.4	58.8
		Unapproved Interim Disclosures	3	1.2	
		False Interim Information Disclosure	1	0.4	
		Failure to Make Interim Disclosure	49	19.6	
Others	Other Reasons	Other Reasons	11	4.4	4.40
	Total		250	100	100

Source: HE Jia et al., *Chinese and Foreign Disclosure Systems Comparison and Their Effectiveness [Zhong-wai Xinxi Pilu Zhidu jiqi Shiji Xiaoguo Bijiao Yanjou], Table 3-5,* Shenzhen Stock Exchange Research Institute, 2002.

The ineffectiveness of governance mechanisms that rely on ex ante screening for violations that occur post listing is corroborated by data on the regional distribution of violations (Table 14). Interestingly, the best performing regions, Northern China, Eastern China, and Southern China, are on opposite ends of the spectrum, suggesting that post – listing violations are independent of economic

performance. The number of listed firms from Northern and Eastern China counted for more than 56% of all listed firms in the two stock exchanges, whereas their violations amounted to less than 31% of all violations. This seems to suggest that better performance is associated with greater compliance, or less cheating. By contrast, the data on Southern China suggest the opposite. Only 15% of listed firms are located in the Southern region of China, but they accounted for 28% of all violations – the worst region in the nation.[6]

Table 14. Regional Distribution of Listed Companies Penalized For Disclosure Violations

Regions and provinces within them	# Of Firms Fined	% Of All Firms Being Fined	Number of Firms Listed as % of National Total	Violation Indicator
Northeast Heilongjiang, Jilin, Liaoning	31	14.22	10.51	+35.30
Northern China Beijing, Tianjin, Inner Mongolia, Hebei, Shanxi, Shandong	22	10.09	17.98	-43.87
Eastern China Shanghai, Anhui, Zheijiang, Fujian, Jiangsu, Jianxi	47	21.56	28.58	-24.56
Southern China Guangdong, Guangxi, Hainan	62	28.44	15.38	+84.92
Central China Henan, Hunan, Hubei	25	11.47	9.99	+14.79
Northwest Shaanxi, Gansu, Ningxia, Qinghai, Xingjiang	6	2.75	6.69	-58.86
Southwest Changqing, Yunnan, Guizhou, Sichuan, Tibet	25	11.47	10.86	+5.86
TOTAL	218	100	100	0

Source: HE Jia et al., *Chinese and Foreign Disclosure Systems Comparison and Their Effectiveness [Zhong-wai Xinxi Pilu Zhidu jiqi Shiji Xiaoguo Bijiao Yanjou], Table 3-11,* Shenzhen Stock Exchange Research Institute, 2002

[6] The fact that the Northern, Eastern, and Southern China are the best economic performing regions is supported by other sources of data, such as Chinese Statistic Yearbook (all the years since the mid 1990s). The fact that the Northern and Eastern China are among regions followed law best (or least corrupted), and Southern China is among regions that followed law worst (or most corrupted) is also supported by other sources of data, such as Xie and Lu (2003).

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