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Separation of Control and Cash-Flow Rights of State Owned Listed Enterprises: Channels of Expropriation after the Discriminated Share Reform in China

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June, 2010

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1   Introduction

In the gradualism transition process of Asian post-planned economies, the state sector still retains control over most of economic activity. This control may have prevented a collapse of institutions and also may have facilitated sound economic transactions so far. Because of this, the gradualism transition process has been evaluated highly because it has accomplished a "Parato maintaining process" that has generated no loser in the society (McMillan and Naughton [1992], Lau and Qian, Roland [2000], Qian[2003]).   Consistent with this evaluation, China, Viet Nam and Myanmar have enjoyed steady growth of their macro economies during the era of gradual reform. The share of the state sector in these economies has remained substantial or has been increasing over the course of reform.

State owned firms, who can exert both economic and political power, are so influential that they can change the nature of institutions from the purpose for which they were originally designed. For example, in a stock market, a controlling owner with overwhelming power may offend the interests of minority owners even though the law provides equality among shareholders. In China, several scandals have occurred where controlling owners pumped up resources of a listed company that later led to bankruptcy of that company. Defects of the inappropriately functioning stock market were apparent in the society until the middle 2000's. From 2005, the Chinese government started a reform of the "discriminate share structure" of listed companies and "defrosting" circulation of locked shares. Thanks to this reform, many listed companies were able to clean up their balance sheets and dissolve the dual class share structure that had been inducing "expropriation" and illegally occupying assets of others by controlling owners. However, the pyramidal ownership structure that allows a controlling owner to expropriate a listed company still remains.

This paper follows of the course of literature on agency problems between controlling owners and minorities, including the work of Fama and Jensen (1983) , Hart(2001), La Prota, de-Silanes and Shleifer (1998) , Bebchuk(1999), Bebchuk et.al (2000), Classen, Djankov, Fan and Lang (1999), Claessen, Djankov and Lang (2000)   Faccio, Lang and Yong (2001), and Fan, Wong and Zhang (2005). However, the work presented here is original in the following ways: (1) This paper set a behavioral model of expropriation by controlling owners over listed companies. Estimation is done based on the structural model. It allows us to check whether or not the expropriation occurred due to inflating total assets is directly estimated. (2)   Structural model allow us to obtain structural parameters that measures size of expropriation. Data that can distinguish control right and cash flow right enabled us to estimate the parameters. (3) A finding is that expropriation via account receivables is very popular in China for all the period since 1978 to 2007 for the state owned listed firms. Another is that the separation of cash flow and control rights exists and it generated expropriation. Further, privately owned listed firms do not show expropriation contrary to the

previous researches result in other Asian economies. (4) Expropriation due to pyramiding was found to still exist even for the sample that "discriminated share reform" completed and "dual class share" structure dissolved.

The paper is organized as follows: Section 2 includes description of literature on agency problems between controlling and minority owners as well as the institutional setting and structure of China's equity market and corporate governance systems over listed companies. A simple theoretical model of expropriation by controlling owners is presented in Section 3 along with an empirical test hypothesis. Description of data and estimation strategies are given in Section 4, and Section 5 includes discussion of results. Conclusions are provided in Section 6.

2   Literature and Chinese Institutions

2.1 Literature on the Agency Problem of "Concentrated Ownership"

 "Expropriating" behavior of concentrated owners is the main topic of recent corporate governance literature. The standard literature on corporate governance and ownership (such as Jensen and Meckling, 1976) has analyzed agency problems between management and owners. Recent literature has focused on structure among owners and conflicts of interests between owners. Distribution of ownership is strikingly different among economies. In the United States or Japan, most shares are diversified, and it is rare to recognize a concentrated owner with more than a ten percent share in a listed company. However, in most developing economies, each listed company has in most cases one concentrated owner or block of shareholders who can exercise overwhelming power over the management and other minority shareholders. Agency problems between concentrated and minority shareholders may easily emerge.

If both concentrated and minority shareholders focus on maximizing only monetary benefit from the company, their interests coincides with each other, and a conflict of interest between them will not emerge. However, such conflict of interest does occur often in the real world. Theoretical literature on corporate governance argues that this happens when a controlling owner has the motive to extract private (non monetary) as well as monetary benefits under certain types of corporate or share structures (Bebchuk [1999], Bebchuk et.al [2000], Claessen et.al [2000]   Faccio, Lang and Yong [2001]).

The literature argues that the controlling owner will be able to exert stronger controlling power (control right) over the decision making of the listed company relative to the size of the shares (cash flow right) in their hand. This phenomenon is called "separation of cash flow and control rights", and researchers in the literature claim that this separation may emerge via the following three types of structure (Bebchuk et.al [2000]):

 (a) **Pyramiding**. Formation of a corporate group by investing vertically, such as when a holding

company invests in its subsidiary and the subsidiary invests in its subsidiary and lets the second or third subsidiary list their shares and finances for the whole group. Pyramiding is common in Asian countries and is typical of large ethnic Chinese firms. It is the most commonly used mechanism for concentrating control in a controlling minority structure (La Porta, de-Silanes and Shleifer [1999]). Enumeration of cash flow right and control right are defined under this structure following La Porta, et.al (1999) and Bebchuk et.al(2000) as in Figure 1-1.

(b) **Cross-Holding**. A share is cross-held between member companies of a group in which the controlling right of a core or holding company in the group may be increased by each share. This is a famous and typical Japanese ownership style but rare in other Asian economies.

(c) **Dual Class Share**. Heterogeneous shares such as common and preferred stock coexist and give the controlling owner a stronger controlling right than the cash flow right in their hand (Figure 1-2). This is common in countries with French laws such as many Latin American economies. Most corporate laws in countries influenced by the German law system, including China, prohibit violation of the one share one vote principle. However, dual share systems existed in China until very recently.

2.2 Separation of Control and Cash Flow Rights in China

What are the institutions and structures that affect the behavior of controlling owners in China? Institutional settings in China related to the controlling owner of listed firms are described in this section.

2.2.1 Concentrated Ownership Structure

Table 1 presents an international comparison of the distribution of control rights. The largest owners of listed companies in China hold about 35 percent of shares at mean and median. The second largest owners only hold six percent at median and nine percent at mean. These statistics reveal that China belongs to a "concentrated ownership structure" group together with France and/or Germany, and is different from a highly "dispersed ownership" group such as the United States, United Kingdom, or Japan. This "concentrated ownership structure" is easily subject to controlling owners violating the interests of minority shareholders. In terms of ownership type, the state sector is the largest controller; this was 60 to 80 percent during 1999 to 2007 (Table 2).

2.2.2 Dual Class Share in China: "Discriminated Shares"

In most civil law, particularly German law related economies, companies are prohibited from violating the "one share one vote principle". Company law in China also includes similar provisions. However, for listing companies, the government imposes restrictions on the circulation of particular

types of shares.

The Chinese government has been reluctant to circulate control rights of firms, particularly those of large companies like listed ones, because the government has wished to maintain power to control the whole economy. In the early 1990's, the government introduced discriminative control over the shares of listed companies. Shares were classified into: (1) state shares, (2) corporate shares (state owned corporation and other corporate shares), (3) individual shares, and (4) foreign shares. State shares (1) and state corporate shares (a part of [2]) are called "state owned shares." In the late 1990's, when massive numbers of old type SOE's started being transformed into "limited share corporations" (corporations under company law), the government demanded that "state owned shares" be the controlling shares, ideally more than 50 percent but at least 25 percent. State shares (1) were allowed to be sold and bought between state and private sectors but this also required permission of the State Asset Committee in addition to decisions at board meetings inside the company. State shares (1) and corporate shares (2) were prohibited from being transacted on the security market according to several administrative guidelines[1]. These administrative guidelines generated discrimination of "circulating shares" and "non-circulating shares."

Table 3 shows the distribution of various types of shares of listed companies in China. Non-circulating shares were 56 and 52 percents of total share both respectively in 2000 and 2007(Table 4), state share has of 36 and 49 per cent among them. Thus, dual class share exists in China.

2.2.3 Pyramiding in China

As in other economies in Asia, pyramiding is very prevalent in China. Listed companies are often owned and controlled by intermediate companies called "holding companies" or "*jituan gongsi*" (a direct translation is "group company"). Most listed companies have been established in order to function as a financing channel for the corporate group or controlling owner, particularly for the companies listed in the early period. Companies that run the actual business do not have their shares made public in the equity market. In China, all listed companies are required to disclose on the annual financial statement detailed information regarding their ultimate controller and pyramidal ownership structure. Specifically, figures depicting pyramid structures have been disclosed since 2001. Thanks to this requirement for listed companies, a researcher can accurately trace the number

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[1] Institutions were structured based on the following administrative documents: 1992 May, 15th, "Procedure on Experiments to Introduce the Limited Share Company", "Opinion on Introducing the Share Limited Company". 1993 April, 22nd, "Provisional Ordinance on Management of Issuing and Transaction of Share." 1994 March, 11th "Provisional Procedure of Treatment of State Owned Shares in Share Limited Company Experiments". 1994, November 3rd,"Provicinal Procedure of Treatment of State Owned Shares in Share Limited Company" (See, Nomura Capital Market Research 2008)

of pyramid layers and can enumerate the size of cash flow and control rights.

2.2.4 Data on Cash Flow and Control Rights: the Pyramid Layer in China

Research has been accumulating on the presence of separation among controlling and cash flow rights in China. Teneve et.al (2002) tried to document and measure this when disclosure of information on the whole pyramidal structure was not formally required. Based on their original survey to 257 firms it was found that listed companies in the Shanghai Exchange, non-circulating shareholders, state, legal persons and employees dispatched 72 out of 76 directors of surveyed companies. If this number is regarded as a proxy of control rights, non-circulating shareholders held 95 percent of control rights, this in contrast to their cash flow share of 70 percent. They asserted the existence of separation of control and cash flow rights. Fan, Wong and Zhang (2005) were the first to document the number of pyramid layers for a sample of newly listed companies. They also measured the size of control and cash flow rights based on the layer structure. Their data shows that for about 60 percent of the firms that were going to issue their shares for the first time, the number of pyramid layers was two on average. Pyramid layers are thicker for privately controlled firms than for government controlled firms. The ratio of cash-flow to control rights is higher for government controlled firms (.97) than for privately controlled firms (.54).

Data that this paper used includes information of pyramidal ownership structures for the all listed companies for the 2006 and 2007 when share structure reform proceeds (Table 4). A similar tendency in the number of pyramids as well as cash flow and control rights may be seen. The number of pyramids for privately controlled firms (2.5 at mean) is larger than that of state controlling firms (2.4 at mean). The ratio of cash-flow to control rights of privately controlled firms (.70 at mean, .76 at median) is lower than that of state controlled firms (.90 at mean and 1 at median).

Literature on agency problems between controlling owners and minority share holders has discussed agency problems among privately owned firms. The above data implies that privately controlled firms have more pyramid layers and larger separation of control and cash-flow rights in China. However, this agency problem may occur in state owned firms as well if there are private benefits and the corporate structures mentioned above. Case studies in China reveal that listed companies under the state sector have gone bankrupt as a result of expropriation via accounts receivable.

In China, listed companies are ultimately owned by the state sector which consists of the central and local governments. About 60 to 80 percent of listed companies from the 1990's to 2007 have been ultimately owned and controlled by the state sector (Table 1). Anecdotal evidence reveals that there has been expropriation in state controlled listed firms.

2.3 "Expropriation" via Accounts Receivable: The Case of Jinan Qingqi Motorcycle

There is no indication in the literature of the channel through which expropriation occurs. Classens Djankov, Fan, and Lang (1999) regressed separation of control and cash flow rights on market valuation change. However, they did not set a behavioral model. Expropriation or private consumption of assets by controlling owners is to some extent traceable through financial statements. Because listed companies cannot throw away money with no record, these firms accomplish their negative behavior by hiding accounting items in financial statements that are used as channels of expropriation.

In the case of China, accounting items relating to trade credit are often used as channels of expropriation. If listed firms have accounts receivable related to some entity that are not settled for a long time, the entity expropriates the cash of a given listed company. In this case, the assets of the listed company look large, but the expropriating part is non-performing and is a dead asset. The exact fraction that has been expropriated may be unobservable, but this dead asset is a part of the accounts receivable presented on the balance sheet of the listed company. Expropriation may also go in the opposite direction. If the listed company does not make settlement of accounts payable to some firm for a long time, the listed company may expropriate their trading partner. This expropriation becomes a part of accounts payable of the listed company's balance sheet. Thus, expropriation of the listed company may be hidden in some accounting items on the asset side of the balance sheet (Regarding structure of balance sheets, see the conceptual explanation in Figure 2). Particularly in China, direct lending between firms was legally prohibited even in 2009. Trade credit has been functioning as an alternative to inter-firm lending and has become a channel of "asset expropriation," and expropriation via accounts receivable has brought about bankruptcy of some listed companies.

Jinan Qingqi Motorcycle, a state controlled company under the Jinan Municipal City government, Shangdong Province, was the number one company in the motorcycle market of China and one of the most active emerging companies in the 1990's. In its annual report of 2001, the Jinan Qingqi Motorcycle, Co. Ltd. auditor announced that judgment regarding a part of accounts receivable and loan guarantees toward the holding company of China Qingqi Motorcycle Group Company, the controlling owner of the listed company, would be withheld. The listed company focused on production of motorcycles, and it depended on the China Qingqi Group Company, the holding company of the group and controlling owner of the listed company, for purchase of materials or patented technology and sales of goods. The listed company was heavily dependent on the holding company and in sales reached 45 percent of the total (Jinan Qingqi Motorcycle Co. Ltd. 2000 Annual Report, p. 14). In 2001, accounts receivable of the holding company totaled 2.47 billion

RMB and for the subsidiary company in the group .343 billion RMB. It reached 62 percent of total assets, and total accounts receivable of the company were 63 percent of total assets. The auditor asserted in the annual report in 2001 that there was little prospect that the accounts receivable would be repaid until a substantial reconstruction of the holding company was begun. The auditor also claimed that the listed company had made a guarantee to the holding company and subsidiaries in the group regarding bank loans amounting to 739.86 million RMB; 471.57 million of this was in default by the end of 2001. The company turned deficits for two years from 2000.

Table 5 presents the development of accounts receivable for the holding company as well as profit, sales, and assets of Jinan Qingqi Motorcycle. The auditor's claim ignited a de facto bankruptcy process organized by the government. In 2003, The Jinan Municipal City Government, the ultimate controller of the listed company, announced a commitment to reduce the non-performing accounts receivable .6 to .8 billion RMB. This came to three times the total assets of the listed company in 2002. The Jinan Government simultaneously started to look for new investors who would merge the motorcycle production department (Jinan Qingqi Motorcycle Co. Ltd., Annual Report 2003, pp.19-20)[2]. This incident is a typical case in which a holding company expropriated the assets of a listed company via accounts receivable.

2.4 "Discriminated Share Reform" since 2005

In the early 2000's, defects of "discriminated shares" and the presence of large blocks of concentrated owners, particularly in the background of state sectors in the stock market, became apparent. Expropriation via inter-firm transactions as in the case of Jinan Qingqi as well as various types of negative behavior by controlling owners became apparent. There was misuse of cash collected from minority shareholders without their consent. In one extreme case, dividend payments were paid in cash to shareholders immediately after a new increase in capital where that of most controlling owners did not increase but was just collected from minority shareholders. In this case, if the controlling owners had 60 percent of shares, they automatically received 60 percent of the cash collected from minority shareholders. In order to dissolve the unequal position of controlling and minority shareholders, and to realize the principle of "one share, one vote, one price," the government announced that it would take steps to correct discrimination among the shares[3].

Governmental reform demanded that each listed company negotiate among shareholders

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[2] Finally, the listed company sold out to state owned enterprises under the central government, the China Armament Industry Group in 2008. Jinan Municipal Government sold all shares of the company, 40.9 percent, free of charge (Jinan Qingqi Motorcycle Co. Ltd. 2008 Annual Report, p.4). This reconstruction simultaneously proceeded with discriminated share reform.

[3] Committee of Security Regulation China, "Guidance on Experiment on Reform Discriminated Share" in 29 May, 2005.

regarding how to compromise the interests of circulating and the non-circulating shareholders in order to allow non-circulating shares to circulate. Each listed companies held a shareholder meeting and reached agreement on a scheme that would allow compensation from non-circulated to circulating shareholders. In most cases, circulating share holders were compensated by receiving additional shares free of charge. 66 percent of the reformed company gave the shares held by non-circulated owners to circulated owners, and 15 percent of the cases showed an increase in capital placed free of charge to circulating share holders (Nomura Institute of Capital Market Research, 2007). Through negotiation, over compensation schemes benefiting minority shareholders, the hidden legacy of past management that had piled up in the accumulation of non-performing accounts receivable assets, and a new scheme to write off non-performing assets, were discussed simultaneously.

In the empirical study reported below, a simple behavior model is developed to capture expropriation behavior by inflating assets such as utilizing accounts receivable. Empirical test are then done to test whether or not expropriation has actually occurred, particularly after discriminated share reform was completed.

3.   Empirical Framework

3.1   A Model of "Expropriation" by Asset Inflation

Here, I present a behavioral model of this empirical study. A listed firm has two heterogeneous owners: controlling owner and minority owners.   Manager of the firm completely follows decision by the controlling owner. Though the corporate law of China provided to maintain "one share one vote" principle, there is a difference in power influencing over decision making on firm. Under this setting, controlling owner can "expropriate" the asset of listed firm for the private purpose of controlling owner. There exists informational asymmetry between controlling owners and minority owners over decision by the controlling owner.

A controlling owner of listed company will decide a level of asset size, by solving following constraint maximization problem. The objective function consists of monetary benefits from share holding and private benefits via expropriation. The former is represented in the first term of equation (1) which represents dividends according to owner cash flow rights. The latter is seen in the second term which includes private benefits gained via "expropriation." The constraint equation (1a) describes factors of profit distribution to the stakeholders. This is assumed to be the sum of actual disbursements of interest payments to debtors and dividends to shareholders.

$$\underset{K}{Max} \quad \varphi[f(K) - rK - ex(K)] + P[ex(K)] \qquad (1)$$

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$$\text{s. t. } rK = qE + iD \qquad (1a),$$

where φ is the cash flow right ratio held by the controlling owner $(0 \le \varphi \le 1)$. K is capital or total assets of the company, Y is turnover, and r is the profit distribution for the investors. $f(K)$ is a production function that generates turnover using the input of total assets, ex(K) is the "expropriation" function, and this is also assumed to be a function of total assets.

$$EX = ex(K) \equiv EX \ln K \qquad (2).$$

Here EX is assumed to be a function of a fraction of particular accounting items on the balance sheet such as accounts receivable (AR) or accounts payable (AP); these are utilized as a channel of expropriation and size of total assets(K). $P(X)$ is the private benefit from expropriation X: Here, it can be assumed that $P(X) \equiv PX$. P is a parameter to capture size of private, or non-economic, benefit for the controlling owner from expropriation.

The first order condition for this problem is derived as follows:

$$f'(K) = r + ex'(K) - \frac{P}{\varphi} ex'(K) \qquad (3).$$

3.1.1 Expropriation via Accounts Receivable

Both the production function $f(K)$ and the expropriation function $ex(K)$ is assumed to take the Cobb-Douglas form. $f(K) \equiv aY \ln K$ has a derivative of Y/K, $ex(K) \equiv bEX \ln K$ has the derivative ex(K) on K as EX/K. This become αAR/K when we assume that expropriation can be a fraction α of accounts receivable (AR), EX=αAR. Plugging (3) and derivatives of $f(K)$ and $ex(K)$, testable equations are derived as follows:

$$a\frac{Y}{K} = r + ex'(K) - \frac{P}{\varphi} ex'(K) = r + b\alpha \frac{\text{AR}}{\text{K}} - Pb\,\alpha \frac{\text{AR}}{\varphi K} \qquad (4)$$

$$\frac{Y}{K} = \beta_0 r + \beta_1 \frac{\text{AR}}{K} - \beta_2 \frac{\text{AR}}{\varphi K} + \xi_{it} + \varepsilon_{it} \qquad (4a),$$

where, $\beta_0 = 1/a$, $\beta_1 = b\alpha/a$, $\beta_2 = Pb\,\alpha/a$. φ is cash flow right ratio of the controlling owners. ξ_{it} is unobservable motivation to expropriate, and ε_{it} represents other unobservable factors. Here, the first order condition implies following relationship: (1) If terms with $ex'(K)$ were statistically insignificant and only r significant, the size of total assets of the company would be at the socially efficient level. This would be free from any waste for

expropriation by the ultimate owner. (2) If the coefficients of $ex'(K)$, particularly β_2, were confirmed to be statistically significant, effective financial cost for the controlling owner would be lowered, and the assets of the firm is excessively and inefficiently increased. In this case, expropriation by the controlling owner emerges at a cost of the violation of minority shareholder's interests.

3.3.2 Expropriation due to Separation of Control and Cash-Flow Rights

Literature related to agency problems of concentrated ownership indicates that separation of control and cash flow rights allows a concentrated owner to achieve expropriation to gain private benefit. This relationship is taken into consideration by inserting factors in the expropriation function. To make this relationship tractable, the expropriation function can be assumed to take the following form, instead of specification in eq. (2):

$$EX = ex(K \mid \rho) \equiv BK^{\alpha_1} g(\rho)^{\alpha_2} \qquad (2').$$

$\rho \ (0 \leq \rho \leq 1)$ is the ratio of "control right" of the ultimate controllers; this is the sum of shares controlled by the ultimate controller. Here, we assume $P(X) \equiv X$ instead of $P(X) \equiv PX$ for to make the test equation operational. Researcher does not know an exact form of ρ, $g(\rho)$. Thus, in this paper, we set $g(\rho)$ in two forms; $g(\rho) = \rho$ and $g(\rho) = 1 - 1/\rho$. The second form is motivated to directly capture relationship between control right and cash flow right.

By inserting (2') in the first order condition for the controller (eq. [2]), the test equation becomes:

$$f'(K) = r + (1 - \frac{1}{\varphi})ex'(K) = r + (1 - \frac{1}{\varphi})B\alpha_1 K^{\alpha_1 - 1} g(\rho)^{\alpha_2} \qquad (3').$$

This equation has following economic implication: the first term in the right hand side, r, represents capital cost for financing both from shareholders and debtors. The second terms represents impact of expropriating behavior of controlling owner on his financing cost. The first part of the second term $1 - 1/\varphi$ is the net benefit ratio of expropriation for the controlling owner. This term takes negative from its definition, thus if this terms is statistically significant it implies it lowers total financing cost of the controlling owner, which induces excess of asset expansion. If this term $1 - 1/\varphi$ is not significant, it implies that financing cost is additionally increased, which induces insufficient investment.

The empirical test equation is reduced from equation (3') by moving r to left side of the equation

and taking logarithms from equation (3').

$$\ln(\frac{Y}{K} - r) = \ln B \, \alpha_1 + \ln(1 - \frac{1}{\varphi}) + (\alpha_1 - 1)\ln K + \alpha_2 \ln g(\rho) \cdot$$

As the term $1 - 1/\varphi$ takes negative values by definition, logarithms cannot be taken. By replacing $\ln(1 - 1/\varphi)$ with $\ln(1 - 1/\varphi) = \ln(1/\varphi - 1) + \ln(-1)$ and letting $\ln(-1)$ be included in the error term, expropriation function equation (4) becomes estimable as follows:

$$\ln(\frac{Y}{K} - r) = \beta_0 + \beta_1 \ln(\frac{1}{\varphi} - 1) + \beta_2 \ln K + \beta_3 \ln g(\rho) + \xi_{it} + \varepsilon_{it} \qquad \text{(4b)},$$

where $\beta_0 / \beta_1 = \ln B \, \alpha_1, \beta_2 / \beta_1 = \alpha_1 - 1, \beta_2 / \beta_1 = \alpha_2, \beta_3 / \beta_1 = \alpha_3$. ξ_{it} is the unobservable that affect motivation to expropriate, and ε_{it} is independent unobservable factors again.

This specification of expropriation function (4b) is dissimilar to expropriation function (4a). It is assumed to capture "source of power to allow expropriation", that is, the relationship of cash flow and control rights here, regardless of the type of expropriation channel, any accounting items that were utilized to expropriate as is the focus of accounts receivable in equation (4a).

This equation has following economic implications: (1) If all the variables in the right hand of equation is statistically insignificant, deviation between marginal product of firm and capital cost is not a function of expropriation behavior. It could be interpreted as there happens no expropriation. (2) If the terms $1 - 1/\varphi$ is statistically significant, it implies that expropriation happens regardless of the form of expropriation function, which consists of K and/or ρ. The term $1 - 1/\varphi$ represents net cost reduction of financing for controlling owners. (3) If the term $1 - 1/\varphi$ is not statistically significant and the terms K and/or ρ is significant, it represents that net increase of capital cost or financing cost for the controlling owners. This implies total asset size of the firm is insufficiently large to the optimal level.

4   Data and Estimation Strategy

4.1   Data

Data from financial statements of all listed companies in China was used and compiled by Sinofin Information Services, China Centre for Economic Research, Peking University. The database supplied the information available from 1994 to the present. Financial statements of all listed companies in China from 1998 to 2007 were used. Information on ownership and corporate governance characteristics were also available for the period of 1998 to 2007. In addition to this

ready-made data, data on control rights and the number of pyramid layers between the listed firms and ultimate controllers were enumerated based on the definition in Section 2. Cash flow rights for 2006 to 2007 were obtained from disclosed information on pyramidal ownership structure in annual reports of all listed firms.

Table 6 provides summary statistics of key variables. Y represents sales of the main operation, K the total assets, and r the profit distribution of investment for the owner. The profit distribution of the stakeholder represents the financial cost that firms would pay for debtor and shareholders[4]. As variables for channels for "expropriation" by controllers, it is ideal if exact values of accounts receivable to the holding company (the ultimate owner) can be used. These figures have been required in the financial statements of all listed companies, at least since 2001. However, samples of this data are limited in availability and contradict one another relative to year-to-year financial statements. Further, this value is missing for many firms. Therefore, we gave up using the account receivable to the holding company, but used accounts receivable as a whole. Other than these variables appearing in the theoretical model, the followings were added as control variables: (1) year dummies, (2) type of ultimate ownership dummies, and (3) a share reformed dummy.

4.2 Source of Endogeneity and Identification Strategy

Estimation here is interested in estimating correct size of expropriation. In order to accomplish this target, I need to correctly estimate the structural parameters above. Equations (4a) and (4b) are the test equations to be identified, which describe rules on how the controlling owner balances his private expropriation motive and a formal profit distribution policy. In (4a), account-receivables is the channel for expropriation of controlling owner. Account receivable for expropriation motives reduces profit substantially, as the case of Jinan Qingqi shows. Therefore, it is presumably correlated with unobservable expropriating motivation ξ_{it}. At the same time, size of profit distributed to debtor and shareholders is also correlated with the expropriating motivation ξ_{it}. The profit distribution to the stakeholders r is endogenous here. In (4b), expropriation is facilitated/constraint by configuration of cash flow right and control right, and it is represented in a part of total asset when expropriation is realized. Therefore, lnK is endogenous here. As we have endogenous variables in the test equations, the equations are estimated by instrumental variables instead of ordinary least squares.

4.3 Instruments

In order to remedy endogeneity explained above, I need the instruments that are correlated with r or

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[4] This consists of the following accounting items: (1) financial expense, including payment to debtors and others related to financing activity plus (2) loss or profit for minority shareholders plus (3) profit to the ordinary owner plus (4) profit to the preferential owner.

lnK, but are not correlated with error terms. What is the exogenous variation that identifies this expropriating action?　I exploited a nature of time structure between formal financial structure and expropriating decision; profit distribution to the stake holders and size of total assets are affected by both the requirement that is contingent to formal financial structure and the expropriation motives. But, usually the former precedes to the latter. Thus indices such as debt and the shares of owners are correlated with r or lnK, but not with error terms, because they are independently determined to expropriation motives, thus we can expect them to work as instrumental variables[5] [6].

5　Results

5.1　Expropriation via Accounts Receivable as it exists for State Controlled Companies

Table 7 displays results of the estimates of "expropriation via account receivable" equation (4a). Comparisons among OLS and fixed effect reveal that the fixed effect estimator corrects overestimation due to time invariant factors, but it got underestimated due to lack of care for the endogeneity problem in decisions on total asset size. GMM estimates indicate that expropriation by the controlling owner occurred for the state owned firms even after the reform of discriminated shares was completed. Private owned firms show a weak effect of expropriation when I do not distinguish the effect of the discriminated share reform.

　Estimation of a spline function was used to capture the impact of discriminated share reform. Lower column of Table 7 shows the results. They indicate that a state controlled firm, even those who completed discriminated share reform, are suffered from expropriation by the controlling owner, though size of coefficients get smaller. Though the discriminated share reform reduced expropriation to some extent, but not resolve the problem completely. For private firms who completed share reform, expropriation via accounts receivable disappeared.

　This means that expropriation has not yet disappeared because the pyramidal ownership structure still remains. We further test this in more general form of specification; that is, specification of "expropriation due to separation of control right and cash-flow right" (equation [4b]).

5.2　Expropriation Due to Separation of Control and Cash-Flow Right

Table 8 includes results of two specifications of 4(b). Estimates in (i) specify control right itself, and

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[5]　Modigliani-Mirror theorem proposed that　financial structure do not affect the firms value (represented in total asset size or profit) if the following three factors do not hold:(1) asymmetry effect of bankruptcy to debtor and shareholder, (2) asymmetry effect of tax policy, (3) incentives of management. Idea to find instruments variable here depends on the assumption that (1) and (2) factors are independent to (3) incentive bias of management, the main interest of this paper.

[6]　Endogeneity tests of instruments variables (Ho= IV are exogenous) are not rejected for general form, but rejected for expropriation via account receivables. See Table 7 and 8.

in (ii) it is specified as $1 - 1/\rho$. Results show the second specification fits more than the first one. Expropriation of the state owned listed firm is affected by configuration of cash flow and control rights as well as total asset size. The expropriation become larger when cash flow right is smaller, and control right is larger. This implies that the larger the separation between control right and cash flow right is, the larger the expropriation. This is a support for the literature that claims separation of cash flow and control right generates expropriation for listed state owned companies. Contrary to the state owned firms, private owned listed firms shows opposite sings of coefficients for the cash flow right and that of control rights is not significant. Configuration of cash flow and control right does not affect "expropriation of private owned firms. This is slightly puzzling as will discuss later.

5.3   Model prediction and counterfactual simulation

As estimation is based on a structural model in this paper, it is possible to retrieve structural parameters of expropriation function, and ratio of expropriation out of expropriated account channels etc.   The expropriation for the state owned enterprises is estimated to be 6.8 percent of total assets in the general form, and to be 7.8 per cent in the form that assume expropriation via account receivables. The equation of "expropriation via account receivable" shows that expropriated ratio out of total account receivable (Alfa) is 4.4 per cent, and private value, in other word non-economic value, of expropriation (P) is 1.7 per cent of total account receivables (Table 9).   For private owned firms, the results showed a negative expropriation.

   Table 10 shows counterfactual simulations. They show how much expropriation would be reduced if separation of control and cash-flow rights is resolved, that is, control and cash-flow rights are completely identical for all sample firms. Excess investment, or asset inflation, may be reduced by about 13 percent for state controlled firms.

5.4 Discussion

Results here are satisfactory to test the existence of expropriation of listed firm by the state owner. Structural model enable us to measure the size of expropriation, its non-economic value for the controlling owner, and to implement counterfactual simulation. IV estimation instead of OLS drastically improved the measurement of coefficient[7].

   Existence of expropriation is robust for the listed firm under the state owners as all specification shows consistent results. They tend to inflate asset for expropriating motives. Non-economic value

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[7] Size of expropriation based on OLS generates unrealistic figures; expropriation amounted to 226 per of total assets, and fraction of expropriation from account receivable amounted to 128 per cent of account receivable.
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of expropriation, such as expropriation for political motives, is not negligible (1.7 per cent of expropriated items). As most of the state owned enterprises are subject to political guidance by the state asset management committees or the government as a whole under the current corporate system, this result should be noted. Policy implications here are as follows: (1) the state owned listed firms should be the target when the regulatory agency implement minority share holder. (2) Resolution of separation of cash flow right and control right, such as listing of ultimate controller itself, is effective to reduce expropriation. Result of privately owned firm is slightly puzzling. Descriptive data shows that private owned firm has longer layer of pyramid, smaller cash flow to control right ration. But the estimation results shows that their expropriation is negative, asset deflation happened to the privately owned firms of China's listed firm. This is presumably related with asymmetric institution for financing among the state owned firms and private owned firms. One possible explanation is separation of cash flow and control rights of private owned firm happened due to financial constraint of them, but due to expropriating motives. In order to understand what happening to the private firm, we need to set up a more appropriate behavioral model considering their financing behavior.

6. Conclusion

Empirical evidence is presented in this paper indicates that "expropriation" exists for the state owned listed firm in China, and it amounted 7 to 8 per cent of total assets in average. If we assume that expropriation is done via account receivable, its size is about 5 per cent of the account receivable and a part of this expropriation was used for non-economic motives as well. Though the discriminated share reform has reduced this expropriation to some extent, the source of problem, separation of cash flow right and control right due to pyramiding, still continue to exist. Private owned listed firms showed an opposite results to the state owned listed firms. They are not able to invest sufficiently. There still asymmetry among the state and private owned firm in the stock market of China.

In China, the state still retains control over listed companies; they have direct controlling power over economic resources. The state is still the ultimate controlling owner of about 60 percent of listed companies. Under this "concentrated and state ownership", listed companies have been termed the "wallet of state owner enterprises or governments." Result in this paper supports such a critical view. Privatization of state ownership and resolution of "pyramidal ownership structures" that facilitate "expropriation" are important agendas for China.

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Figure 1-1 : Cash Flow and Control Rights under Pyramiding
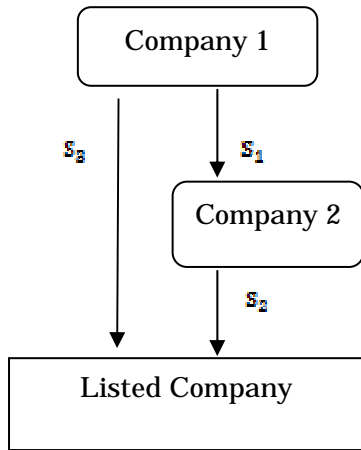
Cash Flow Right = $s_1 * s_2 + s_3$

Control Right = $s_2 + s_3$

Figure 1-2: Cash Flow and Control Rights under Dual Class Shares

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  ┌─────────────────────┐        ╭───────────────╮
  │    Company 1        │        │   Minority    │
  │                     │        │  Shareholders │
  └─────────────────────┘        ╰───────────────╯
          │                              │
         $s_1^a$                        $s_2^b$
          │                              │
          ▼                              ▼
  ┌──────────────────┬──────────────────┐
  │  Non-Circulating │   Circulating    │
  │                  │                  │
  │  Shares          │   Shares         │
  ├──────────────────┴──────────────────┤
  │         Listed Company              │
  └─────────────────────────────────────┘
```

Cash Flow Right $= \dfrac{s_1^a}{s^a + s^b}$
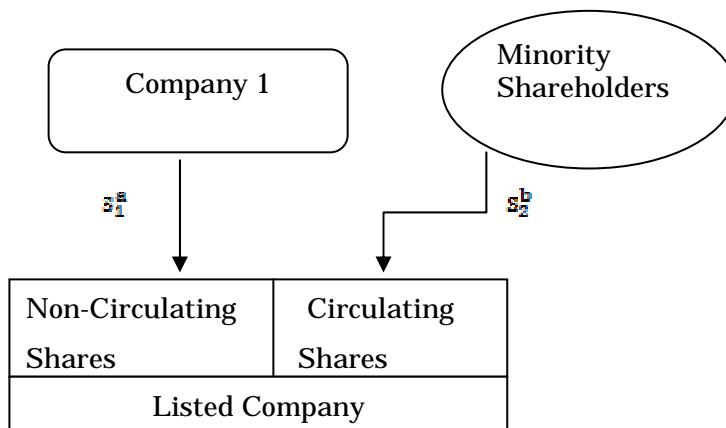
Control Right $= \dfrac{s_1^a}{s^a}$

Table 1: Concentrated Controlling Owners: International Comparison

Country	year	# of Company	Largest Block Holder				2nd Largest Block Holder				3rd Largest Block Holder			
			min	median	mean	max	min	median	mean	max	min	median	mean	max
China	2000	1318	2.1%	44.6%	45.2%	88.6%	0.0%	5.3%	8.4%	42.4%	0.0%	1.9%	3.3%	24.8%
	2007	1518	0.8%	34.3%	36.0%	95.0%	0.1%	6.4%	8.9%	42.4%	0.0%	2.5%	3.6%	24.3%
France	-	-	0.0%	20.0%	29.4%	72.7%	0.0%	5.9%	6.4%	19.7%	0.0%	3.4%	3.0%	8.5%
Germany	-	372	0.0%	57.0%	49.6%	100.0%	0.0%	0.0%	2.9%	45.2%	0.0%	0.0%	0.6%	32.0%
United Kingdom	-	207	3.4%	9.9%	14.4%	78.9%	3.0%	6.6%	7.3%	26.3%	3.0%	5.2%	6.0%	25.7%
United States	-													
NYSE	-	1309	0.0%	5.4%	8.5%	92.9%	0.0%	0.0%	3.7%	40.1%	0.0%	0.0%	1.8%	25.0%
Nasdaq	-	2831	0.0%	8.6%	13.0%	99.5%	0.0%	0.0%	5.7%	48.8%	0.0%	0.0%	3.0%	24.1%

(Source) China: Sinofin Data Base. Others: OECD, Corporate Governance: A Survey of OECD Countries, 2001, Table 1.1.

Table 2: Ownership Types of all Listed Companies

	state		private		foreign		collective		NPO		union		unknown		Total
1999	762	83%	70	8%	9	1%	31	3%	8	1%	7	1%	32	3%	919
2000	1075	82%	129	10%	10	1%	38	3%	7	1%	10	1%	49	4%	1318
2001	962	81%	125	11%	9	1%	37	3%	6	1%	8	1%	38	3%	1185
2002	919	77%	185	16%	10	1%	28	2%	5	0%	7	1%	35	3%	1190
2003	912	73%	268	21%	8	1%	28	2%	7	1%	8	1%	11	1%	1250
2004	924	69%	349	26%	7	1%	23	2%	20	1%	12	1%	2	0%	1337
2005	924	69%	371	28%	6	0%	16	1%	5	0%	13	1%	1	0%	1336
2006	912	65%	453	32%	7	0%	17	1%	5	0%	15	1%	4	0%	1413
2007	919	61%	530	35%	10	1%	28	2%	4	0%	13	1%	1	0%	1518

(Source)   Sinofin Database.

Table 3: Discriminated Shares

	2000			2007
No. of Listed Corporations	894	No. of Listed Corporations		2083
Non-Circulating Shares	56%	Restricted Circulation Shares		52%
Corporate Proposer's Shares	47%	State and SOE Shares		42%
State Shares	36%	State Shares		33%
Domestic Corporation Shares	10%	SOE Shares		9%
Foreign Shares	1%	Other Domestic Corporation Shares		8%
Non Proposer's Non-Circulating Shares	9%	Domestic Individual Shares		1%
Invited Corporation	6%	Foreign Shares		1%
Employee	1%	Foreign Corporation Shares		1%
Preferential/ Other Shares	2%	Foreign Individual Shares		0%
		Other Non-Circulation Shares		1%
Circulating Shares	44%	No restriction shares		48%
A Shares	41%	A Shares		22%
B Shares	3%	B Shares		1%
H Shares	1%	H Shares		25%
		Free Circulation Shares		0%
Total Share Number (Billion)	330.78	Total Share Number (Billion)		3478.61
	100%			100%

(Source) Sino Fin Database
(Notes) 1) See text for definition of Non-Circulating and Circulating Shares.
2) A shares are listed in Shanghai or Shenzhen Security Market and transacted only among Chinese nationals. B shares are listed on the Shanghai or Shenzhen Security Market and transacted exclusively among foreigners. H shares are listed on security markets abroad such as Hong Kong and New York.

Table 4 Cash Flow Right, Control Right and Number of Pyramid Layers of all Listed Firms

Variable	Obs	Mean	Std. Dev.	Min	Median	Max
2007: All Listed Firms						
Number of Pyramid Layers	1542	2.3	0.9	1	2	7
Cash-Flow Right	1542	0.33	0.17	0.01	0.30	1.00
Control Right	1542	0.38	0.16	0.05	0.37	1.00
Cash-Flow Right / Control Right	1542	0.84	0.24	0.06	1.00	1.00
2006: All Listed Firm						
Number of Pyramid Layers	1432	2.3	0.8	1	2	7
Cash-Flow Right	1431	0.32	0.17	0.01	0.30	0.99
Control Right	1432	0.38	0.15	0.07	0.36	0.99
Cash-Flow Right / Control Right	1431	0.83	0.25	0.05	1.00	1.00
2007: State Controlled Firms						
Number of Pyramid Layers	792	2.4	0.8	1	2	6
Cash-Flow Right	792	0.35	0.16	0.02	0.34	0.84
Control Right	792	0.39	0.15	0.05	0.39	0.84
Cash-Flow Right / Control Right	792	0.90	0.19	0.10	1.00	1.00
Share of the Largest Owner	792	0.38	0.15	0.04	0.37	0.84
2007: Privately Controlled Firms						
Number of Pyramid Layers	361	2.5	0.9	1	2	7
Cash-Flow Right	361	0.23	0.14	0.01	0.20	0.78
Control Right	361	0.31	0.14	0.09	0.28	0.91
Cash-Flow Right / Control Right	361	0.70	0.27	0.06	0.76	1.00
Share of the Largest Owner	361	0.30	0.13	0.05	0.27	0.78
2007: Share Structure Reform Completed						
Number of Pyramid Layers	1192	2.40	0.82	1.00	2	7
Cash-Flow Right	1192	0.31	0.16	0.06	0.29	0.84
Control Right	1192	0.37	0.15	0.05	0.36	0.91
Cash-Flow Right / Control Right	1192	0.83	0.24	0.01	1.00	1
Share of the Largest Owner	1192	0.35	0.15	0.04	0.34	0.84

Note
1) 2007 data includes information for companies that were in prepared listings but not yet issuing shares. Therefore, some corporation control and cash flow rights are 100 percent.
2) The sample of state controlled and privately controlled firms does not include all listed companies, but only the ones used in estimation.

Figure 2: Channels of "Expropriation"
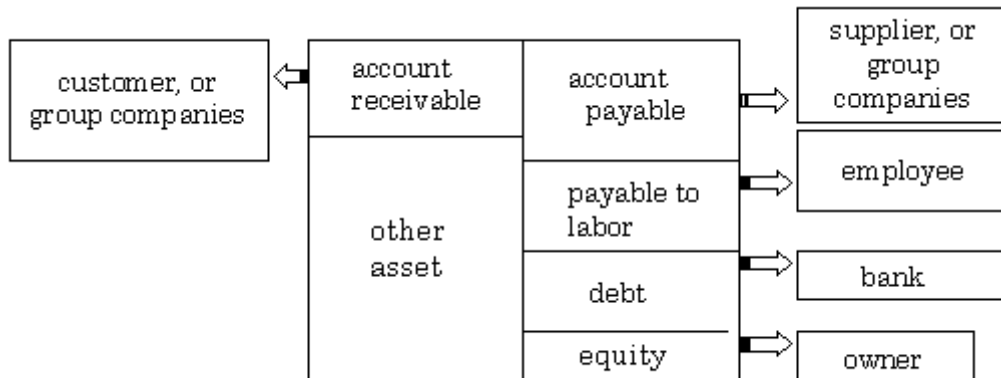
(Source) Author

Table 5: Financial Status of Jinan Qingqi Motorcycle 1998-2003

	Accounts Receivable	to holding company and group	to holding company and groups (including accumulated)	Accounts Payable	to holding company and group	Guarantee to Holding Company / did not perform	Profit	Sales mil. RMB	Total Assets mil. RMB
1998	53.4%	n.a.	n.a.	3.6%	n.a.	n.a.	14.5%	1,950	3,290
1999	61.0%	16.9%	58.1%	16.2%	2.4%	n.a.	0.9%	902	3,850
2000	62.7%	31.6%	61.6%	17.5%	1.7%	n.a.	-6.6%	534	4,150
2001	71.4%	35.9%	77.2%	19.1%	2.0%	13.6%	-20.7%	643	3,460
2002	14.9%	64.4%	316.7%	76.4%	4.0%	75.5%	-357.1%	661	954
2003	16.4%	30.8%	105.8%	43.6%	1.5%	0.0%	0.9%	983	2,029

Source   Sino Fin Database for 1998-2003, Annual Report of Jinan Qingqi Motorcycle Co. Ltd.

(Note 1) These are normalized by total assets other than notice. 2) Ultimate owner shares remained at 40.9 percent during the whole period in the table.

Table 6: Summary Statistics of Key Variables

Variable	Obs	Mean	Std. Dev	Min	Max
Turnover / Total asset	10478	0.61	0.51	-0.08	10
Profit paid to stakeholders/ Total asset	10478	0.03	0.02	-0.08	0.49
Accounts Receivable/ Total asset	10478	0.19	0.13	0.00	1.18
Debt Asset Ratio	10478	0.49	0.37	0.00	16
Share of 1st Largest Owner	10461	0.42	0.17	0.01	1
Share of 2nd largest owner	10461	0.09	0.08	0.00	1
Share of 3rd largest owner	10461	0.03	0.04	0.00	0.25
Share reform completed	10478	0.24	0.43	0	1
Dummies of Ownership of Ultimate Controller					
State	10478	0.70	0.46	0	1
Private	10478	0.19	0.39	0	1
Foreign	10478	0.01	0.08	0	1
Collective	10478	0.02	0.14	0	1
NPO	10478	0.01	0.08	0	1
Union	10478	0.01	0.09	0	1
Sample with Cash-Flow Right, Control Right and Number of Pyramid Layer					
Turnover /K	2454	0.72	0.60	-0.02	10.02
Profit paid to stake holders/ Total asset	2454	0.02	0.02	-0.07	0.49
Accounts Receivable/ Total asset	2454	0.17	0.12	0.00	0.99
Debt Asset Ratio	2454	0.55	0.37	0.00	7.33
Number of Pyramid Layers	2454	2.36	0.80	1.00	7.00
Cash-Flow Right	2453	0.31	0.16	0.01	0.84
Control Right	2454	0.37	0.15	0.05	0.91
Share of 1st Largest Owner	2451	0.36	0.15	0.04	0.84
Share of 2nd Largest Owner	2451	0.08	0.08	0.00	0.42
Share of 3rd Largest Owner	2451	0.03	0.03	0.00	0.24
Share Reform Completed	2454	0.94	0.23	0	1
Dummies of Ownership of Ultimate Controller					
State	2454	0.66	0.47	0	1
Private	2454	0.30	0.46	0	1
Foreign	2454	0.01	0.08	0	1
Collective	2454	0.01	0.12	0	1
NPO	2454	0.00	0.05	0	1
Union	2454	0.01	0.10	0	1

(Source) Sino Fin Database

Table 7:   Expropriation after Share Reform: ex(K)=ARln(K)

Dependent Sales/Total asset																	
	(i)			(ii)			(iii)			(iv)			(v)			(vi)	
Estimator	OLS			FE			gmm			gmm			gmm			gmm	
# of obs	10461			10461			10461			10461			2545			2545	
# of firms				1245			-										
Sample							1998-2007						2006-07			2006-07	
	Coef.	s.e.		Coef.	s.e.		Coef.	s.e.		Coef.	s.e.		Coef.	s.e.		Coef.	s.e.
Rental fee of capital r	**2.6**	0.2	***	**0.8**	0.1	***	**24.7**	3.2	***	**29.3**	3.42	***	**28.4**	10.1	**	**29.7**	10.3 ***
Expropriation AR/K(=private)	**1.4**	0.1	***	0.0	0.1		0.0	0.3		**0.52**	0.11	***	-0.34	0.8		-0.89	0.7
Expropriation*1/share AR/K*1/shar(=private)	0.0	0.0		0.0	0.0		0.0	0.0					**-0.02**	0.0	*		
Expropriation*SOE	**0.6**	0.1	***	**-0.1**	0.1		0.9	0.1	***				**1.26**	0.3	***		
Expropriation*SOE*1/share	**-0.1**	0.0	***	**0.0**	0.0	**	**-0.1**	0.0	***				**-0.02**	0.0	**		
Expropriation*others	0.2	0.1		-0.2	0.1	**	0.4	0.2	*				0.93	1.4			
Expropriation*others*1/share	**-0.1**	0.0	**	0.0	0.0		0.0	0.0					-0.09	0.1			
Expropriation*Reformed (=private)										**1.07**	0.43	**				-0.01	0.8
Expropriation*Reformed*1/share										**-0.26**	0.09	**				-0.02	0.0
Expropriation * Reformed*SOE										**1.73**	0.34	***				**1.3**	0.3 ***
Expropriation*Reformed:SOE*1/share										**-0.21**	0.06	***				**-0.02**	0.0 **
Expropriation * Reformed*others										2.13	1.76					0.38	1.8
Expropriation*Reformed*others*1/share										-0.21	0.28					-0.07	0.09
Endogeneity test (Ho= variables are exogenous)							99.9			161.5			23.7			25.6	
							(p=.00)			(p=.00)			(p=.00)			(p=.00)	
Fit/Test of Over Identification	0.59			0.06			35.8			8.1			1.3			1.0	
				within			(p=.00)			(p=.0044)			(p=.718)			(p=.8119)	
							0.0										
Wald chi square/F value(d.f.)	1372			450			138			178			48			51	
variable for share of controling owner	control right			control right			control right			control right			cash flow right			cash flow right	

(Source) Author

(Note1) All regression include year dummies and controlling owner type dummies.

(Note2)   Results of expropriation items x ownership reported linear combination of estimates expropriation and *ownerships.

(Note3)   FE is the fixed effect on stock code (=respective firm)

(Note4) Instruments for (iii) and (iv) are total debt (logarithm) and shares of 1st largest owners, for (v) and (iv) are total debt (log) and 1[st] to 3[rd] largest owners' share .

Note5   Due to limitation of data, data used for share of controlling owner,   of the test equation is "control right" not "cash flow right" for 1998-2007 sample, but is "cash flow right" for 2006-07 sample definition in the text.

Table 8: Expropriation post- the Discriminated Share Reform period

Dependent ln (sales/total asset - rental fee of capital expropriation)						
	(i)			(ii)		
Estimator	GMM			GMM		
# of obs	2421			2429		
# of firms						
	Coef.	s.e.		Coef.	s.e.	
ln total asset	-5.60	3.67		**-4.74**	2.71	*
ln total asset * reformed	**0.67**	0.36	*	**0.63**	0.25	**
ln total asset * reformed*SOE	**0.30**	0.14	**	**0.25**	0.11	**
ln total asset * reformed*others	0.51	0.70		0.33	0.50	
ln control right	2.40	2.12				
ln control right*reformed	0.81	0.88				
ln control right*reformed*SOE	-0.45	0.64				
ln control right*reformed*others	1.49	5.07				
ln (1/control right-1)				-1.79	1.24	
ln (1/control right-1)*reformed				0.04	0.12	
ln (1/control right-1)*reformed*SOE				**-0.14**	0.08	*
ln (1/control right-1)*reformed*others				-0.51	0.48	
ln (1/cash flow right-1)	0.98	1.41		1.60	1.25	
ln (1/cash flow right-1)*reformed	0.02	0.13		**-0.36**	0.20	*
ln (1/cash flow right-1) *reformed*SOE	-0.08	0.24		**0.23**	0.08	***
ln (1/cashflow right-1) *reformed*others	0.30	0.96		0.22	0.59	
Test of Over Identification	19.4			20.3		
	(p=.0016)			(p=.0011)		
Endogeneity test	9.2			11.8		
(Ho=variables are exogenous)	(p=.0561)			(p=.0191)		
Firs stage F value (P>z)						
lnK	0.00			0.00		
lnK_reformed	0.00			0.00		
lnK_reformed*SOE	0.00			0.00		
lnK_reformed*others	0.12			0.27		
Instruments	total debt(log) share of 1st to 8th owener			total debt(log) share of 1st to 8th owener		

Notes:
1) All regressions include a year dummy and an ultimate owner type dummy.
2) Results of expropriation items x ownership are reported as a linear combination of estimates of expropriation and ownership dummies.
3) FE is the fixed effect on stock code (firm code).
4) Bold type indicates that statistical estimates of $P>|z|$ are lower than 10%.

Table 9.   Size of Expropriation (Estimated ex(K) / Total asset K)

Estimated	Obs	Mean	S.D.	Min	Max		
General form							
State Owned	1540	.0683	.580	.00019	16.71		
Private Owned	738	-13.6	120.8	-2888	0		
Via Account Receivable						Alfa	P
State Owned	1621	.0784	.0764	1.36e-14	.455	.044	.017
Private Owned	738	-.0240	.267	6.72e	15	-.012	.067

Note:

1) Alfa in via account receivable indicates ratio of fraction for expropriation of account receivables.

P indicates ratio of private (non monetary) benefit out of expropriation. See text for details.

Table10.   Form of Expropriation Function and Counterfactual Simulation

	State controlled firms	Private controlled firms
	$9.91\,e^{-16}\,K^{2.09}\left(1-\dfrac{1}{\rho}\right)^{-0.6}$	$-1.95\,e^{16}\,K^{-0.76}$
Simulated ex(K) /Estimated ex(K):mean	.8699	.6384

Note:
1) Estimates of equation (ii) in Table .
2) Multipliers of terms are divided by the coefficient of term (1-1/   ).
3) Both on the firms that completed "discriminated share reform".
4) Simulation for the case if size of cash flow right is equalized to that of control right.