Corporate Governance Reform and State Ownership: Evidence from China*

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Abstract
Using a sample of propensity-score matched overseas and domestically listed firms, we examine whether the effect of corporate governance reform (CGR) in 2001 in China varies among firms with different ownership structures. The positive effect of the CGR is weaker for firms with more state-owned shares, and product market competition increases the effect of the CGR on such firms. These findings suggest that government regulations on corporate governance and market competition can serve as complementary solutions to agency problems that arise from state ownership.

Keywords Corporate governance reform; State ownership; Product market competition; China

1. Introduction
Given the global trend toward strong corporate governance systems,1 the Chinese Securities Regulatory Commission (CSRC) and the State Economic and Trade Commission (SETC) issued a new Code of Corporate Governance (Code, hereafter) for listed companies in January 2001. The Code strictly adheres to the OECD Principles of Corporate Governance and aims to introduce solid corporate governance in publicly listed firms

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1In 1999, the OECD published the Corporate Governance Principles to provide important guidance on the formulation of the CGRs of its member countries and to strengthen influence on non-OECD countries, including China.
by elevating the standards for accounting procedures and information disclosure, enhancing the independence of boards of directors, and tightening the supervision of corporate management. Implementing the Code is considered a corporate governance reform (CGR) undertaken by the Chinese financial market.²

Similar to many governments, the Chinese government has, for the past 20 years, been using the financial market as an important tool for improving corporate governance and the performance of state-owned enterprises (SOEs). However, different ownership structures are associated with various agency problems, which reduce firm value through different channels. Thus, it is important and interesting to examine how state ownership influences the effectiveness of the governance mechanisms covered by CGR to enhance firm value. Understanding this issue facilitates further enhancement of corporate governance and the performance of state-owned publicly listed firms. Such an improvement is particularly important for the development of financial markets in transition economies or countries where a number of publicly listed SOEs exist.

Additionally, previous studies that examine the effects of corporate governance on firm performance often suffer from biases either because of endogenous governance variables (e.g., Bai et al., 2004) or because of the omitted variables due to the use of cross-sectional data (e.g., Zhang et al., 2001). The CGR implemented by the Chinese government may be considered an exogenous natural experiment, which enables more accurate identification of the effects of corporate governance on firm value. Taking advantage of this exogenous reform therefore translates to more credible estimates of the effects of corporate governance on firm performance.

To identify the effects of CGR and to control for confounding effects we employ a difference-in-difference (DID) approach, in which we compare the changes in performance of exclusively overseas listed firms (i.e., firms listed on the Hong Kong Stock Exchange or United States Stock Exchange) and domestically listed firms (i.e., firms solely listed on the Shanghai Stock Exchange or Shenzhen Stock Exchange). Considering that firms listed on the Hong Kong or United States stock exchanges are exempt from the governance regulations of the Chinese financial market, these firms are not affected by CGR implemented by Chinese stock exchanges. Therefore, we use these overseas listed Chinese firms as the control group in estimating the effects of CGR.

²Since the late 1990s, a number of countries have implemented CGRs, defined as deliberate interventions in the corporate governance traditions of a country by the state, securities and exchange commissions, or stock exchanges. CGRs are usually implemented through the publication of a set of codified corporate governance norms or amendments to countries’ corporate and/or securities laws that pertain to issues such as the role and composition of boards of directors; the establishment of board subcommittees (e.g., audit, compensation, and nomination committees); the appointment and rules of operation that apply to external auditors; the distribution of rights and powers over professional managers, shareholders, and other stakeholders; and the protection of informants and enhancement of penalties for corporate fraud (Aguilera and Cuervo-Cazurra, 2004).
Combining the variations in the state shares owned by different firms, we identify how the effects of CGR differ with respect to ownership structure.

One caveat is that overseas and domestically listed firms may not be naturally comparable, thereby potentially invalidating the DID approach. To eliminate this problem, we use propensity scores to match the overseas and domestically listed firms, and then employ the matched sample to estimate regressions.

Another concern is the potential endogeneity of state ownership, which we address by estimating instrumental variable (IV) regressions. Following Estrin and Tian (2008), we use the average ratio of the state-owned shares of other firms in the same industry (i.e., firms in the same industry as the individual firm, excluding the individual firm itself) in the same year as the IV of the state-owned shares in each firm.

We find that the effects of CGR are significantly weaker for firms with more state-owned shares. These results are robust to different measurements of state-owned shares. Our findings suggest that the under-performance of publicly listed SOEs relative to publicly listed non-SOEs can arise from the fact that the governance mechanisms introduced by the financial markets are less effective in solving certain agency problems of SOEs than in addressing those of non-SOEs.

We then provide possible explanations for the above-mentioned findings. We argue that agency problems reduce firm value through three channels: empire-building activities, enjoying quiet life behaviors, and diversion/stealing. Empire-building activities and diversion/stealing are caused primarily by information asymmetry between internal managers and external investors, while the enjoyment of quiet life behaviors stems mainly from lack of incentives. The governance mechanisms introduced by the CGR, such as the increased independence of boards of directors, greater information transparency and disclosure, and increased shareholder rights and corporate fraud penalties, may alleviate information asymmetry between internal managers and external shareholders. Such mechanisms reduce the agency problems related to empire-building activities and diversion/stealing. However, the governance mechanisms do not provide more incentives to managers, making these less effective in reducing the agency problems associated with managers’ enjoyment of quiet life behaviors. Given that this channel is more commonly observed in firms with more state-owned shares, the effects of CGR are weaker for such firms.

We test this argument by checking whether the effects of CGR on firms with state-owned shares are stronger in more competitive product markets. Product market competition has been viewed as an important mechanism for generating managerial incentives and reducing managerial entrenchment, which have been documented as crucial reasons for the existence of enjoying quiet life behaviors (Alchian, 1950; Friedman, 1953; Guadalupe and Wulf, 2007; Giroud and Mueller, 2010). We find that the effects of CGR on firms with state-owned shares are stronger in more competitive product markets, a result that supports our argument.

3Li (1997) finds similar evidence that over 87% of performance growth is attributable to improved incentives and intensified product market competition.
Our paper contributes to the literature on several fronts. First, the growing body of literature that investigates the effects of CGRs around the world on firm performance provides mixed evidence. These mixed findings suggest heterogeneity in the effectiveness of CGRs. Our findings highlight that ownership structure may lead to different agency problems, and that some agency problems are better solved by CGR, whereas others are less sensitive to the regulations covered by reform. This observation explains the variances in the findings of previous studies on the effects of CGRs. The CGR for the Chinese financial market strictly adheres to the OECD Principles of Corporate Governance, and its contents are similar to those of CGRs recently implemented in other countries. This similarity enhances the generality of our findings.

Second, previous studies (e.g., Li, 1997; Frydman et al., 1999; Sun and Tong, 2003; Gupta, 2005) investigate only the effects of the reforms on SOEs (or the privatization process itself), whereas the current work focuses on the heterogeneous efficiency of CGR on firm value in terms of ownership structure. Understanding the manner by which the quality of governance in publicly listed SOEs can be enhanced is important for the development of financial markets in transition economies or countries where a number of publicly listed SOEs are located.

Our findings have some policy implications. Agency problems are nonidentical and reduce firm value through different channels. CGR may have a limited role in solving agency problems in SOEs. CGR implemented by the government and product market competition can serve as complementary solutions to the agency problems that arise from state ownership. Opening the market and enhancing product competition are good market-based solutions that complement the introduced corporate governance regulations.

The rest of the paper is organized as follows. Section 2 provides the background to Chinese CGR. Section 3 presents the empirical methods adopted in this study. Section 4 describes the data used, and Section 5 presents the results. Section 6 discusses the findings, and Section 7 concludes.

2. Corporate Governance Reform in China

To elevate Chinese corporate governance standards for publicly traded firms in financial markets to the level of international best practice, the CSRC and SETC issued the Code in 2001. The issuance, implementation, and contents of the Code are comparable with those of the CGRs implemented in other countries; therefore,
The *Code* is considered the CGR in China. The *Code* took effect upon the date of issuance, 2001.

The *Code* aims to introduce solid corporate governance in listed companies by elevating the standards for accounting procedures and information disclosure, introducing independent director systems, and tightening the supervision of corporate management. The *Code* is applicable to all firms listed in the Shenzhen and Shanghai stock exchanges. It follows the “comply-or-explain” rule, which compels a company to report its actual corporate governance status, disclose the gap between its actual status and the status required by the *Code*, and provide the reasons for the existence of such a gap.

The contents of the *Code* have strictly adhered to the OECD Principles of Corporate Governance. Thus, this CGR enacted in China is very similar to some recent governance reforms implemented in other countries, making the findings of the present study more generalizable. The *Code* mainly covers regulations concerned with three aspects of governance mechanisms: board structure, disclosure, and shareholder rights.

With regard to board structure and composition, the *Code* requires listed companies to have at least two independent directors, who should account for at least one-third of the total number of board members. The audit, nomination, and remuneration and appraisal committees of a company should be chaired by independent directors, who should account for the majority of membership in the committees. Moreover, at least one independent director in the audit committee should be a professional accountant.

In terms of disclosure, the *Code* compels listed companies to disclose publicly information regarding their corporate governance practices in accordance with laws and regulations. A company should provide timely disclosure of who owns large percentages of the company, the shareholders who control the company when acting in concert, and the actual controllers of the company. When controlling shareholders increase or decrease their shareholdings or pledge the shares of the company, or when the actual control of the company is transferred, the company and its controlling shareholders should promptly and accurately disclose relevant information to all shareholders.

The *Code* also provides a set of rules for the conventions and procedures for shareholder meetings. Listed companies are required to establish procedures for shareholder meetings and the authorization granted by the shareholders to the board of directors. Shareholders may attend meetings either in person or by appointing a proxy. Shareholders owning 10% of outstanding shares may call a special meeting. When the controlling shareholders of listed companies own more than 30% of shares, the companies should adopt a cumulative voting system. The companies that adopt this system are required to stipulate the rules for the cumula-

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5To qualify, independent directors should be truly independent from the company that hires them; that is, an independent director cannot hold any other position in the company.
tive voting system in their articles of association. Shareholders have the right to request the company to sue for compensation in accordance with the law.

Two major channels address agency problems and protect investors: enhancing monitoring to ensure that management does not conduct value-harmful activities (i.e., anti-wrongdoing activities), and stimulating managerial efforts (i.e., increasing managerial incentives). Similar to CGRs implemented by other countries, the governance mechanisms covered by the China 2001 Code generally enhance monitoring by the board and shareholders. However, these mechanisms may not effectively generate incentives for increasing managerial efforts. Managerial efforts can be encouraged by enhancing the alignment effects from incentive compensation or the alignment effects of pressure from markets through markets for corporate control or product market competition. However, the Code does not lay down solid and implementable regulations on management performance evaluation and incentive schemes, or any other regulations on enhancing pressures from external markets.

In summary, the Code stipulates the requirements for information disclosure, clarifies the rights and responsibilities of shareholders, directors, managers, and stakeholders, and focuses on protecting investors by enhancing monitoring of management activities. Despite these regulations, the Code may not efficiently stimulate managerial efforts on the whole.

3. Empirical Strategies

3.1. Regression Models
We begin by discussing the specifications of examining the average effects of CGR on firm value. Given that CGR is implemented across the entire country, simply comparing firm value before and after the reform cannot partial out time effects. Fortunately, Chinese firms that are exclusively listed overseas (e.g., in Hong Kong and the United States) are not required to comply with Chinese CGR. Theoretically, therefore, they are unaffected by CGR and can be used as a control group. To identify the effects of

6The Code stipulates only several very soft and general rules on incentive compensation. For example, the evaluation of directors and management personnel should be conducted by the board of directors or by the remuneration committee of the board of directors; a scheme for the amount and methods of compensation for directors should be proposed at the shareholders’ meeting for approval; listed companies should establish reward systems that link the compensation for management personnel to company performance and individual work performance. In practice therefore, the Code may only enhance transparency but not efficiently generate managerial incentives.

7One may argue that CGR has some spillover effects on overseas listed firms. However, CGR does not directly affect overseas listed firms, so such firms are less strongly affected by CGR than are domestically listed firms. Thus, overseas listed firms can still serve as the control firms of domestically listed firms. Additionally, the existence of spillover effects on overseas listed firms may reduce the capacity of the test to obtain significant results with the DID specifications.
CGR, we compare the changes in firm value of domestically listed firms and exclusively overseas listed firms before and after CGR implementation. This identification strategy adheres to the principle of the DID method. The baseline regression is as follows:

\[
Y_{it} = \delta CGR_{kt} + \gamma X_{it} + \alpha_t + \alpha_i + \epsilon_{ikt},
\]

where \(i\) denotes firm \(i\), while \(k\) and \(t\) represent listing location \(k\) and year \(t\) respectively. \(Y\) is the firm value measured by Tobin’s Q, which is calculated as a ratio. The numerator of the ratio is the book value of total assets minus the book value of equity plus the market value of equity. The denominator of the ratio is the book value of total assets (Doidge et al., 2004). In contrast to other accounting-based performance measures (e.g., return on assets, which focuses only on the current profitability of a firm), Tobin’s Q reflects current profitability and growth opportunities. \(CGR\) is a dummy variable that equals 1 if a firm is listed only in Chinese stock exchanges in or after 2001; otherwise, \(CGR\) equals 0. \(X\) is a vector of control variables, including firm age, total assets, and leverage; \(\alpha_t\) and \(\alpha_i\) are year- and firm-fixed effects, respectively, and \(\epsilon_{ikt}\) is an error term with a mean equal to 0. The detailed definitions of all the variables are provided in Table 1.

To estimate the heterogeneous effects of CGR in relation to ownership structure, we estimate the following regression function:

\[
Y_{it} = \delta CGR_{kt} + \eta CGR_{kt} \ast State\_OWN_{it} + \lambda State\_OWN_{it} + \gamma X_{it} + \alpha_t + \alpha_i + \epsilon_{ikt},
\]

where \(State\_OWN\) is a measure of state ownership. We use four different measures of state ownership: the percentage of state-owned shares; a dummy for firms with positive state-owned shares; a dummy for firms with more than one-third state-owned shares; and a dummy for firms with more than two-thirds state-owned shares. Coefficient \(\eta\) is of interest because it indicates the heterogeneous effects of the CGR on firm value in terms of ownership structure. At the same time, when \(State\_OWN\) is measured by a dummy for firms with positive state-owned shares or the percentage of state-owned shares, coefficient \(\delta\) depicts the effectiveness of CGR on non-SOEbs.

### 3.2. Propensity Score Matched Sample

To identify the effects of CGR by the DID strategy, a pre-assumption is that the changes in firm value of the treatment group with time should be identical to the changes in firm value of the control group if no CGR were implemented. If this pre-assumption does not hold, the estimates will be biased.

Identifying the firms that are exclusively overseas listed and perfectly identical to the domestically listed firms as the control group is impossible. An alternative approach is to use certain criteria as bases in identifying some overseas listed firms that are similar to domestically listed firms, and employ the matched exclusively
overseas listed and domestically listed firms to estimate the effects of the CGR. This matching process ensures that the selection of firms that are affected and unaffected by the CGR is unrelated to the outcome that is contingent on the matching criteria.

We employ propensity scores to match the firms.\(^8\) In this study, the likelihood that firms will be affected by CGR depends on the listing status of the firms. Thus, we define the propensity score as the predicted probability of being listed overseas, estimated by a Probit model. In the Probit model, the dependent variable is an indicator equal to 1 if the firm is listed overseas in 2000, and the independent variables include the factors used to match the firms. As suggested by Doidge \textit{et al.} (2004) and Bebchuk \textit{et al.} (forthcoming), firm size, firm age, and leverage are closely related to both firm value and different corporate governance

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\(^8\)Matching firms from multiple dimensions is an important issue because it requires weighing differences in one dimension against another. Rosenbaum and Rubin (1983) provide the following solution to this dimensionality problem: if matching on a vector of variables \(Z\) is possible, then we can also perform matching on the basis of \(P(Z) = \Pr(D = 1|Z)\), the probability that a firm will be affected, contingent upon \(Z\). Probability \(\Pr(D = 1|Z)\) is the propensity score, which can convert a vector of several relevant factors into one criterion to enable matching of the firms.
variables. In this article, therefore, we match the firms on the basis of these three variables.\textsuperscript{9}

We employ the method of one-to-one nearest neighbor matching, which is the most commonly used form of matching.\textsuperscript{10} In this approach, each exclusively overseas listed firm is matched to the nearest domestically listed firm by minimizing the Mahalanobis distance metric between an overseas listed firm and any domestically listed firm. Additionally, we exclude the exclusively overseas listed firms that do not match any of the firms.

The main results are estimated with the propensity score matched sample.\textsuperscript{11} According to Bertrand \textit{et al.} (2004), serial and spatial correlations among the error terms within a listing country may cause downward bias in the OLS standard error estimates. Thus, standard errors are clustered by listing country. Another potential bias in estimating standard errors in these regressions stems from the ignorance of the components of the variance due to the estimation of propensity scores. Therefore, we also perform bootstrapping to correct the estimates of standard errors while estimating the results with the propensity score matched sample.

4. Data Description

We construct a firm-level panel data set by combining the data on Chinese firms listed in non-United States stock exchanges (taken from Compustat Global) with the data on Chinese firms listed in United States stock exchanges (taken from Compustat North America). Compustat Global data are normalized to provide comparability across a wide variety of global accounting standards and practices. We convert value variables into values measured by US$2000 by adjusting for exchange and local inflation rates. State ownership data are collected from RESET, World Scope, and company websites.

\textsuperscript{9}In this article, firm size is measured by the log value of total assets; firm age is measured by the log value of listing years; and leverage is measured by the ratio of long term debt to total assets. Asymptotically, all inexact matching schemes are in some sense equivalent because they all tend toward exact matches as the sample increases. However, these schemes can still yield very different results in finite samples. Thus, to check the robustness of the results, we match the sample with different combinations of matching variables; the results are reasonably unchanged.

\textsuperscript{10}A potential limitation of one-to-one matching is small sample size. Only the nearest unaffected firm neighbors are included in the control group. In addition, matching only one nearest neighbor minimizes bias because all matches are close matches, but cost increases in terms of high variance because less information is used to construct the counterfactual for each treated firm. As a robustness check, therefore, we also match firms with the kernel matching method. The results we obtain are robust.

\textsuperscript{11}We also estimate the results using the unmatched sample. The results show that if the selection is uncontrolled, the estimated CGR effects will be downward biased. The results are not reported here but are available upon request.
The CGR was implemented in 2001; thus, we use the sample beginning from 1998 (3 years before the implementation of CGR) to 2003 (3 years after the implementation). As an emerging market, the Chinese financial market has experienced highly active development in the past decade. The sample includes only 6 years to eliminate potential estimation bias caused by other regulation regimes or confounding effects that have taken place in either China or overseas financial markets. An example of such effects is the 2005 reform on nontradable shares in China.

Table 2 presents the distributions of the firms by year. The sample covers 688 firm-year observations. Column 2 lists the number of firms in the sample by year. Column 3 shows the number of exclusively overseas listed firms in each year. To ensure the validity of our DID method we include only exclusively overseas listed firms, but not overseas and domestically dual-listed firms, in the sample. Given that changing the listing status of firms may also influence the effects of the CGR on firms, the sample excludes firms that have changed their listing status during the sample period. No important corporate governance-related regulation regimes in 2001 have taken place in either the Hong Kong or United States stock exchange.12 This finding justifies our choice of the control firms. Columns 4, 5, and 6 in Table 2 indicate the number of firms with positive state-owned shares, firms with more than one-third state-owned shares, and firms with more than two-thirds state-owned shares, respectively. Overall in each year, more than 50% of the firms have positive state-owned shares. Among these firms, approximately 70% have more than one-third state-owned shares and less than 25% have more than two-thirds state-owned shares.

Table 3 presents the summary statistics of the sample. The average value of Tobin’s Q is 1.349, and the mean of the CGR is 0.48, suggesting that the observa-

12SOX is considered an important CGR implemented in the United States financial market. Although it was announced in 2002, affected firms were not required to comply with the regulations until 2003, the last year covered by the sample. In our sample, only six firms are listed in the United States Stock Exchange. We estimate the results reported in the tables with the sample, including these six firms. To verify robustness, we exclude these six firms and re-estimate the results. The results are almost unchanged.
Tobin's Q are more or less evenly distributed in the before and after periods of the CGR implementation. The average value of the percentage of total shares owned by the state is 27%, with 59.6% of the firms having positive state-owned shares, 46.1% having more than one-third state-owned shares, and 4.7% having more than two-thirds state-owned shares.

Aside from the above-mentioned variables, the summary statistics of the other variables, such as firm age, total assets, and leverage, are shown in Table 3. Details are not discussed here because of space limitations.

5. Results

5.1. Main Results

Table 4 presents the main estimated results. The coefficients of the CGR dummy are all positive and significant at least at the 5% level, as shown in columns 1–4 of the table. This finding indicates that for firms without any state-owned shares, the effects of the CGR are significantly positive.

The effects of the CGR on the firms with positive state-owned shares are reflected by the coefficients of the interactions between the CGR dummy and state ownership variables. First, the coefficient of the interaction between the CGR dummy and the dummy for the firms with positive state-owned shares is −0.106, which is significant at the 1% level (column 1, Table 4). This result indicates that compared with the change in the Tobin's Q of the firms without state-owned shares, the CGR-induced change in the Tobin's Q of the firms with positive state-owned shares is lower by 0.106. Second, we replace the dummy for the firms that have positive state-owned shares with a dummy for the firms with more than one-third state-owned shares and a dummy for the firms with more than two-thirds state-owned shares. Columns 2 and 3 in Table 4 show the estimated results.

Table 3 Summary statistics
Definitions of the variables are given in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Mean (1)</th>
<th>SD (2)</th>
<th>Min (3)</th>
<th>Max (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobin’s Q</td>
<td>1.349</td>
<td>1.304</td>
<td>0.263</td>
<td>15.741</td>
</tr>
<tr>
<td>CGR</td>
<td>0.480</td>
<td>0.500</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>State_%</td>
<td>0.270</td>
<td>0.255</td>
<td>0.000</td>
<td>0.749</td>
</tr>
<tr>
<td>State_00</td>
<td>0.596</td>
<td>0.491</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>State_33</td>
<td>0.461</td>
<td>0.499</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>State_66</td>
<td>0.047</td>
<td>0.211</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Firm age</td>
<td>2.226</td>
<td>0.301</td>
<td>1.099</td>
<td>2.833</td>
</tr>
<tr>
<td>Total assets</td>
<td>5.577</td>
<td>1.013</td>
<td>2.999</td>
<td>8.432</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.080</td>
<td>0.103</td>
<td>0.000</td>
<td>0.545</td>
</tr>
<tr>
<td>ICR</td>
<td>0.416</td>
<td>0.120</td>
<td>0.185</td>
<td>1.000</td>
</tr>
</tbody>
</table>
The coefficient of the interaction between the CGR dummy and the dummy for the firms with more than one-third of state-owned shares is $-0.203$, which is significant at the 1% level. Meanwhile, the coefficient of the interaction between the CGR dummy and the dummy for the firms with more than two-thirds of state-owned shares is $-0.530$, significant at the 1% level. These findings suggest that the more substantial the state-owned shares in the firms, the weaker the effect of the CGR on firm value. Third, we combine the CGR dummy with the ratio of state-owned shares and then estimate the same specification. Column 4 in Table 4 shows the
estimated results. The coefficient of the interaction between the CGR dummy and the ratio of state-owned shares is \(-0.407\), significant at the 1% level. This result confirms our findings (columns 1–3): the effect of the CGR on firm value decreases with increasing state-owned shares in the firms.

These findings generally suggest the heterogeneous effects of the CGR on enhancing firm value in relation to ownership structure. The more state-owned shares the firms have, the weaker the impacts of the CGR on the firms.

5.2. Addressing Endogeneity in State Ownership

One caveat we need to bear in mind is that firm ownership structure can be correlated with some unobservable variables, such as the tradition and culture of firms. Such variables may also affect firm performance. It leads to a problem of endogeneity, biasing the OLS estimates. Following Estrin and Tian (2008), we use the average ratio of the state-owned shares of other firms in the same industry\(^{13}\) (i.e., firms in the same industry as the individual firm, excluding the individual firm itself) in a given year as an IV for the ratio of the state-owned shares of an individual firm.\(^{14}\)

In general, we find that the heterogeneous effects of the CGR on firm value in terms of firm ownership structure considerably strengthen. Table 5 shows the results. Columns 1 and 2 present the first-stage results. The average ratio of the state-owned shares of other firms in the same industry is a good predictor of the ratio of the state-owned shares of individual firms. All F-statistics are larger than 10. Column 3 presents the IV estimates. The coefficient of the interaction between the CGR dummy and the ratio of state-owned shares is \(-4.1\), which is significant at the 1% level, suggesting that the results in Table 4 are not driven by endogenous state-owned shares. The coefficient of the CGR dummy is 1.263, significant at the 1% level, indicating that the CGR positively affects the firm value of firms without state-owned shares.

Overall, the results presented in Table 5 suggest that the heterogeneous effects of state-owned shares on the influence of CGR on Tobin’s Q are not driven by the potential endogeneity of state ownership.

6. Discussion

6.1. Possible Explanation for Weaker CGR Effects on Firms with State-owned Shares

The above-mentioned findings suggest the heterogeneous effects of the CGR on enhancing firm value in relation to ownership structure. Different ownership structures may be associated with various agency problems, which reduce firm value.

\(^{13}\)The industry is defined based on the first two digits of the SIC code of firms.

\(^{14}\)We exclude the observations that do not have more than three firms in the same industry in a given year. Thus, the sample used for IV regressions is smaller than that used in the OLS regressions.
Table 5 Controlling for endogeneity: two-stage least squares regressions

Reported in parentheses are robust standard errors calculated by bootstrapping. Denotes statistical significance at the *10% level, **at the 5% level, ***at the 1% level. (1) All regressions control for firm fixed effects and year fixed effects. (2) State_%_Mean is the average value of the ratio of state-owned shares of all other firms in the same industry. And definitions of other variables are shown in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>1st Stage</th>
<th>State_%*CGR</th>
<th>State_%</th>
<th>2nd Stage</th>
<th>Tobin’s Q</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>State_%*CGR</td>
<td>State_%</td>
<td>Tobin’s Q</td>
<td>State_%*CGR</td>
<td>State_%</td>
</tr>
<tr>
<td>CGR</td>
<td>0.585***</td>
<td>0.014</td>
<td>1.263***</td>
<td>(0.028)</td>
<td>(0.061)</td>
</tr>
<tr>
<td>State_%*CGR</td>
<td></td>
<td></td>
<td></td>
<td>0.585***</td>
<td></td>
</tr>
<tr>
<td>State_%</td>
<td>0.154</td>
<td>0.326</td>
<td>(0.058)</td>
<td>(0.236)</td>
<td>(0.217)</td>
</tr>
<tr>
<td>State_%_Mean*CGR</td>
<td>0.821***</td>
<td>0.109</td>
<td>(0.035)</td>
<td>(0.153)</td>
<td>(1.440)</td>
</tr>
<tr>
<td>State_%_Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Firm age</td>
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<td>0.459</td>
<td>(0.198)</td>
<td>(0.276)</td>
<td>(1.001)</td>
</tr>
<tr>
<td>Total assets</td>
<td>0.038**</td>
<td>0.004</td>
<td>(0.005)</td>
<td>(0.004)</td>
<td>(0.070)</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.029</td>
<td>0.044</td>
<td>(0.027)</td>
<td>(0.043)</td>
<td>(0.411)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.724</td>
<td>0.767</td>
<td>(0.394)</td>
<td>(0.640)</td>
<td>(1.315)</td>
</tr>
<tr>
<td>Observations</td>
<td>485</td>
<td>485</td>
<td>485</td>
<td></td>
<td>(1.15)</td>
</tr>
<tr>
<td>F-statistics(IVs)</td>
<td>8900</td>
<td>2772.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj-R²</td>
<td>0.72</td>
<td>0.92</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

through different channels. As previously mentioned, agency problems can be solved by different methods: enhancing monitoring to prevent management from conducting value-reducing activities, or enhancing managerial efforts. The governance mechanisms covered by the CGR generally enhance monitoring by the board and shareholders, but these may be ineffective in generating incentives for increasing managerial efforts either by managerial compensation or through pressure from external markets. Thus, the CGR may more effectively reduce the agency problems that stem from lack of monitoring measures than those that arise from lack of managerial incentives.

Generally, agency problems reduce firm value through three major channels. The first is described as enjoying quiet life behaviors (Myers and Majluf, 1984; Bertrand and Mullainathan, 2003). This channel means that internal managers tend to be excessively conservative in making investment decisions. The governance mechanisms introduced by the CGR would not effectively reduce this tendency.
because these mechanisms are less effective when the managers are silent and just want to enjoy a quiet life. Although the mechanisms improve the monitoring of management, they may not effectively generate incentives sufficient to encourage managers. Thus, the CGR would be less effective in eliminating the behaviors associated with enjoying a quiet life.

In Chinese SOEs, important investment decisions are normally jointly determined by the firms’ internal managers and relevant government officials. These investment decisions typically carry high political costs incurred from investment failure. However, these decisions do not directly translate to benefits from successful investments, which is especially true for involved government officials. Thus, the internal managers of SOEs tend to be more risk averse when it comes to investment decisions. By contrast, important corporate investment decisions in non-SOEs are normally made only by internal managers. These decision makers can obtain high payoffs from successful investments through compensation or other benefits, but they are not compelled to bear all the costs that result from investment failure. Thus, investment decision making tends to be more aggressive in non-SOEs. The behaviors of enjoying a quiet life are more likely to be observed in SOEs than in non-SOEs. The CGR would less effectively eliminate the associated behaviors, a diminished effectiveness that extends to the capacity of CGR to reduce agency problems in SOEs.

The second channel is called empire-building activities (e.g., Jensen and Meckling, 1976; Jensen, 1986), which pertain to internal managers achieving their personal ambitions by conducting non-value maximizing aggressive investments. Empire-building activities are more likely to occur in non-SOEs than in SOEs. By improving the independence of boards of directors, enhancing information transparency and disclosure, and augmenting the protection of shareholders’ rights, CGR enhances the monitoring of management. The improvement of monitoring eliminates some suboptimal investments. Thus, the governance mechanisms introduced by CGR can alleviate empire-building activities. Given that such activities are more likely to occur in non-SOEs than in SOEs, CGR may more effectively reduce agency problems in non-SOEs than in SOEs.

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15For example, independent directors may provide more objective opinions on investment decisions and reject some non-profitable investment proposals during board meetings. Enhancing financial transparency and disclosure may help external shareholders and investors access more information on firm business plans and promptly prevent non-value creation investment by increasing external pressure on management. Enhancing shareholder rights enables shareholders to intervene in important corporate investment and operating policies. The failure of excessive risk-taking activities or investments may generate motivations for corporate fraud. Therefore, enhancing the penalties for corporate fraud can make investment decision making more conservative \textit{ex ante}. 

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The last channel is diversion/stealing activities (e.g., La Porta et al., 2002), which refers to internal managers deriving benefits from the firm by stealing or diverting corporate resources.\textsuperscript{16} This problem may occur when there is a separation between controlling rights and cash flow rights, and information asymmetry exists between internal managers and external investors. These two issues exist in all publicly listed firms, regardless of ownership structure. The governance mechanisms introduced by CGR reduce such information asymmetry, thereby alleviating diversion/stealing activities and increasing the firm value of both SOE and non-SOE publicly listed firms.

In summary, CGR effectively alleviates agency problems due to empire-building activities, which are more likely to happen in non-SOEs. It also effectively reduces agency problems that stem from diversion/stealing activities, which are likely to occur in both non-SOEs and SOEs. This result explains why the estimated effects of CGR on non-SOEs are positive. However, CGR is less effective in generating managerial incentives that sufficiently reduce the inclination for activities of enjoying a quiet life, which are more likely to occur in SOEs. This result explains why the effects of CGR on SOEs are weaker.

6.2. Product Market Competition, Corporate Governance Reform, and State Ownership

As previously discussed, enjoying quiet life behaviors is essentially the result of lack of incentives for managers. Product market competition is an efficient external governance mechanism for generating external pressure and incentives for managers, eliminating the agency problems caused by this channel.\textsuperscript{17} SOEs in more competitive industries can function similarly to non-SOEs because product market competition reduces management entrenchment and creates managerial incentives. To validate the argument laid down in the last section, we examine whether product market competition can improve the efficiency of the impact of CGR on SOEs.

More specifically, we compare the effects of CGR on the firm value of SOEs in more competitive and less competitive markets. If CGR were also effective in reducing agency problems due to enjoying quiet life behaviors, no difference would be observed between these two groups of SOEs since the CGR would have already alleviated the agency problem related to enjoying quiet life behaviors. If the results show a significant difference between the SOEs in more competitive and less competitive markets in terms of the effects of CGR on firm value, then we can

\textsuperscript{16}Stealing or diverting corporate resources can be accomplished in various ways, such as tunneling company resources, paying abnormally high compensation, and enjoying excessive perks.

\textsuperscript{17}Alchian, 1950; Friedman, 1953; Recent evidence shows that competition improves governance (Guadalupe and Wulf, 2007) and serves as an effective external governance mechanism (Giroud and Mueller, 2010).
conclude that the CGR is ineffective in reducing the agency problems that stem from enjoying quiet life behaviors.

Following previous studies (e.g., Kadyrzhanova and Rhodes-Kropf, 2007; Durnev and Mangen, 2009; Giroud and Mueller, 2010), we take the industry concentration ratio (ICR) as the primary measure of product market competition. ICR is the sum of the market share of the four firms with the largest sales among all Chinese publicly listed firms in the same industry and in the same year. Using the matched sample, we estimate the following regression:

\[
Y_{it} = \delta \text{CGR}_{kt} + \eta \text{CGR}_{kt} \times \text{State}_\text{OWN}_{it} + \lambda \text{State}_\text{OWN}_{it} \\
+ \theta (1 - \text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt} + \beta (1 - \text{ICR})_i \times \text{State}_\text{OWN}_{it} \\
+ \psi (1 - \text{ICR})_j \times \text{CGR}_{kt} + \rho (1 - \text{ICR})_i \times \gamma X_{it} + \alpha_i + \alpha_j + \epsilon_{ikt}
\]

where \(j\) represents industry \(j\), \((1-\text{ICR})\) denotes the measure of the degree of product market competition, and a lower value of \((1-\text{ICR})\) indicates greater competition. Thus, internal managers experience stronger external pressure to work hard and seize growth opportunities for their firms. The variable of interest is \((1-\text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt}\), and its coefficient \(\theta\) represents how the heterogeneous effects of the CGR on firm value in terms of ownership structure change with the degree of product market competition. A positive \(\theta\) supports our arguments.

The estimated results (Table 6) are consistent with our prediction. The coefficients of \((1-\text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt}\), \((1-\text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt}\), \((1-\text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt}\), and \((1-\text{ICR})_j \times \text{State}_\text{OWN}_{it} \times \text{CGR}_{kt}\) are all positive, and most are statistically significant. This evidence suggests that firms with state-owned shares operating in more competitive product markets behave more similarly to firms without state-owned shares. These firms are therefore more strongly affected by the CGR than are firms

\(^{18}\)We rely on the four largest companies because the ICRs based on the 8, 20, or 50 largest publicly listed firms may present a greater probability of omitted private companies, which leads to classification errors (Kadyrzhanova and Rhodes-Kropf, 2007; Durnev and Mangen, 2009).

\(^{19}\)Industries are defined as the first two-digit SIC codes.

\(^{20}\)We acknowledge the potential problems of this product market competition measure because its calculation disregards the existence of non-publicly listed firms. First, accessing data on the sales of all publicly listed and non-publicly listed firms is impossible; in particular, the latter are not required to disclose their financial information to the public. Second, publicly listed firms tend to be large; thus, the bias introduced by focusing only on publicly listed firms is limited. Third, we exclude the observations for which less than 10 firms are in the industry in a given year to reduce potential bias. Thus, the sample size in this test is smaller than that for estimating the OLS regressions in Table 4. Finally, one may also argue that the financial markets during the early years tend to cover fewer firms; therefore, bias will be stronger. To some extent, this concern can be controlled with year-fixed effects. Although this calculation is imperfect, it has been extensively used in previous studies (e.g., Giroud and Mueller, 2010).
Table 6: State ownership, corporate governance reform, product market competition and firm value

Reported in parentheses are robust standard errors calculated by bootstrapping. Denotes statistical significance at the *10% level, **at the 5% level, ***at the 1% level. (1) All regressions control for firm fixed effects and year fixed effects. (2) The definitions of variables are shown in Table 1.

<table>
<thead>
<tr>
<th>Dependent Variable: Tobin’s Q</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGR</td>
<td>0.395*** (0.066)</td>
<td>0.419*** (0.051)</td>
<td>0.313*** (0.061)</td>
<td>0.512*** (0.097)</td>
</tr>
<tr>
<td>(1-ICR)<em>State_00</em>CGR</td>
<td>0.389*** (0.030)</td>
<td>0.836*** (0.029)</td>
<td>0.923*** (0.011)</td>
<td>1.537*** (0.073)</td>
</tr>
<tr>
<td>State_00*CGR/C0</td>
<td>0.345*** (0.017)</td>
<td>0.726*** (0.017)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State_33*CGR/C0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State_66*CGR/C0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State_%*CGR/C0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-ICR)*State_00</td>
<td>-0.345*** (0.017)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-ICR)*State_33</td>
<td></td>
<td>-0.726*** (0.017)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-ICR)*State_66</td>
<td></td>
<td></td>
<td>-1.019*** (0.008)</td>
<td></td>
</tr>
<tr>
<td>(1-ICR)*State_%</td>
<td></td>
<td></td>
<td></td>
<td>-1.400*** (0.031)</td>
</tr>
<tr>
<td>State_00</td>
<td>0.408*** (0.036)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State_33</td>
<td></td>
<td>0.446*** (0.043)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State_66</td>
<td></td>
<td></td>
<td>2.018*** (0.089)</td>
<td></td>
</tr>
<tr>
<td>State_%</td>
<td></td>
<td></td>
<td></td>
<td>1.050*** (0.317)</td>
</tr>
<tr>
<td>(1-ICR)*CGR</td>
<td>1.161*** (0.051)</td>
<td>0.852*** (0.036)</td>
<td>0.606*** (0.042)</td>
<td>0.751*** (0.084)</td>
</tr>
</tbody>
</table>
that have state-owned shares and operate in less competitive industries. Gupta (2005) finds that the IPOs of SOEs and product competition are not interchangeable when examining effect on firm performance. Our findings provide evidence that product market competition can be a complementary mechanism to CGR in enhancing the efficiency of governance mechanisms in increasing firm value.

7. Conclusion

We investigate the differences in the way Chinese CGR affects SOEs and non-SOEs in terms of firm value, as measured by Tobin’s Q. The effects of CGR on firm value are weaker for firms with more state-owned shares. This finding may be attributed to the ineffectiveness of CGR in reducing the agency problems related to managers’ tendency to enjoy quiet lives, a behavior more commonly observed in SOEs than in non-SOEs. We then test this argument by examining whether the effects of CGR on SOEs are stronger in more competitive product markets, which have been widely documented as an external governance mechanism that alleviates agency problems related to the aforementioned channel. Our results support our argument.

Our results also reveal new possibilities for future research. Although competitive product markets provide evidence for our argument, more studies should be conducted to construct a variable that measures the extent of managers’ enjoyment of quiet life behaviors. This variable would facilitate further direct validation of the arguments presented in this paper. The sample we use covers a 3-year period before the reform was enacted and another 3 years after the initiation of the reform. Thus, the estimated effects of the reform are better interpreted as short-term effects. Further research can be conducted to investigate whether the same pattern, that

Table 6 (Continued)

<table>
<thead>
<tr>
<th>Dependent Variable: Tobin’s Q</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-ICR)</td>
<td>-0.105*</td>
<td>0.117*</td>
<td>0.307***</td>
<td>-0.127</td>
</tr>
<tr>
<td>(FirmAge)</td>
<td>0.085***</td>
<td>0.091***</td>
<td>0.101***</td>
<td>0.080***</td>
</tr>
<tr>
<td>(TotalAsset)</td>
<td>-1.276***</td>
<td>-1.278***</td>
<td>-1.248***</td>
<td>-1.303***</td>
</tr>
<tr>
<td>(Leverage)</td>
<td>1.513***</td>
<td>1.601***</td>
<td>1.586***</td>
<td>1.541***</td>
</tr>
<tr>
<td>(Constant)</td>
<td>7.329***</td>
<td>7.279***</td>
<td>6.895***</td>
<td>7.420***</td>
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<tr>
<td>Observations</td>
<td>485</td>
<td>485</td>
<td>485</td>
<td>485</td>
</tr>
<tr>
<td>Adj-R²</td>
<td>0.75</td>
<td>0.75</td>
<td>0.76</td>
<td>0.75</td>
</tr>
</tbody>
</table>
is, CGR’s weaker effects on SOEs, would exist in the long run. If the same pattern does not exist in the long term, then the underlying reasons for this deviation should be investigated. Whether competition in product markets plays a similar role in reducing managers’ enjoyment of quiet life behaviors in the long run is also worth examining.

References

Friedman, M., 1953, The methodology of positive economics, essays in positive economics (University of Chicago Press, Chicago).


Myers, S., and N. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, pp. 187–221.


