# Subsidizing the Firm: New Evidence on the Impact of Politically Connected Boards

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## Abstract

This paper examines the impact of firms' political connections on firm performance and the industry-wide capital misallocation. Our empirical strategy takes advantage of a regulation in China that forces current and former government officials or members of Communist Party in China (CPC) to resign from their corporate positions. Using a difference-in-differences approach, we show that firm performance decreases after the mass resignation of official independent directors (OIDs). We explore the reason and find that subsidies, an important income source for Chinese firms, are drained away with the officials' resignation. Furthermore, related party transactions previously brought by OIDs are much less frequent. These changes affect firms' cash reserves. In order to maintain a steady financing source, firms borrow more from the bank. Consequently, their leverage goes up significantly after the new regulation. We also find that OIDs' mass resignation increases the industry-wide capital misallocation. Overall, our results suggest that firms with higher marginal productivity hire OIDs to gain an easier access to economic rents, and consequently mitigate the degree of capital misallocation.

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# 1. Introduction

China has experienced fast economic growth during the past three decades. Although the economic system has become greatly decentralized during this period, the influence of political connection remains as a notable feature. Thousands of firms in China hire current or retired government officials to sit in their boards. State-owned companies, which largely control the key industries of China, have CEOs that are directly appointed by the central or local government. Compared with developed economies such as the US, the proportion of such "politically connected" firms are much higher in China. Therefore, China, despite its fast economic growth, remains one of the most politics-oriented economies in the world.

Probably due to the lack of high quality data, the role played by firms' political connections in China remains largely unexplored in the literature. We know little about the extent to which political connections hinder, or contribute to, China's economic growth. The literature has been focusing political connection issues in other countries though. A majority of the studies suggests that political connections can add net value to the firm (e.g. Faccio, 2006; Boubakra et al., 2012), with a few exceptions arguing that politicians' rent-seeking effect would dominate and thus reduce firm value (e.g. Shleifer and Vishny,1994). In this paper, taking advantage of a new regulation in China, we seek to provide evidence for the exact role played by official independent directors (OIDs) in China. In particular, can firms with OIDs gain extra rents in the form of government subsidies? To what extent do firms benefit from such economic rents? Does granting subsidies based on firms' political connections mitigate or exacerbate capital misallocation? By answering these questions, we seek to add new insights to the literature and meanwhile provide

implications for government policies.

To examine the causal effect of political connections on firm performance (and on capital misallocation), our identification strategy utilizes the forced resignation of independent directors with government backgrounds. Recently, Chinese government attracted world's attention by setting off an anti-corruption wave that swept the whole country. A focal point of the anti-corruption is to delink companies from politicians.[1] The first major step of the activity is a new regulation that imposed stringent restrictions on government officials' access to corporate positions. In China, many current or former government officials (including members of Communist Party) take office in corporations, and the most common practice for them is to serve as independent directors of the board.[2] On 19 October 2013, the highest hierarchy of the Communist Party in China (CPC) issued a new regulation, named *Document 18*, which targeted this dual-role problem. Document 18 forces the current and former government officials or CPC members (we use "officials" to refer to both government officials and CPC members hereafter) to resign from their corporate positions. The new regulation therefore triggered a resignation wave of OIDs from the listed companies, creating an exogenous shock to these firms' degree of political connections. In this respect, the new regulation provides an ideal setting to examine the effect of political connection on firm performance.

We employ a difference-in-differences (DID) approach which can capture the effect of

[1] Chinese media often reports that government officials that hold company positions help firms grab government procurement contracts or embezzle state properties, after accepting a considerable amount of bribes.

[2] Government officials can also become the CEO of a firm, but such cases are predominantly limited to state-owned companies, in which government officials are directly appointed by the government. These cases, however, are not against *Document 18*, which only targets officials who seek corporation positions by themselves.

the new regulation by comparing the change of two groups of firms – firms that are affected by Document 18 and those that are unaffected. We define affected firms as those that were hiring officials on 19 October 2013. A potential concern is that these firms are far different from those that were not hiring any officials in various dimensions (e.g. Faccio, 2006; 2010). In order to ensure that the two groups follow a relatively similar or parallel trend before the regulation, we use a propensity-score matching (PSM) algorithm. Specifically, we find each affected firm a control firm that has the closest probability of hiring OIDs right before the event. We show that after PSM, the parallel trend assumption holds better. The DID approach is thus conducted based on the matched sample.

We first investigate the effect of political connections on firm performance. The results show that after the new regulation, Tobin's $q$ for affected firms declines significantly relative to unaffected firms. To explore the reason for the decline in $q$, we investigate the change in government subsidies, an important source of income for Chinese firms. We find that after the resignation of OIDs, government subsidies obtained by affected firms decline by 32.5% relative to unaffected firms. Furthermore, the decline is mainly driven by the reduction of "discretionary" subsidies, defined as government subsidies granted without designated usage (thus are easily subject to officials' discretion in granting).[3] This evidence implies that official independent directors can help firms gain extra economic rents from the government. Furthermore, we also find that the resignation of OIDs causes the number of related-party transactions to drop significantly. This suggests that, by

[3] In our data, each subsidy grant is under a title, usually specifying the dedicated usage of the subsidy. For example, research and development subsidies, import tax deduction, outstanding firm award, etc. However, 43 % of the titles are just in general terms such as "subsidy", "allowance", "support", etc., without specifying any purpose or usage.

utilizing their political resources, OIDs actively engage their firms in more transactions.

We also investigate other consequences that could contribute to the value reduction of affected firms. We find that accompanying the reduction in subsidies and related-party transactions, affected firms' cash holding is significantly reduced. Further, as a consequence of the reduced funding after the regulation, firms have to resort to more external financing. Indeed, we find that affected firms borrow more from banks. As a result, these firms' leverage ratio increases significantly after the regulation relative to control firms.

Another interesting question, in our context, is whether OIDs are just passive independent directors on board. To answer this question, we exploit the data that reports the frequency of opinion expressions for each independent director on board. If officials are simply passive independent directors, we expect them to express their views less frequently than normal independent directors. Therefore, their mass resignation should lead to an increase in the average number of opinion expressions of independent directors. However, we find the opposite – after the new regulation, the average number of independent directors' opinion expressions declines significantly relative to unaffected firms.

Our evidence suggests that firms can get extra economic resources, i.e., government subsidies, related-party transactions, through their political connections. A fundamental question is that, is this an optimal way of allocating capital and economic resources? To answer this question, we investigate the impact of political connections on the industry-level capital misallocation. We find that after OIDs resignation following the new

regulation, the dispersion of marginal productivity within an industry increases. This evidence implies that the existence of political connections (i.e., OIDs) mitigate industry-wide misallocation of capital. We conduct further analyses and find that this mitigation effect is consistent with highly productive firms choosing or attracting OIDs that help them obtain necessary capital, but cannot be attributed to OIDs' personal ability or superior information that can help increase firms' marginal productivity.

The Chinese independent director system has been criticized since its existence and is known as "decorative" directors, because of their unsatisfactory performance in the monitoring and advising roles. Our study provides evidence that independent directors with government backgrounds, who are believed to have played the least active role, influence the firm significantly by actively engaging in some corporate activities. Such activities benefit individual firms and meanwhile mitigate the degree of capital misallocation at the industry level. To our best knowledge, this study is one of the first few, if any, to provide evidence on the relationship between the degree of political connection and capital misallocation.

Our paper differs from the previous studies in several ways. First, our setting takes advantage of an event that exogenously affects the political connection of firms, thus largely mitigating the endogeneity problem that concerns most of the studies in the literature. Second, we utilize a unique dataset of detailed government subsidy grants to Chinese firms. In China, officials are likely to use companies as a platform to cash out their political resources. Government subsidies are the most direct measure of wealth transfer from the government to firms. The difference between this measure and those

used in the literature is further discussed in the following section. Third, we use another unique dataset, the frequency of expressing opinions, to measure the advising function of independent directors and examine whether OIDs play an active role in this respect. Our findings suggest that OIDs play a more active role than non-official directors in terms of providing relevant opinions.

## 2. Literature review

This paper contributes to the broad literature of political connection, especially political connections through board of directors (Goldman et al., 2009). Prior studies have documented various channels through which political connection adds value. Most of the benefits come from the financing side, such as easier access to finance (Claessens et al., 2008), lower financing cost for equity (Boubakra et al., 2012), public debt (Bradley et al., 2014) and bank loans (Houston et al., 2014). Another channel, as documented in Faccio et al. (2006), indicates that politically connected firms are more likely to be bailed out in financial distress. Along the same line, Duchin and Sosyura (2012) illustrate one mechanism through which political connections affect real side of the economy. They find that politically-connected firms can obtain more government funding through Troubled Asset Relief Program, but these government investments suffer capital misallocation. Do et al. (2015) use a regression discontinuity design to show that firms connected to the election winner party invest more and receive more state procurement contracts. While these two studies are most similar to ours, we deviate from the former by looking at government subsidies during normal periods rather than bailout programs following

financial crisis, and deviate from the latter by examining a more direct channel of value transfer – cash granted from the government.

Our paper also adds to the literature of government subsidies. Van Tongeren (1998) investigate government subsidies in Netherlands during the 1980s and find no impact on investment decision. However, firms become more solvent after receiving subsidies. Other papers on government subsidy explore the welfare implication of government subsidies. Beason and Weinstein (1996) show that subsidizing firms leads to reduced growth and reduced return of scale. Lee (1996), using a sample of manufacturing firms in Korea, shows that government subsidies affect resource allocation across the nation, but does not generate any welfare gain. Bergstrom (2000) uses a sample of Swedish firms and shows that in the long run total factor productivity worsens with more granted subsidies. Our paper shows that government subsidies can affect firms' cash balance and financing decisions.

## 3. Document 18 in China

After the establishment of the independent director system in China, it has become a common phenomenon that listed companies hire current or retired government officials and CPC members under the title of "independent director". The CPC issued three documents in 2004, 2008 and 2013, setting up detailed regulations on officials taking positions in corporations. These documents aimed to restrict the power of these officials and mitigate potential corruptions. The general principle is that officials should not be involved in real business of the company. However, the first two documents only lay down

the general principle, without detailing instructions on execution, which left much room for officials to circumvent the regulation. As a result, few officials resigned because of these two regulations.

After 2012, China started a huge wave of anti-corruption activities. Against this backdrop, the third document, known as Document 18, was issued on 19 Oct 2013. The main regulations in this document is summarized below.

(1) Current officials (including CPC members and government officials) should not take positions in corporations.

(2) Within three years of their retirement, officials should not take any positions in the corporations that were previously within their jurisdiction. If they want to do so, they need to seek special approval from the corresponding Party Committee; after three years of retirement, officials who intend to take positions in corporations should also seek special approval from the corresponding Party Committee.

(3) Officials approved to take positions in corporations should not receive any form of compensation from the corporation. In addition, they should not take more than one position, should not serve more than two tenures, and should leave before they turn 70-year old.

Although the regulations still leave some room for an official to stay in a corporation, the incentive for doing so is significantly reduced. In addition to the pecuniary reason that the compensation is reduced to zero, the non-pecuniary reason can be even stronger: the central government is determined to punish any form of corruption, and any politically connected positions will be subject to intensive investigation conducted by the Disciplinary

Committee of the CPC. The enforcement this time is much more stringent than the previous two, and thus the independent directors with official backgrounds started to resign. Within just a few months following the regulation announcement, the media reported a large number of resignations of officials from their positions in listed companies. Many of them are former officials in the central government.

## 4. Data and Summary Statistics

For information on financial statement, bank loans and related party transactions, we use CSMAR database. Our government subsidy data is from Wind database. We download government subsidy information for each company and merge them with the CSMAR data. This not only gives us the total amount of subsidies received by each firm in each period, but also a detailed breakdown of the dedicated usage for each grant. Based on the information about the usage, we classify government subsidies into six categories: Technology-related, Tax-related, Project-related, Import/Export-related, Environment-related and Discretionary subsidies. For example, if the subsidy description contains words related to technology development or innovation (i.e. research, invention, technology, among others), the subsidy is classified as Technology-related type. If the subsidy description includes the word "tax", the subsidy is categorized as Tax-related type (such as tax deduction or other preferential tax treatments). We similarly classify Import/Export-related and Environment-related subsidies. To be qualified as a Project-related type, the subsidy must be granted for a particular investment project (i.e. constructions of buildings and infrastructures). Finally, we classify items which contain

no information about the usage of subsidy, but are simply described as "subsidy", "allowance" and "support", as Discretionary type, since these subsidies do not have clearly designed purposes and can be more easily manipulated or tunneled. To ensure a mutually exclusive categorization, we apply the following sequence in assigning subsidy types: Technology > Tax > Project > import/Export > Environment > Discretionary. It means that if a subsidy item has been assigned a type that comes earlier in the sequence, it will not be classified as any type that comes later. Although the financial statements are updated on a quarterly basis, subsidy data is only revealed semi-annually. Thus we use half a year as one period in our analysis.

The information on board of directors are collected from both CSMAR and Wind database. We first utilize the Personal Characteristics database in CSMAR, which directly classifies directors on board into officials and non-officials. However, some of the board members are not included in this database. We thus supplement it using information from Wind database. For each listed company, Wind records two data files, one for current board members, and the other for historical board members. Merging these files creates a panel of board members, with their names, positions, tenure and detailed background information about their past experience. Using this information, we are able to identify directors that are omitted in CSMAR, and then do a detailed background investigation on them to determine whether they are affected by the regulation.[4] A combination of the two databases therefore allows us to accurately classify the treatment and control firms. A

[4] Identifying whether a person is affected by the regulation and thus needs to resign need careful work. For example, some independent directors served government many years ago, before they quit and started to do business. These people are not under the jurisdiction of the Communist Party and thus are not required to resign.

treatment firm is defined as a firm with at least one OID on the announcement date of regulation.

After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015, a total of 11 periods. 1391 firms had OIDs on board on 19 October 2013, and are thus classified as treatment firms. Table 1 presents the summary statistics for treatment and control firms. In Panel A, we compare the board characteristics for the two groups of firms. Treatment firms have larger board size and fewer PhD degree holders on board. The average age and female percentage are similar across the two groups. In Panel B, we describe firm characteristics for the two sets of firms. Treatment firms are slightly larger in firm size and sales, and they receive more government subsidies. Panel C shows detailed classifications of subsidy. Interestingly, Discretionary subsidies comprise almost 50% of the total granted subsidies. Furthermore, on average, the total amount of subsidies is a substantial component of firm's net income. For the treatment firms, government subsidies account for around 30% of their net income. For the control firms, this number is 21%. This comparison also suggests that firms are more likely to get more funds from the government when they have officials sitting on board.

## 5. Empirical Strategy

To test the impact of OIDs on firm performance, an ideal experiment requires that the change in board structure, in terms of the number of official independent directors, be not related to the outcome variables (i.e., Tobin's $q$, subsidies, etc.). In other words, we need an exogenous change in the number of OIDs and then examine its effect on our outcome

variables. To achieve this, our identification strategy exploits the resignation of OIDs that is caused exogenously by a regulation change.

Document 18 was issued by the Publicity Department of the CPC Central Committee, which is the highest party authority in charge of personnel and organization affairs. As described earlier, Document 18 was issued to push the anti-corruption activities in China. It is exogenous in the sense that no firms have lobbied for its issuance, and thus any observed outcomes after the event should not be attributed to self-selection. Moreover, firms are forced to comply with the new regulation, i.e. OIDs have no choices but to resign.

This resignation wave is shown in Figure 1. Figure 1a and Figure 1b show that the average board size and the number of independent directors do not change much over time.[5] Figure 1c shows the total number of official independent directors (OIDs) across time. The curve initially increases, largely due to the increasing in the number of firms in China, and then drops significantly from its peak at the end of 2013. This is exactly when the Document 18 of CPC was announced. In the next one and a half years, around 1000 OIDs ceased to hold office. Even more evidently, Figure 1d shows the average number of OIDs per firm across time, which drops from 1 to 0.5 per firm after the event. To further illustrate the resignation wave, Figure 1e shows the semi-annual, noncumulative number of resignation of OIDs. Obviously, resignation has some seasonality that directors are less likely to resign at year end. However, the curve surges around the regulation date and then recovers to normal level. Figure 1f plots the fraction of resigned OIDs to the total

[5] According to Chinese Company Law, when an independent director resigns, he/she should continue sitting in the board until a replacement is found. This ensures that independent directors remain at least one third of the total board size.

resigned independent directors in each half-year period. The pattern is similar to Figure 1e. This suggests that the resignation of OIDs is beyond the normal resignation pattern of independent directors.

However, we can still observe around 1700 OIDs on board after the dramatic resignation wave. A probable reason is that, due to the difficulty of identifying whether a particular independent director is under the jurisdiction of the CPC, our classification process might have over-classified people into the treatment group. For example, some former officials had retired long enough before they sat in a board, and thus were not required to quit by Document 18. But it is difficulty to identify their effective retirement dates, since government officials' retirement in China is not strictly based on age. In this case, we still classify the independent director as an OID. Thus we are suffering the risk of classifying a potential control firm as a treatment firm. While we are not able to fully rule out this possibility, the concern is mitigated in our setting. First, over-classifying control firms into treatment firms only causes bias that goes against finding a significant impact of official independent directors. Second, even if some OIDs did not resign when they should have, the close investigation of CPC following the new regulation would have their hands tied, paralyzing their political powers that used to influence the company. In this sense, the new regulation still causes a reasonable variation in the function of OIDs and thus satisfies our need to perform an empirical test.

Our estimation method is a difference-in-differences (DID) approach, which compare the change in a treatment firm after the regulation date with that in the control firm. However, treatment firms that hired officials in their boards could be highly different from

those that did not hire any official in a variety of characteristics. The parallel trend assumption, required by the DID approach, is likely to break down under this circumstance. To resolve this issue, we conduct a propensity-score matching algorithm. Specifically, we estimate, for each firm, the propensity score of hiring official independent directors prior to the regulation date. The estimation is based on a Probit model in which the dependent variable equals one when there was at least one OID on board and zero otherwise, and the control variables include Log(Asset), Log(Board size), *Tobin's q*, ROA and SOE dummy. Then we perform a nearest-neighbor one-to-one match, i.e., match each treatment firm with a control firm that has the closest value of propensity score without replacement.

Figure 2 plots the average difference of Tobin's $q$ and subsidies between treatment and control firms. Figure 2a shows the difference of Log(subsidy) using the original sample and Figure 2b plots the difference of Log(subsidy) using the propensity-score matched sample. Without matching, the difference in treatment and control firms' subsidies fluctuates a lot before the regulation. This implies that the two groups of firms have different patterns of subsidies before the experiment, breaching the parallel trend assumption of DID. When using matched sample instead, the difference of subsidies becomes relatively flat and has smaller fluctuations before the regulation. The comparison also suggests that treatment and control groups are more similar to each other in the matched sample than in the original sample. Therefore, we estimate the DID model with the matched sample as follows.

$$Y_{i,t} = Post_i * Treat_t + Controls_{i,t} + Firm\ Fix\ Effect_i + Time\ Fixed\ Effect_t + \varepsilon_{i,t} \qquad (1)$$

where *Y* is the outcome variable, including Tobin's *q*, subsidies, number of related party transactions, cash holdings, bank loan amount, and leverage. *Post* equals one for the period after the regulation announcement, and zero for the period before that. *Treat* equals one for firms that were hiring at least one OID on or before the regulation announcement and equals zero for those that were not. *Controls* include control variables that are specific to each dependent variable. All variable definitions are included in the Appendix.

## 6. Empirical Results

### *6.1 Tobin's q*

We first examine the effect of independent directors' political connections on firm performance. Following the literature, we use Tobin's *q* as the measure of firm performance (Coles et al, 2008; Ahern and Dittmar, 2012). We estimate equation (1) in which the dependent variable is *q*. Table 2 presents the results. After including both firm fixed effect and time fixed effect in column (6), the resignation of OIDs results in a 0.086 reduction in Tobin's *q* relative to firms without OIDs. Since the average *q* of treatment sample equals 2.455, this result is equivalent to a 3.5% reduction in *q*. This evidence implies that independent directors' political connections add value to firms.

### *6.2 Government subsidies and related party transactions*

We then attempt to identify the channels through which the political connection of board affects firm performance. First, we explore the amount of government subsidy granted to firms, which can be viewed as the most direct financial aid from government. For a Chinese firm, subsidy from the government takes a large fraction of net income, as

shown in Table 1. Besides, the allocation process of government subsidy is not completely transparent, and thus is easily controlled or fiddled by government officials. In column (6) of Table 3, the amount of government subsidy reduces by 32.5%, relative to control firms, after OIDs are forced to leave the firm. Since the average semi-annual subsidy is around 11 million CNY (shown in Table 1), this reduction amounts to 3.58 million CNY for a treatment firm during the post-regulation period. This is an economically significant number.

To shed light on which types of government subsidies are more affected, we use the logarithm of each subsidy category as the dependent variable, and estimate the DID regression. Interestingly, we are unable to document any significant change for subsidies that have a clearly designated granting purpose (i.e., technology-, tax-, import/export-, project-, and environment-related). But we find a significant reduction in the discretionary subsidy category. This result is presented in Table 4. After controlling for firm and year fixed effects, discretionary subsidies are reduced by 27.8%. Since discretionary subsidies, by our definition, do not specify the usage of funds when granted, they are more likely to be subject to manipulation and tunneling than other types. Our result shows that this type of subsidies is most likely to be obtained by a firm that has government officials in its board. We are not sure, however, whether official independent directors will grab a proportion of these government grants as "rebates".

As related party transactions have been widely used to tunnel wealth from the firm to related parties (Jian and Wong, 2010), we further investigate the effect of independent directors' political connections on related party transactions. In CSMAR, related party

transactions include eleven categories based on the counterparty of the transactions, counterparties including (1) the parent company of the listed company, (2) the subsidiary of the listed company, (3) other enterprise controlled by the same parent company, (4) investor(s) exercising joint control over the listed company, (5) investor(s) imposing significant influence on the listed company, (6) joint venture of the listed company, (7) affiliated enterprise of the listed company, (8) major individual investors of the listed company and their close relatives, (9) key executives of the listed company (including executives of the parent company) and their close relatives, (10) enterprise which is controlled, jointly controlled or significantly influenced by the listed company's major individual investors, executives, and their close relatives, and (11) other related parties. In our analysis, we count related party transactions that involve top managers, board members and key personnel in a firm, i.e., category (9) and (10).

In Table 5, we show a 33.3% reduction in the number of related party transactions, after including various controls and fixed effects. The economic significance of the reduction implies that government officials in the boardroom are utilizing their political resources to engage the firm in a substantial quantity of related party transactions. Although related party transactions do not necessarily reflect tunneling, but if OIDs do obtain "rebates" from the firms they serve, related party transactions can be one channel through which these "rebates" take place.

### *6.3 Other consequences*

In this subsection, we examine other consequences that could be caused by the resignation of OIDs. We first focus on firms' cash holding. It has been shown that after the

resignation of OIDs, firms are getting significantly lower amount of government subsidies and much fewer related party transactions relative to control firms. Reductions in both activities could lead to a contraction in firm's cash balance. Using the DID approach, Table 6 reports that treatment firms' cash holding reduces by around 2.6%, after including all controls and fixed effects. Note that the reasons for the reduction in cash holding should not be only limited to the decreasing subsidies and related party transactions, because officials are likely to be engaged in other fund-raising (or saving) activities that we could not observe. For example, with the presence of a government official on board, some firms do not have to bribe the local government for approvals of investment projects.

With fewer funding sources, to sustain current and future investment opportunities, firms need to resort to alternative financing choices. In Table 7, we show that firms borrow more from banks after the regulatory change. After controlling for time and firm fixed effects, column (6) shows that a treatment firm increases its borrowing from the bank by 39.3% relative to the control firm. We also test the issuance pattern for corporate bonds and is unable to identify any significant change. This is reasonable because bank loans are more flexible financing sources. For example, with long-lasting relationship developed with the banks, firms are able to obtain urgent credits to fulfill investment needs (Bharath et al., 2011).

As a result of the increasing borrowing from the bank, firms should become more leveraged. We test this conjecture in Table 8, and find consistent evidence. After the resignation of OIDs, treatment firms' leverage goes up by around 0.006 relative to control firms, as shown in column (6). This amount to a 1% decline in leverage for treatment firms.

To summarize the results, we show that firm performance decreases after OIDs are forced to resign. Subsidies, a major source of financial support from Chinese government, is drained away with the officials' leave. Related party transactions previously brought by OIDs are much less frequent. These changes affect firms' cash reserves. In order to maintain a steady financing source, firms have to resort more to bank debt. Consequently, their leverage goes up significantly after the new regulation.

### *6.4 Frequency of opinion expression*

In China, government officials and CPC members hired by companies are often criticized as "zombies" in the boardroom – they serve as a brand for a company, receiving high compensation, but do nothing, neither monitoring nor giving advice. This criticism seems to go against our finding that OIDs play an active role in getting subsidies from the government and in engaging the firm in related party transactions. If this indeed is the case, our findings could just reflect a spurious relation between firm's political resources and government subsidies (or related party transactions). Using our setting and a unique dataset, we examine whether OIDs are zombie directors on board. The Company law in China mandates firms to record independent directors' proposals and voting in board meetings. Using this dataset, we are able to identify on which specific subject a particular independent director brought forward an opinion. For each firms, we count the number of opinions independent directors make on a semi-annual basis, compute the average number of opinions per director, and examine the change in the average number of opinions after the resignation of OIDs. The premise is that, a passive director is less likely to express his/her opinion frequently; if OIDs are more passive than an average director,

we should observe a decline in the average number of opinions after their resignation. In Table 9, we show that after the new regulation, the number of opinions per independent director reduces by 18.6% after controlling for time and firm fixed effects. This suggests that OIDs were expressing views more frequently than normal independent directors before the regulation.

### *6.5 Capital misallocation*

Above evidence implies that one of the major role of officials in a firm is to transfer resources from the government to the firm. Although this behavior adds value to the firm, it might hurt social welfare. Ideally, firms with more valuable growth opportunities (but are financially constrained or in temporary financial distress) should be allocated more government support (Alemeida et al, 2014). Our evidence, however, suggests that firms with more powerful officials on the board are allocated more subsidies. In other words, resources are allocated based on political connections instead of marginal productivity. Such an allocation is likely to generate dead weight loss for the society.[6]

However, it is also possible that political connection is a *sign* of higher marginal productivity, and thus allocating resources based on political connection improves the efficiency of capital allocation. This can happen under the following circumstances. First, only highly productive firms hire OIDs, because they know that OIDs can help them obtain necessary fund for their good investment projects. Second, government officials, who seek to cash out their political power, only choose firms that have the highest growth potential

[6] For this view to be true, however, we have to assume that government can utilize resources (either do direct investments or allocate subsidies to firms based on other mechanisms) more efficiently than politically based allocation.

to sit in.[7] In both cases, OIDs are transferring money to firms that have the highest productivity. We call this "Good firm" hypothesis. A third scenario is that OIDs are more able than ordinary independent directors, or, they have superior information on future investment opportunities. In this case, OIDs are able to better advise the firm and create more valuable opportunities for the firm, increasing its marginal productivity. Thus, allocating resources to firms with OIDs is also welfare improving. We call this "Good OID" hypothesis.

We follow Chen and Song (2013) to test whether political connection is the right base for capital allocation, More specifically, we use the industry-level dispersion of capital productivity as a measure of capital misallocation (variable definitions in appendix). The rationale is that an optimal capital allocation should always allocate resources to highest marginal productivity first, which consequently minimizes the dispersion of marginal productivity (Chen and Song, 2013). First, we identify 31 industries based on the first two digits of industry code. Next, we measure the degree of an industry's political connection by calculating the percentage of politically connected firms within each industry. Finally we classify industries into treatment and control groups with several different methods and run industry-level DID regressions. The results are presented in Table 10. Columns (1) and (2) classify an industry into treatment group if the percentage of politically connected firms in the industry is above the mean. Columns (3) and (4) classify an industry into treatment group if the percentage of politically connected firms in the industry is

[7] For this case to happen, we should assume that OIDs have relevant information about a firm's productivity or an industry's growth potential, such that they can choose the right firm to sit in. This is particularly feasible in China, where local governments are in charge of operating licensing of firms, and government performance assessment are closely related to local economic growth. Officials perform corporate site visits regularly to examine firms' performance.

among the top one third of the sample. In columns (5) and (6), we directly use the percentage of affected firms within an industry as a continuous measure of political connection.

The results show that after the regulation and subsequent mass resignation of OIDs, the industry-level dispersion in capital productivity increases significantly for industries with higher degree of political connection, indicating more severe capital misallocation. The evidence implies that higher degree of political connection facilitates efficient resource allocation and improves industry-wide welfare.

As mentioned earlier, this could be due to either the "Good firm" hypothesis or the "Good OID" hypothesis. To illuminate which mechanism is at work, we conduct further tests. If the Good OID hypothesis is at work, we should expect the presence of OIDs to shape the firms' productivity per se. However, Good firm hypothesis does not predict firm's productivity to vary with the presence of OIDs – OIDs are just selecting a good firm, or selected by a good firm. Thus, we examine whether the capital productivity of politically connected firms is changed after the resignation of OIDs. More precisely, we estimate a firm-level DID specification, as in equation (1), dependent variable being capital productivity. The results, presented in Table 11, show that there is no significant change in treatment firms' capital productivity.[8] Therefore, the evidence is not consistent with the Good OID hypothesis. The improvement of capital allocation by firms' political connections should be attributed to OIDs selecting or being selected by good firms.

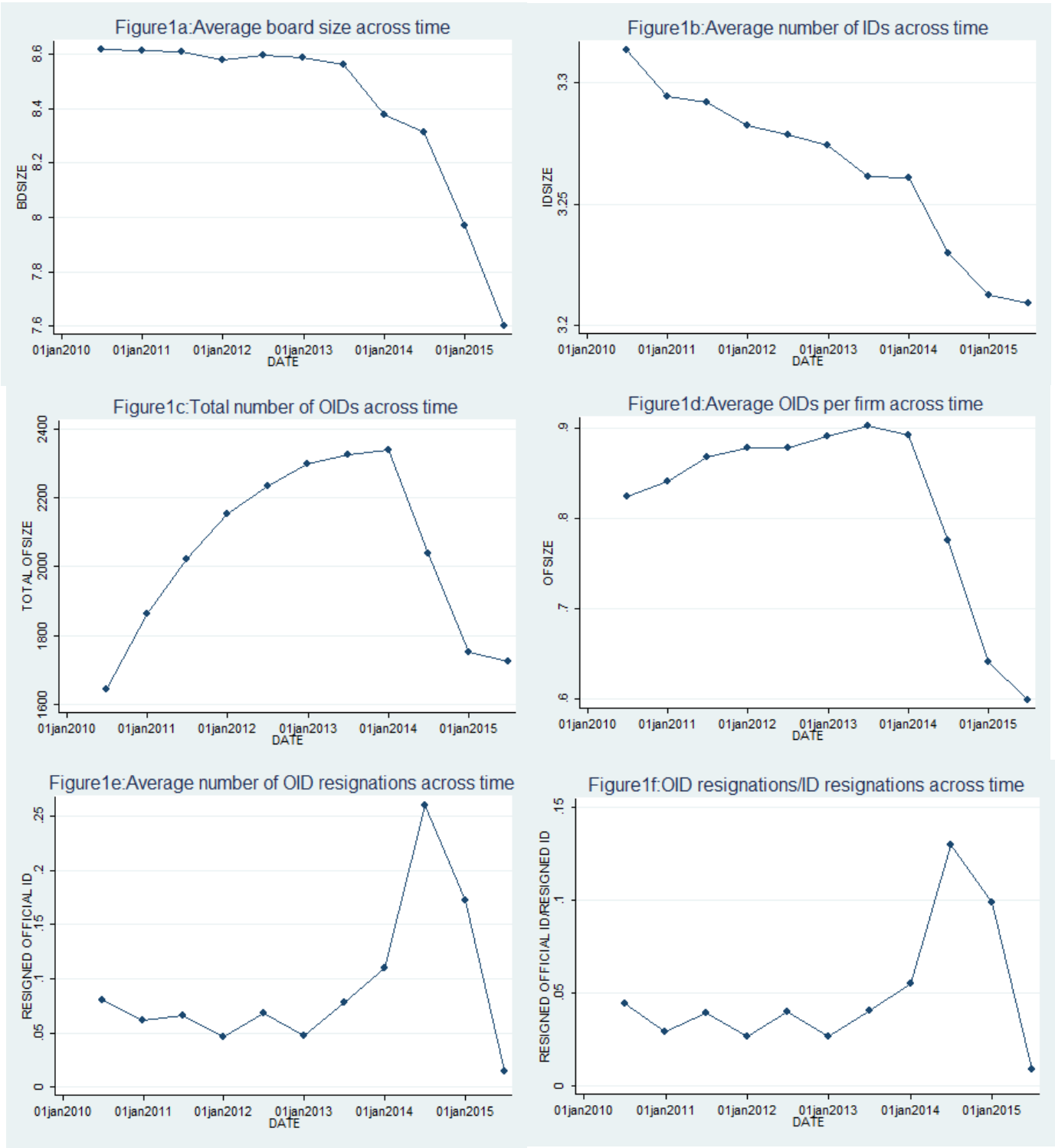
[8] Operating income, in the calculation of capital productivity, does not include subsidies. Thus, subsidies should not affect capital productivity, while they may affect Tobin's $q$, since $q$ considers all future discounted cash flows.

## 7. Conclusion

This paper explores the causal effect of board political connections on firm performance and capital misallocation. We utilize a clean experiment – the forced resignation of OIDs following CPC's new regulation. With a unique dataset on detailed government subsidies granted to Chinese firms, we document that the allocation of government subsidies in China is heavily influenced by the presence of political connections. Politically connected firms obtain significantly lower level of government subsidies after their OIDs' resignation. They also experience a decline in the number of related party transactions. These changes impose a liquidity shock to politically connected firms and they have to borrow more from the bank, causing an increase in the debt-equity ratio. Furthermore, we find that the resignation of OIDs causes a reduction in the average number of opinion expression in the boardroom. Finally, the industry-level capital misallocation deteriorates after the mass resignation of OIDs, indicating that allocating resources based on firms' political connections is welfare improving. We explore the reason and the evidence is consistent with the notion that hiring OIDs are a sign of being productive firms.

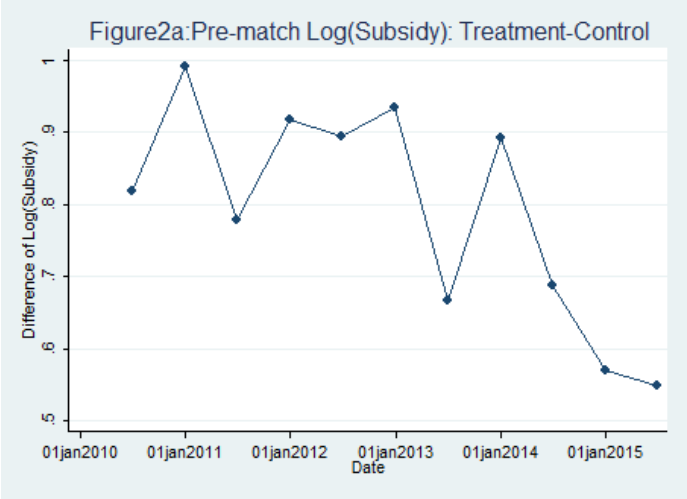
## Figure 1. Resignation of independent directors

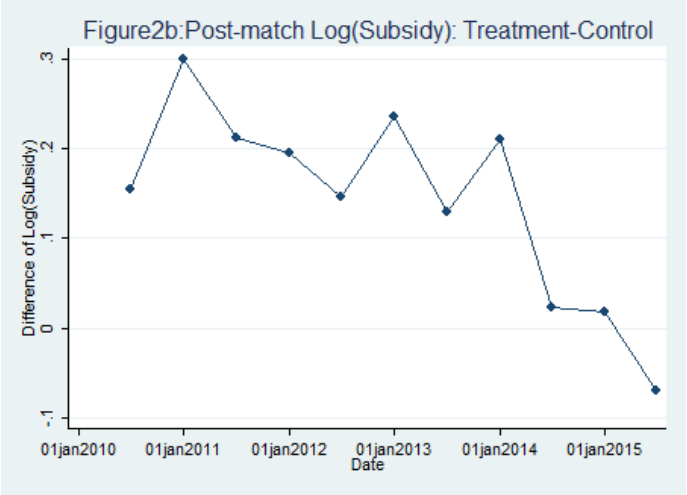
This figure plots the time series of several board characteristics, including average board size, average number of independent directors (IDs), total number of official independent directors (OIDs), average number of official independent directors, average resignations of official independent directors, and average resignations of official independent directors as a fraction of all resignations of independent directors



## Figure 2. Parallel trend assumptions

We calculated the time series average for Log(subsidy) for both the treatment and control groups, and graphs the difference between them.



## Table 1 Summary statistics

The table below provides summary statistics of board characteristics and firm characteristics. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. Treatment and Control groups are reported separately. Panel A reports key characteristics of the board of directors. Board size is the average number of board members. PhD degree (%) and Female (%) measure the percentage of board members holding a PhD degrees and being female. Age of directors is the average age of the board. Panel B reports firm characteristics. Variable definitions are shown in the appendix. Panel C reports characteristics of government subsidies. We classify subsidies into six categories: Technology-related, Tax-related, Project-related, Import/Export-related, Environment-related and Discretionary subsidies, according to the subsidy description. Raw (thousands) measures the average amount of each subsidy category. Fraction (%) measures the percentage of a subsidy category in total subsidy. % of Asset and % of Net Income measure the percentage of a subsidy category of total asset and of the absolute value of net income. All values are winsorized at the 1% and 99% level.

**Panel A Board Characteristics**

| | Treatment | | | | Control | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Min | Max | Mean | Median | Min | Max |
| Board Size | 9.11 | 9.00 | 1.00 | 17.00 | 7.30 | 9.00 | 1.00 | 17.00 |
| PhD Degree (%) | 19.956 | 14.286 | 7.143 | 100.000 | 32.444 | 20.000 | 7.143 | 100.000 |
| Female (%) | 12.219 | 11.111 | 0.000 | 55.556 | 11.720 | 11.111 | 0.000 | 55.556 |
| Age of directors | 50.97 | 50.91 | 41.00 | 61.00 | 49.70 | 49.57 | 41.00 | 61.00 |

**Panel B Firm Characteristics**

| | Treatment | | | | Control | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Min | Max | Mean | Median | Min | Max |
| Tobin's q | 2.455 | 2.019 | 0.603 | 20.223 | 2.557 | 2.119 | 0.602 | 20.151 |
| Log(assets) | 22.062 | 21.839 | 18.281 | 28.349 | 21.702 | 21.548 | 18.278 | 27.114 |
| Book Leverage | 0.428 | 0.465 | 0.000 | 0.943 | 0.387 | 0.394 | 0.000 | 0.943 |
| Cash Holding | 0.196 | 0.148 | 0.000 | 0.799 | 0.201 | 0.151 | 0.000 | 0.799 |
| Development/Assets | 0.002 | 0.000 | 0.000 | 0.052 | 0.001 | 0.000 | 0.000 | 0.052 |
| Profitability | 0.010 | 0.008 | -0.093 | 0.096 | 0.010 | 0.009 | -0.092 | 0.096 |
| Sales/Assets | 0.163 | 0.133 | 0.000 | 0.938 | 0.158 | 0.133 | 0.000 | 0.939 |
| Log(1+Subsidy) | 12.667 | 14.348 | 0.000 | 19.211 | 10.948 | 13.863 | 0.000 | 19.159 |

**Panel C Subsidy Characteristics**

| | Treatment | | | | Control | | | |
|---|---|---|---|---|---|---|---|---|
| | Raw(thousands) | Fraction (%) | % of Assets | % of Net Income | Raw(thousands) | Fraction (%) | % of Assets | % of Net Income |
| Technology | 1524.734 | 25.239 | 0.029 | 5.580 | 1055.858 | 27.486 | 0.121 | 4.648 |
| Tax | 1901.692 | 12.126 | 0.021 | 2.923 | 959.222 | 10.748 | 0.028 | 2.154 |
| Project | 520.357 | 8.366 | 0.008 | 1.455 | 428.408 | 7.957 | 0.018 | 1.077 |
| Import/Export | 74.764 | 1.888 | 0.001 | 0.221 | 58.904 | 2.391 | 0.007 | 0.207 |
| Environment | 90.317 | 0.767 | 0.000 | 0.057 | 183.148 | 0.624 | 0.001 | 0.042 |
| Discretionary | 7144.205 | 49.849 | 0.066 | 14.171 | 3639.570 | 49.189 | 0.000 | 10.112 |
| Total | 11256.069 | 100.000 | 0.137 | 30.073 | 6325.111 | 100.000 | 0.057 | 21.565 |

## Table 2 Board political connections and Tobin's q

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable $y$ is Tobin's $q$. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Tobin's q | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.081** | **-0.062** | **-0.074*** | **-0.095**** | **-0.089**** | **-0.086***** |
| | (0.054) | (0.042) | (0.040) | (0.040) | (0.036) | (0.032) |
| **Treat Dummy** | 0.013 | -0.013 | 0.005 | 0.009 | | |
| | (0.022) | (0.017) | (0.017) | (0.017) | | |
| **Post Dummy** | 0.500*** | | | | 0.667*** | |
| | (0.038) | | | | (0.027) | |
| **Log(Board Size)** | | -0.010 | -0.083* | -0.092** | 0.084 | 0.183* |
| | | (0.047) | (0.045) | (0.043) | (0.103) | (0.094) |
| **Log(Sale)** | | -0.468*** | -0.483*** | -0.487*** | -0.427*** | -0.286*** |
| | | (0.008) | (0.009) | (0.009) | (0.026) | (0.028) |
| **Book Leverage** | | -1.255*** | -0.845*** | -0.880*** | -0.711*** | -0.735*** |
| | | (0.046) | (0.051) | (0.051) | (0.115) | (0.107) |
| **Profitability** | | 12.094*** | 12.169*** | 12.352*** | 9.211*** | 6.548*** |
| | | (0.433) | (0.436) | (0.437) | (0.449) | (0.452) |
| **SOE Dummy** | | -0.126*** | -0.106*** | -0.102*** | | |
| | | (0.018) | (0.019) | (0.018) | | |
| **Constant** | 2.712*** | 12.606*** | 14.371*** | 13.059*** | 11.238*** | 9.760*** |
| | (0.016) | (0.179) | (0.204) | (0.189) | (0.583) | (0.607) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 27228 | 26430 | 26430 | 26430 | 26430 | 26430 |
| **Adj R-square** | 0.014 | 0.399 | 0.463 | 0.494 | 0.617 | 0.695 |

## Table 3 Board political connections and government subsidy

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the logarithm of total government subsidy granted to the firm. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Log(Subsidy) | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.427*** ** | **-0.422*** ** | **-0.354*** ** | **-0.337*** ** | **-0.367*** ** | **-0.325*** ** |
| | (0.125) | (0.114) | (0.109) | (0.110) | (0.095) | (0.090) |
| **Treat Dummy** | 0.410*** | 0.355*** | 0.232*** | 0.225*** | | |
| | (0.085) | (0.078) | (0.076) | (0.076) | | |
| **Post Dummy** | 1.954*** | | | | 1.392*** | |
| | (0.090) | | | | (0.071) | |
| **Log(Board Size)** | | -0.017 | -0.311* | -0.330* | 0.090 | 1.075*** |
| | | (0.178) | (0.175) | (0.175) | (0.352) | (0.319) |
| **Log(Sale)** | | 1.182*** | 1.030*** | 1.031*** | 1.688*** | 0.404*** |
| | | (0.030) | (0.029) | (0.029) | (0.083) | (0.080) |
| **Book Leverage** | | -1.747*** | -0.454*** | -0.443** | -0.667* | 1.174*** |
| | | (0.178) | (0.176) | (0.176) | (0.352) | (0.331) |
| **Market-to-Book** | | 0.002 | -0.112*** | -0.114*** | -0.121*** | -0.066*** |
| | | (0.022) | (0.022) | (0.022) | (0.021) | (0.022) |
| **Profitability** | | -3.700*** | 2.565** | 2.786** | -15.743*** | -1.536 |
| | | (1.163) | (1.133) | (1.133) | (1.276) | (1.212) |
| **SOE Dummy** | | -0.810*** | -0.655*** | -0.657*** | | |
| | | (0.069) | (0.067) | (0.067) | | |
| **Constant** | 12.399*** | -10.389*** | -5.639*** | -6.819*** | -21.409*** | 3.580** |
| | (0.062) | (0.670) | (0.682) | (0.660) | (1.848) | (1.740) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 28165 | 26343 | 26343 | 26343 | 26343 | 26343 |
| **Adj R-square** | 0.021 | 0.198 | 0.250 | 0.252 | 0.458 | 0.534 |

## Table 4 Board political connections and discretionary subsidy

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y is* the logarithm of total discretionary subsidy granted to the firm, which includes those subsidy items without granting purpose, but simply described as "subsidy", "allowance" and "support". *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | **Dependent Variable: Log(Discretionary Subsidy)** | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.400**** | **-0.378**** | **-0.339**** | **-0.338**** | **-0.389***** | **-0.278**** |
| | (0.157) | (0.148) | (0.146) | (0.146) | (0.122) | (0.119) |
| **Treat Dummy** | 0.375*** | 0.293*** | 0.281*** | 0.278*** | | |
| | (0.095) | (0.090) | (0.089) | (0.089) | | |
| **Post Dummy** | 1.767*** | | | | 1.301*** | |
| | (0.112) | | | | (0.090) | |
| **Log(Board Size)** | | 0.664*** | 0.563*** | 0.541*** | 0.861** | 1.726*** |
| | | (0.212) | (0.208) | (0.208) | (0.436) | (0.396) |
| **Log(Sale)** | | 1.131*** | 0.980*** | 0.982*** | 1.978*** | 0.590*** |
| | | (0.034) | (0.034) | (0.035) | (0.097) | (0.089) |
| **Book Leverage** | | 0.022 | 1.086*** | 1.084*** | -1.061*** | 0.804** |
| | | (0.211) | (0.212) | (0.213) | (0.399) | (0.383) |
| **Market-to-Book** | | -0.035 | -0.131*** | -0.132*** | -0.195*** | -0.145*** |
| | | (0.024) | (0.022) | (0.022) | (0.024) | (0.025) |
| **Profitability** | | 1.329 | 6.074*** | 6.290*** | -19.490*** | -3.942** |
| | | (1.369) | (1.347) | (1.347) | (1.622) | (1.542) |
| **SOE Dummy** | | -1.339*** | -1.162*** | -1.167*** | | |
| | | (0.084) | (0.083) | (0.083) | | |
| **Constant** | 10.343*** | -13.134*** | -9.073*** | -10.049*** | -30.814*** | -3.748* |
| | (0.068) | (0.780) | (0.809) | (0.777) | (2.179) | (1.988) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 27331 | 25612 | 25612 | 25612 | 25612 | 25612 |
| **Adj R-square** | 0.013 | 0.155 | 0.183 | 0.185 | 0.433 | 0.495 |

## Table 5 Board political connections and related party transactions

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the logarithm of total involved number of related party transactions. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| **Dependent Variable: Log(Amount of Related Party Transactions)** | | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.156** | **-0.263** | **-0.260** | **-0.273** | **-0.393**** | **-0.333**** |
| | (0.202) | (0.167) | (0.167) | (0.168) | (0.193) | (0.147) |
| **Treat Dummy** | 0.036 | 0.094 | 0.086 | 0.089 | | |
| | (0.108) | (0.089) | (0.089) | (0.089) | | |
| **Post Dummy** | 3.391*** | | | | 3.693*** | |
| | (0.143) | | | | (0.142) | |
| **Log(Board Size)** | | 0.694*** | 0.702*** | 0.718*** | 0.689 | -0.508 |
| | | (0.205) | (0.206) | (0.206) | (0.585) | (0.446) |
| **Log(Sale)** | | 0.778*** | 0.789*** | 0.787*** | -2.083*** | 0.070 |
| | | (0.033) | (0.033) | (0.034) | (0.107) | (0.088) |
| **Book Leverage** | | 0.176 | 0.111 | 0.108 | 6.684*** | 2.582*** |
| | | (0.210) | (0.215) | (0.215) | (0.538) | (0.413) |
| **Market-to-Book** | | -0.026 | -0.026 | -0.026 | 0.526*** | 0.056* |
| | | (0.024) | (0.025) | (0.025) | (0.035) | (0.030) |
| **Profitability** | | -0.825 | -1.050 | -1.140 | 23.714*** | 5.443*** |
| | | (1.388) | (1.405) | (1.409) | (2.195) | (1.733) |
| **SOE Dummy** | | -0.005 | -0.003 | -0.002 | | |
| | | (0.085) | (0.085) | (0.085) | | |
| **Constant** | 4.399*** | -12.061*** | -3.657*** | -12.270*** | 42.592*** | 12.954*** |
| | (0.076) | (0.739) | (0.790) | (0.758) | (2.515) | (2.038) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 28059 | 26231 | 26231 | 26231 | 26231 | 26231 |
| **Adj R-square** | 0.037 | 0.391 | 0.391 | 0.391 | 0.210 | 0.543 |

## Table 6 Board political connections and cash holdings

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the logarithm of firm cash holding. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Log(Cash Holding) | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.0596*** | **-0.0153** | **-0.0164** | **-0.0147** | **-0.0281*** | **-0.0259*** |
| | (0.0355) | (0.0245) | (0.0239) | (0.0238) | (0.0151) | (0.0151) |
| **Treat Dummy** | 0.0709*** | 0.0315** | 0.0333*** | 0.0326*** | | |
| | (0.0185) | (0.0128) | (0.0126) | (0.0126) | | |
| **Post Dummy** | 0.0647** | | | | 0.0424*** | |
| | (0.0260) | | | | (0.0116) | |
| **Log(Board Size)** | | 0.366*** | 0.394*** | 0.388*** | 0.0837* | 0.0883* |
| | | (0.0303) | (0.0294) | (0.0294) | (0.0500) | (0.0496) |
| **Log(Sale)** | | 0.594*** | 0.625*** | 0.626*** | 0.290*** | 0.282*** |
| | | (0.00627) | (0.00606) | (0.00603) | (0.0149) | (0.0163) |
| **Market-to-Book** | | -0.562*** | -0.743*** | -0.745*** | -0.397*** | -0.379*** |
| | | (0.0340) | (0.0335) | (0.0335) | (0.0585) | (0.0590) |
| **Profitability** | | -0.0674*** | -0.0542*** | -0.0538*** | -0.0523*** | -0.0644*** |
| | | (0.00564) | (0.00521) | (0.00520) | (0.00492) | (0.00618) |
| **Tangibility** | | 3.505*** | 2.544*** | 2.601*** | 1.812*** | 1.881*** |
| | | (0.235) | (0.233) | (0.232) | (0.208) | (0.221) |
| **SOE Dummy** | | -0.0589*** | -0.0884*** | -0.0892*** | | |
| | | (0.0124) | (0.0120) | (0.0120) | | |
| **Constant** | 19.93*** | 7.212*** | 6.641*** | 6.540*** | 14.02*** | 14.32*** |
| | (0.0136) | (0.135) | (0.137) | (0.131) | (0.319) | (0.347) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 27856 | 26083 | 26083 | 26083 | 26083 | 26083 |
| **Adj R-square** | 0.001 | 0.530 | 0.551 | 0.552 | 0.843 | 0.844 |

## Table 7 Board political connections and bank loans

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the logarithm of total bank loan amount granted to the firm. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Log(Bank Loan Amount) | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **0.271** | **0.437**** | **0.425**** | **0.383*** | **0.371**** | **0.393***** |
| | (0.192) | (0.197) | (0.197) | (0.198) | (0.148) | (0.147) |
| **Treat Dummy** | 0.013 | 0.068 | 0.080 | 0.094 | | |
| | (0.083) | (0.086) | (0.086) | (0.086) | | |
| **Post Dummy** | 1.578*** | | | | 1.312*** | |
| | (0.134) | | | | (0.107) | |
| **Log(Board Size)** | | -0.332 | -0.299 | -0.278 | -1.772*** | -1.503*** |
| | | (0.220) | (0.220) | (0.220) | (0.448) | (0.445) |
| **Log(Sale)** | | -0.002 | 0.111*** | 0.101*** | 0.672*** | 0.442*** |
| | | (0.029) | (0.030) | (0.030) | (0.081) | (0.087) |
| **Market-to-Book** | | 3.632*** | 2.908*** | 2.907*** | 4.197*** | 4.242*** |
| | | (0.229) | (0.228) | (0.227) | (0.412) | (0.412) |
| **Profitability** | | -0.171*** | -0.118*** | -0.129*** | -0.116*** | -0.115*** |
| | | (0.020) | (0.020) | (0.021) | (0.024) | (0.026) |
| **Tangibility** | | -0.736 | -2.815** | -2.823** | -7.462*** | -3.558** |
| | | (1.394) | (1.393) | (1.392) | (1.733) | (1.787) |
| **SOE Dummy** | | -0.820*** | -0.822*** | -0.824*** | | |
| | | (0.090) | (0.090) | (0.090) | | |
| **Constant** | 2.043*** | 3.052*** | 2.200*** | 0.944 | -8.535*** | -2.622 |
| | (0.059) | (0.680) | (0.743) | (0.695) | (1.888) | (2.002) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 28457 | 26617 | 26617 | 26617 | 26617 | 26617 |
| **Adj R-square** | 0.014 | 0.039 | 0.047 | 0.050 | 0.419 | 0.428 |

## Table 8 Board political connections and firm leverage

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the book leverage of the firm. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Book Leverage | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **0.011**** | **0.012**** | **0.009**** | **0.010**** | **0.006**** | **0.006**** |
| | (0.005) | (0.005) | (0.004) | (0.004) | (0.002) | (0.002) |
| **Treat Dummy** | -0.016*** | -0.012*** | -0.006** | -0.007*** | | |
| | (0.003) | (0.002) | (0.002) | (0.002) | | |
| **Post Dummy** | -0.009** | | | | -0.004** | |
| | (0.004) | | | | (0.002) | |
| **Log(Board Size)** | | -0.005 | -0.004 | -0.005 | -0.012* | -0.016** |
| | | (0.006) | (0.006) | (0.006) | (0.007) | (0.007) |
| **Log(Sale)** | | 0.042*** | 0.046*** | 0.046*** | 0.031*** | 0.039*** |
| | | (0.001) | (0.001) | (0.001) | (0.002) | (0.002) |
| **Market-to-Book** | | -0.014*** | -0.006*** | -0.007*** | -0.002*** | -0.003*** |
| | | (0.001) | (0.001) | (0.001) | (0.000) | (0.001) |
| **Profitability** | | -2.161*** | -2.164*** | -2.208*** | -0.822*** | -0.910*** |
| | | (0.040) | (0.041) | (0.042) | (0.032) | (0.033) |
| **Tangibility** | | 0.135*** | 0.173*** | 0.175*** | 0.092*** | 0.099*** |
| | | (0.007) | (0.009) | (0.009) | (0.011) | (0.011) |
| **SOE Dummy** | | 0.031*** | 0.009*** | 0.008*** | | |
| | | (0.002) | (0.003) | (0.003) | | |
| **Constant** | 0.247*** | -0.569*** | -0.695*** | -0.670*** | -0.368*** | -0.533*** |
| | (0.002) | (0.021) | (0.022) | (0.022) | (0.042) | (0.045) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 27585 | 25984 | 25984 | 25984 | 25984 | 25984 |
| **Adj R-square** | 0.001 | 0.318 | 0.412 | 0.415 | 0.854 | 0.856 |

## Table 9 Board political connections and the frequency of opinion expressions

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is the average number of opinions per board member, expressed at board meeting. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | Dependent Variable: Number of Opinions | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **-0.097** | **-0.126** | **-0.124** | **-0.122** | **-0.221**** | **-0.186***** |
| | (0.101) | (0.090) | (0.089) | (0.089) | (0.086) | (0.070) |
| **Treat Dummy** | 0.426*** | 0.430*** | 0.431*** | 0.429*** | | |
| | (0.054) | (0.047) | (0.047) | (0.047) | | |
| **Post Dummy** | 3.317*** | | | | 3.207*** | |
| | (0.071) | | | | (0.063) | |
| **Log(Board Size)** | | -1.071*** | -1.132*** | -1.124*** | -1.421*** | -1.604*** |
| | | (0.110) | (0.110) | (0.110) | (0.263) | (0.212) |
| **Log(Sale)** | | 0.053*** | 0.025 | 0.017 | -0.360*** | 0.228*** |
| | | (0.017) | (0.018) | (0.018) | (0.050) | (0.043) |
| **Book Leverage** | | -0.694*** | -0.489*** | -0.502*** | 1.927*** | 0.377* |
| | | (0.115) | (0.118) | (0.118) | (0.250) | (0.204) |
| **Market-to-Book** | | 0.047*** | 0.034** | 0.031** | 0.113*** | 0.030** |
| | | (0.013) | (0.013) | (0.013) | (0.016) | (0.014) |
| **Profitability** | | 1.054 | 2.458*** | 2.181*** | 4.385*** | 1.079 |
| | | (0.753) | (0.759) | (0.760) | (1.001) | (0.839) |
| **SOE Dummy** | | -1.536*** | -1.498*** | -1.495*** | | |
| | | (0.046) | (0.046) | (0.045) | | |
| **Constant** | 4.226*** | 7.172*** | 12.070*** | 7.972*** | 14.276*** | 8.328*** |
| | (0.038) | (0.390) | (0.418) | (0.399) | (1.155) | (0.996) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 28355 | 26561 | 26561 | 26561 | 26561 | 26561 |
| **Adj R-square** | 0.130 | 0.369 | 0.373 | 0.375 | 0.425 | 0.626 |

## Table 10 Political connections and industry-level capital misallocation

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable y is the standard deviation of the logarithm of capital productivity in an industry. *Capital productivity* is defined as the ratio of operating income before depreciation to lagged ppent. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. In columns (1) to (4), *Treat* equals one for treatment group and zero for control group. Columns (1) and (2) classify an industry into treatment group if the percentage of politically connected firms in the industry is above the mean. Columns (3) and (4) classify an industry into treatment group if the percentage of politically connected firms in the industry is among the top 1/3 of the sample. In columns (5) and (6), *Treat* equals the percentage of politically connected firms in an industry. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Treat*Post** | **0.127**** | **0.119**** | **0.207***** | **0.165**** | **0.573***** | **0.525***** |
| | (0.053) | (0.054) | (0.069) | (0.069) | (0.167) | (0.171) |
| **Log(Board Size)** | | 0.706 | | 1.406** | | 0.513 |
| | | (0.461) | | (0.589) | | (0.468) |
| **Log(Sale)** | | 0.026 | | -0.010 | | 0.014 |
| | | (0.078) | | (0.097) | | (0.077) |
| **Book Leverage** | | -0.991** | | -1.352** | | -0.964** |
| | | (0.428) | | (0.540) | | (0.426) |
| **Market-to-Book** | | 0.006 | | 0.041** | | 0.005 |
| | | (0.006) | | (0.017) | | (0.006) |
| **Profitability** | | 1.880 | | 0.502 | | 1.864 |
| | | (1.593) | | (1.990) | | (1.585) |
| **Constant** | 1.227*** | -0.664 | 1.131*** | -1.551 | 0.931*** | -0.272 |
| | (0.050) | (1.703) | (0.066) | (2.125) | (0.112) | (1.703) |
| **Semi-annual FE** | **YES** | **YES** | **YES** | **YES** | **YES** | **YES** |
| **Industry FE** | **YES** | **YES** | **YES** | **YES** | **YES** | **YES** |
| **N** | 580 | 580 | 384 | 384 | 580 | 580 |
| **Adj R-square** | 0.380 | 0.388 | 0.326 | 0.350 | 0.388 | 0.394 |

## Table 11 Board political connections and capital productivity

This table provides OLS estimation for the following equation

$$y_{i,t} = Post_t * Treat_i + Controls_{i,t} + Treat_i + Post_t + \varepsilon_{i,t}$$

The dependent variable *y* is logarithm of capital productivity. *Post* is a dummy variable which equals one for the period after 19 October 2013, and equals zero otherwise. *Treat* is a dummy variable that equals one if the firm had at least one official independent director (OID) in the board on 19 October 2013 and zero otherwise. After excluding finance and utility firms, our sample includes 2234 A-share firms from June 2010 to June 2015. For each treatment firm, we select a control firm that has the nearest propensity score of having an OID on 19 October 2013. Numbers in the parentheses are standard errors corrected for heteroscedasticity and firm level clustering. (***, **, * denotes significant level at 1%, 5%, and 10%, respectively).

| | **Dependent Variable: Capital productivity** | | | | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| **Treat*Post** | **0.005** | **0.001** | **0.012** | **0.015** | **0.004** | **0.007** |
| | (0.051) | (0.044) | (0.037) | (0.037) | (0.023) | (0.023) |
| **Treat Dummy** | 0.079*** | 0.046** | -0.013 | -0.016 | | |
| | (0.027) | (0.022) | (0.019) | (0.019) | | |
| **Post Dummy** | -0.265*** | | | | -0.213*** | |
| | (0.037) | | | | (0.018) | |
| **Log(Board Size)** | | -0.601*** | -0.479*** | -0.480*** | 0.296*** | 0.252*** |
| | | (0.058) | (0.049) | (0.049) | (0.081) | (0.080) |
| **Log(Sale)** | | -0.093*** | 0.006 | 0.004 | 0.211*** | 0.307*** |
| | | (0.010) | (0.008) | (0.008) | (0.025) | (0.030) |
| **Book Leverage** | | -0.003 | -1.005*** | -1.007*** | -0.578*** | -0.669*** |
| | | (0.072) | (0.057) | (0.057) | (0.088) | (0.090) |
| **Market-to-Book** | | -0.078*** | -0.018** | -0.020*** | -0.005 | -0.018*** |
| | | (0.009) | (0.007) | (0.007) | (0.006) | (0.007) |
| **Profitability** | | 36.292*** | 32.868*** | 32.879*** | 34.721*** | 33.426*** |
| | | (0.542) | (0.477) | (0.477) | (0.513) | (0.521) |
| **SOE Dummy** | | -0.067*** | -0.182*** | -0.183*** | | |
| | | (0.024) | (0.020) | (0.019) | | |
| **Constant** | -1.751*** | 0.512** | -1.670*** | -1.495*** | -7.682*** | -9.741*** |
| | (0.019) | (0.220) | (0.185) | (0.177) | (0.529) | (0.630) |
| **Semi-annual FE** | | **YES** | **YES** | | | **YES** |
| **Industry FE** | | | **YES** | | | |
| **Industry*Semi-annual FE** | | | | **YES** | | |
| **Firm FE** | | | | | **YES** | **YES** |
| **N** | 20197 | 19538 | 19538 | 19538 | 19538 | 19538 |
| **Adj R-square** | 0.006 | 0.306 | 0.499 | 0.500 | 0.823 | 0.826 |

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# Appendix: Variable Definitions

**Tobin's q**: (Total assets+ Market value of equity-Book value of equity)/Total assets

**Subsidy:** The amount of subsidy granted by government in half a year

**Related party transaction amount**: The amount of related party transactions involving top managers, directors or key personnel in a firm in half a year

**Cash**: the sum of cash and marketable securities

**Bank loan**: The amount of loans granted by banks in half a year

**Leverage**: Total debt/(total debt+book value of equity)

**Number of opinion**: The average number of opinions an independent director expresses in half a year

**Capital productivity**: oibdp/lagged ppent

**Dispersion in capital productivity**: standard deviation of logarithm of capital productivity

**Post**: A dummy variable which equals 1 for the period after 19 October 2013, and equals 0 otherwise

**Treat**: A dummy variable that equals 1 if the firm had at least 1 official independent director (OID) in the board on 19 October 2013 and 0 otherwise.

**Asset**: The amount of total asset

**Sale**: The amount of sale

**Board size**: the number of board members

**Market-to-Book**: (Market value of equity+total debt)/Total asset

**Profitability**: OIBDP/Total asset

**Tangibility**: PPENT/Total asset