Minority shareholder participation and earnings management

A test of catering theory

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Received 22 January 2018
Accepted 27 January 2018

Abstract

Purpose – The purpose of this paper is to test a catering theory by examining impacts of minority shareholders' pressures on earnings management (EM), and attempt to answer: what is the role of minority shareholders participation (MSP) in corporate governance? and does MSP serve as an external monitor to managers, or does it put excessive pressure on them?

Design/methodology/approach – Using a novel online voting data set in China's stock market, the author constructs the measure of MSP, and regress the EM on MSP. To address the endogeneity, the author introduces propensity score matching and difference-in-difference methods, instrumental variables, and Heckman estimation to show that the results are robust to different specifications and alternative measures.

Findings – The author documents that: MSP plays limited role in external monitoring; and firms facing high MSP levels tend to manage earnings more actively. In addition, information asymmetry, proposals' importance, managerial incentives, and CEO financial expertise significantly affect firms' catering behaviors.

Originality/value – This paper contributes to different strands of the literature. First, the finding significantly supports the catering hypothesis from a new perspective of EM. Second, the author contributes to a hotly debated issue in corporate governance: whether minority shareholders should be granted increased participation in corporate decisions? The results also provide timely empirical evidence for government regulators who are concerned about the costs and benefits of granting minority shareholders direct control over corporate decisions.

Keywords China, Earnings management, Catering theory, Minority shareholder participation, Online voting

Paper type Research paper

1. Introduction

In this paper, we propose a catering theory of earnings management (EM). In particular, we test whether pressures from minority shareholders' direct participation in corporate decisions have consequences for firm EM.

We define catering following Baker *et al.* (2009) and Baker and Wurgler (2013), i.e. catering refers to any actions intended to boost share prices above fundamental value by increasing the supply of a characteristic that investors appear to be paying a premium for. In this paper, the catering theory of EM posits that the EM is partly a response to the demand of investors who can affect the stock prices. Empirically, this theory predicts that the probability of EM will be higher when the firm faces more active participation pressures of shareholders, and especially when the shareholders do not have ability to identify the EM.

Meanwhile, one hotly debated issue is whether minority shareholders should be granted increased participation in corporate decisions. Given the difficulty to exactly identify relevant costs and benefits, the answer is ambiguous. For example, Bainbridge (2006) argues that minority shareholders' direct participation in corporate decisions will reduce shareholder value due to lacking the necessary information idiosyncratic to a particular firm. Listokin (2010) finds that simply altering shareholder power without changing other governance mechanisms is unlikely to lead to widespread changes in corporate governance.

JEL Classification — G32, G34

China Finance Review International

2044-1398
DOI 10.1108/CFRI-01-2018-0007

Although some scholars argue that firms may have incentives to cater investors by managing earnings, to the best of our knowledge, there is no direct study to formally explore this issue. For example, Graham *et al.* (2005) survey Chief Financial Officers who indicate they manage earnings to maintain or increase the stock price of their firms. Simpson (2013) points out that EM is partially driven by the market-wide investor sentiment. Moreover, the likelihood of EM to avoid negative earnings surprises is also positively associated with investor sentiment. However, both of these two studies are not directly examining whether firms cater to minority shareholders by EM.

The difficulty of studying these issues comes from limited available data. In particular, the data of minority shareholders' participation in corporate governance is not accessible to most researchers. Thus, difficulties arise in constructing the variable serving as a proxy for minority shareholders participation (MSP) in corporate governance. In the current paper, based on a unique data set of the minority shareholders' online voting for firms' proposals in China, we construct the *MSP* as the ratio of shares of MSP in online voting over the number of all outstanding shares, and further analyze its impact on EM.

In specific, to measure the participation activeness of minority shareholders, we introduce a natural experiment to construct a direct proxy. Regulations in China provide us a suitable setting to investigate the influence of minority shareholders on corporate activities and the catering behavior on earnings disclosure. In 2004, the China Securities Regulatory Commission (CSRC) required that listed firms provide an online voting system for minority shareholders to vote on proposals for substantial business operations at general shareholder meetings (majority shareholders are excluded from online voting system). The online voting system offers minority shareholders a convenient and costless channel to express their concerns about corporate practices and to influence the corporate decision-making process. In the absence of other effective mechanisms for individual minority shareholders to challenge a firm's management in China, the participation of minority shareholders in online voting events could serve as an effective indicator of *MSP*.

With this unique data, we argue and show that firms facing a higher level of *MSP* are more likely to manipulate earnings to cater to minority shareholders. It is worthy to note that institutional investors and majority shareholders are excluded. Although previous research has already shown that institutional investors have influence on firm behavior[1], the effect of individual shareholder (i.e. *MSP* in this paper) on EM is unclear. To the best of our knowledge, no attention has been paid to minority shareholders' role in corporate governance.

Protection of minority shareholders is an important issue in corporate governance literature. Minority shareholders typically hold low amounts of stocks, and the benefits gained from their participation in shareholder meetings are thus extremely asymmetric to the cost. Therefore, minority shareholders usually vote by foot or are merely "free riders." A common solution to this agency conflict is to design monitoring mechanisms (e.g. boards of directors and auditors) to reduce conflicting interests between minority shareholders and majority shareholders. Due to the failure of many common monitoring mechanisms, interest has grown among active minority shareholders in shifting the corporate decision-making power from majority shareholders or insiders to minority shareholders. However, numerous studies in this field have only emphasized the monitoring role of institutional investors and largely neglected the potential role of minority shareholders. Using a theoretical model, Noe (2002) points out that there is no monotonic relationship between the size of preexisting shareholdings and activism although the smallest investors are passive. Gillan and Starks (2000) offer an excellent review of shareholder activism in the USA.

In addition, regulators worldwide are exhibiting increasing eagerness to propose regulations and are busy enacting new laws to strengthen monitoring mechanisms, which grant minority shareholders direct expression on corporate decisions (e.g. Chen *et al.*, 2013).

Considering the above concerns, we believe that our study on the catering behaviors of firms facing the pressures of minority shareholders has significant implications in practice and in the academe. In addition, we also believe that our results are of general interest given the significance of the Chinese stock market, which had 171 million investment accounts at year-end 2012 and the second-largest market capitalization among all national stock markets at year-end 2012.

To examine the impact of *MSP* on EM, we use *MSP* and discretionary accruals (DAs) as the respective proxies for *MSP* and EM. Based on a sample of publicly listed firms in Shenzhen Stock Exchange (SZSE) from 2006 to 2011, we find that firms facing high *MSP* have a higher level of DAs than those facing low *MSP*, which is consistent with catering theory. For robustness, we use alternative measures of *MSP* and EM to repeat our empirical study. The estimated results show a significantly positive relation between *MSP* and EM once again.

One immediate concern with these results is the potential endogeneity of *MSP*. Our findings will be biased if minority shareholders are more likely to participate in firms with more EM and worse information environment. To address this concern, we first conduct preliminary tests and find that minority shareholders cannot identify the firm's EM even though they express their concerns by online voting. This means that minority shareholders are less likely to select firms by the level of EM.

Then, to further address the endogeneity issue, we present different specifications to examine the relation between *MSP* and EM: a lagged variables approach; propensity score matching approach (PS-matching) and difference-in-difference (DID) methods; instrumental variables (IV) approach; and Heckman two-step procedure. With alternative approaches, we find that our results remain.

Specifically, for the PS-matching procedure, we construct a reduced sample based on a probit model, in which the likelihood of a stock participated in by minority shareholders is linked to firm-specific variables. In our PS-matching sample, a stock participated in by minority shareholders and its matched stock are identical with respect to the predicted likelihood of participation; thus, they are equally likely ex-ante to have the same participating likelihood as that of minority shareholders (although they, in fact did not, ex-post). Therefore, for the firms in this PS-matching sample, the difference in the actual *ex-post MSP*, if any, is likely to be exogenous. To compare the EM between the firms that have adopted online voting system and those have not, we further conduct a DID test. That is, examining the change in EM after a firm adopts an online voting system and using a matched firm that has not adopted any online voting system as benchmark. The simplest set up is one where outcomes are observed for two groups during two periods. One of the groups is exposed to a treatment in the second period but not in the first period. The second group is not exposed to the treatment during either period.

We further adopt the following two IVs to capture exogenous variations in *MSP*: a dummy variable indexing whether a firm experiences "share-split" event; and the number of shareholder accounts. These IVs affect the participation of minority shareholders, but are less susceptible to the selection problem. The estimates from IV regressions also suggest that firms with higher *MSP* conduct more EM.

We also explore whether importance of proposals, information asymmetry, and top management characteristics (TMC) affect the relation between *MSP* and EM. We find that, ceteris paribus, firms with high voting for important proposals, information asymmetry, and more managerial incentives or financial expertise, are more likely to cater to minority shareholders by EM.

This paper contributes to different strands of the literature. First, our finding significantly supports the catering hypothesis from a new perspective of EM. This mechanism complements the catering theory of dividends (e.g. Baker and Wurgler, 2004), firm investment

(e.g. Polk and Sapienza, 2009), and nominal share prices (Baker *et al.*, 2009). In particular, we find firms manage earning upward when facing a high level of *MSP*, and this is consistent with catering theory: if shareholders prefer positive earnings, managers will cater to them in an attempt to up-adjust firms' earnings. Baker and Wurgler (2013) review some indirect evidences related to catering behaviors in firms' EM. We thus complement the prior literature.

Second, we contribute to a hotly debated issue in corporate governance: whether minority shareholders should be granted increased participation in corporate decisions? It is difficult to exactly identify relevant costs and benefits with an increase in minority shareholders' control rights. For example, Bainbridge (2006) and Listokin (2010) argue that minority shareholders' direct participation in corporate decisions may reduce shareholder value. In this paper, the unique data set (i.e. minority shareholders' online voting records in SZSE) allows us to conduct a direct test to investigate how the degree of *MSP* in corporate governance affects firm decision. Therefore, questions on the governance role of minority shareholders can be answered, distinguishing us from other tests (Davis and Kim, 2007; Cremers and Romano, 2011).

Third, this study also sheds new light on the literature of investor activism. Most studies thus far pay their attention on the institutional investor activism and only find mixed results[2]. However, the effect of individual shareholder on EM is largely unexplored. To the best of our knowledge, this paper is the first empirical study attempting to investigate minority shareholders' role on EM. By providing the impact of individual investor activism on firm EM, we complement prior studies on the minority shareholders role in firm decisions. More specific, we provide evidence that firms adjust their behavior reacting to the individual investors in the stock market, which is consistent with the feedback effect recently proposed in the literature (e.g. Chen *et al.*, 2007; Edmans *et al.*, 2012, 2015).

Fourth, we contribute to the literature on the determinants of EM. Managers have incentives to manipulate financial numbers such as firm performance, debt, growth and investment (see DeFond and Park, 1997; Nissim and Penman, 2001), financial reporting practices (Barth *et al.*, 2008), investor protection (Leuz *et al.*, 2003), and capital market incentives on capital raising and meeting earnings forecasts (Morsfield and Tan, 2006; Das *et al.*, 2006). Our evidence of the impact of activities of minority shareholders on EM provides another external channel to understand manager incentives to manage firm earnings.

Last, we shed new light on academic understanding of the governance role of minority shareholders in emerging markets with weak country-level investor protections and severe agency conflict between large and minority shareholders[3]. In particular, we find that *MSP* can increase the EM of listed firms, which offers critical insight and serious challenges for regulators, particularly in finding alternative channels to enhance the earnings quality and protect minority shareholders with high participation. Our results also provide timely empirical evidence for government regulators who are concerned about the costs and benefits of granting minority shareholders direct control over corporate decisions.

The rest of the paper is organized as follows: Section 2 reviews the literature and develops the hypotheses; Section 3 describes the sample selection and variable definition; Sections 4 and 5 present preliminary tests and main results, respectively; Section 6 reports further tests; and Section 7 concludes.

2. Background and hypothesis development

2.1 Institutional background

As the largest emerging market and the second largest stock markets in the world, the Chinese stock market, established in 1990, is dominated by inexperienced individual (even institutional) investors. By the end of 2012, Chinese two stock exchanges, the

Shanghai Stock Exchange and the SZSE, had more than 171 million investor accounts (with 170.5 million individual accounts and 0. 5 million institutional accounts).

According to Allen *et al.* (2005), due to a lack of minority investor protection mechanisms in China, controlling or majority shareholders of listed firms have a strong incentive to tunnel the wealth and resources of listed firms to themselves by using their appointed management (e.g. Jian and Wong, 2010; Berkman *et al.*, 2010; Fan *et al.*, 2007; Jiang *et al.*, 2010). Researchers argue that "large investors may represent their own interests, which need not coincide with the interests of other investors in the firm, or with the interests of employees and managers" (Shleifer and Vishny, 1997).

In China, to submit a proposal to shareholder meeting, initiators of the proposal need owning at least 3 percent of the shares that can be voted at the shareholder meeting. Given that around two-thirds shares in China's stock market are non-tradable shares (NTS) held by the government, it is almost impossible for individual investors to effectively submit a proposal to the shareholder meeting.

To restrict controlling shareholders' egregious expropriation behavior, the CSRC issued a new regulation entitled "Provisions on Strengthening the Protection of the Rights and Interests of the General Public Shareholders" on December 7, 2004. This regulation applies to all domestically listed firms. The provisions stipulate that listed firms should take effective measures to promote the proportion of public shareholders who attend the general meeting of shareholders, thus requiring listed firms to provide an online voting system apart from the present shareholder meeting. In specific, this regulation mandatorily enforces that when proposals in shareholder meetings involve: SEO, M&A, asset reorganization, asset transactions or collateral with amount larger than 30 percent of book value, debt repayment using firm shares or firm assets, oversea IPO, share placement, non-public offering, changes of the purpose of raised capital, adjustment of firm policies, equity incentive, other important events that have significant influence on the benefits public shareholders, etc. Given that the regulation is mandatory and required when proposals meet some thresholds, our study thus is unlikely suffering from the sample selection bias.

The online voting system offers a simple and convenient voting mechanism to minority shareholders[4], and this enormously decreases the cost of minority shareholders participating in corporate governance. For a shareholder meeting accompanied with online voting, the requirement for a proposal to be formally approved need the approval ratio no less than two-thirds for all the shares participating in the shareholder meeting.

In firms with more tradable shares, this online voting system works especially well with a great amount of small investors or shareholders. For instance, the 2010 internal report of SZSE mentions that with the introduction of online voting system, participation percentage of minority shareholders in split share structure reform greatly increased to 13 percent[5], compared with only approximately 1 percent acquired from shareholder meetings without online voting. From 2005 to 2009, 1,573 out of 8,991 shareholder meetings in SZSE offered online voting systems. As for shareholder meetings with online voting, 1.44 million shareholders or investors express their opinions by using the online voting system. On average, 920 shareholders participate in each shareholder meeting; the participation rate and disapproval rate are 5.8 and 15.9 percent, respectively. Further, disapproval rate in split share structure reform meetings and other meetings are 8.4 and 19.86 percent, respectively. However, in shareholder meetings without online voting, eight shareholders participate in each shareholder meeting; the participation rate and disapproval rate are 0.033 and 2 percent, respectively, on average.

Thus, online voting systems in China's stock market enhance the participation of minority shareholders and positively affect the role of minority shareholders in corporate governance.

Figure 1 plots the average monthly participation rates of online voting (take the maximum if there are multiple meetings or multiple proposals for voting) from 2006 to 2011. It can be observed that, on average, the participation rates are around 10 percent and keep in stable.

2.2 Hypothesis development

The hypothesis in this paper tests the view that the *MSP* creates incentives for EM. This view argues that managers have incentives to cater to the minority shareholders in order to avoid earnings disappointment that would trigger investor selling and a temporary misvaluation of the firm's stock price (Graves and Waddock, 1990; Bushee, 1998)[6]. Essentially, this perspective is a counterpart interpretation of the "catering theory" of dividends (Baker and Wurgler, 2004) in the context of EM, that is, managers give investors what they want.

This hypothesis requires that:

(1) firm managers have incentives to avoid price drops;

(2) minority shareholders are sensitive to earnings news and can cause a temporary misvaluation or price impact[7];

(3) firm managers can manipulate firm earnings without much cost and minority shareholder cannot effectively identify the EM[8]; and

(4) minority shareholders can express their concerns and attitudes (in trading) by online voting.

We argue that all these four conditions are met in our economic setting. First, prior research shows that managers place a substantial weight on current stock price that they are unwilling to "ride out" a temporary misvaluation (Stein, 1988, 1989; Froot *et al.*, 1992;

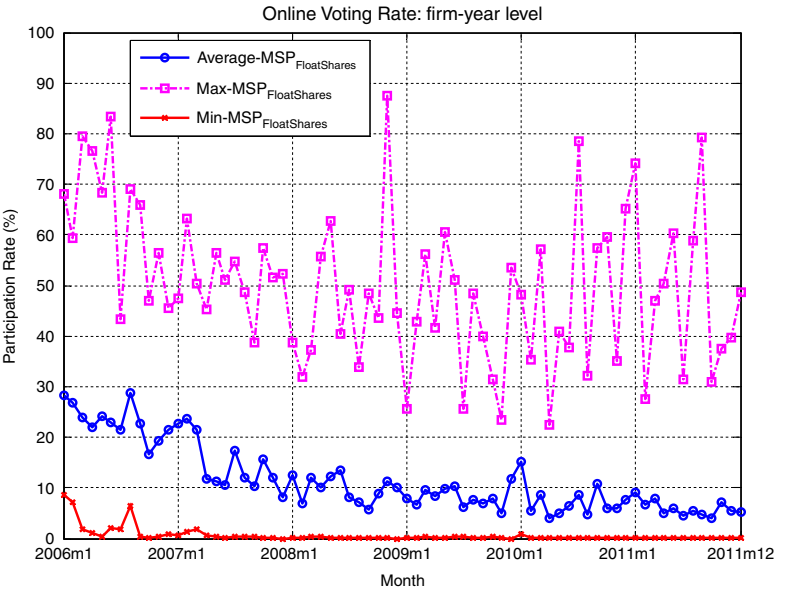

Figure 1. Time-series distribution of the voting participation ratio

Note: This figure plots the average monthly participation rates of online voting (take the maximum if there are multiple meetings or multiple proposals for voting) from 2006 to 2011

Bushee, 1998). In particular, this concern over current stock price could be driven by stock-based compensation, near-term equity funding requirements, the threat that a raider will exploit a temporary undervaluation, or by the time horizons of influential investors (Froot *et al.*, 1992). Dutta and Trueman (2002) analyze a setting, in which a firm's manager can disclose facts, but not their valuation implications, and this corporate disclosure strategy serves to affect investors' beliefs. As argued by Fama and Jensen (1983), Holmstrom and Tirole (1993), and Dimitrov and Jain (2011), the most visible and comprehensive measure of managerial performance is the stock price. In addition to reflecting information about realized earnings, the prices also capture shareholders' assessment for the prospects of firm operations (e.g. Beaver *et al.*, 1980; Lundholm and Myers, 2002). Prior research has shown that poor market performance increases the turnover of chief executive officer (CEO) (Coughlan and Schmidt, 1985; Warner *et al.*, 1988; Weisbach, 1988) and leads to greater support for shareholder-sponsored proposals and voting campaigns (Gillan and Starks, 2000; Del Guercio *et al.*, 2008). Therefore, we believe this point is natural and can be safely applied to China's stock market.

In effect, two related regulations are issued in China just before our sample period: "Trial Regulations on Equity Incentives of Listed Companies," issued by CSRC on December 31, 2005 and "Trial Regulations on Equity Incentives of State-owned (domestic) Listed Companies," issued by State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and The Ministry of Finance (MOF) of the People's Republic of China on September 30, 2006. Both of these two regulations allow and encourage the tool of stock option. In addition, regulators in China also pay close attention to the stock price. For example, a listed firm will be delisted if its close prices keep below the book value per share in a consecutive 20 trading days[9]. We also conduct an empirical test to show indirect evidences on this issue. In untabulated analysis, we estimate an earnings reaction model to study how individual investors (*RetailHold*) affect the relation between cumulative abnormal return (*CAR*) and standard unexpected earnings (*SUE*) around annual earnings announcements. In particular, we regress the *CAR* on *SUE*, *RetailHold*, *RetailHold* × *SUE*, and other control variables (the same as main empirical model in this paper). We find that individual investors significantly enhance the sensitivity of *CAR* to *SUE*, and institutional investor has a significantly negative impact on this sensitivity. This result indicates that individual investors pay more attentions to the firm earnings surprise and impact the stock price in a more significant way than institutional investors, and therefore, the managers have incentives to meet the individual investors (by managing earnings).

Second, minority shareholders have incentives to sell stocks with declining earnings and may use earnings to "measure" a firm's fundamental value in their trading decisions due to an information asymmetry between minority shareholders and listed firms. Recently, Piotroski and Wong (2012) describe the information environment of China's listed firms in an excellent survey, noting that many emerging economies, including China, suffer from opaque information environments and weak corporate transparency. This asymmetry could arise if minority shareholders have short expected holding periods and focus only on information oriented toward predicting near-term price movements instead of devoting resources to gathering information on long-term prospects. In a study on the unique speculation bubble in Chinese warrant market, Xiong and Yu (2011) point out that all warrants are traded with turnover over 300 percent each day, and the annual turnover of stock is approximately 500 percent, compared with 80 to 100 percent annual turnover in the US stock market.

In addition, characteristics of individual investors in China's stock market also amplify the potential effect of minority shareholders on firm decisions. As the largest emerging market and the second largest stock market in the world, the Chinese stock market is dominated by inexperienced individual investors, i.e. the minority shareholders defined in

this paper. The institutional accounts comprise less than 1 percent of total investor accounts in China[10] and the value of shares held by institutions is less than 50 percent in SZSE. Meanwhile, the herding behavior of individual investor is prevalent (Tan *et al.*, 2008) further amplifying the consequence of investor reactions to earnings event.

One minor concern is that, after the split share reform (the end of 2007), NTS held by large shareholders also become tradable with a compensation, and therefore individual shareholders may not have significant influence. However, this view of point is not true. On the one hand, the number of tradable shares (transformed from NTS) reduces to one-third of the number of original number of NTS, which mitigates the controlling power and voting shares of the large shareholders. On the other hand, and more important, the tradable shares (transformed from NTS) cannot be traded in stock market in lock-up periods, which typical are 3~5 years. Therefore, even the amount of tradable shares increase after split share reform, the tradable shares (transformed from NTS) are not allowed to trade, and of course have no impacts on the prices. Therefore, the split share reform does not affect the minority shareholders' influence on price, and meanwhile, since that majority shareholders are excluded from the online voting, the reform is less likely to have significant influence over the outcome of online voting.

Third, pervious research finds that Chinese firms have strong incentives to manage earnings; moreover, the weak reputational penalties and legal sanctions against accounting scandal result in EM being prevalent among listed firms in China. For example, Piotroski and Wong (2012) show a striking observation about the reported earnings of Chinese firms as demonstrated by the clustering of firm-level ROE realizations around 0, 6, and 10 percent. The CSRC uses bright-line regulatory benchmarks to grant approvals for IPOs and rights offerings and to initiate performance-related delisting. Thus, listed Chinese firms have an incentive to manage reported earnings to meet these specific performance benchmarks (Chen and Yuan, 2004; Aharony *et al.*, 2000; Chen *et al.*, 2003; Kao *et al.*, 2009; Yu *et al.*, 2006; Liu and Lu, 2007; Jiang *et al.*, 2010; Jian and Wong, 2010).

Last, we will present more formal empirical results in Section 4 to show that minority shareholders cannot effectively identify the EM, and meanwhile, by means of online voting, minority shareholders can express their concerns to the management.

Jointly, in China's stock market, which is dominated by minority shareholders and with the prevalent of EM, we hypothesize the following:

H1. Ceteris paribus, a higher level of MSP increases the magnitude of EM.

3. Data and variables

3.1 Data sources

In our study, the online voting information is retrieved from the SZSE. The database includes the voting details for each proposal, for which online voting is required by the stock exchanges and CSRC. We also obtain detailed data on *MSP* in online voting, i.e. the total number of shares voting through the online system, the total number of shares owned by minority shareholders, and the number of shares voting for and against a substantial proposal during the period from 2006 to 2011.

All of the other variables in this study are obtained from China Stock Market and Accounting Research (CSMAR) database, which is a leading financial data provider in China's stock markets.

3.2 Variables and definitions

3.2.1 Minority shareholders' control over corporate decisions. We introduce the minority shareholder participation ratio, *MSP*, as our proxy for minority shareholder control over corporate decisions.

To obtain *MSP*, we first define $MSP_{proposal}$, year by year, as follows:

$$MSP_{proposal} = \frac{1}{N}\sum_{n=1}^{N}\frac{OVS_n}{OutShares - \sum BlockShareholders} \quad (1)$$

where OVS_n is the total number of shares participating in online voting on the nth proposal in a general shareholder meeting in a specific year, *OutShares* is the number of all outstanding shares, and $\sum BlockShareholders$ is the sum of shares held by the top ten shareholders if their holding position is more than 5 percent of the total shares outstanding. We then compute the *MSP* as the yearly average value of $MSP_{proposal}$ year by year from 2006 to 2011. Noting that our results still hold if we only take *OutShare* as the denominator in Equation (1).

In addition to proxy attitudes or concerns of minority shareholder in online voting, we introduce the affirmative vote ratio (Agree). This is defined similarly to the *MSP*, except that we calculate OVS_n as the number of shares approving the nth proposal in a general shareholder meeting in a specific year.

3.2.2 EM. To estimate EM, we adopt DAs as the main proxy for EM. Earnings have two major components, cash flow and accounting adjustments. The determination of the signs and sizes of accruals requires managers' judgment and estimation; thus, accruals are more vulnerable to manipulation. However, not all accruals are the result of earnings manipulation. Given industry and operational conditions, certain accrual adjustments are necessary and appropriate, and must be applied on a regular basis. Thus, total accruals can be further decomposed into two parts as follows: nondiscretionary accruals (NDAs) and DAs. DAs are used as the proxy for EM in a variety of studies related to EM (Teoh *et al.*, 1998; Shivakumar, 2000; DeAngelo, 1986; DeAngelo, 1988; Perry and Williams, 1994; Erickson and Wang, 1999; DeFond and Jiambalvo, 1994; Healy, 1985; Holthausen *et al.*, 1995; Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Yu, 2008; Krishnan *et al.*, 2011). The magnitude of a firm's DAs is indicated as a percentage of the lagged assets of the firm. Since that we are interest in EM with upward directions (the catering hypothesis), this leads us to use the raw value of DAs in our study[11].

Our first proxy of EM (*MJones*) is a modified version of the Jones model (Jones, 1991; Dechow *et al.*, 1995), which estimates DAs from cross-sectional regressions of total accruals on changes in sales and on property, plant, and equipment (PPE) within industries.

In order to determine DAs, we first run the following cross-sectional OLS regression by the first two-digit standard industrial classification (SIC) code to estimate coefficients α_1, α_2, and α_3 as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1\frac{1}{A_{it-1}} + \alpha_2\frac{\Delta REV_{it}}{A_{it-1}} + \alpha_3\frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}, \quad (2)$$

where i indexes firms, t indexes time, TA_{it} equals net income minus cash flow from operations, ΔREV_{it} is the changes in sales revenues, and *PPE* is gross property, plant, and equipment. All variables are scaled by total assets at the beginning of the period. We estimate the cross-sectional models separately for each combination of year and two-digit SIC code with a minimum of 15 observations.

We then use the estimated $\hat{\alpha}_1$, $\hat{\alpha}_2$, and $\hat{\alpha}_3$ to calculate NDAs as follows:

$$NDA_{it} = \hat{\alpha}_1\frac{1}{A_{it-1}} + \hat{\alpha}_2\frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \hat{\alpha}_3\frac{PPE_{it}}{A_{it-1}}, \quad (3)$$

where ΔREC_{it} is the change in receivables. Based on Equations (2) and (3), we can derive DA

using the following:

$$DA_{it} = \frac{TA_{it-1}}{A_{it-1}} - NDA_{it}, \quad (4)$$

All the variables are scaled by total assets at the beginning of the period. Thus, the magnitude of a firm's DAs is indicated as a percentage of the assets of the firm.

Our second measure of EM, *EM_ROA*, is performance-adjusted DAs (Ashbaugh *et al.*, 2003; Kothari *et al.*, 2005). We first use the same Equation (2) to run the regression and get the residuals, i.e. DAs. Then, to adjust for performance differences across firms, we rank firms within each SIC industry into deciles based on their prior year's return of asset (ROA). We compute *EM_ROA* as the value of the difference between the firm's *DA* and the median *DA* for its *ROA* decile.

One concern is that the EM models have been developed using audited financial statements prepared according to US GAAP, and the Chinese financial statements do not follow the same accounting standards. However, on February 15, 2006, the MOF of China issues new accounting standards in practices, which aims to improve the international convergence of the financial reporting system in China's stock market. Such new practices are primarily based on the International Financial Reporting Standards, which have been adopted by many developed markets. Therefore, in our sample period, it is reasonable to use the accrual model to estimate the EM.

3.2.3 Measuring CAR around event dates. Given that our sample includes 22,637 proposals and 2,957 shareholder meetings with online voting, collecting and analyzing each news item reported is not feasible. Instead, we use the market reactions to measure the net effect of all the reported news around shareholder meetings, i.e. the attitudes of investor or minority shareholders. In specific, we compute CAR as the sum of daily market-adjusted returns over a particular period. In the analysis, we examine *CAR*s from day −3 to day +3 and from day −10 to day +10 relative to the meeting date.

Specifically, we define the event day (T_0) as the meeting day of shareholders. The estimation window, [T_0−130, T_0−11], is a 120-day period, within which we estimate how a stock normally relates to the market. The event window is the period within which we study the market value changes caused by the event shock. Event windows with different lengths are also used, thereby obtaining similar results.

CAR for each firm is calculated as the *CAR* for stock i over the event window, $CAR_i = \sum_t AR_{i,t}$. $AR_{i,t}$ is computed using the market model, $R_{i,t} = a_{i,t} + b_i MR_t + e_{i,t}$, to estimate the expected stock returns for firm i at time t in the estimation window. MR_t represents the market return on day t. This regression obtains the estimated coefficient $a_{i,fitted}$ and $b_{i,fitted}$. Then the equation $AR_{i,t} = R_{i,t} - (a_{i,fitted} + b_{i,fitted} MR_t)$ estimates the $AR_{i,t}$ for stock i in the event window.

3.2.4 SUE. We use a naïve time-series model in order to measure earnings surprise. Consistent with many prior studies, we define the earnings surprise as actual earnings minus expected earnings, scaled by stock price or standard deviation of unexpected earnings.

The naïve time-series estimation is typically based on a rolling random walk model, which has been advocated by Foster *et al.* (1984), Bernard and Thomas (1989), Livnat and Mendenhall (2006). Specifically, we use a simple standardized measure of periodically adjusted earnings, given as $SUE_{i,T} = UE_{i,T}/Price_{i,T}$, where $SUE_{i,T}$ is the standard unexpected earnings for firm i in the period T. Here, $UE_{i,T}$ represents unexpected earnings, and $Price_{i,T}$ is the stock price for firm j at the end of fiscal year T. We estimate the $UE_{i,T}$ using the following naïve model: $UE_{i,T} = (AE_{i,T} - AE_{i,T-1})/|AE_{i,T-1}|$, where $AE_{i,T}$ represents

the actual earnings per share reported by the firm in T, and $|AE_{i,T-1}|$ is the absolute value of actual earnings per share in $T-1$. Compared with more accurate models, the naïve model provides the same conclusion (Foster *et al.*, 1984).

3.2.5 Control variables. Following prior literature on shareholder activism and corporate governance (David *et al.*, 2007; Li and Zhang, 2007; Liu and Lu, 2007), we also control for other variables as follows (all independent variables are defined at the beginning the fiscal year).

Regarding the firm characteristics, we include the following variables:

- *SOE* is a dummy variable, equal to 1 if the firm is controlled by the state and 0 otherwise.
- *InstHold* is defined as the percentage of shares held by all institutional investors.
- *RetailHold* is defined as the percentage of shares held by all individual (retail) investors.
- *Nanal* is the natural logarithm of one plus the total number of analysts who make earnings forecasts for firm *i* during each period.
- *Size* is the natural logarithm of total assets.
- *BM* is the book-to-market value ratio.
- *Leverage* is the ratio of total liabilities to total assets.
- *TO* is annual stock turnover measured over the fiscal year.
- *BoardD1* and *BoardD2* are dummies that take the value of 1 if a company is listed in the main board and small and medium-sized enterprise (SME) board, respectively.
- *Stkret* is annual stock return measured over the fiscal year.

As for corporate governance, we include the following variables:

- *Duality* is a dummy variable, equal to 1 if both the chair and CEO are the same person and 0 otherwise.
- *OutDirect* is defined as the proportion of independent directors sitting on the board.
- *Top1* is the percentage of shares held by the largest stockholder.
- *Top2_10* is the percentage of shares held by the second through the tenth largest stockholders (to control for the effect of block shareholders.
- *Herf2_10* is defined as the sum of squares of the percentage of shares held by the second to the tenth largest shareholders.
- *ExeHold* is defined as the percentage of shares held by the top executives.
- *HBshare* is a dummy variable with value of 1 if a listed company also cross-listed in Hong Kong stock market, B-shares stock market, or any other foreign stock markets.

3.3 Summary statistics

Table I reports the descriptive statistics of our sample. In Panel A, we present our sample selection process. The initial sample consists of 5,518 annual preliminary financial data of non-financial industry firms listed in SZSE from 2006 to 2011. When estimating DAs based on modified Jones model and performance-matched model, we eliminate 705 firm-years whose EM can't be estimated. Then we exclude 287 firm-years without necessary observations of corporate government variables. Since that some listed firms are forced to

Table I.
Descriptive statistics

Panel A: sample selection

Annual sample of non-financial industry firms listed in SZSE market from 2006 to 2011	5,518
Less: firm-years without necessary data to compute earnings management (*MJones* and *EMROA*)	−705
Less: firm-years without necessary corporate government variable	−287
Less: firm-years without necessary stock market performance record	−114
Number of firm-years used in main empirical tests	4,412
Among the above sample	
Firm-years with online voting	1,713
Firm-years without online voting (we replace *MSP* with zero in this situation)	2,699
In robustness test	
Less: firm-years without necessary data to compute alternative earnings management	−1,177
Number of firm-years used in robustness test	3,235

Panel B: summary statistics

Variables	Obs.	Mean	SD	Min.	Max.
MJones	4,412	0.017	0.122	−0.442	0.460
EM_ROA	4,412	0.006	0.116	−0.416	0.442
EQMcN	3,235	−0.005	0.079	−0.357	0.245
EQDD	3,235	−0.007	0.088	−0.377	0.315
EQBS	3,235	−0.007	0.085	−0.373	0.292
$MSP_{online\ voting\ firms}$	1,713	0.061	0.069	0	0.607
$MSP_{all\ firms}$	4,412	0.024	0.052	0	0.607
InstHold	4,412	0.242	0.214	0	0.814
LnSize	4,412	21.113	1.363	0.001	25.857
BM	4,412	0.345	0.252	−0.377	1.250
TO	4,412	7.747	4.346	0.529	19.560
Leverage	4,412	0.458	0.276	0.049	1.850
Nanal	4,412	1.591	1.224	0	4.344
BoardD1	4,412	0.555	0.497	0	1
BoardD2	4,412	0.373	0.484	0	1
Stkret	4,412	0.425	1.017	−0.768	4.133
SOE	4,412	0.476	0.500	0	1
Top1	4,412	0.349	0.152	0.008	0.894
Top2_10	4,412	0.224	0.138	0.006	0.656
Herf2_10	4,412	0.021	0.025	0	0.157
Outdirect	4,412	0.567	0.118	0	0.857
Duality	4,412	0.169	0.374	0	1
ExeHold	4,412	0.042	0.114	0	0.843
HBshare	4,412	0.064	0.245	0	1
Idiovol	4,412	0.025	0.007	0	0.079

(*continued*)

Spread	3,720	0.029	0.030	0.010	0.433
TM_Major	4,412	0.009	0.096	0	1
Compensation	3,856	13.450	0.850	10.683	15.827
SUE	7,032	−0.105	0.926	−7.782	1.597

Panel C: minority shareholders participation

	Main board			SME board			GE board		
Year	Obs.	Percent	MSP	Obs.	Percent	MSP	Obs.	Percent	MSP
2006	358	75.53	0.114	13	10.92	0.069			
2007	155	33.05	0.093	77	35.00	0.026			
2008	142	30.28	0.075	106	38.97	0.025			
2009	146	31.33	0.065	122	34.17	0.028			
2010	194	41.72	0.053	173	31.34	0.027	12	6.35	0.032
2011	219	47.20	0.052	267	41.01	0.031	58	19.80	0.015

Notes: Panel B of Table I reports the descriptive statistics of our sample. *MJones, EM_ROA, EQMcN, EQDD*, and *EQBS* are proxies of earnings management, i.e. discretionary accruals. In specific, *MJones* is a modified version of the Jones model, which is estimated as Dechow *et al.* (1995), *EM_ROA* is Kothari *et al.*'s (2005) performance-adjusted discretionary accruals. *EQDD* is the accruals quality developed in Dechow and Dichev (2002) and Francis *et al.* (2005), *EQMcN* is the accruals quality of McNichols (2002), and *EQBS* is discretionary accruals estimated as Ball and Shivakumar (2006). Section 3.2.2 provides more estimation detail for earnings management. *MSP* is the minority shareholder participation (proxy for minority shareholder control over corporate decisions), which is computed as the average value of $MSP_{proposal}$ year by year from 2006 to 2011. Here, $MSP_{proposal}$ is the ratio of total number of shares participating in online voting to the number of all outstanding shares in a general shareholder meeting for one specific year. Section 3.2.1 provides more estimation detail for *MSP*. $MSP_{all\ firms}$ is the *MSP* based all shareholder meetings (including the shareholder meetings without online voting). *InstHold* is defined as the percentage of shares held by all institutional investors. *SOE* is a dummy variable, equal to 1 if the firm is controlled by the state and 0 otherwise. *Nanal* is the natural logarithm of one plus the total number of analysts who make earnings forecasts for firm *i* during each period. *LnSize* is the natural logarithm of the total assets. *BM* is the book-to-market value ratio. *TO* is annual stock turnover measured over the fiscal year. *Leverage* is the ratio of total liabilities to total assets. *BoardD1* and *BoardD2* are dummies that take the value of 1 if a company is listed in the main board and small and medium-sized enterprise board (SME), respectively. *Stkret* is annual stock return measured over the fiscal year. *Duality* is a dummy variable, equal to 1 if both the chair and chief executive officer (CEO) are the same person and 0 otherwise. *OutDirect* is defined as the proportion of independent directors sitting on the board. *Top1* is the percentage of shares held by the largest stockholder. *Top2_10* is the percentage of shares held by the second through the tenth largest stockholders (to control for the effect of block shareholders. *Herf2_10* is defined as the sum of squares of the percentage of shares held by the second to the tenth largest shareholders. *ExeHold* is defined as the percentage of shares held by the top executives. *HBshare* is a dummy variable with value of 1 if a listed company also cross-listed in Hong Kong stock market, B-shares stock market, or any other foreign stock markets. *Idiovol* is stock's idiosyncratic volatility, which is defined as the standard deviation of residual estimated on the CAPM model in each year. *Spread* is stock's proportional effective spread, computed following the approach of Chordia *et al.* (2000). *TM_Major* is a dummy variable denoting whether the chairman of board has a finance-related degree. *Compensation* is defined as the logarithm top three executives' compensation (the compensation of CEO is not available in China). *SUE* is a variable used in the preliminary tests (noting that *SUE* has different observations with the variables in main tests), which is standard unexpected earning and estimated by a naïve time-series estimation based on a rolling random walk model (Foster *et al.*, 1984); Panel C of Table I presents the minority shareholders participation year by year. Here, "SME Board" refers to small and medium-sized enterprise board and "GE Board" refers to growth enterprise board, which is created in 2010. Percent is the fraction of shareholder meetings with online voting to all shareholder meetings in a specific year

Table I.

suspend trading in SZSE, we further exclude 114 firm-years without necessary market record to construct control variables. Our final sample in the main tests thus has 4,412 observations, and among the final sample, 1,713 firm-years are with online voting. In robustness tests, we use alternative EM measures, which are developed in Dechow and Dichev (2002), Francis *et al.* (2005), and McNichols (2002). The estimation of these alternative measures is based on firm's cash flow in the last, present, and next year, and we have to eliminate 1,177 firm-years without necessary data.

Panel B shows that the average $MSP_{online\ voting\ firms}$ for firms with online voting is 6.1 percent. The $MSP_{all\ firms}$ is the *MSP* for all shareholder meetings, including the shareholder meetings without online voting. If the firm has no online voting on that year, we take the value of *MSP* as zero. As shown in the table, the average value of $MSP_{all\ firms}$ is only 2.4 percent, far below $MSP_{online\ voting\ firms}$.

Panel C presents the annual *MSP*. Notably, the online voting events primarily occur in the main board and in that of SMEs; moreover, 30 to 40 percent of firms use online voting in their shareholder meetings.

Table II presents the correlation tests on our key variables. First, we find that different measures of EM (i.e. DAs) are highly correlated with each other (i.e. the correlations among all five measures of EM range from 0.5 to 0.9). High correlations indicate that the use of different discretionary models is robust. *MSP* and *Agree* show a consistently positive relation with all the five measures of EM, thus exhibiting a basic support for our hypothesis.

4. Preliminary tests

In this section, we conduct two preliminary tests to provide supportive evidence to our hypothesis and as our starting point for further analysis.

4.1 Do minority shareholders identify EM?

We first investigate whether minority shareholders can identify a firm's EM or not. This test serves two purposes: only under the condition that minority shareholder cannot identify the EM, the firm's manager, in a stock market dominated by minority shareholders, tends to manage earnings in a significant way to cater to minority shareholders; and if minority shareholders cannot identify the firm's EM, it means that minority shareholders are less likely to select firms by the level of EM. Thus, our results in the next section are less likely to suffer from selection bias.

In order to study the behaviors of minority shareholders (i.e. individual investors), we introduce listed firms' annual financial report events to investigate the impact of EM on the relation between *CAR* over post-event window $[T_0+1,\ T_0+30]$ (or $[T_0+1,\ T_0+60]$ and the percentage of firm shares held by individual investors (*RetailHold*).

To conduct the test, we use announcement dates of annual financial report instead of the date of shareholder meetings. In China, the earnings number is announced together with annual report, and therefore on the earnings announcement date the investors can estimate the magnitude of EM. On annual meeting date, the investors do not have additional information to assess the EM. Therefore, we use the CAR around annual report to capture the market reaction of minority shareholders. Balsam *et al.* (2002) also use this methodology to examine whether sophisticated investors are able to decompose the earnings figure into its discretionary and nondiscretionary components. Formally, we run the following regression:

$$CAR_{[T_0+1,\ T_0+30]}\left(or: CAR_{[T_0+1,\ T_0+60]}\right) = f(EM,\ RetailHold,\ EM \times RetailHold,\ SUE,\ Other\_Control), \quad (5)$$

where *CAR, EM*, and *RetailHold* are defined as in Section 3.2. In Equation (5), we define T_0 as the earnings announcement date of each firm. We are interested in the coefficients of

Table II.
Correlations among key variables

Variables	*MJones*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 EM_ROA	0.864														
2 EQMcN	0.678	0.558													
3 EQDD	0.656	0.568	0.863												
4 EQBS	0.703	0.592	0.795	0.892											
5 MSP	0.030	0.035	0.052	0.098	0.094										
6 Agree	0.053	0.052	0.061	0.121	0.121	0.601									
7 SUE	0.129	0.159	0.222	0.253	0.256	0.031	0.041								
8 InstHold	0.090	0.011	0.128	0.144	0.192	0.043	0.099	0.076							
9 Ln(Size)	0.114	0.024	0.145	0.157	0.203	0.078	0.091	0.096	0.585						
10 BM	0.085	0.023	0.099	0.050	0.059	0.052	0.001	−0.067	−0.094	−0.105					
11 TO	0.039	0.038	0.021	−0.013	−0.027	−0.258	−0.155	0.030	−0.310	−0.076	−0.253				
12 Leverage	−0.214	−0.075	−0.316	−0.268	−0.301	0.082	0.059	−0.067	−0.127	−0.131	−0.261	−0.153			
13 Nanal	0.148	0.028	0.217	0.215	0.264	0.048	0.130	0.098	0.615	0.541	0.016	−0.121	−0.195		
14 Stkret	0.010	0.063	0.048	0.091	0.081	0.046	0.059	0.108	0.056	0.359	−0.425	0.395	0.008	−0.020	
15 SOE	−0.072	−0.039	−0.108	−0.109	−0.090	0.066	−0.018	−0.029	0.076	0.211	0.186	−0.131	0.063	0.018	0.013

Notes: This table reports the correlation matrix of key variables in this paper. All variable are defined in Table I

EM × *RetailHold*. A significantly positive interaction item means that, controlling for the *SUE* level, the greater holding of minority shareholders results in a more positive reaction to high EM. Balsam *et al.* (2002) also use a similar regression in their study. In the estimation of Equation (5), we also include the following control variables (*Other_Control*): *SOE*, *Nanal*, Ln (*Size*), *BM*, *TO*, *BoardD1*, *BoardD2*, *Stkret*, *Duality*, *OutDirect*, *Top1*, *Top2_10*, *Herf2_10*, *ExeHold*, and *HBshare*.

Table III presents estimated results of Equation (5) using all firms in China's stock market. Panel A and Panel B report the results based on $CAR_{[T0+1,\ T0+30]}$ *and* $CAR_{[T0+1,\ T0+60]}$, respectively. The coefficients of *EM* × *RetailHold* stay positive and significant regardless of the inclusion of control variables in our regression; this indicates that the minority shareholders cannot effectively identify the firm EM.

4.2 Do minority shareholders express their concerns by online voting?

In our second preliminary test, we attempt to show that minority shareholders can express their attitudes or concerns by online voting. To do so, we use the affirmative vote ratio (*Agree*) to measure attitudes of minority shareholders and introduce the following regression model:

$$Agree = f\left(CAR_{[T_0+1,\ T_0+3](\text{or }[T_0+1,\ T_0+10])},\ Other\_Control\right), \tag{6}$$

Variables	Panel A: CAR[T_0+1, T_0+30] Reg-1	Reg-2	Panel B: CAR[T_0+1, T_0+60] Reg-3	Reg-4
RetailHold	0.047*** (4.295)	0.048*** (4.199)	0.072*** (4.475)	0.073*** (4.401)
Mjone	−0.096* (−1.817)		−0.199** (−2.421)	
Mjone × *RetailHold*	0.164** (2.249)		0.253** (2.267)	
EM_ROA		−0.114** (−1.963)		−0.187** (−2.219)
EM_ROA × *RetailHold*		0.168** (2.127)		0.203* (1.854)
SUE	−0.008*** (−3.599)	−0.008*** (−3.362)	−0.013*** (−4.305)	−0.013*** (−4.222)
Ln(Size)	0.002 (0.629)	0.001 (0.543)	0.019*** (5.152)	0.019*** (4.995)
BM	0.036*** (4.322)	0.039*** (4.445)	0.008 (0.653)	0.010 (0.777)
TO	−0.003*** (−4.399)	−0.003*** (−4.002)	−0.003*** (−2.991)	−0.003*** (−3.052)
Leverage	0.019** (2.328)	0.015 (1.586)	0.019 (1.508)	0.018 (1.465)
Nanal	−0.009*** (−4.341)	−0.010*** (−4.232)	−0.014*** (−4.389)	−0.014*** (−4.405)
BoardD1	0.008 (0.649)	0.011 (0.821)	−0.058*** (−2.892)	−0.058** (−2.381)
BoardD2	0.006 (0.521)	0.008 (0.693)	−0.051*** (−2.700)	−0.050** (−2.161)
Stkret	−0.018*** (−7.712)	−0.020*** (−7.693)	−0.037*** (−10.471)	−0.037*** (−11.376)
SOE	−0.008* (−1.814)	−0.008* (−1.776)	−0.015** (−2.217)	−0.015** (−2.326)
Top1	0.010 (0.632)	0.011 (0.652)	0.034 (1.516)	0.035 (1.550)
Top2_10	−0.008 (−0.257)	−0.006 (−0.178)	0.008 (0.160)	0.008 (0.163)
Herf2_10	0.043 (0.334)	0.042 (0.311)	0.006 (0.034)	0.007 (0.034)
Outdirect	0.029* (1.769)	0.026 (1.497)	0.019 (0.814)	0.019 (0.806)
Dualtiy	0.017*** (2.585)	0.018*** (2.631)	0.017* (1.873)	0.017* (1.868)
ExeHold	−0.053* (−1.903)	−0.051* (−1.809)	−0.030 (−0.717)	−0.028 (−0.600)
HBshare	−0.005 (−0.772)	−0.004 (−0.653)	−0.004 (−0.440)	−0.004 (−0.411)
Constant	−0.082 (−1.345)	−0.078 (−1.222)	−0.426*** (−4.720)	−0.428*** (−4.533)
Fixed effects	Yes	Yes	Yes	Yes
Obs.	7,032	7,032	7,032	7,032
Adj-R^2	0.069	0.067	0.064	0.064

Table III.
Do minority shareholders identify earnings management?

Notes: This table reports results from Equation (5). All variable are defined in Table I. Panel A and Panel B present our results with dependent variables based on CAR over [T_0+1, T_0+30] and [T_0+1, T_0+60], respectively. In this table, we define T_0 as the earnings announcement date of each firm. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

where *Agree* is defined similarly to *MSP*, except that we calculate *OVSn* as the number of shares approving the *n*th proposal in a general shareholder meeting in a specific year.

In Equation (6), we define T_0 as the date of proposal of shareholder meetings announced (not the announcement dates of annual report). *CAR* is defined as Section 3.2, and *Other_Control* is the same with Equation (5).

If investors are rational, they should vote according to their perception of the proposal. Therefore, the dependent variable is the affirmative vote, and the independent variable is investors' perception. If the online voting system can help minority shareholders express their concerns, we expect that the coefficient of *CAR* is positive. Proposals are usually published one or two weeks before the shareholder meeting day. Thus, the shareholder can "vote by foot" in stock market and can express their concerns by the online voting. We expect that both of these methods are consistent, and if so, *CAR* should be positively significant.

Table IV reports regression results of Equation (6). Panel A and Panel B are based on all firms with online voting events and firms with online voting events only one time in a specific year, respectively. Noting that our observations are 2,659 and 1,410 in Panel A and Panel B, respectively, since that our sample in Table IV is defined on online voting events rather than firm year level. Our market reaction analysis shows that *CAR* positively relate to the *Agree*, which indicates that minority shareholders significantly express their opinions.

	Dep. Var.: *Agree*			
	Panel A: all online voting events		Panel B: online voting events only one time in a specific year	
Variables	CAR[T_0+1, T_0+3]	CAR[T_0+1, T_0+10]	CAR[T_0+1, T_0+3]	CAR[T_0+1, T_0+10]
CAR	0.541*** (2.888)	0.313*** (3.916)	0.551** (2.322)	0.255*** (2.681)
InstHold	0.062 (1.046)	0.065 (1.107)	0.124 (1.630)	0.126* (1.660)
Ln(Size)	0.036*** (3.654)	0.037*** (3.679)	0.033*** (3.015)	0.033*** (3.010)
BM	−0.181*** (−4.402)	−0.182*** (−4.421)	−0.204*** (−3.827)	−0.204*** (−3.823)
TO	−0.009*** (−2.726)	−0.009*** (−2.730)	−0.006 (−1.529)	−0.006 (−1.565)
Leverage	−0.038 (−0.996)	−0.041 (−1.073)	0.006 (0.115)	0.003 (0.062)
Nanal	0.066*** (5.930)	0.065*** (5.797)	0.052*** (3.565)	0.050*** (3.469)
BoardD1	0.105 (1.528)	0.102 (1.475)	0.126 (1.516)	0.122 (1.473)
BoardD2	0.055 (0.873)	0.052 (0.819)	0.046 (0.610)	0.041 (0.543)
Stkret	0.054*** (4.278)	0.053*** (4.146)	0.047*** (3.212)	0.046*** (3.148)
SOE	−0.039* (−1.830)	−0.040* (−1.865)	−0.037 (−1.388)	−0.036 (−1.362)
Top1	0.075 (1.108)	0.075 (1.113)	0.096 (1.096)	0.096 (1.107)
Top2_10	0.288** (2.041)	0.288** (2.034)	0.474*** (2.609)	0.479*** (2.635)
Herf2_10	−1.353** (−1.993)	−1.378** (−2.025)	−1.917** (−2.095)	−1.958** (−2.136)
Outdirect	0.003 (0.041)	0.005 (0.075)	0.016 (0.182)	0.017 (0.192)
Duality	0.003 (0.133)	0.001 (0.033)	0.009 (0.302)	0.007 (0.231)
ExeHold	0.089 (0.930)	0.090 (0.941)	0.090 (0.686)	0.104 (0.789)
HBshare	−0.035 (−1.140)	−0.037 (−1.180)	−0.077* (−1.848)	−0.075* (−1.789)
Constant	−0.345 (−1.478)	−0.374 (−1.575)	−0.254 (−0.920)	−0.264 (−0.950)
Fixed effects	Yes	Yes	Yes	Yes
Obs.	2,659	2,659	1,410	1,410
Adj-R^2	0.125	0.127	0.133	0.134

Notes: This table reports results from Equation (6). All variable are defined in Table I. Panel A and Panel B are based on all firms with online voting events and firms with online voting events only one time in a specific year, respectively. Noting that our observations are 2,659 and 1.410 in Panel A and Panel B, respectively, since that our sample in Table IV is defined on online voting events rather than firm year level. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table IV. Do minority shareholders express their concerns by online voting?

5. Main results

Thus far, our results show that minority shareholders express their opinions by online voting; however, they cannot effectively identify the EM. We now test our main hypothesis, that is, intensive *MSP* increases a firm's EM level. In this section, we begin the analysis with pooled-OLS regressions. Then, we use IV regressions with two IV. Finally, we examine the effect of *MSP* on EM using a matched sample and DID method.

5.1 Baseline empirical results

5.1.1 Pooled-ordinary least squares regression. In order to estimate the effect of *MSP* on EM, we run the following regression model:

$$EM = f(MSP,\ Other\_Control), \tag{7}$$

where all variables in Equation (7) are defined as in Section 3.2, and the control variables (*Other_Control*) are the same as those in Equation (5). We expect that the coefficient of *MSP* is significant and positive. In the regression, the dependent variable *EM* measures the actions taken by managers in the end of a specific fiscal year (In China, the disclosure of annual report is typically in the first four months of the next year), and the independent variable *MSP* measures the activism of minority shareholders in the specific year. This specification implicitly assumes that the managers will react to the participation of individual shareholders by managing earnings number. In addition, to further alleviate the endogeneity problem, we also conduct empirical test by lagging independent variables with one period.

Table V shows the results of the pooled-OLS regressions. Column 1 and column 2 show the results of the regressions based on all shareholder meetings (including those meetings without online voting). Specifically, Column 1 and Column 2 report the regression using *MJones* and *EM_ROA*, respectively. The coefficient on *MSP* is significantly positive, indicating that a higher level of *MSP* is associated with a higher level of EM. In order to further explore the potential lagged effect of minority shareholder participation, columns 3 and 4 show the results from the regressions with EM (i.e. dependent variable) of the next fiscal year (lead one period). We find that the magnitude of coefficients in *MSP* is more significant.

Of course, the online voting is required when proposals concern a number of specific important events. Thus, it is more likely that managers are manipulating earnings because of these events. For example, Teoh *et al.* (1998) and Erickson and Wang (1999) find that managers are more likely to manipulate earnings around SEOs and stock-for-stock mergers, respectively. However, even though it is true that the earnings manipulation is related to some specific events, the bottom line of our hypothesis is that managers are trying to affect the stock price eventually in these events by using EM in a stock market dominated by minority shareholders. We will formally address the potential endogenous issue in Section 5.2.

In addition, institutional ownership (*InstHold*) exhibits a significant negative association with EM, which is consistent with the view that institutional investors also serve as external monitors.

The negative coefficients of *SOE* mean that state-owned firms in China show a lower level of EM. This is consistent with the combined research of Linck *et al.* (2013) and Fan *et al.* (2008). Linck *et al.* (2013) state that financially constrained firms with valuable projects can use EM to credibly signal positive prospects, enabling such firms to raise capital to make the investments. Furthermore, they find that financially constrained firms with good investment opportunities have significantly higher DAs in the two quarters prior to investments compared with their unconstrained counterparts. Fan *et al.* (2008), meanwhile, document that politics influences the decisions of state banks to lend capital to SOEs.

Variables	*MJones* Reg-1	*EM_ROA* Reg-2	$MJones_{t+1}$ Reg-3	EM_ROA_{t+1} Reg-4
MSP	0.068* (1.724)	0.066* (1.721)	0.128*** (3.310)	0.115*** (2.852)
InstHold	−0.039*** (−3.288)	−0.043*** (−3.848)	−0.029** (−2.360)	−0.015 (−1.263)
Ln(Size)	0.003 (1.202)	−0.001 (−0.603)	0.006** (2.143)	0.000 (0.158)
BM	0.025*** (3.047)	0.013 (1.486)	0.000 (0.026)	0.014 (1.289)
TO	0.001** (2.373)	0.001 (1.382)	−0.001 (−0.942)	0.001 (1.135)
Leverage	−0.070*** (−7.188)	−0.028** (−2.526)	−0.069*** (−5.938)	−0.029** (−2.362)
Nanal	0.014*** (7.191)	0.008*** (4.593)	0.009*** (4.305)	0.004** (2.054)
BoardD1	−0.001 (−0.090)	−0.001 (−0.090)	0.006 (0.552)	0.012 (1.116)
BoardD2	−0.009 (−1.088)	−0.004 (−0.540)	0.004 (0.536)	0.011 (1.350)
Stkret	0.000 (0.153)	0.007*** (2.782)	0.005* (1.725)	−0.000 (−0.188)
SOE	−0.020*** (−4.545)	−0.011** (−2.493)	−0.012** (−2.424)	−0.002 (−0.467)
Top1	0.091*** (6.252)	0.056*** (3.971)	0.066*** (3.839)	0.039** (2.348)
Top2_10	0.172*** (5.972)	0.136*** (4.892)	0.119*** (3.717)	0.068** (2.148)
Herf2_10	−0.488*** (−3.958)	−0.441*** (−3.659)	−0.220* (−1.693)	−0.150 (−1.182)
Outdirect	−0.001 (−0.077)	−0.005 (−0.315)	0.010 (0.593)	0.016 (0.955)
Duality	−0.005 (−1.013)	−0.005 (−1.163)	0.007 (1.260)	0.006 (1.143)
ExeHold	0.035* (1.867)	0.016 (0.851)	0.029 (1.476)	0.019 (0.994)
HBshare	0.001 (0.140)	−0.002 (−0.370)	−0.002 (−0.212)	−0.003 (−0.396)
Constant	−0.089* (−1.745)	−0.003 (−0.075)	−0.151** (−2.383)	−0.057 (−0.976)
Fixed effects	Yes	Yes	Yes	Yes
Obs.	4,412	4,412	3,226	3,226
Adj-R^2	0.121	0.047	0.113	0.027

Notes: This table reports results from Equation (7). All variable are defined in Table I. Reg-1 and Reg-2 show the results of the regressions based on all shareholder meetings (including those meetings without online voting) in the firm year level. Reg-3 and Reg-4 further explore the potential lagged effect of minority shareholder participation and take earnings management of the next year (lead one period) as dependent variables. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table V.
Impacts of minority shareholders participation on earnings management

However, due to the lack of this type of political connection, non-SOE firms in China's capital market cannot obtain loan quotas as easily as their SOE counterparts.

5.1.2 Robustness: alternative measures of EM and MSP. Despite the extensive use of DAs as a measure of quality of earnings, there is little evidence proving that the DA model is superior or more appropriate. Therefore, we use alternative measures of DAs in our sensitivity tests.

Specifically, we re-estimate DAs using the following: the accruals quality measure (*EQDD*) developed in Dechow and Dichev (2002) and Francis *et al.* (2005); the accruals quality measure (*EQMcN*) developed in McNichols (2002); and the DAs measure (*EQBS*) suggested by Ball and Shivakumar (2006).

Panel A of Table VI presents the results based on all these alternative estimations. Our results using all these alternative estimations are, once again, similar to those reported in our main tables, suggesting that our findings are not sensitive to different ways of estimating DAs.

We also introduce an alternative measure of *MSP*, that is, $MSP_{TotalShare}$. Specifically, we define $MSP2_{proposal}$, year by year, as follows:

$$MSP2_{proposal} = \frac{1}{N}\sum_{n=1}^{N}\frac{OVS_n}{TotalShares - \sum BlockShareholders}, \quad (8)$$

where *TotalShares* is the number of all shares (= outstanding shares + non-tradable shares),

Variables	Panel A: alternative earnings management *EQMcN*	*EQDD*	*EQBS*	Panel B: $MSP_{TotalShares}$ as *MSP* *MJones*	*EM_ROA*
MSP	0.061** (2.456)	0.111*** (3.814)	0.107*** (3.751)	0.055** (2.237)	0.058** (2.452)
InstHold	−0.037*** (−4.314)	−0.046*** (−4.726)	−0.035*** (−3.659)	−0.024 (−1.073)	−0.019 (−0.838)
Ln(Size)	0.005** (2.508)	0.006*** (2.583)	0.006** (2.441)	0.004 (1.469)	0.002 (0.567)
BM	0.013* (1.911)	0.005 (0.642)	0.007 (0.992)	−0.027 (−1.568)	−0.011 (−0.614)
TO	−0.001*** (−2.720)	−0.002*** (−5.265)	−0.002*** (−4.433)	0.001 (0.866)	0.002** (1.962)
Leverage	−0.081*** (−9.567)	−0.079*** (−8.538)	−0.078*** (−8.612)	−0.068*** (−2.873)	−0.030 (−1.282)
Nanal	0.009*** (5.872)	0.009*** (5.554)	0.008*** (4.746)	0.012** *(3.305)	0.007** (2.046)
BoardD1	−0.023** (−2.551)	−0.034*** (−3.307)	−0.035*** (−3.419)	0.012 (0.268)	−0.019 (−0.375)
BoardD2	−0.013* (−1.691)	−0.021** (−2.292)	−0.022** (−2.419)	−0.005 (−0.121)	−0.027 (−0.544)
Stkret	0.005** (2.522)	0.009*** (4.248)	0.007*** (3.692)	0.003 (0.733)	−0.001 (−0.063)
SOE	−0.013***(−4.321)	−0.016*** (−4.477)	−0.012*** (−3.630)	−0.010 (−1.201)	0.004 (0.450)
Top1	0.043*** (4.406)	0.073*** (6.544)	0.066*** (6.190)	0.060** (2.245)	0.047* (1.762)
Top2_10	0.091*** (4.391)	0.123*** (5.243)	0.116*** (5.128)	0.129** (2.342)	0.074 (1.373)
Herf2_10	−0.283*** (−3.095)	−0.346*** (−3.446)	−0.319*** (−3.253)	−0.188 (−0.737)	−0.085 (−0.339)
Outdirect	0.006 (0.567)	0.014 (1.099)	0.012 (1.029)	−0.0144 (−0.478)	−0.010 (−0.336)
Duality	−0.003 (−0.886)	0.001 (0.355)	0.002 (0.494)	0.002 (0.199)	0.001 (0.142)
ExeHold	0.036** (2.514)	0.056*** (3.104)	0.055*** (3.158)	0.067 (1.533)	0.050 (1.218)
HBshare	−0.002 (−0.502)	−0.004 (−0.827)	−0.000 (−0.097)	0.017 (1.373)	0.007 (0.600)
Constant	−0.081* (−1.691)	−0.099* (−1.813)	−0.102* (−1.754)	−0.046*(−1.750)	−0.042 (−1.521)
Fixed Effects	Yes	Yes	Yes	Yes	Yes
Obs.	3,235	3,235	3,235	4,412	4,412
Adj-R^2	0.216	0.226	0.218	0.112	0.044

Notes: This table reports results from Equation (7) with alternative measures. Panel A and Panel B present results based on alternative measures of earnings management and minority shareholder participation, respectively. $MSP_{TotalShare}$ is the minority shareholder participation (proxy for minority shareholder control over corporate decisons), which is computed as the average value of $MSP_{proposal}$ year by year from 2006 to 2011. Here, $MSP_{proposal}$ is the ratio of total number of shares participating in online voting to the number of all shares (outstanding shares + non-tradable shares) in a general shareholder meeting for one specific year. Section 5.4 provides more estimation detail for $MSP_{TotalShare}$. All other variables are defined in Table I. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table VI.
Minority shareholders participation and earnings management: alternative measures

and all other variables are defined as in Equation (1). We compute the $MSP_{TotalShare}$ as the average value of $MSP2_{year}$ from 2006 to 2011.

Panel B of Table VI exhibits estimated results based on $MSP_{TotalShare}$. The coefficient for $MSP_{TotalShare}$ is positively significant, using each of our measures of EM. Thus, the relation between *MSP* and EM, as shown in the main results, is robust when tested with different measures of *MSP*.

5.2 Endogeneity

While the above tests are suggestive of a catering theory, they may suffer from endogeneity concerns. In this section, we address concerns about endogeneity in three ways. First, we construct a cleaner sample based on propensity score matched. Second, we use a two-stage-least squares regression with two IV. Third, we further introduce the Heckman estimation to address the potential self-selection bias in our sample.

5.2.1 Estimation based on propensity score matched sample and DID method. We conduct PS-matching analysis to further address the possibility of reverse causality or endogeneity and to alleviate this concern (Rosenbaum and Rubin, 1984).

Specifically, regarding the procedure of PS-matching, we construct a reduced sample based on a probit model, in which the likelihood of minority shareholders participating in a stock is linked to firm-specific variables. We expect that the interest level of minority

shareholders in a firm is determined by firm-specific attributes. Considering that these attributes are likely to correlate with dimensional characteristics that distinguish one firm from another, we thus include the same control variables in Equation (5) (i.e. *Other_Control*) to calculate the propensity score. Industry and year dummies are also included to account for the industry and time constants.

Using probit regression, we obtain the predicted likelihood of a stock to be participated by minority shareholders, that is, the propensity score for each firm. Based on this score and using the one-to-one nearest-neighbor matching method, we match online voting firms with the firms from the non-online voting group. In our PS-matching sample, a firm followed by minority shareholders and its matched firm are identical with respect to the predicted likelihood of being followed by minority shareholders; thus, they are equally likely *ex-ante* to have the same participation likelihood of minority shareholders (although they, in fact, did not participate, *ex-post*). Therefore, for the firms in this PS-matching sample, the difference in the actual *ex-post MSP*, if any, is likely to be exogenous.

Panel A of Table VII presents the results based on the matched sample with PS-matching. In particular, columns 1 and 2 present the results of the regressions based on matched sample. Consistent with the pooled-OLS test, the coefficient on *MSP* is significantly positive.

To compare the EM, or more generally, financial reporting and voluntary disclosures, between the firms that have adopted online voting system and those have not, we further conduct a DID test. That is, examining the change in EM after a firm adopts an online voting system and using a matched firm that has not adopted any online voting system as benchmark. The use of DID has become widespread since the work of Ashenfelter and Card (1985). The simplest set up is one where outcomes are observed for two groups during two periods. One of the groups is exposed to a treatment (online voting of *MSP* firms in this paper) in the second period but not in the first period. The second group (non-*MSP* matching firms) is not exposed to the treatment during either period. In the case where the same units within a group are observed in each period, the average gain in the second (control) group is subtracted from the average gain in the first (treatment) group. This removes biases in second period comparisons between the treatment or control group that could be the result of permanent differences between those groups, as well as biases from comparisons over time in the treatment group that could be the result of trends.

Therefore, we turn to use DID estimation and PS-matching method (DID + PSM) to investigate the treatment effects of *MSP* on firms' EM behaviors before and after the online voting events. Before DID + PSM estimation, we employ the PS-matching method to choose control samples for *MSP* firms. The matching principles and processes are the same as the above section. After PS-matching, we introduce the following regression:

$$EM = f\left(Time_{dummy},\ MSP_{dummy},\ Time_{dummy} \times MSP_{dummy},\ Other\_Controls\right), \quad (9)$$

where *EM* is earnings management and the control variables (*Other_Control*) are the same as those in Equation (5). $Time_{dummy}$ is a dummy variable representing whether the period is after the online voting events, and if the year is before the online voting events, then $Time_{dummy}$ equals 0, otherwise $Time_{dummy} = 1$. MSP_{Dummy} is another dummy variable denoting whether the firm belongs to the treatment group, i.e. firms who hold online voting. If the firm belongs to the control group (i.e. matched firms without online voting), then MSP_{Dummy} equals 0.

We focus on the coefficient of interaction item of $Time_{dummy} \times MSP_{dummy}$. If there are differences in EM between online voting firms (*MSP* firms) and control firms after the online

Variables	Panel A: PS-matching		Panel B: PS-matching + DID	
	MJones	*EM_ROA*	*MJones*	*EM_ROA*
MSP	0.075* (1.883)	0.073* (1.873)		
$Time_{Dummy}$			−0.022*** (−2.700)	−0.014* (−1.716)
MSP_{Dummy}			0.002 (0.254)	0.004 (0.568)
$Time_{Dummy} \times MSP_{Dummy}$			0.022** (2.247)	0.016* (1.881)
InstHold	−0.042*** (−2.660)	−0.041***(−2.697)	−0.048*** (−3.145)	−0.046*** (−3.064)
Ln(Size)	0.007** (2.250)	0.001 (0.222)	0.009** (2.451)	0.000 (0.037)
BM	0.022** (2.072)	0.017 (1.579)	0.030*** (3.231)	0.016* (1.660)
TO	0.002*** (2.723)	0.001* (1.856)	0.001 (0.812)	0.000 (0.044)
Leverage	−0.068*** (−4.988)	−0.029** (−2.099)	−0.090*** (−7.641)	−0.034** (−2.511)
Nanal	0.012*** (4.447)	0.007*** (2.605)	0.010*** (3.783)	0.005* (1.872)
BoardD1	−0.014 (−0.726)	−0.021 (−1.208)	−0.009 (−0.642)	−0.009 (−0.667)
BoardD2	−0.026 (−1.494)	−0.026 (−1.616)	−0.001 (−0.108)	−0.005 (−0.445)
Stkret	−0.001 (−0.400)	0.007** (2.155)	−0.000 (−0.058)	0.008** (2.340)
SOE	−0.018*** (−3.029)	−0.004 (−0.640)	−0.019*** (−3.474)	−0.016*** (−2.888)
Top1	0.092*** (4.803)	0.055*** (2.920)	0.084*** (4.705)	0.049*** (2.822)
Top2_10	0.190*** (4.735)	0.151*** (3.856)	0.160*** (4.404)	0.105*** (2.866)
Herf2_10	−0.457*** (−2.596)	−0.429** (−2.534)	−0.433*** (−2.759)	−0.379** (−2.471)
Outdirect	−0.020 (−0.956)	−0.018 (−0.903)	−0.007 (−0.362)	−0.013 (−0.690)
Duality	−0.005 (−0.755)	−0.005 (−0.844)	0.001 (0.149)	−0.002 (−0.277)
ExeHold	0.054* (1.818)	0.039 (1.319)	0.079*** (2.674)	0.063** (2.121)
HBshare	−0.003 (−0.386)	−0.009 (−1.027)	−0.002 (−0.215)	−0.006 (−0.753)
Cons	−0.173** (−2.313)	−0.024 (−0.385)	−0.188** (−2.364)	0.003 (0.032)
Fixed effects	Yes	Yes	Yes	Yes
Obs.	2,622	2,622	2,700	2,700
Adj-R^2	0.100	0.042	0.174	0.055

Notes: This table reports results from Equations (7) to (8) in Panel A and Panel B, respectively. All variable are defined in Table I. In Panel A, to get the regression sample, we construct a reduced sample based on a probit model in which the likelihood of a stock being participated by minority shareholders is linked to firm-specific variables. In this model, the likelihood of a firm participated by minority shareholders is linked to firm-specific variables. By using probit regression, we obtain the predicted likelihood of a stock to be visited by minority shareholders, that is, the propensity score for each firm. Based on this score and using the one-to-one nearest-neighbor matching method, we match online voting firms with the firms from the non-online voting group. In Panel B, we further conduct a DID test. That is, examining the change in earnings management after a firm adopts an online voting system and using a matched firm that has not adopted any online voting system as benchmark. One of the groups is exposed to a treatment (online voting of *MSP* firms) in the second period but not in the first period. The second group (non-*MSP* matching firms) is not exposed to the treatment during either period. Section 5.3 offers more details. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table VII.
Impacts of minority shareholders participation on earnings management: PS-matched sample and difference-in-difference

voting, we expect that the coefficient of $Time_{dummy} \times MSP_{dummy}$ is significantly positive, which means that *MSP* firms have a larger extent of EM compared with the non-*MSP* firms. Panel B of Table VII presents the results based on the DID estimation and matched sample with PS-matching. Once again, we present supportive evidence to the catering theory with coefficients of $Time_{dummy} \times MSP_{dummy}$ significantly positive both for *MJones* and *EM_ROA* measures suggesting that the estimation results are robust. Our findings indicate that *MSP* firms indeed have a stronger incentive to cater minority shareholders.

5.2.2 IV estimations: 2SLS. Although our results significantly indicate that firms' EM is positively associated with *MSP*, other explanations are possible. Specifically, our findings are also consistent with the possibility that *MSP* would choose to participate in shareholder meetings of firms with worse financial reporting quality. Thus, one immediate concern for the OLS test is the endogeneity of *MSP*, which can be affected by firms' EM behavior.

Minority shareholders can intentionally choose to monitor firms with high EM. This type of positive relation between *MSP* and EM could be driven by the selection bias.

In effect, preliminary tests show that the minority shareholder cannot effectively identify the EM (this reduces the possibility of self-selection bias), and that the lagged-variable in Table V analysis can further help alleviate the reverse causality.

In this subsection, in order to address the potential endogeneity problem more formally, we use the 2SLS test adopting different instruments to capture the variations in minority shareholder participation that are exogenous to firms' EM behavior. In this subsection, we introduce two IV.

First, we introduce the share split event and construct a dummy variable, *Split*. *Split* is assigned the value 1 if a firm split its shares in a specific year; otherwise, it is assigned the value 0. Schultz (2000) and Dyl and Elliott (2006) argue that a firm may split its shares to enlarge the shareholder base (or investor base) of the firm, and in US stock markets, lower share prices are characteristic of firms owned by so-called "small" investors. Based on this claim, we believe that the split event is related to the *MSP*, but is not likely driven by firm's earnings which announced in the next year. In our sample, the average of *Split* is 24.6 percent.

Second, we introduce the number of shareholder accounts, that is, the investor base, as our second IV, *AccNum*. This variable is closely related to *MSP*, but is less likely affected by the earnings numbers disclosed in the next year.

Table VIII presents the results of the 2SLS tests with our IVs. We first conduct first-stage regression in Panel A with *MSP* as the dependent variable to check the relevance of our IV. The main variables of interest are the coefficients of IV, i.e. *Split* and *AccNum*. All other control variables are the same as those in the regression equation, i.e. Equation (7). The fixed effects of industry and year are included. The coefficients of *Split* and *AccNum* are significant. The *F*-statistics in the first stage are 31.56 and 28.35 for IV1 and IV2, respectively. All the regressions in the first stage are significant at 1 percent significance level. By the rule-of-thumb with one instrument (Staiger and Stock, 1997; Stock and Yogo, 2002), i.e. *F*-statistics are larger than 10, we reject the null hypothesis that the instrument is weak. When we include both of the *Split* and *AccNum* as IVs in Panel B and Panel C, the Sargan Test is unable to reject the null that the instruments are uncorrelated with the disturbance process, which further provides support for the validity of the subset of our instruments used in the specific regression.

In the second stage regression of Table VIII, all the coefficients on *MSP* instrumented by these variables are positively significant and are of greater magnitude than those in the pooled-OLS tests. These results suggest that an increase in the level of *MSP* causes a higher level of EM after controlling for endogeneity.

5.2.3 Heckman estimation. In this subsection, we introduce Heckman (1979) two-step procedure to address the potential selection bias in our study. In particular, we conjecture that the decisions of a firm arranging online voting may also be determined endogenously, and this kind of bias in our sample could also cause OLS estimates unreliable.

Specifically, in the first stage we run a probit regression, the dependent variable is MSP_{Dummy}, denoting whether the firm has an online voting at that year. In the second stage regression, the dependent variable is firm's EM (*MJones* or *EM_ROA*). To meet the exclusion restrictions necessary for identification, in the first-stage, we include these two instrument variables, *Split* and *AccNum*, introduced and validated in the prior part of IV regressions.

Table IX presents the results of Heckman's two-step treatment regressions. All the coefficients of *MSP* remain significantly positive both for *MJones* and *EM_ROA*, suggesting that an increase in the level of *MSP* causes a higher level of EM after controlling for selection bias.

Table VIII.
Impacts of minority shareholders participation on earnings management: IV estimation

Variables	Panel A: 1st Step (Dep.Var: *MSP*)			Panel B: 2nd Step (Dep.Var: *MJones*)			Panel C: 2nd Step (Dep.Var: *EM_ROA*)		
	IV1	IV2	IV1 + IV2	IV1	IV2	IV1 + IV2	IV1	IV2	IV1 + IV2
Split	0.004* (1.930)		0.007*** (2.901)						
AccNum		0.005*** (4.001)	0.005*** (4.164)						
MSP				4.170* (1.674)	2.205*** (2.867)	2.118*** (3.468)	4.021* (1.658)	1.971*** (2.681)	1.949*** (3.289)
InstHold	0.008* (1.830)	−0.000 (−0.086)	−0.002 (−0.265)	−0.059* (−1.884)	0.006 (0.361)	0.006 (0.365)	−0.062** (−2.055)	0.002 (0.097)	0.002 (0.097)
Ln(Size)	0.001* (1.686)	0.003** (2.561)	0.003*** (2.646)	−0.003 (−0.769)	−0.003 (−0.608)	−0.002 (−0.588)	−0.005 (−1.234)	−0.007* (−1.683)	−0.007* (−1.785)
BM	0.002 (0.684)	−0.001 (−0.238)	−0.001 (−0.305)	0.013 (0.706)	0.031*** (2.580)	0.031*** (2.627)	0.006 (0.338)	0.020* (1.727)	0.020* (1.735)
TO	−0.001*** (−6.439)	−0.002*** (−7.590)	−0.002*** (−7.707)	0.007** (1.999)	0.006*** (3.614)	0.006*** (4.174)	0.007* (1.904)	0.005*** (2.947)	0.005*** (3.416)
Leverage	0.005 (1.518)	0.003 (0.819)	0.003 (0.945)	−0.098*** (−5.203)	−0.076*** (−6.955)	−0.076*** (−7.119)	−0.044** (−2.420)	−0.030*** (−2.898)	−0.030*** (−2.925)
Nanal	0.006*** (7.702)	0.005*** (5.414)	0.005*** (5.100)	−0.009 (−0.551)	−0.001 (−0.122)	−0.000 (−0.033)	−0.016 (−0.984)	−0.006 (−1.237)	−0.006 (−1.391)
BoardD1	0.019*** (4.858)	0.013** (2.397)	0.014*** (2.600)	−0.089* (−1.800)	−0.030 (−1.518)	−0.029 (−1.559)	−0.078 (−1.615)	−0.022 (−1.159)	−0.021 (−1.202)
BoardD2	0.004 (1.131)	0.003 (0.598)	0.003 (0.647)	−0.025 (−1.486)	−0.010 (−0.681)	−0.010 (−0.681)	−0.019 (−1.128)	−0.006 (−0.427)	−0.006 (−0.426)
Stkret	0.006*** (5.149)	0.005*** (4.112)	0.005*** (4.001)	−0.030* (−1.906)	−0.012** (−2.131)	−0.011** (−2.285)	−0.022 (−1.417)	−0.004 (−0.692)	−0.004 (−0.736)
SOE	−0.003 (−1.507)	−0.002 (−1.071)	−0.002 (−0.784)	−0.006 (−0.514)	−0.010 (−1.612)	−0.010* (−1.710)	−0.002 (−0.151)	−0.005 (−0.863)	−0.005 (−0.892)
Top1	−0.032*** (−5.805)	−0.028*** (−4.558)	−0.029*** (−4.608)	0.207** (2.460)	0.123*** (4.116)	0.120*** (4.600)	0.178** (2.174)	0.091*** (3.192)	0.090*** (3.564)
Top2_10	0.022* (1.924)	0.037*** (2.757)	0.035*** (2.595)	0.046 (0.569)	0.041 (0.815)	0.044 (0.948)	0.023 (0.287)	0.012 (0.256)	0.013 (0.290)
Herf2_10	−0.191*** (−3.699)	−0.229*** (−3.701)	−0.221*** (−3.568)	0.399 (0.724)	0.143 (0.553)	0.123 (0.529)	0.379 (0.706)	0.134 (0.541)	0.129 (0.570)
Outdirect	0.008 (1.398)	0.006 (0.868)	0.006 (0.837)	−0.033 (−0.933)	−0.020 (−0.934)	−0.019 (−0.936)	−0.035 (−1.001)	−0.022 (−1.081)	−0.022 (−1.088)
Duality	0.001 (0.379)	0.001 (0.283)	0.001 (0.242)	−0.007 (−0.704)	−0.005 (−0.777)	−0.005 (−0.786)	−0.009 (−1.012)	−0.008 (−1.258)	−0.008 (−1.263)
ExeHold	−0.008 (−1.124)	−0.013 (−1.253)	−0.014 (−1.375)	0.070* (1.818)	0.066** (2.035)	0.065** (2.075)	0.048 (1.285)	0.047 (1.495)	0.046 (1.518)
HBshare	−0.003 (−1.049)	−0.004 (−1.176)	−0.004 (−1.171)	0.010 (0.635)	0.007 (0.666)	0.006 (0.656)	0.009 (0.566)	0.004 (0.453)	0.004 (0.452)
Constant	0.035** (2.122)	0.015 (0.588)	0.012 (0.467)	−0.196 (−1.609)	−0.135* (−1.746)	−0.135* (−1.776)	−0.138 (−1.167)	−0.001 (−0.007)	−0.000 (−0.005)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instrumented	–	–	–	*MSP*	*MSP*	*MSP*	*MSP*	*MSP*	*MSP*
IV	–	–	–	*Split*	*AccNum*	*Split* + *AccNum*	*Split*	*AccNum*	*Split*+*AccNum*
Sargan test	–	–	–	–	–	0.039	–	–	0.003
DWH test	–	–	–	10.899***	16.297***	22.943***	9.992***	12.639***	18.866***
Obs.	4,412	3,814	3,814	4,412	3,814	3,814	4,412	3,814	3,814
Adj-R^2	0.237	0.244	0.246	0.166	0.136	0.138	0.056	0.038	0.04

Notes: This table reports results from Equation (7) with instrumental variables. The first instrumental variable is *Split*, a dummy variable, which takes 1 if a firm splits its shares in a specific period. Otherwise, *Split* equals to 0. The second instrumental variable, *AccNum*, is number of shareholder accounts, i.e. the investor base. All other variables are defined in Table I. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**, ***Significant at 10, 5, and 1 percent levels, respectively

Variables	1st step Dep.Var: *MSPDummy*	2nd step Dep.Var: *MJones*	Dep.Var: *EM_ROA*
Split	0.192*** (3.241)		
AccNum	0.087*** (2.577)		
MSP		0.064* (1.662)	0.090* (1.833)
InstHold	−0.492*** (−3.366)	−0.007 (−0.419)	0.000 (0.010)
Ln(Size)	−0.038 (−1.341)	0.007** (2.088)	0.004 (0.936)
BM	0.388*** (3.928)	0.002 (0.190)	0.017 (1.053)
TO	−0.042*** (−6.302)	0.003*** (3.055)	0.004*** (3.187)
Leverage	0.457*** (5.027)	−0.054*** (−4.852)	−0.050*** (−3.000)
Nanal	0.146*** (5.747)	0.003 (1.104)	−0.003 (−0.681)
BoardD1	0.975*** (6.412)	0.017 (0.812)	−0.004 (−0.136)
BoardD2	0.898*** (6.548)	0.003 (0.177)	−0.012 (−0.398)
Stkret	0.145*** (5.680)	−0.004 (−1.445)	0.002 (0.541)
SOE	−0.073 (−1.410)	−0.018*** (−3.153)	−0.004 (−0.579)
Top1	0.224 (1.329)	0.078*** (4.082)	0.052** (2.081)
Top2_10	1.504*** (4.203)	0.128*** (3.028)	0.105* (1.679)
Herf2_10	−4.741*** (−2.774)	−0.248 (−1.263)	−0.276 (−1.025)
Outdirect	−0.160 (−0.899)	−0.027 (−1.355)	−0.028 (−1.089)
Duality	−0.009 (−0.153)	−0.007 (−1.103)	−0.008 (−1.023)
ExeHold	−0.512* (−1.904)	0.069** (2.103)	0.062 (1.480)
HBshare	−0.063 (−0.746)	0.010 (1.064)	0.003 (0.297)
Heckman's λ		−0.034*** (−2.583)	−0.037 (−1.121)
Constant	−1.344* (−1.814)	−0.144* (−1.869)	−0.066 (−0.595)
Fixed effects	Yes	Yes	Yes
χ^2	–	< 0.01	< 0.01
Obs.	4,121	4,121	4,121

Notes: This table presents the results of Heckman's two-step treatment regressions. In the first stage probit model, the dependent variable is MSP_{Dummy}, denoting whether the firm has an online voting at that year. In the second stage regression, the dependent variable is earnings management (*MJones*, or *EM_ROA*). To meet the exclusion restrictions necessary for identification, in the first-stage, we include these two instrument variables introduced and validated in the prior part of IV regressions. *Split* is a dummy variable, which takes 1 if a firm splits its shares in a specific period. Otherwise, *Split* equals to 0. *AccNum*, is number of shareholder accounts, i.e. the investor base. All other variables are defined in Table I. In both two steps regressions, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table IX. Impacts of minority shareholders participation on earnings management: heckman estimation

6. Further tests

6.1 Exploring on differences between important and less important proposals

In this subsection, we further partition the proposals into different groups. Intuitively, some proposals may not be very important or not very controversial *ex-ante*. However, some proposals may be very crucial to the firms, such as SEO proposals or merger and acquisition proposals. In addition, shareholders other than the controlling shareholder may have larger influence on some proposals than others. For example, large shareholders may be required to abstain from voting on related party transactions (RPT) proposals. If the catering hypothesis is correct, we should find more pronounced effects when the firms have a more important or controversial proposal to vote.

To do so, we define the following proposals as important proposals: SEO, M&A, asset reorganization, asset transactions or collateral, oversea IPO, RPT, and non-public offering. Meanwhile, the following proposals are defined as less important proposals: changes of the purpose of raised capital, adjustment of firm policies, equity incentive, and share placement, etc. Overall, the percent of online voting involving important proposals is around 75 percent of all online voting.

In addition, prior studies show that listed firms in China have incentives to manage earnings upward before equity issuance, e.g. Chen and Yuan (2004). To alleviate this effect in our sample, we also identify all the shareholder meetings accompanied with online voting and including the equity issuance proposals.

By splitting the sample into different groups, we examine the effect of *MSP* on EM between important proposals and less important proposals. If the annual meeting has at least one important proposal, then the observation is grouped in the "important proposal" subsample. Similarly, if the annual meeting has at least one important proposal but none of them are about equity issuances, then the observation should be grouped in the "important proposal excluding equity issuance" subsample. In our sample, the observations of shareholder meetings with and without online voting are 1,713 and 2,699 (= 4,412−1,713), respectively. By our splitting, the observations of shareholder meetings with online voting involving important proposals are 1,281, and 763 of them are related to equity issuances. In the empirical conduction, we include both the observations of a specific subsample and shareholder meetings without online voting. Therefore, the observations of Panel A, B and C are 3,980 (= 1,281 + 2,699), 3,217 (= 1,281 − 763 + 2,699), and 3,131 (= 1,713 − 1,281 + 2,699), respectively.

We repeat our empirical study as in Equation (7), and Table X presents our results. Consistent with our conjecture, we find that the effect of *MSP* on EM lies mainly in the important proposals, and regarding the less important proposals, the coefficients of *MSP* is not significant. Meanwhile, we also find that the magnitude of coefficients with important proposals is also higher than that of less important proposals. In particular, Panel B shows that after controlling the effect of equity issuances on potential EM incentives, we still find consistent results with the subsample of important proposals excluding equity issuance. The result that more pronounced effects are found with more important proposals further supports the catering hypothesis.

6.2 The marginal effect of information asymmetry

According to Rajgopal and Venkatachalam (2011), the observed deteriorating earnings quality from 1962 to 2001 in the US stock market is associated with higher idiosyncratic return volatility (*Idio_Risk*). In a highly volatile and speculative market, we expect that the idiosyncratic return volatility will result in more asymmetric information between the firm's manager and outside shareholders. If this situation is true, then we should observe a more positive relation between *MSP* and EM when the firm suffers from higher idiosyncratic risk. *Idio_Risk* is defined as the risk that is unique to a specific firm (i.e. firm-specific risk). By definition, idiosyncratic risk is independent of the common movement of the market. Following Ang *et al.* (2006), we measure the idiosyncratic risk of an individual stock as described here. In each year, daily returns of individual stocks are regressed on the daily market return. Then, the idiosyncratic volatility of a stock is computed as the standard deviation of the regression residuals[12].

We also introduce an alternative measure of information asymmetry in market microstructure theory: proportional effective spread (*Spread*), which is a well-developed measure and defined following Chordia *et al.* (2000). Similar results are obtained if we use the proportional quoted spread of Glosten (1987). In particular, we define *Spread* as $2 \times |P_t - P_m| / P_t$, where P_t denotes the actual transaction price, and P_m is the bid-ask mid-point. We estimate effective spread for every transaction and average it within each day. For each stock, we compute the average value of effective spread on each year. We obtain the high-frequency trade-and-quote data from CSMAR database.

We use the following model to test our assumption:

$$EM = f(MSP,\ AsyInfo,\ MSP \times AsyInfo,\ Other\_Control), \tag{10}$$

Table X.
Differences effects of important and less important proposals on the catering behaviors

Variables	Panel A: important proposals		Panel B: important proposals (excluding equity issuance)		Panel C: less important proposals	
	MJones	*EM_ROA*	*MJones*	*EM_ROA*	*MJones*	*EM_ROA*
MSP	1.804*** (3.446)	1.628*** (3.182)	2.504*** (2.802)	2.283*** (2.636)	3.470 (0.409)	2.774 (0.408)
InstHold	0.010 (0.608)	0.009 (0.567)	0.021 (1.010)	0.016 (0.794)	−0.068 (−0.333)	−0.062 (−0.377)
Ln(Size)	−0.002 (−0.457)	−0.006* (−1.695)	−0.001 (−0.186)	−0.006 (−1.585)	−0.023 (−0.343)	−0.023 (−0.429)
BM	0.040*** (3.457)	0.026** (2.289)	0.039*** (2.892)	0.020 (1.500)	−0.139 (−0.330)	−0.121 (−0.358)
TO	0.005*** (4.318)	0.004*** (3.486)	0.004*** (3.261)	0.003** (2.440)	0.013 (0.444)	0.009 (0.405)
Leverage	−0.075*** (−7.438)	−0.030*** (−2.995)	−0.054*** (−3.902)	−0.008 (−0.559)	−0.211 (−0.582)	−0.138 (−0.475)
Nanal	0.003 (0.669)	−0.003 (−0.910)	0.004 (1.000)	−0.002 (−0.460)	−0.062 (−0.331)	−0.054 (−0.359)
BoardD1	−0.015 (−0.898)	−0.008 (−0.501)	−0.030 (−1.455)	−0.021 (−1.024)	−0.357 (−0.415)	−0.280 (−0.406)
BoardD2	0.000 (0.030)	0.002 (0.166)	−0.009 (−0.549)	−0.006 (−0.402)	−0.240 (−0.423)	−0.189 (−0.417)
Stkret	−0.006 (−1.458)	0.001 (0.180)	−0.011** (−2.172)	−0.005 (−0.979)	−0.110 (−0.426)	−0.081 (−0.390)
SOE	−0.012** (−2.046)	−0.009 (−1.560)	−0.012* (−1.806)	−0.010 (−1.599)	0.054 (0.310)	0.045 (0.327)
Top1	0.093*** (4.163)	0.061*** (2.816)	0.094*** (3.537)	0.065** (2.550)	0.410 (0.468)	0.323 (0.460)
Top2_10	0.056 (1.317)	0.012 (0.278)	0.039 (0.789)	−0.006 (−0.118)	−0.288 (−0.292)	−0.234 (−0.296)
Herf2_10	0.000 (0.001)	0.060 (0.303)	0.016 (0.068)	0.091 (0.404)	2.869 (0.357)	2.233 (0.347)
Outdirect	−0.016 (−0.791)	−0.016 (−0.828)	0.005 (0.228)	0.002 (0.076)	−0.090 (−0.320)	−0.081 (−0.361)
Duality	−0.002 (−0.360)	−0.007 (−1.074)	−0.002 (−0.266)	−0.006 (−0.821)	−0.061 (−0.405)	−0.052 (−0.437)
ExeHold	0.047 (1.560)	0.033 (1.120)	0.039 (1.111)	0.025 (0.736)	0.381 (0.431)	0.291 (0.412)
HBshare	0.002 (0.249)	0.001 (0.149)	0.000 (0.026)	−0.001 (−0.085)	0.003 (0.039)	0.002 (0.030)
Cons	−0.037 (−0.457)	0.084 (1.063)	−0.071 (−0.792)	0.077 (0.889)	0.638 (0.332)	0.620 (0.403)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	3,405	3,405	2,891	2,891	2,594	2,594
Adj-R^2	0.144	0.046	0.143	0.039	0.138	0.039

Notes: This table reports results by partitioning the proposals into different groups. In particular, we define the following proposals as important proposals: SEO, M&A, asset reorganization, asset transactions or collateral, oversea IPO, RPT, and non-public offering. Meanwhile, the following proposals are defined as less important proposals: changes of the purpose of raised capital, adjustment of firm policies, equity incentive, and share placement, etc. In each Panel, we include both the observations of a specific subsample and shareholder meetings without online voting. All other variables are defined in Table I. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

where *AsyInfo* is the measure of information asymmetry, which is proxied by *Idio_Risk* and *Spread*. All other variables in Equation (10) are defined as in Equation (5). In this model, we are interested in the coefficient of *MSP*× *AsyInfo* and expect that it is positive and significant.

Table XI presents our estimated results. Consistent with our expectations, all the coefficients of *MSP*× *Idio_Risk* (in columns 1 and 2) and *MSP*× *Spread* (in columns 3 and 4) are positive and significant, which means that information environment does matter in the catering behaviors of managers. In addition, we also provide supplemental evidence to the study of Rajgopal and Venkatachalam (2011), confirming that the firm tends to manage earnings when facing a high level of idiosyncratic return volatility.

6.3 The marginal effects of TMC

The motivation of this study is to investigate whether firm managers manipulate earnings to cater minority shareholders when facing a high level *MSP*. Given that managers may

Variables	*MJones* Reg-1	*EM_ROA* Reg-2	*MJones* Reg-3	*EM_ROA* Reg-4
MSP	−0.265* (−1.776)	−0.329* (−1.695)	−0.061 (−1.194)	−0.041 (−0.803)
Idio_Risk	0.200 (0.590)	0.238 (0.661)		
MSP× *Idio_Risk*	12.697** (2.049)	16.030** (2.092)		
Spread			0.130* (1.854)	−0.011 (−0.171)
MSP× *Spread*			2.615*** (2.723)	2.170*** (2.680)
InstHold	−0.044*** (−3.827)	−0.046*** (−4.107)	−0.005 (−0.386)	−0.012 (−0.907)
Ln(Size)	0.001 (0.606)	−0.001 (−0.618)	0.012*** (3.792)	0.002 (0.521)
BM	0.019** (2.255)	0.015* (1.708)	0.032*** (3.606)	0.013 (1.346)
TO	0.001 (1.468)	0.000 (0.725)	0.002*** (3.486)	0.000 (0.748)
Leverage	−0.079*** (−7.826)	−0.026** (−2.365)	−0.060*** (−5.484)	−0.007 (−0.613)
Nanal	0.016*** (8.290)	0.009*** (4.675)	0.008*** (3.904)	0.004* (1.676)
BoardD1	−0.007 (−0.679)	−0.001 (−0.117)	−0.001 (−0.110)	0.001 (0.074)
BoardD2	−0.008 (−0.998)	−0.004 (−0.527)	−0.001 (−0.175)	−0.002 (−0.199)
Stkret	0.000 (0.135)	0.007** (2.563)	−0.002 (−0.652)	0.005 (1.307)
SOE	−0.015*** (−3.423)	−0.012*** (−2.598)	−0.017*** (−3.915)	−0.013*** (−2.864)
Top1	0.081*** (5.745)	0.056*** (3.924)	0.066*** (4.462)	0.045*** (3.116)
Top2_10	0.165*** (5.918)	0.131*** (4.726)	0.133*** (4.485)	0.095*** (3.215)
Herf2_10	−0.449*** (−3.642)	−0.423*** (−3.501)	−0.367*** (−2.865)	−0.346*** (−2.776)
Outdirect	−0.001 (−0.082)	−0.003 (−0.188)	−0.001 (−0.089)	−0.003 (−0.234)
Duality	−0.002 (−0.483)	−0.005 (−1.075)	−0.003 (−0.609)	−0.005 (−1.184)
ExeHold	0.036* (1.913)	0.016 (0.896)	0.031 (1.559)	0.019 (1.024)
HBshare	−0.001 (−0.078)	−0.002 (−0.262)	0.002 (0.352)	0.001 (0.216)
Constant	−0.062 (−1.214)	−0.006 (−0.137)	−0.277*** (−4.203)	−0.035 (−0.511)
Fixed effects	Yes	Yes	Yes	Yes
Obs.	4,412	4,412	3,720	3,720
Adj-R^2	0.157	0.051	0.128	0.031

Notes: This table reports results from Equation (10). *Idio_Risk* is defined as the risk that is unique to a specific firm (i.e. firm-specific risk). By definition, idiosyncratic risk is independent of the common movement of the market. Following Ang *et al.* (2006), we measure the idiosyncratic risk of an individual stock as follows. In every year, daily returns of individual stocks are regressed on the daily market return. Then, the idiosyncratic volatility of a stock is computed as the standard deviation of the regression residuals. *Spread* is the proportional effective spread, which is defined as *Spread* as $2\times|P_t - P_m|/P_t$, where P_t denotes the actual transaction price, and P_m is the bid-ask mid-point. We estimate effective spread for every transaction and average it within each day. For each stock, we compute the average value of effective spread on each half year. We obtain the high-frequency trade-and-quote data from CSMAR database. All other variables are defined in Table I. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

Table XI. Marginal effects of information asymmetry on catering behaviors

have different abilities and characteristics across different firms, one question related to our findings arises: How do the cross-sectional differences of *TMC* potentially affect our results?

We introduce four related measures of *TMC* to formally address this concern. The first measure of *TMC* is *ExeHold*, which is defined as the percentage of shares held by the top executives (i.e. CEO) and we already take this measure as control variable in our empirical model. We expect that the top executives with higher *ExeHold* have more incentives to cater minority shareholder for a higher stock price.

The second measure is the financial expertise of top management (*TM_Major*), which is a dummy variable denoting whether top executives have a financial degree. We expect that the top management with a financial degree have a good understanding of the financial and accounting reporting system and can deal with the accounting issue more skillfully. Therefore, the financial expertise of top management can help the firm manage the earnings and cater the minority shareholders more easily. In particular, we define top executives with financial expertise as those who have graduated with majors in financial management, accounting, economics, management science, business administration, or finance. In China, accounting is a fundamental subject included in major programs such as economics, management science, business administration, and finance. Therefore, students enrolled in these programs also take relevant financial and accounting courses and are able to master a certain amount of accounting and financial knowledge. So, our definition includes those related majors as the professional backgrounds.

The third measure of *TMC* is *Compensation*, which is defined as the logarithm top three executives' compensation (the compensation of CEO is not available in China). We expect that the top executives with higher *Compensation* have more incentives to maintain the stock price in a high level to show their abilities.

The last measure of *TMC* is the sensitivity of CEO pay to accounting performance (PAPS). Leone *et al.* (2006) estimates *PAPS* for each firm by conducting time-series regression. However, given the short history of China's stock market, especially the SME board and growth enterprise board in SZSE, it is impossible to estimate the *PAPS* in the firm level. Hence, we make compromises between the preciseness and research needs, and choose to estimate the *PAPS* for each industry. Specifically, in each industry *j*, we compute *PAPS* by introducing a pool regression on our sample period as follows:

$$\text{Log}(Compensation) = f\left(ROA,\ Stk\text{Ret},\ \text{Re}venue,\ \text{Re}venue^2\right), \tag{11}$$

where *Compensation*, *ROA* are defined as before, *StkRet* is yearly stock return and *Revenue* is firm's revenue scaled by its asset in the end of last year. We use the coefficient of *ROA* to proxy the sensitivity of top management compensation to accounting performance for each industry (i.e. *PAPS*). Following Leone *et al.* (2006), we use the *PAPS* indicator rather than the concrete value to denote whether the industry *PAPS* belongs to the top group. In our paper, we divide the whole 22 industries into 2 groups. We conjecture that the industries with higher *PAPS* have more incentives to cater minority shareholder for a higher stock price.

We use the following model to test our assumption:

$$EM = f(MSP,\ TMC,\ MSP \times TMC,\ Other\_Control), \tag{12}$$

where *TMC* is the measure of top management characteristics and all other variables in Equation (12) are defined as in Equation (5). In this model, we are interested in the coefficient of $MSP \times TMC$ and expect that it is positive and significant.

Table XII presents our estimates. Consistent with our expectation, we find that all these four measures of *TMC* have positive marginal effects on the catering behaviors for minority

Table XII.
Marginal impacts of top management characteristics on catering behaviors

Variables	*MJones* Reg-1	*EM_ROA* Reg-2	*MJones* Reg-3	*EM_ROA* Reg-3	*MJones* Reg-5	*EM_ROA* Reg-6	*MJones* Reg-7	*EM_ROA* Reg-8
MSP	−0.002 (−0.049)	0.007 (0.148)	−0.002 (−0.038)	0.007 (0.171)	0.075** (1.967)	0.073* (1.819)	−0.036 (−0.583)	−0.028 (−0.383)
MSP × *ExeHold*	0.648** (2.017)	0.524* (1.678)						
TM_Major			−0.035* (−1.722)	−0.043** (−2.105)				
MSP × *TM_Major*			0.276 (1.041)	0.491** (2.114)				
Compensation					0.007** (2.146)	−0.000 (−0.087)		
Compensation × *MSP*					0.099** (2.301)	0.063 (1.409)		
PAPS							0.004 (1.017)	−0.001 (−0.269)
PAPS × *MSP*							0.144* (1.916)	0.140 (1.617)
InstHold	−0.023* (−1.872)	−0.028** (−2.300)	−0.023* (−1.828)	−0.027** (−2.240)	−0.038*** (−3.229)	−0.046*** (−3.929)	0.007** (2.146)	−0.000 (−0.087)
Ln(Size)	0.001 (0.567)	−0.001 (−0.395)	0.001 (0.631)	−0.001 (−0.402)	0.003 (1.189)	−0.001 (−0.312)	0.099** (2.301)	0.063 (1.409)
BM	0.024*** (2.707)	0.016* (1.760)	0.026*** (2.885)	0.016* (1.740)	0.026*** (3.107)	0.019** (2.204)	−0.016 (−1.281)	−0.014 (−1.141)
TO	0.001** (2.357)	0.001* (1.851)	0.001** (2.358)	0.001* (1.912)	0.001** (2.392)	0.001 (1.317)	0.006** (2.268)	−0.002 (−0.710)
Leverage	−0.079*** (−7.756)	−0.027** (−2.435)	−0.085*** (−7.492)	−0.027** (−2.439)	−0.071*** (−7.229)	−0.024* (−1.953)	0.036*** (4.199)	0.026*** (3.033)
Nanal	0.017*** (8.935)	0.010*** (5.110)	0.018*** (8.878)	0.010*** (5.062)	0.014*** (6.984)	0.008*** (4.033)	0.002*** (3.637)	0.001* (1.757)
BoardD1	−0.013 (−1.275)	−0.005 (−0.460)	−0.011 (−1.064)	−0.003 (−0.341)	−0.001 (−0.099)	0.003 (0.261)	−0.060*** (−6.017)	−0.022** (−2.017)
BoardD2	−0.013 (−1.583)	−0.007 (−0.859)	−0.012 (−1.377)	−0.006 (−0.791)	−0.009 (−1.086)	−0.003 (−0.340)	0.007*** (3.190)	0.004* (1.929)
Stkret	−0.005 (−1.515)	0.002 (0.549)	−0.005 (−1.329)	0.002 (0.502)	0.000 (0.153)	0.008*** (2.884)	0.006 (0.593)	0.006 (0.653)
SOE	−0.018*** (−4.068)	−0.013*** (−2.971)	−0.019*** (−4.154)	−0.014*** (−3.036)	−0.020*** (−4.532)	−0.014*** (−2.920)	−0.008 (−0.923)	−0.003 (−0.362)
Top1	0.074*** (5.172)	0.050*** (3.457)	0.075*** (5.074)	0.051*** (3.514)	0.090*** (6.235)	0.067*** (4.289)	−0.001 (−0.370)	0.008*** (2.993)
Top2_10	0.145*** (5.148)	0.118*** (4.172)	0.147*** (5.033)	0.119*** (4.217)	0.176*** (6.112)	0.151*** (5.186)	−0.022*** (−4.714)	−0.011** (−2.497)
Herf2_10	−0.420*** (−3.428)	−0.410*** (−3.393)	−0.429*** (−3.395)	−0.416*** (−3.450)	−0.502*** (−4.072)	−0.493*** (−4.030)	0.087*** (5.808)	0.049*** (3.391)
Outdirect	0.002 (0.106)	−0.001 (−0.076)	0.002 (0.153)	−0.001 (−0.090)	−0.002 (−0.133)	−0.003 (−0.192)	0.167*** (5.577)	0.117*** (3.996)
Duality	−0.003 (−0.745)	−0.006 (−1.309)	−0.004 (−0.838)	−0.006 (−1.297)	−0.004 (−0.935)	−0.007 (−1.495)	−0.511*** (−3.947)	−0.407*** (−3.296)
ExeHold	0.036* (1.904)	0.016 (0.873)	0.040** (2.061)	0.019 (1.019)	0.036* (1.920)	0.015 (0.814)	−0.013 (−0.833)	−0.016 (−1.048)
HBshare	−0.003 (−0.419)	−0.004 (−0.554)	−0.004 (−0.570)	−0.004 (−0.617)	0.000 (0.017)	−0.003 (−0.398)	−0.006 (−1.304)	−0.007 (−1.490)
Constant	−0.039 (−0.781)	0.012 (0.261)	−0.044 (−0.856)	0.011 (0.242)	−0.091* (−1.775)	−0.027 (−0.609)	0.028 (1.385)	0.014 (0.739)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	−0.005	−0.004
Obs.	4,412	4,412	4,412	4,412	4,412	4,412	4,412	4,412
Adj-R^2	0.164	0.054	0.164	0.055	0.122	0.043	0.098	0.029

Notes: This table reports results from Equation (12) to investigate how the cross-sectional differences of *TMC* affect the firm catering behaviors. *ExeHold* is defined as the percentage of shares held by the top executives (i.e. CEO). *TM_Major* is the financial expertise of top management, which is a dummy variable denoting whether top executives have a financial degree. In particular, we define top management with financial expertise as those who have graduated with majors in financial management, accounting, economics, management science, business administration, or finance. In China, accounting is a fundamental subject included in major programs such as economics, management science, business administration, and finance. Therefore, students enrolled in these programs also take relevant financial and accounting courses and are able to master a certain amount of accounting and financial knowledge. So, our definition includes those related majors as the professional backgrounds. *Compensation* is defined as the logarithm top three executives' compensation (the compensation of CEO is not available in China). *PAPS* is the sensitivity of CEO pay to accounting performance. We estimate the *PAPS* for each industry following Leone *et al.* (2006). Equation (11) in Section 6.3 provides the estimation detail. All variable are defined in Table I. In regression, we also control for fixed effects of industry and year. Adj-R^2 is the adjusted-R^2. Robust standard errors are in parentheses. *,**,***Significant at 10, 5, and 1 percent levels, respectively

shareholders, and most of them are significant. In particular, five of the interaction items *TMC* × *MSP* out of eight are significant, two cases are near significant, and only one case (i.e. the coefficient of *TM_Major* × *MSP* with *MJones* as EM) is not significant. Collectively, our results provide further evidences that *TMC* has significant marginal effect on the relationship between MSP and EM.

7. Conclusion

The aim of this study is to shed light on whether *MSP* affects the decisions of firms. Specifically, we consider the following important questions. What is the role of *MSP* in corporate governance? Does *MSP* serve as an external monitor to managers or does it place excessive pressure on them? Do firms cater to minority shareholders by EM when the shareholders cannot effectively identify the EM?

We use a unique data set, the online voting data set in SZSE from 2006 to 2011, to investigate the impact of *MSP* on firms' EM, through which we find that firms with high levels of *MSP* tend to manage earnings better. We address the potential endogeneity in our results using the lagged variable approach, propensity score matching and DID methods, two IVs based on share split and the number of shareholder accounts, and Heckman two-step procedure. Based on estimations using all the alternative measures and different methods, we find that our results are robust.

This paper offers valuable information regarding the highly debated issue of allowing minority shareholders to have direct control in corporate governance. Our results are directly relevant to the CSRC and related regulators who encounter the challenge of protecting the interests of minority shareholders. Given China's poor level of investor protection and weak law enforcement, we demonstrate how strengthening the direct control of minority shareholders over corporate decisions can drive the EM of listed firms in countries with such an environment.

To the best of our knowledge, this is the first paper that directly investigates *MSP* and firms' EM using the voting behaviors of individual investors. By offering critical insight and a serious challenge for regulators, the policy implications presented in the current paper could be of interest to regulators in China and other countries who intend to strengthen minority shareholder control over corporate decisions.

Notes

1. A lot of studies have investigated the relationship between institutional investor and firm earnings management. For example, according to Dechow *et al.* (1996) and Bange and De Bondt (1998), greater institutional ownership significantly reduces the incidence of earnings management behavior. Bushee (1998) further notes that different types of institutional investors have different impacts on firms' earnings management behaviors. In addition, numerous studies also have investigated the role of institutional investors in firm decisions, such as McConnell and Servaes (1990), Smith (1996), Carleton *et al.* (1998), Bushee (1998), Del Guercio and Hawkins (1999), Gillan and Starks (2000), Del Guercio *et al.* (2008), and Cronqvist and Fahlenbrach (2009).

2. For example, while Strickland *et al.* (1996), Smith (1996), Becht *et al.* (2009), and Gantchev (2013) find institutional activism increases firm performances for target companies, Wahal (1996), Karpoff *et al.* (1996), Del Guercio and Hawkins (1999), and Prevost and Rao (2000) find there is no significant improvement of institutional activism on firm financial performance. Recently, Brav *et al.* (2008) find that activist hedge funds propose strategic, operational, and financial remedies and attain success or partial success in most cases. Klein and Zur (2009) find that hedge funds lead to greater profits by addressing cash flow agency costs. Greenwood and Schor (2009) argue that the ability of hedge funds activism to force target firms into a takeover can largely explain the abnormal returns. Admati and Pfleiderer (2009) theoretically show that the threat of exit from active shareholders can produce quite different effects depending on the agency problem.

Regarding CEO compensation, Ferri and Sandino (2009) find that shareholder proposals affect accounting and compensation choices. Ertimur *et al.* (2011) find that firms with excess CEO pay targeted by vote-no campaigns experience a significant reduction in CEO pay.

3. The weak investor protection in China is due to two reasons. First, many laws are not effectively enforced in China, and severe conflict of interest occurs between "fair play" in practicing law and the monopoly power of the single ruling party, especially in cases in which government officials or their affiliates are involved. Second, China's financial and accounting system is far from mature, and the most important problem in China's accounting system is the lack of independent, professional auditors. According to Allen *et al.* (2005), this implies that the accounting standards may be counterproductive within China's current infrastructure. Embezzlement of company assets and other forms of fraud may frequently happen, with few auditors understanding and enforcing these standards, along with the lack of an effective judicial system.

4. Before the 2004 regulation, investors who want to vote have to attend the shareholder meeting and vote in person for expressing their opinions or attitudes.

5. Historically, the China's domestic A-shares are divided into tradable shares (TS) and non-tradable shares (NTS). However, both types of shares have the same cash flow and voting rights. This unique split share structure leads to divergent interests and incentive conflicts between TS and NTS shareholders and has long been recognized as the source of many corporate governance problems in China. To solve the governance problems with split share structure, the Chinese Government initiated a split share structure reform program in April 2005 and aimed to convert NTS into TS (Firth *et al.*, 2010; Li *et al.*, 2011).

6. Noting that the catering theory does not require that the minority shareholders have absolute power to disapprove the proposal, or have dominating influence on the vote outcome. Our bottom line is that the managers can realize and feel the pressure or concerns of minority shareholders (e.g. the selling pressure). Of course, there are lots of media reports on the role of online voting. For example, on January 21, 2005, ShenHuo Group, a listed firm in SZSE (Stock Code: 000933), holds a shareholder conference to vote on the proposal of issue convertible bonds. The approve ratio of spot voting is 87.86 percent, however, the disapprove ratio is 57.58 percent in the online voting. Therefore, the proposal of ShenHuo Group is disapproved. On June 10, 2005, the split-shares reform plan of Tsinghua Tongfang Co., Ltd (Stock Code: 600100) is disapproved because of the high ration of disagreement in online voting. On December 24, 2008, three proposals of Qinghai Salt Lake Potash Co., Ltd (Stock Code: 000792) are disapproved in the online voting. On March 21, 2008, the proposal of non-public offering of Ningbo Huaxiang Electronic Co., Ltd (Stock Code: 002048) are disapproved with a 99 percent disapprove ratio in online voting.

7. In effect, as stated in the "catering theory" of Baker and Wurgler (2004), the misvaluation is not a necessary condition for managers having incentives to care about the stock price. Managers may just cater to, or even be forced by proxy vote to meet, extreme investor demands in general, and mispricing is merely a symptom of extreme investor demand.

8. It is worthy to note that the reporting preferences of large controlling shareholders and institutional investors are less likely affect our results in China. First, by virtue of heritage and design, all China's listed firms have controlling (or dominant) shareholders, and around two-thirds shares are held by the government. Therefore, in most situations, the firms and the large controlling shareholders are in the same boat (Jiang *et al.*, 2010). Second, in China stock market, most outstanding shares are held by individual investors. The institutional investors still in the early stage of development and cannot effectively play the monitor role (Firth *et al.*, 2010). To further address this concern, we also control the ultimate controllers and the fraction of shares held by institutional investors in our empirical analysis.

9. Please refer to "Proposal for Optimizing the Delisting System of Listed Companies of Shanghai Stock Exchange", issued by Shanghai Stock Exchange (SSE) on June 28, 2012 and "Proposal for Improving and Optimizing the Delisting System of Listed Companies on the Main Board and the Small and Medium Enterprise Board of the Shenzhen Stock Exchange", issued by SZSE on June 28, 2012.

10. For instance, two Chinese stock exchanges, the (SSE) and the SZSE, had more than 169 million investor accounts (with 168.55 million individual accounts and 0.45 million institutional accounts). We obtained the data from Statistical Monthly (December 2012) of China Securities Depository and Clearing Corporation Limited (CSDC). The Chinese version of this file can be got at www.chinaclear.cn/

11. Positive DAs suggest income-increasing manipulations, while negative DAs indicate income-decreasing manipulations. Managers have incentives to manage earnings not only upward, but also downward. For example, in good years, they could wish to hide certain earnings for future reporting use, whereas in bad years, they could "take a bath" (e.g. overstate bad assets or take a large restructuring charge) to make future earnings targets easier to meet.

12. We require a minimum of 100 trading days in a year for both a daily return and non-zero trading volume to reduce the impact of infrequent trading on idiosyncratic volatility estimates.

References

Admati, A.R. and Pfleiderer, P. (2009), "The 'wall street walk' and shareholder activism: exit as a form of voice", *Review of Financial Studies*, Vol. 22 No. 7, pp. 2645-2685.

Aharony, J., Lee, C.W.J. and Wong, T.J. (2000), "Financial packaging of IPO firms in China", *Journal of Accounting Research*, Vol. 38 No. 1, pp. 103-126.

Allen, F., Qian, J. and Qian, M.J. (2005), "Law, finance, and economic growth in China", *Journal of Financial Economics*, Vol. 77 No. 1, pp. 57-116.

Ang, A., Hodrick, R.J., Xing, Y.H. and Zhang, X.Y. (2006), "The cross-section of volatility and expected returns", *Journal of Finance*, Vol. 61 No. 1, pp. 259-299.

Ashbaugh, H., LaFond, R. and Mayhew, B.W. (2003), "Do nonaudit services compromise auditor independence? Further evidence", *Accounting Review*, Vol. 78 No. 3, pp. 611-639.

Ashenfelter, O. and Card, D. (1985), "Using the longitudinal structure of earnings to estimate the effect of training programs", *Review of Economics and Statistics*, Vol. 67 No. 4, pp. 648-660.

Bainbridge, S.M. (2006), "Director primacy and shareholder disempowerment", *Harvard Law Review*, Vol. 119 No. 6, pp. 1735-1758.

Baker, M. and Wurgler, J. (2004), "A catering theory of dividends", *Journal of Finance*, Vol. 59 No. 3, pp. 1125-1165.

Baker, M. and Wurgler, J. (2013), "Behavioral corporate finance: an updated survey", in Harris, M., Constantinides, G.M. and Rene, M.S. (EdS), *Handbook of the Economics of Finance*, Elsevier, Amsterdam.

Baker, M., Greenwood, R. and Wurgler, J. (2009), "Catering through nominal share prices", *Journal of Finance*, Vol. 64 No. 6, pp. 2559-2590.

Ball, R. and Shivakumar, L. (2006), "The role of accruals in asymmetrically timely gain and loss recognition", *Journal of Accounting Research*, Vol. 44 No. 2, pp. 207-242.

Balsam, S., Bartov, E. and Marquardt, C. (2002), "Accruals management, investor sophistication, and equity valuation: evidence from 10-q filings", *Journal of Accounting Research*, Vol. 40 No. 4, pp. 987-1012.

Bange, M.M. and De Bondt, W.F.M. (1998), "R&D budgets and corporate earnings targets", *Journal of Corporate Finance*, Vol. 4 No. 2, pp. 153-184.

Barth, M.E., Landsman, W.R. and Lang, M.H. (2008), "International accounting standards and accounting quality", *Journal of Accounting Research*, Vol. 46 No. 3, pp. 467-498.

Beaver, W., Lambert, R. and Morse, D. (1980), "The information content of security prices", *Journal of Accounting and Economics*, Vol. 2 No. 1, pp. 3-28.

Becht, M., Franks, J., Mayer, C. and Rossi, S. (2009), "Returns to shareholder activism: evidence from a clinical study of the Hermes UK focus fund", *Review of Financial Studies*, Vol. 22 No. 8, pp. 3093-3129.

Bergstresser, D. and Philippon, T. (2006), "CEO incentives and earnings management", *Journal of Financial Economics*, Vol. 80 No. 3, pp. 511-529.

Berkman, H., Cole, R.A. and Fu, L.J. (2010), "Political connections and minority-shareholder protection", *Journal of Financial and Quantitative Analysis*, Vol. 45 No. 6, pp. 1391-1417.

Bernard, V.L. and Thomas, J.K. (1989), "Post-earnings-announcement drift: delayed price response or risk premium?", *Journal of Accounting Research*, Vol. 27 No. 1, pp. 1-36.

Brav, A., Jiang, W., Partnoy, F. and Thomas, R. (2008), "Hedge fund activism, corporate governance, and firm performance", *Journal of Finance*, Vol. 63 No. 4, pp. 1729-1775.

Burns, N. and Kedia, S. (2006), "The impact of performance-based compensation on misreporting", *Journal of Financial Economics*, Vol. 79 No. 1, pp. 35-67.

Bushee, B.J. (1998), "The influence of institutional investors on myopic R&D investment behavior", *Accounting Review*, Vol. 73 No. 3, pp. 305-333.

Carleton, W., Nelson, J. and Weisbach, M. (1998), "The influence of institutions on corporate governance through private negotiations: evidence from Tiaa-Cref", *Journal of Finance*, Vol. 53 No. 4, pp. 1335-1362.

Chen, K. and Yuan, H. (2004), "Earnings management and resource allocation: evidence from China's accounting-based regulation of rights issues", *Accounting Review*, Vol. 79 No. 3, pp. 645-665.

Chen, Q., Goldstein, I. and Jiang, W. (2007), "Price informativeness and investment sensitivity to stock price", *Review of Financial Studies*, Vol. 20 No. 3, pp. 619-650.

Chen, X., Lee, C.J. and Li, J. (2003), "Chinese tango: government assisted earnings management", *Journal of Accounting and Public Policy*, Vol. 27 No. 3, pp. 262-274.

Chen, Z., Ke, B. and Yang, Z. (2013), "Minority shareholders' control rights and the quality of corporate decisions in weak investor protection countries: a natural experiment from China", *Accounting Review*, Vol. 88 No. 4, pp. 1211-1238.

Chordia, T., Roll, R. and Subrahmanyam, A. (2000), "Commonality in liquidity", *Journal of Financial Economics*, Vol. 56 No. 1, pp. 3-28.

Coughlan, A. and Schmidt, R. (1985), "Executive compensation, management turnover, and firm performance: an empirical investigation", *Journal of Accounting and Economics*, Vol. 7 Nos 1-3, pp. 43-66.

Cremers, M. and Romano, R. (2011), "Institutional investors and proxy voting on compensation plans: the impact of the 2003 mutual fund voting disclosure regulation", *American Law and Economics Review*, Vol. 13 No. 1, pp. 220-268.

Cronqvist, H. and Fahlenbrach, R. (2009), "Large shareholders and corporate policies", *Review of Financial Studies*, Vol. 22 No. 10, pp. 3941-3976.

Das, S., Guo, R.J. and Zhang, H. (2006), "Analysts' selective coverage and subsequent performance of newly public firms", *Journal of Finance*, Vol. 61 No. 3, pp. 1159-1185.

David, P., Bloom, M. and Hillman, A.J. (2007), "Investor activism, managerial responsiveness, and corporate social performance", *Strategic Management Journal*, Vol. 28 No. 1, pp. 91-100.

Davis, G.F. and Kim, E.H. (2007), "Business ties and proxy voting by mutual funds", *Journal of Financial Economics*, Vol. 85 No. 2, pp. 552-570.

DeAngelo, L. (1986), "Accounting numbers as market valuation substitutes: a study of management buyouts of public stockholders", *Accounting Review*, Vol. 61 No. 3, pp. 400-420.

DeAngelo, L. (1988), "Managerial competition, information costs, and corporate governance", *Journal of Accounting and Economics*, Vol. 10 No. 1, pp. 3-36.

Dechow, P.M. and Dichev, I.D. (2002), "The quality of accruals and earnings: the role of accrual estimation errors", *Accounting Review*, Vol. 77 No. 1, pp. 35-59.

Dechow, P., Sloan, R. and Sweeney, A. (1995), "Detecting earnings management", *Accounting Review*, Vol. 70 No. 2, pp. 193-226.

Dechow, P., Sloan, R. and Sweeney, A. (1996), "Causes and consequences of aggressive financial reporting policies", *Contemporary Accounting Research*, Vol. 13 No. 1, pp. 1-36.

DeFond, M.L. and Jiambalvo, J. (1994), "Debt covenant violation and manipulation of accruals", *Journal of Accounting and Economics*, Vol. 17 Nos 1-2, pp. 145-176.

DeFond, M.L. and Park, C.W. (1997), "Smoothing income in anticipation of future earnings", *Journal of Accounting and Economics*, Vol. 23 No. 2, pp. 115-139.

Del Guercio, D. and Hawkins, J. (1999), "The motivation and impact of pension fund activism", *Journal of Financial Economics*, Vol. 52 No. 3, pp. 293-340.

Del Guercio, D., Seery, L. and Woidtke, T. (2008), "Do boards pay attention when institutional investor activists 'just vote no'?", *Journal of Financial Economics*, Vol. 90 No. 1, pp. 84-103.

Dimitrov, V. and Jain, P.C. (2011), "It's showtime: do managers report better news before annual shareholder meetings?", *Journal of Accounting Research*, Vol. 49 No. 5, pp. 1193-1221.

Dutta, S. and Trueman, B. (2002), "The interpretation of information and corporate disclosure strategies", *Review of Accounting Studies*, Vol. 7 No. 1, pp. 75-96.

Dyl, E.A. and Elliott, W.B. (2006), "The share price puzzle", *Journal of Business*, Vol. 79 No. 4, pp. 2045-2066.

Edmans, A., Goldstein, I. and Jiang, W.E.I. (2012), "The real effects of financial markets: the impact of prices on takeovers", *Journal of Finance*, Vol. 67 No. 3, pp. 933-971.

Edmans, A., Goldstein, I. and Jiang, W. (2015), "Feedback effects and the limits to arbitrage", *American Economic Review*, Vol. 105 No. 12, pp. 3766-3797.

Erickson, M. and Wang, S.-w. (1999), "Earnings management by acquiring firms in stock for stock mergers", *Journal of Accounting and Economics*, Vol. 27 No. 2, pp. 149-176.

Ertimur, Y., Ferri, F. and Muslu, V. (2011), "Shareholder activism and CEO pay", *Review of Financial Studies*, Vol. 24 No. 2, pp. 535-592.

Fama, E.F. and Jensen, M. (1983), "Agency problems and residual claims", *Journal of Law and Economics*, Vol. 26 No. 2, pp. 327-350.

Fan, J., Wong, T. and Zhang, T. (2007), "Politically connected CEOs, corporate governance, and post-IPO performance of China's newly privatized firms", *Journal of Financial Economics*, Vol. 84 No. 2, pp. 330-357.

Fan, J.P.H., Rui, O.M. and Zhao, M.X. (2008), "Public governance and corporate finance: evidence from corruption cases", *Journal of Comparative Economics*, Vol. 36 No. 3, pp. 343-364.

Ferri, F. and Sandino, T. (2009), "The impact of shareholder activism on financial reporting and compensation: the case of employee stock options expensing", *Accounting Review*, Vol. 84 No. 2, pp. 433-466.

Firth, M., Lin, C. and Zou, H. (2010), "Friend or foe? The role of state and mutual fund ownership in the split share structure reform in China", *Journal of Financial and Quantitative Analysis*, Vol. 45 No. 3, pp. 685-706.

Foster, G., Olsen, C. and Shevlin, T. (1984), "Earnings releases, anomalies, and the behavior of security returns", *Accounting Review*, Vol. 59 No. 4, pp. 575-603.

Francis, J., LaFond, R., Olsson, P. and Schipper, K. (2005), "The market pricing of accruals quality", *Journal of Accounting and Economics*, Vol. 39 No. 2, pp. 295-327.

Froot, K.A., Perold, A.F. and Stein, J.C. (1992), "Shareholder trading practices and corporate investment horizons", *Journal of Applied Corporate Finance*, Vol. 5 No. 2, pp. 42-58.

Gantchev, N. (2013), "The costs of shareholder activism: evidence from a sequential decision model", *Journal of Financial Economics*, Vol. 107 No. 3, pp. 610-631.

Gillan, S.L. and Starks, L.T. (2000), "Corporate governance proposals and shareholder activism: the role of institutional investors", *Journal of Financial Economics*, Vol. 57 No. 2, pp. 275-305.

Glosten, L.R. (1987), "Components of the bid-ask spread and the statistical properties of transaction prices", *Journal of Finance*, Vol. 42 No. 5, pp. 1293-1307.

Graham, J.R., Harvey, C.R. and Rajgopal, S. (2005), "The economic implications of corporate financial reporting", *Journal of Accounting and Economics*, Vol. 40 Nos 1-3, pp. 3-73.

Graves, S. and Waddock, S. (1990), "Institutional ownership and control implications for long-term corporate strategy", *Academy of Management Executive*, Vol. 4 No. 1, pp. 75-83.

Greenwood, R. and Schor, M. (2009), "Investor activism and takeovers", *Journal of Financial Economics*, Vol. 92 No. 3, pp. 362-375.

Healy, P.M. (1985), "The effect of bonus schemes on accounting decisions", *Journal of Accounting and Economics*, Vol. 7 Nos 1-3, pp. 85-107.

Heckman, J.J. (1979), "Sample selection bias as a specification error", *Econometrica*, Vol. 47 No. 1, pp. 153-161.

Holmstrom, B. and Tirole, J. (1993), "Market liquidity and performance monitoring", *Journal of Political Economy*, Vol. 101 No. 4, pp. 678-709.

Holthausen, R.W., Larcker, D.F. and Sloan, R.G. (1995), "Annual bonus schemes and the manipulation of earnings", *Journal of Accounting and Economics*, Vol. 19 No. 1, pp. 29-74.

Jian, M. and Wong, T.J. (2010), "Propping through related party transactions", *Review of Accounting Studies*, Vol. 15 No. 1, pp. 70-105.

Jiang, G.H., Lee, C. and Yue, H. (2010), "Tunneling through intercorporate loans: the China experience", *Journal of Financial Economics*, Vol. 98 No. 1, pp. 1-20.

Jones, J. (1991), "Earnings management during import relief investigations", *Journal of Accounting Research*, Vol. 29 No. 2, pp. 193-228.

Kao, J.L., Wu, D. and Yang, Z.F. (2009), "Regulations, earnings management and post IPO performance: the Chinese evidence", *Journal of Banking and Finance*, Vol. 33 No. 1, pp. 63-76.

Karpoff, J.M., Malatesta, P.H. and Walkling, R.A. (1996), "Corporate governance and shareholder initiatives: empirical evidence", *Journal of Financial Economics*, Vol. 42 No. 3, pp. 365-395.

Klein, A. and Zur, E. (2009), "Entrepreneurial shareholder activism: hedge funds and other private investors", *Journal of Finance*, Vol. 64 No. 1, pp. 187-229.

Kothari, S.P., Leone, A.J. and Wasley, C.E. (2005), "Performance matched discretionary accrual measures", *Journal of Accounting and Economics*, Vol. 39 No. 1, pp. 163-197.

Krishnan, J., Wen, Y. and Zhao, W. (2011), "Legal expertise on corporate audit committees and financial reporting quality", *Accounting Review*, Vol. 86 No. 6, pp. 2099-2130.

Leone, A.J., Wu, J.S. and Zimmerman, J.L. (2006), "Asymmetric sensitivity of CEO cash compensation to stock returns", *Journal of Accounting and Economics*, Vol. 42 Nos 1-2, pp. 167-192.

Leuz, C., Nanda, D. and Wysocki, P.D. (2003), "Earnings management and investor protection: an international comparison", *Journal of Financial Economics*, Vol. 69 No. 3, pp. 505-527.

Li, H.Y. and Zhang, Y. (2007), "The role of managers' political networking and functional experience in new venture performance", *Strategic Management Journal*, Vol. 28 No. 8, pp. 791-804.

Li, K., Wang, T., Cheung, Y.L. and Jiang, P. (2011), "Privatization and risk sharing: evidence from the split share structure reform in China", *Review of Financial Studies*, Vol. 24 No. 7, pp. 2499-2525.

Linck, J.S., Netter, J. and Shu, T. (2013), "Can managers use discretionary accruals to ease financial constraints? Evidence from discretionary accruals prior to investment", *Accounting Review*, Vol. 88 No. 6, pp. 2117-2143.

Listokin, Y. (2010), "If you give shareholders power, do they use it? An empirical analysis", *Journal of Institutional and Theoretical Economics*, Vol. 166 No. 1, pp. 38-53.

Liu, Q. and Lu, Z. (2007), "Corporate governance and earnings management in the Chinese listed companies: a tunneling perspective", *Journal of Corporate Finance*, Vol. 13 No. 5, pp. 881-906.

Livnat, J. and Mendenhall, R. (2006), "Comparing the post-earnings announcement drift for surprises calculated from analyst and time series forecasts", *Journal of Accounting Research*, Vol. 44 No. 1, pp. 177-205.

Lundholm, R. and Myers, L.A. (2002), "Bringing the future forward: the effect of disclosure on the returns-earnings relation", *Journal of Accounting Research*, Vol. 40 No. 3, pp. 809-839.

McConnell, J.J. and Servaes, H. (1990), "Additional evidence on equity ownership and corporate value", *Journal of Financial Economics*, Vol. 27 No. 2, pp. 595-612.

McNichols, M.F. (2002), "Discussion of the quality of accruals and earnings: the role of accrual estimation errors", *Accounting Review*, Vol. 77 No. 1, pp. 61-69.

Morsfield, S.G. and Tan, C.E.L. (2006), "Do venture capitalists influence the decision to manage earnings in initial public offerings?", *Accounting Review*, Vol. 81 No. 5, pp. 1119-1150.

Nissim, D. and Penman, S.H. (2001), "Ratio analysis and equity valuation: from research to practice", *Review of Accounting Studies*, Vol. 6 No. 1, pp. 109-154.

Noe, T.H. (2002), "Investor activism and financial market structure", *Review of Financial Studies*, Vol. 15 No. 1, pp. 289-318.

Perry, S.E. and Williams, T.H. (1994), "Earnings management preceding management buyout offers", *Journal of Accounting and Economics*, Vol. 18 No. 2, pp. 157-179.

Piotroski, J. and Wong, T. (2012), "Institutions and information environment of Chinese listed firms", in Fan, J. and Morck, R. (Eds), *Capitalizing China*, University of Chicago Press, Chicago, IL, pp. 201-242.

Polk, C. and Sapienza, P. (2009), "The stock market and corporate investment: a test of catering theory", *Review of Financial Studies*, Vol. 22 No. 1, pp. 187-217.

Prevost, A.K. and Rao, R.P. (2000), "Of what value are shareholder proposals sponsored by public pension funds?", *Journal of Business*, Vol. 73 No. 2, pp. 177-204.

Rajgopal, S. and Venkatachalam, M. (2011), "Financial reporting quality and idiosyncratic return volatility", *Journal of Accounting and Economics*, Vol. 51 Nos 1-2, pp. 1-20.

Rosenbaum, P.R. and Rubin, D.B. (1984), "Reducing bias in observational studies using subclassification on the propensity score", *Journal of the American Statistical Association*, Vol. 79 No. 387, pp. 516-524.

Schultz, P. (2000), "Stock splits, tick size and sponsorship", *Journal of Finance*, Vol. 55 No. 1, pp. 429-450.

Shivakumar, L. (2000), "Do firms mislead investors by overstating earnings before seasoned equity offerings?", *Journal of Accounting and Economics*, Vol. 29 No. 3, pp. 339-371.

Shleifer, A. and Vishny, R.W. (1997), "A survey of corporate governance", *Journal of Finance*, Vol. 52 No. 2, pp. 737-783.

Simpson, A. (2013), "Does investor sentiment affect earnings management?", *Journal of Business Finance & Accounting*, Vol. 40 Nos 7-8, pp. 869-900.

Smith, M.P. (1996), "Shareholder activism by institutional investors: evidence from calpers", *Journal of Finance*, Vol. 51 No. 1, pp. 227-252.

Staiger, D. and Stock, J.H. (1997), "Instrumental variables regression with weak instruments", *Econometrica*, Vol. 65 No. 3, pp. 557-586.

Stein, J.C. (1988), "Takeover threats and managerial myopia", *Journal of Political Economy*, Vol. 96 No. 1, pp. 61-80.

Stein, J.C. (1989), "Efficient capital markets, inefficient firms: a model of myopic corporate behavior", *Quarterly Journal of Economics*, Vol. 104 No. 4, pp. 655-669.

Stock, J. and Yogo, M. (2002), "Testing for weak instruments in linear iv regression", working paper, NBER, available at: www.nber.org/papers/t0284

Strickland, D., Wiles, K.W. and Zenner, M. (1996), "A requiem for the USA is small shareholder monitoring effective?", *Journal of Financial Economics*, Vol. 40 No. 2, pp. 319-338.

Tan, L., Chiang, T.C., Mason, J.R. and Nelling, E. (2008), "Herding behavior in Chinese stock markets: an examination of a and b shares", *Pacific-Basin Finance Journal*, Vol. 16 Nos 1-2, pp. 61-77.

Teoh, S., Hong, I.W. and Wong, T.J. (1998), "Earnings management and the underperformance of seasoned equity offerings", *Journal of Financial Economics*, Vol. 50 No. 1, pp. 63-99.

Wahal, S. (1996), "Pension fund activism and firm performance", *Journal of Financial and Quantitative Analysis*, Vol. 31 No. 1, pp. 1-23.

Warner, J.B., Watts, R.L. and Wruck, K.H. (1988), "Stock prices and top management changes", *Journal of Financial Economics*, Vol. 20 No. 20, pp. 461-492.

Weisbach, M. (1988), "Outside directors and ceo turnover", *Journal of Financial Economics*, Vol. 20 No. 88, pp. 431-460.

Xiong, W. and Yu, J. (2011), "The Chinese warrants bubble", *American Economic Review*, Vol. 101 No. 6, pp. 2723-2753.

Yu, F. (2008), "Analyst coverage and earnings management", *Journal of Financial Economics*, Vol. 88 No. 2, pp. 245-271.

Yu, Q., Du, B. and Sun, Q. (2006), "Earnings management at rights issuance thresholds: evidence from China", *Journal of Banking and Finance*, Vol. 30 No. 12, pp. 3453-3468.

Further reading

Chang, X., Hilary, G., Kang, J.-K. and Zhang, W. (2013), "Does accounting conservatism impede corporate innovation?".

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