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Financial reporting quality, ownership concentration, and investment efficiency: evidence from China

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ABSTRACT

This paper uses 3,726 samples of Chinese listed firms during the period 2008–2012 to examine the relation between financial reporting quality, ownership concentration, and investment efficiency. We find that financial reporting quality is negatively associated with both underinvestment and overinvestment. Further, financial reporting quality is more strongly associated with overinvestment for firms with low ownership concentration, which suggests that financial reporting quality can reduce information asymmetry between the managers and investors and thus lower shareholders' cost of monitoring managers and improving project selection. Our findings contribute to the literature on financial reporting and investment in emerging capital markets.

KEYWORDS

Financial reporting quality; Ownership concentration; Investment efficiency; Underinvestment; Overinvestment.



INTRODUCTION

This study examines the relation between financial reporting quality, ownership concentration and investment efficiency for listed firms from emerging markets. In the neoclassical framework, the marginal value of an investment project is the only factor needed for firms to decide to invest or not (Miller and Modigliani, 1958)^[1]. Thus, firm investment should not be related to internally generated cash flows, the access to external funds and the managers' personal interests. But, an increasing number of studies find that "noise" due to taxes and transaction costs and other factors will affect the validity of the market, and thus making firm investment deviate from the optimal level of investment. Information asymmetries and agency problems are the most common and important distorting factors that influence firm's investment efficiency in imperfect markets (Bushman and Smith, 2001)^[2]. However, financial reporting is generally considered to be an important tool to reduce information asymmetries and mitigate agency problems in real world (Healy and Palepu, 2001)^[3]. Recent papers (Biddle and Hilary, 2006; Hope and Thomas, 2008; McNichols and Stubben, 2008; Biddle, Hilary, and Verdi, 2009; Betty, Liao, and Weber, 2010; Chen et al., 2011; Ramalingegowda, Wang, and Yu, 2013)^[4-10] suggest that enhanced financial reporting quality can have important economic implications such as increased investment efficiency just in developed countries. Also, some papers show that ownership structure can be associated with investment efficiency (Jensen and Meckling, 1976; Morck, Shleifer and Vishny, 1988, McConnell and Servaes, 1990)^[11-13]. Despite a growing number of papers in this area, little research directly examines whether financial reporting quality alleviates overinvestment for firms with low ownership concentration. Thus, there is necessary and important to research on financial reporting, ownership concentration and investment efficiency in emerging capital markets.

We posit that financial reporting plays an important role in mitigating both underinvestment and overinvestment, especially reducing overinvestment for firms with low ownership concentration. On one hand, financial reporting quality reduces information asymmetry by providing more information to investors on the firm's investment projects, thereby reducing adverse selections at the issuance of securities (Bushman and Smith, 2001)^[2]. On the other hand, financial reporting quality mitigates moral problems by facilitating contracting and monitoring (Healy and Palepu, 2001)^[3]. In addition, low ownership concentration which produces "free rider" problem among minority shareholders may relax the supervision of managers. However, firms with higher financial reporting quality create a positive impact of investment efficiency by enhancing the ability of shareholders to monitor managers and improving project selection. Therefore, we hypothesize that financial reporting quality is negatively associated with both underinvestment and overinvestment (H1 and H2). Further, we expect the mitigating role of financial reporting quality to overinvestment for firms with low ownership concentration (H3).

We measure investment efficiency as deviations from expected investment which is a function of growth opportunities (Richardson, 2006)^[14] and financial reporting quality using the modified Dechow and Dichev (2002)^[15] model. We estimate ownership concentration as the sum of squaring the percentage share owned by each of top-five largest shareholders (Demsetz and Lehn, 1985; Kraft and Niederprum, 1999; Hartzell and Starks, 2003; Makhija and Patton, 2004; Lakahal, 2005)^[16-20]. Based on a large sample of 3,726 firm-year observations during the period 2008–2012 in China, we find that that financial reporting quality is negatively associated with both underinvestment and overinvestment. Further, financial reporting quality is more strongly associated with overinvestment for firms with low ownership concentration, which suggests that financial reporting quality can reduce the information asymmetry between the managers and investors and thus lower shareholders' cost of monitoring managers and improving project selection.

Our study contributes to two aspects of literature. First, it contributes to expand the research that examines the relation between financial reporting quality and investment efficiency from emerging capital markets in the world. Most prior studies are based on markets which are mature and standardize in the developed countries (Biddle and Hilary, 2006; Hope and Thomas, 2008; McNichols and Stubben, 2008; Biddle, Hilary, and Verdi, 2009; Balakrishnan et al., 2014)^[4-9,21]; this paper extends the field of application of financial reporting quality and investment efficiency. Second, it reveals that financial reporting quality is more strongly associated with overinvestment for firms with low ownership concentration. Most prior studies are focused on direct impact between financial reporting quality and investment efficiency (Biddle, Hilary, and Verdi, 2009)^[7]. There is little research that examines how financial reporting quality impacts investment efficiency in different types of firms with different degree of ownership concentration.

The remainder of the paper proceeds as follows. Section 2 develops the hypotheses. Section 3 describes the sample and the measurement of investment efficiency, financial reporting quality and ownership concentration. Section 4 presents the research design and results. Section 5 concludes the paper.

HYPOTHESIS DEVELOPMENT

Determinants of investment efficiency

Investment efficiency refers to firms that undertake all and only projects with positive net present value (NPV). There exist at least two determinants of investment efficiency. First, a firm needs to have financing capacity and decide to raise capital for its investment opportunities. In a world of perfect capital market, there is no difference between internal and external capital. Firm investment and financing is unrelated, and all projects with positive net present values should be funded (Modigliani and Miller, 1961)^[22]. However, a number of studies in accounting and finance show that firms face financing constraints which suggests their financing capacity is limited. Thus, sometimes managers cannot raise enough capital to finance all potential projects (Hubbard, 1998)^[23]. One conclusion of these studies is that a firm facing financing constraints will pass up projects with positive net present value due to the limit of financing capacity, resulting in underinvestment (Lambert, Leuz, and Verrecchia, 2007)^[24]. Second, even if the firm has the ability to raise enough capital and decides to finance, there is no guarantee that managers will make correct decision on investment projects. For example,

managers could choose to maximize their personal welfares by making bad project selections, empire building, perquisite consumption, or expropriating existing resources (Jensen and Meckling, 1976; Jensen, 1986,1993)^[11,25,26]. Most studies in this area show that managers incline to choose poor selection which is not in the best interests of shareholders leads to overinvestment (Stein, 2003)^[27]. There are also some papers showing that managers prefer choosing a “quiet life” which leads to underinvestment (Bertrand and Mullainathan, 2003)^[28].

Financial reporting quality and investment efficiency

Recently there are a large of literature have been developed on the effects of financial reporting quality on investment efficiency (Biddle and Hilary, 2006; Hope and Thomas, 2008; McNichols and Stubben, 2008; Biddle, Hilary, and Verdi, 2009; Betty, Liao, and Weber, 2010; Chenet al., 2011; Ramalingegowda, Wang, and Yu,2013;Balakrishnan et al., 2014)^[4-10,21]. Financial reporting quality can be associated with investment efficiency though at least two channels. First, financial reporting conveys firm-specific information to investors and reduces information asymmetry between the firm and investors and among investors. Thus, it could mitigate adverse selection costs and reduce the costs of raise capital (Verrecchia, 2001)^[29]. For example, Leuz and Verrecchia (2000)^[30] show that firm discloses more information to increase liquidity by reducing information asymmetry between the firm and investors. On the other hand, the existence of information asymmetry between the firm and investors could lead suppliers of capital to discount the stock price and to increase the cost of raising capital because investors would infer that firms raising funds is of a bad type (Myers and Majluf, 1984)^[31]. Therefore, financial reporting quality mitigates information asymmetry and increases investment efficiency by reducing the costs of external financing for firms (McNichols and Stubben, 2008)^[6].

Second, it is common argued that financial reporting quality plays an important role in mitigating agency problems between the managers and investors. For example, compensation contract is always based on financial information and is an important source of information used by investors to monitor managers (Bushman and Smith, 2001)^[2]. In addition, financial information contributes to the monitoring role of stock markets as an important source of firm-specific information (Kanodia and Lee, 1998; Healy and Palepu, 2001)^[32,3]. Therefore, if financial reporting quality reduces agency problems between the managers and investors, it can then improve investment efficiency by increasing shareholders’ ability to monitor managers and thus reduce financing costs and improve project selection.

Based on the discussion above that financial reporting quality affects both adverse selection and agency conflict, we follow the approach ofGomariz and Balleata (2014)^[33] to test whether financial reporting quality from emerging markets helps to mitigate both underinvestment and overinvestment. In other words, we investigate financial capital investment inefficiencies under less conducive conditions than those examined in prior research. The above discussion leads to our hypotheses as follows:

H1: Financial reporting quality is negatively associated with underinvestment.

H2: Financial reporting quality is negatively associated with overinvestment.

Financial reporting quality effect on investment efficiency conditioned to the degree of ownership concentration

In a world of perfect capital markets, there are no information asymmetries, no moral hazard problems, no taxes and no frictions for raising external finance. Thus, managers can raise enough capital for all projects with positive net present values (Modigliani and Miller, 1958)^[1]. In addition, managers will invest efficiently by making good project selections to maximize the interests of shareholders. However, managers always do not act like that in such a world. Managers usually maximize their personal welfares which are not in the best interests of shareholders. This problem produces from the separation of ownership and control between the managers and shareholders (Berle and Means, 1932; Jensen and Meckling, 1976)^[34,11]. Managers may focus on perquisite consumption (Jensen and Meckling, 1976)^[11], empire building (Shleifer and Vishny,1997)^[35] and engaging in additional investment on self-serving projects rather than maximize shareholders’ wealth (Jensen and Meckling,1976; Lamont, 1997; Berger and Hann, 2003)^[11,36,37]. Thus, investors need to monitor the managers whether they are on the right way to invest valuable projects and create profits for shareholders. However, different shareholders have different incentives to monitor managers. On one hand, minority shareholders always give up supervision due to their weak control, which produces “free rider” problem among investors (Jensen and Meckling, 1976)^[11]. On the other hand, larger shareholders due to their control rights and cash flow rights have strong ability and incentives to monitor managers in order to mitigate agency problems.

Financial reporting can reduce information asymmetry between the managers and the investors and thus lower the shareholders’ cost of monitoring managers. Firms with dispersed ownership which make managers have more opportunity to engage in value destroying investment activities, which indicates that firm with overinvestment has a high likelihood of agency problems. Therefore, financial reporting quality can play a more important monitoring role in mitigating agency problems for these firms. This discussion motivates our final hypothesis:

H3: The relation between financial reporting quality and overinvestment is stronger for firms with low ownership concentration.

SAMPLE AND MEASUREMENT OF MAIN VARIABLES

Data source

Our financial data needed to test this paper is from one of China's stock market Shenzhen Stock Exchange (SZSE) and the China Stock Market and Accounting Research (CSMAR) database. We manually collect the nature of equity according to the annual financial reports of individual firms. The sample selection process is as follows. Firstly, considering

our research purposes, we exclude financial firms because their general characteristics are much different from common listed firms. Secondly, we exclude the firms which are restructuring assets and changing equity. Thirdly, we exclude the firms for which data is incomplete. Last, based on the A–M industry classification standard in China, each industry requires at least 20 observations each year.

Proxy for investment efficiency

Investment efficiency refers to firms that undertake all projects with positive net present value. To construct the measure of investment efficiency, consistent with prior research (Richardson, 2006; Biddle, Hilary, and Verdi, 2009; Chen et al., 2011; Ramalingegowda, Wang, and Yu, 2013)^[7,9,10,14], we build a model which predicts firm’s investment efficiency and then use residuals from this model as a proxy for inefficiency investment. In other words, we use this model to measure investment efficiency as deviations from expected investment, which is a function of growth opportunities. We describe the negative deviations from expected investment as underinvestment, the positive deviations from expected investment as overinvestment. Both underinvestment and overinvestment are inefficiency investment. The model is described below:

$$Investment_{i,t} = \alpha_0 + \alpha_1 Growth_{i,t-1} + \alpha_2 Leverage_{i,t-1} + \alpha_3 Cash_{i,t-1} + \alpha_4 Size_{i,t-1} + \alpha_5 Return_{i,t-1} + \alpha_6 Age_{i,t-1} + \alpha_7 Investment_{i,t-1} + \varepsilon_{i,t} \tag{1}$$

where $Investment_{i,t}$ is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of property, plant, and equipment, scaled by lagged total asset for firm i at the end of year $t-1$. $Growth_{i,t-1}$ is the annual revenue growth rate for firm i at the end of year $t-1$. $Leverage_{i,t-1}$ is financial leverage, the ratio of long-term debt to the sum of long-term debt plus the market value of equity of firm i at the end of year $t-1$; $Cash_{i,t-1}$ is the ratio of cash to total asset of firm i at the end of year $t-1$. $Size_{i,t-1}$ is the log of total assets of firm i at the end of year $t-1$. $Return_{i,t-1}$ is the stock returns of firm i at the end of year $t-1$. $Age_{i,t-1}$ is the difference between the first year when firm i appears in Shenzhen Stock Exchange at the end of year $t-1$. $Investment_{i,t-1}$ is the lag of investment.

Proxy for financial reporting quality

The objective of financial reporting is providing the estimation of expected cash flow and the useful information to help investors and potential investors to make reasonable decisions. Among the disclosed information in financial reporting, accruals quality is one of the most important and comprehensive messages for concerned investors (Echer et al., 2006)^[38]. Accruals quality is not only an important tool for investors to make investment decisions but also an important foundation for firms’ contract design. We proxy for financial reporting quality using measures of accruals quality derived in prior work (Dechow and Dichev, 2002; Francis et al., 2005; Srinidhi and Gul, 2007)^[15,39,40] based on the idea that accruals are estimates of future cash flow. Specifically, we estimate the following model for each industry that has at least 20 observations:

$$TCA_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 Rev_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t} \tag{2}$$

where $TCA_{i,t}$ is total current accruals, measured as the change in non-cash current assets minus the change in current non-interest-bearing liabilities, scaled by lagged total assets for firm i at the end of year t ; CFO is cash flow from operations, measured as the sum of net income, depreciation and amortization, and changes in current liabilities, minus changes in current assets, scaled by lagged total assets; $Rev_{i,t}$ is the annual change in revenues scaled by lagged total assets for firm i at the end of year t ; $PPE_{i,t}$ is property, plant, and equipment, scaled by lagged total assets for firm i at the end of year t . The residuals from Equation (2) represent the estimation errors in the current accruals that are not associated with operating cash flows and that cannot be explained by the change in revenue and the level of PPE. Given the short longitudinal time frame in our study, we follow Francis et al. (2005)^[39] and Srinidhi and Gul (2007)^[40] and use the absolute value of this residual as a proxy for financial reporting quality. We multiply the absolute values of the Dechow-Dichev measure by -1 (DD). Thus, higher values of DD represent higher financial reporting quality.

Proxy for ownership concentration

We use the proxy for ownership concentration consistent with prior studies that investigate the consequences of concentrated ownership structures (Demsetz and Lehn, 1985; Kraft and Niederprum, 1999; Hartzell and Starks, 2003; Makhija and Patton, 2004; Lakahal, 2005)^[16-20]. Ownership concentration is measured using the formula:

$$OC = \sum_i^n S_i^2 \quad n=1, 2, 3, 4, 5 \tag{3}$$

where n is the top-five larger shareholders including insider shareholders such as directors and executives, financial institutions and other outside block shareholders; S is the percentage share owned by each of top-five largest shareholders for firms in Shenzhen Stock Exchange. The OC index we measured by squaring the percentage share ranges from zero to one with larger values indicating more concentrated ownership.

RESEARCH DESIGN AND RESULTS

Empirical models

Because we are interested in how financial reporting quality affects investment efficiency, especially how it affects investment for firms with different ownership concentration, we test our hypothesis by regressing the measure of investment

efficiency in year t on the measure of financial reporting quality (FRQ) and ownership concentration (OC) in year $t-1$. Similar to Biddle et al. (2009)^[7], Chen et al. (2011)^[9], and Ramalingegowda et al.(2013)^[10], we also estimate Equation(4) and Equation(5) separately for underinvestment and overinvestment. The empirical models are as follows:

$$\begin{aligned} \text{OverI}_{i,t} \text{ or UnderI}_{i,t} = & \gamma_1 + \gamma_2 \text{FRQ}_{i,t-1} + \gamma_3 \text{Size}_{i,t-1} + \gamma_4 \text{Growth}_{i,t-1} + \gamma_5 \text{Lev}_{i,t-1} + \gamma_6 \text{Pay}_{i,t-1} + \gamma_7 \text{Mfe}_{i,t-1} \\ & + \gamma_8 \text{Vfo}_{i,t-1} + \gamma_9 \text{State}_{i,t-1} + \sum \text{Industry} + \sum \text{Year} + \varepsilon_{it} \end{aligned} \quad (4)$$

$$\begin{aligned} \text{OverI}_{i,t} \text{ or UnderI}_{i,t} = & \gamma_1 + \gamma_2 \text{FRQ}_{i,t-1} + \gamma_3 \text{FCF}_{i,t-1} + \gamma_4 \text{FRQ}_{i,t-1} * \text{OC}_{i,t-1} + \gamma_5 \text{Size}_{i,t-1} + \gamma_6 \text{Growth}_{i,t-1} \\ & + \gamma_7 \text{Lev}_{i,t-1} + \gamma_8 \text{Pay}_{i,t-1} + \gamma_9 \text{Mfe}_{i,t-1} + \gamma_{10} \text{Vfo}_{i,t-1} + \gamma_{11} \text{State}_{i,t-1} + \sum \text{Industry} + \sum \text{Year} + \varepsilon_{it} \end{aligned} \quad (5)$$

where:

$\text{OverI}_{i,t}$ = positive excess investment, which is the positive residual of the investment model as described above.

$\text{UnderI}_{i,t}$ = negative excess investment, which equals the absolute value of the negative residual of the investment model as described above.

$\text{FRQ}_{i,t-1}$ = financial reporting quality which is the absolute residual of the modified Dechow and Dichev (2002)^[15] model, multiplied by -1.

$\text{OC}_{i,t-1}$ = the sum of squaring the percentage share owned by each of top-five largest shareholders.

Motivated by prior research, we include the log of firm size ($\text{Size}_{i,t-1}$), the annual revenue growth rate ($\text{Growth}_{i,t-1}$), the financial leverage ($\text{Lev}_{i,t-1}$), the log of executive compensation ($\text{Pay}_{i,t-1}$), the ratio of administrative expenses scaled by total assets ($\text{Mfe}_{i,t-1}$), operations cash flow scaled by total assets ($\text{Vfo}_{i,t-1}$), the nature of equity ($\text{State}_{i,t-1}$) as control variables, as well as year and industry fixed effects.

Descriptive statistics and correlations

TABLE 1 provides descriptive statistics and correlations for our measures of investment efficiency, financial reporting quality (FRQ), ownership concentration (OC) and our main control variables. Panel A shows that the sample consists of 3,726 firms-year observations. In this sample, there are 2,109 (1,617) firms belong to the underinvestment (overinvestment) group. The mean (median) value for underinvestment is 0.072 (0.049) and for overinvestment is 0.085 (0.057). These indicate that underinvestment firms are more than overinvestment samples, while overinvestment firms whose inefficiency degree is more serious than that of underinvestment firms. The mean value for financial reporting quality (FRQ) is 0.603 and its median is 0.612, which shows that the general financial reporting quality is good in listed firms in China. The mean value for ownership concentration is 0.536 and its median is 0.520. Finally, we include descriptive statistics on firm size, sales growth and other control variables. Panel B presents Pearson (Spearman) correlations for underinvestment and financial reporting quality and the main control variables in Panel A. We can see in Panel B that the coefficient between underinvestment and financial reporting quality is -0.092. This result preliminarily forecasts financial reporting quality is negatively associated with underinvestment. It presents preliminary evidence for the relation between financial reporting quality and underinvestment in hypothesis H1. Panel C presents Pearson (Spearman) correlations for overinvestment and financial reporting quality and the main control variables in Panel A. We can see in Panel C that the coefficient between overinvestment and financial reporting quality is -0.113. This result preliminarily forecasts financial reporting quality is negatively associated with overinvestment. It presents preliminary evidence for the relation between financial reporting quality and overinvestment in hypothesis H2. In addition, both underinvestment samples and overinvestment samples, the Pearson (Spearman) correlation coefficients between variables are low, therefore the samples we selected do not exist multicollinearity.

TABLE 1 : Descriptive statistics and correlations

Panel A : Descriptive statistics

| Variable | OBS | Mean | Median | STD | Min | Max |
|----------|-------|-------|--------|-------|--------|-------|
| Total I | 3,726 | 0.078 | 0.052 | 0.114 | 0.000 | 1.307 |
| UnderI | 2,109 | 0.072 | 0.049 | 0.121 | 0.000 | 1.307 |
| OverI | 1,617 | 0.085 | 0.057 | 0.106 | 0.000 | 0.968 |
| FRQ | 3,726 | 0.603 | 0.612 | 0.078 | 0.034 | 0.985 |
| OC | 3,726 | 0.536 | 0.520 | 0.967 | 0.203 | 0.992 |
| Size | 3,726 | 21.32 | 20.78 | 0.973 | 10.27 | 35.79 |
| Growth | 3,726 | 0.155 | 0.147 | 0.382 | -0.461 | 0.867 |
| Lev | 3,726 | 0.572 | 0.594 | 0.793 | 0.000 | 1.241 |
| Pay | 3,726 | 12.56 | 12.61 | 0.943 | 8.350 | 15.52 |
| Mfe | 3,726 | 0.069 | 0.046 | 0.178 | 0.000 | 3.924 |
| Vfo | 3,726 | 0.063 | 0.055 | 0.076 | 0.006 | 0.437 |
| State | 3,726 | 0.616 | 1.000 | 0.587 | 0.000 | 1.000 |

Panel B: Pearson correlations variables through $UnderI_{i,t}$.

| | <i>UnderI</i> | <i>FRQ</i> | <i>OC</i> | <i>Size</i> | <i>Growth</i> | <i>Lev</i> | <i>Pay</i> | <i>Mfe</i> | <i>Vfo</i> | <i>State</i> |
|---------------|---------------|------------|-----------|-------------|---------------|------------|------------|------------|------------|--------------|
| <i>UnderI</i> | 1 | | | | | | | | | |
| <i>FRQ</i> | -0.092 | 1 | | | | | | | | |
| <i>OC</i> | 0.008 | -0.077 | 1 | | | | | | | |
| <i>Size</i> | -0.103 | 0.231 | 0.089 | 1 | | | | | | |
| <i>Growth</i> | 0.121 | -0.084 | 0.173 | 0.155 | 1 | | | | | |
| <i>Lev</i> | 0.086 | -0.073 | 0.019 | 0.286 | 0.035 | 1 | | | | |
| <i>Pay</i> | -0.112 | -0.025 | 0.142 | 0.314 | 0.089 | -0.047 | 1 | | | |
| <i>Mfe</i> | 0.527 | -0.063 | 0.267 | 0.109 | 0.075 | 0.044 | -0.468 | 1 | | |
| <i>Vfo</i> | 0.045 | -0.016 | -0.158 | 0.182 | 0.403 | 0.024 | 0.061 | 0.029 | 1 | |
| <i>State</i> | -0.041 | 0.005 | 0.331 | 0.113 | 0.126 | 0.098 | 0.372 | -0.009 | 0.027 | 1 |

Panel C: Pearson correlations variables through $OverI_{i,t}$.

| | <i>OverI</i> | <i>FRQ</i> | <i>OC</i> | <i>Size</i> | <i>Growth</i> | <i>Lev</i> | <i>Pay</i> | <i>Mfe</i> | <i>Vfo</i> | <i>State</i> |
|---------------|--------------|------------|-----------|-------------|---------------|------------|------------|------------|------------|--------------|
| <i>OverI</i> | 1 | | | | | | | | | |
| <i>FRQ</i> | -0.113 | 1 | | | | | | | | |
| <i>OC</i> | -0.092 | -0.104 | 1 | | | | | | | |
| <i>Size</i> | 0.235 | 0.158 | 0.133 | 1 | | | | | | |
| <i>Growth</i> | 0.008 | -0.069 | 0.211 | 0.198 | 1 | | | | | |
| <i>Lev</i> | -0.015 | -0.287 | 0.109 | 0.331 | 0.042 | 1 | | | | |
| <i>Pay</i> | -0.063 | -0.014 | 0.247 | 0.254 | 0.129 | -0.081 | 1 | | | |
| <i>Mfe</i> | 0.452 | 0.006 | 0.313 | 0.162 | 0.094 | 0.057 | -0.337 | 1 | | |
| <i>Vfo</i> | 0.076 | -0.004 | -0.350 | 0.206 | 0.195 | 0.043 | 0.082 | 0.067 | 1 | |
| <i>State</i> | 0.424 | -0.055 | 0.394 | 0.189 | 0.097 | 0.072 | 0.346 | -0.022 | 0.003 | 1 |

Panel A presents descriptive statistics for the measures of investment efficiency, financial reporting quality, ownership concentration, and controls. Panel B presents Pearson correlations for underinvestment, financial reporting quality, ownership concentration, and controls. Panel C presents Pearson correlations for overinvestment, financial reporting quality, ownership concentration, and controls. Variable computations are described as follows.

Variable definitions

Total I = the absolute values of the residuals from the investment efficiency model;

UnderI = absolute value of the negative residuals from the investment efficiency model;

OverI = positive residuals from the investment efficiency model;

FRQ = financial reporting quality, the absolute residual of the modified Dechow-Dichev model as implemented by Francis et al. (2005) and Srinidhi and Gul (2007), multiplied by -1;

OC = the sum of squaring the percentage share owned by each of top-five largest shareholders;

Size = the log of total assets;

Growth = the annual revenue growth rate;

Lev = financial leverage, the ratio of long-term debt to the sum of long-term debt plus the market value of equity;

Pay = the log of executive compensation;

Mfe = the ratio of administrative expenses scaled by total assets;

Vfo = the ratio of operations cash flow scaled by total assets;

State = the nature of equity.

Results

TABLE 2–Panel A reports the multiple regressions testing hypothesis H1 and H2. The estimated model is a regression of underinvestment (overinvestment) on financial reporting quality, firm characteristics, and industry and year fixed effects. Because our samples contain unbalanced panel data including time-series and cross-section data, we use 2008–2012 data to measure underinvestment efficiency and overinvestment efficiency in response to the measurement financial reporting quality from 2007 to 2011. As can be seen from Panel A, the regression coefficients of financial reporting quality are negative, and are significantly under the 1% significance level. The estimated coefficients suggest that moving from bottom to top decile of financial reporting quality (FRQ) is associated with a reduction on underinvestment of 4.5%. Given the mean of underinvestment is 7.2% the effect is economically significant. It indicates that financial reporting is negatively associated with underinvestment and overinvestment, which means that high financial reporting quality can reduce moral hazard and adverse selection between the managers and investors. As a result, high financial reporting quality can reduce underinvestment and overinvestment leading to increase investment efficiency which strongly support the hypothesis H1 and H2.

TABLE 2–Panel B reports the empirical results of financial reporting quality, ownership concentration, and investment efficiency. As before, our empirical models include the control variables such as firm size, sales growth and other firm characteristics, industry and year fixed effects. As can be seen in Panel B, the estimated coefficient on the interaction term ($FRQ_{i,t-1} * OC_{i,t-1}$) is positive but not significant for underinvestment group. We cannot conclude that financial reporting quality plays a stronger role in mitigating underinvestment for firms with ownership concentration. However, the estimated coefficient on the interaction term ($FRQ_{i,t-1} * OC_{i,t-1}$) is negative and significant at 1% significance level for overinvestment group. We can see in Panel B which present consistent with results with Hypothesis H3. As we described above, firms with dispersed ownership have more opportunity to engage in overinvesting activities. Our result shows that financial reporting quality (FRQ) plays a more important monitoring role in mitigating agency problems for these firms.

TABLE 2 : Causality Tests

Panel A: Financial reporting quality and investment efficiency

| | Underinvestment | | Overinvestment | |
|-------------------------------|-----------------|----------------------|----------------|----------------------|
| | Predictions | Coefficient | Predictions | Coefficient |
| <i>Constant</i> | | 0.178*** (3.06) | | 0.221*** (4.77) |
| <i>FRQ_{i,t-1}</i> | – | -0.045*** (-2.75) | – | -0.068*** (-3.29) |
| <i>Size_{i,t-1}</i> | | -0.157 (-1.96) | | 0.225* (4.26) |
| <i>Growth_{i,t-1}</i> | + | 0.083** (4.28) | + | 0.011*** (12.67) |
| <i>Lev_{i,t-1}</i> | + | 0.104** (9.39) | + | -0.009* (-5.83) |
| <i>Pay_{i,t-1}</i> | | -0.007*** (-2.67) | | -0.074 (-3.36) |
| <i>Mfe_{i,t-1}</i> | + | 0.253 (1.96) | + | 0.135** (4.17) |

TABLE 2 (continued)

| | Predictions | Coefficient | Predictions | Coefficient |
|------------------------------|-------------|-------------------|-------------|--------------------|
| <i>Vfo_{i,t-1}</i> | – | 0.080 (1.66) | + | 0.065*** (3.92) |
| <i>State_{i,t-1}</i> | | -0.034 (-1.92) | | 0.036** (7.97) |
| <i>Industry</i> | | Yes | | Yes |
| <i>Year</i> | | Yes | | Yes |
| <i>Adjust R²</i> | | 0.079 | | 0.052 |
| <i>F Value</i> | | 20.82*** | | 18.94*** |
| <i>N</i> | | 2,109 | | 1,617 |

Panel B: Financial reporting quality, ownership concentration and investment efficiency

| | Underinvestment | | Overinvestment | |
|---|-----------------|---------------------|----------------|----------------------|
| | Predictions | Coefficient | Predictions | Coefficient |
| <i>Constant</i> | | 0.232* (5.40) | | 0.326** (4.95) |
| <i>FRQ_{i,t-1}</i> | - | -0.051** (-2.75) | - | -0.112*** (-4.26) |
| <i>OC_{i,t-1}</i> | | 0.078 (2.49) | | 0.084** (3.09) |
| <i>FRQ_{i,t-1} * OC_{i,t-1}</i> | - | -0.064 (-1.26) | - | -0.091*** (-2.83) |
| <i>Size_{i,t-1}</i> | | -0.127** (-4.08) | | 0.119 (2.37) |
| <i>Growth_{i,t-1}</i> | + | 0.145* (2.88) | + | 0.216** (6.29) |
| <i>Lev_{i,t-1}</i> | + | 0.105*** (5.66) | + | -0.014** (-1.81) |
| <i>Pay_{i,t-1}</i> | | -0.225** (-5.97) | | -0.192** (4.13) |
| <i>Mfe_{i,t-1}</i> | + | 0.173 (3.72) | + | 0.105 (1.79) |
| <i>Vfo_{i,t-1}</i> | - | 0.128** (3.43) | + | 0.184*** (3.90) |
| <i>State_{i,t-1}</i> | | -0.096 (-1.81) | | 0.296* (4.74) |
| <i>Industry</i> | | Yes | | Yes |
| <i>Year</i> | | Yes | | Yes |
| <i>Adjust R²</i> | | 0.073 | | 0.096 |
| <i>F Value</i> | | 22.85 | | 29.68*** |
| <i>N</i> | | 2,109 | | 1,617 |

*, **, *** Denote significance at the 10 percent, 5percent, and 1percent levels, respectively. Panel A reports results of the relation between financial reporting quality and investment efficiency. Panel B reports results of the relation between financial reporting quality, ownership concentration, and investment efficiency. Variable computations are described as follows.

Variable definitions

UnderI = absolute value of the negative residuals from the investment efficiency model;

OverI = positive residuals from the investment efficiency model;

FRQ = financial reporting quality, the absolute residual of the modified Dechow-Dichev model as implemented by Francis et al. (2005) and Srinidhi and Gul (2007), multiplied by -1;

OC = the sum of squaring the percentage share owned by each of top-five largest shareholders;

Size = the log of total assets;

Growth = the annual revenue growth rate;

Lev = financial leverage, the ratio of long-term debt to the sum of long-term debt plus the market value of equity;

Pay = the log of executive compensation;

Mfe = the ratio of administrative expenses scaled by total assets;

Vfo = the operations cash flow scaled by total assets;

State = the nature of equity.

Sensitivity analyses

We perform a few sensitivity tests with respect to the investment model. Firstly, we estimate investment efficiency by adding industry and year fixed effects in Equation (1). Also we respectively calculate financial reporting quality and ownership concentration by adding industry and year fixed effects in Equation (2) and (3). Secondly, we use CAPEX as an alternative measure of investment that is commonly used in the literature (Hubbard, 1998)^[23] and the change in non-current net operating assets (Li, 2003)^[41]. The reason for this analysis is that the investment measure used in the paper omitted stock for stock acquisitions since it includes only cash acquisitions as reported in the statement of cash flow. Finally, we use

financial reporting quality which is lagged two periods as explanatory variable to reduce endogenous bias in Equation (4) and (5). The results for the sensitivity tests above are still consistent with the findings presented in this paper.

CONCLUSIONS

Despite recent papers claim that financial reporting quality can have economic implications for investment efficiency, there is little empirical evidence from emerging markets. This paper studies the relation between financial reporting quality, ownership concentration, and investment efficiency in Chinese listed firms. The analysis is done on a sample of 3,726 firm-year observations during the period from 2008 to 2012. We find evidence that financial reporting quality is negatively associated with both underinvestment and overinvestment for our sample firms. Further, we find that the relation between financial reporting quality and overinvestment is stronger for firms with low ownership concentration, which suggests that financial reporting quality can reduce the information asymmetry between the managers and investors and thus lower shareholders' cost of monitoring managers and improving project selection.

Our study provides new evidence that financial reporting quality plays an important role in investment efficiency in emerging markets. Specifically, financial reporting quality plays a more important role in overinvestment for firms with low ownership concentration. Our study also is subject to some caveats. Firstly, we acknowledge that the investment efficiency, the financial reporting quality and the ownership concentration variables likely suffer from measurement error. Second, our results do not necessarily generalize to all emerging markets because of China's special institutional background.

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