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The Determinants of Virtue: Modelling Changes in the CSR Ratings of Chinese Firms

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ABSTRACT

The Determinants of Virtue: Modelling Changes in the CSR Ratings of Chinese Firms*

Most empirical studies on Corporate Social Responsibility (CSR) use cross-sectional data or case studies, making causality hard to establish. We overcome this limitation by using panel data on Chinese firms. We find no effect of last year's profits on CSR ratings, although their negative contemporaneous relation suggests a trade-off. Managerial shareholdings reduce CSR ratings while rising wages and employment are the main drivers of increasing CSR ratings. This suggests the CSR agenda aligns with the interests of labour, but not capital. However, the positive effect of Tobin's Q may indicate CSR is associated with intangibles of value to a firm.

JEL Classification: M14

Keywords: corporate social responsibility, firms, China

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INTRODUCTION

A long-lasting debate over corporate social responsibility (CSR) is whether a business should be responsible for the general welfare of society (Zu and Song, 2009; Young and Makhija, 2014; Singer, 2015). The principle of CSR is that firms do have such obligations, observing a social contract that extends beyond the commercial contracts they pursue to maximise profits. The contrary position was captured by Gary Becker's who answered a "no" to the question whether "*corporations have a social responsibility beyond stockholder value?*". Becker argued that "*.....laws and contracts, and individual use of their own resources, rather than corporate behaviour, should be the way to implement various social goals*" (Becker-Posner Blog, July 2005). To Becker, only if companies can attract employees and customers that also value social responsibility, can firms combine the profit motive with non-profit considerations including CSR (Kitzmueller and Shimshack, 2012).

In parallel with these normative debates, since 2010, businesses face pressures to follow guidelines, known as ISO26000, for CSR and sustainable development introduced by the International Organisation for Standardisation (ISO, 2010). The key beneficiaries from ISO26000 are intended to be employees, the natural environment and local communities. Given that businesses will incur a cost for taking part in CSR activities, what induces corporations to follow ISO26000? We examine empirically what factors drive some firms to be more socially responsible than others?

Most empirical studies on the research of CSR are conducted by using cross-sectional firm data or case studies (for example, Chen and Wang, 2011; Miska, Wittand and Stahl, 2016; Wang, Dou and Jia, 2016). This makes it hard to establish causality. This paper, to our best knowledge, is the first to use firm panel data to try to determine the causal relationship between firms' characteristics and their ratings for CSR in emerging markets. We use panel data on Chinese A-share listed firms from 2008 to 2012. By linking firm balance sheet data with independent ratings of companies' CSR activities, we provide evidence on the driving factors that promote CSR at the firm-level. We look at the relationship between corporate profitability and CSR, throwing light on whether firms' practice of CSR activities hinder their corporate performance. We also assess how increasing the profit motivation of managers,

through company share-holdings, has any effect on CSR ratings. Aside from the relationship with profits, this paper also examines how payments to other stakeholders in a business – specifically workers and the government – affect CSR ratings. We therefore look at how the vested interests of various stakeholders – shareholders, managers, employees and governments – are aligned with CSR.

The paper proceeds as follows. Section 2 reviews pertinent literature on the context and issues. Section 3 describes the analytical framework including the introduction of data, variables to be used for the empirical analysis. Section 4 explains the hypotheses and modelling strategies. The empirical results are discussed in Section 5. Section 6 concludes.

CONTEXT, ISSUES AND RESEARCH QUESTIONS

Conventionally, a firm is expected to maximise profits (Friedman, 1962). Within this perspective, a firm which follows such goals is ethical and deviating from them is a violation of the management's responsibility to share-holders or owners, provided it follows the law, regulations and pays tax. A profit-maximising firm should be able to invest, promoting future growth, and will provide employment, so that it is socially and economically sustainable. Following Friedman, we expect that a firm should be treated as a business entity and its functions should not go beyond its business values. So when successful corporates donate to non-business related activities – supporting local communities, making funds to treat pollution, or financing social agendas, it raises the question of why some firms do engage in such activities and others do not.

Being CSR active incurs some costs. When a firm supports a local community for social projects unrelated to its own business and pays for the cost, does the cost become a financial burden? There are differing perspectives on this – according to Friedman, such outlays impose a competitive disadvantage on a firm, making them vulnerable to being out competed by more profit-oriented rivals. From this perspective, such costs would either be transient, with CSR activities eventually having to be reduced for the firm to survive, or they would be evidence that non-profit maximising firms were protected from competition. However, as Becker caveats, it is possible that CSR activities enhance

profits if a firm attracts more customers (and perhaps more employee effort) because its customers (or employees) value CSR. It is, therefore, interesting to determine whether a firm's social responsibility comes at the expense of its long-term profits (Singer, 2015)? Some evidence on this has been provided in the UK, where companies' 'past financial performance can explain variation in certain elements of corporate social responsibility' (Balabanies *et al*, 1998: 42). Public owned firms – for example, the Chinese state-owned enterprises (SOEs) - may also be expected to perform socially, but they are less focussed on profit maximisation as their overall objective and may be expected to reflect moral standards when undertaking public investment. Miska *et al* (2016) find from a case study of 29 globally influential multinational enterprises of China that the firms are all integrated with global CSR standards and their top management teams respond to CSR positively. However, this is rather a select sample and the study relies on qualitative methods.

Aside from the interests of owners, firms' behaviour may also reflect the vested interests of other stakeholders. The corporate governance of a business, especially a multinational enterprise, involves different types of actors, each of whom could play a role in, or have influence on, decisions about how the company should deploy its resources. In a non-unitary firm, these actors or stake-holders may comprise shareholders, entrepreneurs, managers and employees. The vested interests of different actors will not always be consistent. In deciding on CSR activities, any business firms, especially those with the governance of a well-structured ownership, CSR decision could be agreed collectively or reconciled from different actors. For example, employees want sustainable jobs and higher wages whilst investors might want employees to receive the lowest wages in return to obtain their dividends to the highest level. Yet, for both of the two parties, any cost which is incurred on CSR and added to the total cost, could mean a loss of funds available for other purposes. As for managers, their role in firms' social activities could be complex. It may range from anything covering reputation-building, profit attainment to profit-sharing between owners and employees in an attempt to increase productivity (Weitzman and Kruse, 1985). This is to say, managers' performance may be measured by a mixed metrics of indicators overlapping those of owners and employees within the firm. The motivation for being a reputable manager may also induce him to be the key driving force for either denying or promoting CSR.

With the issues discussed above, we ask the following research questions in this paper. First, are CSR ratings affected by the corporate financial performance? Second, does firms' ownership structure – particularly giving senior executive managers a share in the firm - affect CSR? Third, how do payments to other corporate stakeholders – notably labour and government – affect CSR?

DATA AND ECONOMETRIC SPECIFICATION

Sample and Measurement of CSR

We measure CSR using the Rankin CSR ratings published in mainland Chinaⁱ, which provide a comprehensive assessment of firms' CSR performance (on a 0-100 scale) as judged by a group of independent CSR experts. The ratings are based on four broad categories: “macrocosm”, “content”, “technique” and “industry” with weights of 30%, 45%, 15%, and 10% respectively. Within these four broad dimensions, 15 criteria and 63 sub-criteria are each assessed based on the annual CSR reports published by the listed firms. “Macrocosm” comprises criteria evaluating the effectiveness of a firm's CSR strategy, governance and interactions with stakeholders. “Content” refers to a set of criteria on performance of economic, labor and human rights, environment, fair operations, consumers and community participation and development. In the category of “Technique”, six criteria are included: the balance of content, information comparability, innovation of report, reliability and transparency, reporting format and the effectiveness of information transitivity. Lastly, Rankin classifies the industries into 22 types according to the China Securities Regulatory Commission (CSRC) and set a number of criteria specific for the particular type of industry.

We examine the determinants of CSR ratings using data on all A-share listed firms in China with CSR ratings. Since 2008, CSRC released *Guidance on the Disclosure of CSR Information* and required the publicly listed firms to report on CSR information in their annual reports (Lin, 2010). From each annual report of the listed firms, we manually obtained the CSR rating as assessed by Rankin and matched it with other firm-level information from a dataset of China's publicly listed firms known as SCMAR registered to Shanghai and Shenzhen Stock Exchangesⁱⁱ.

We focus on A-share listed firms as the shares of these firms, which are traded in Chinese currency *Reminbi* (RMB), rather than in foreign currency, are not restricted to foreign investorsⁱⁱⁱ². They are thus appropriate for examining the CSR behaviour of listed firms of various kinds of ownership and control in mainland China. Table 1 gives the breakdown of our sample by ownership type and by year. The sample we use for the empirical analysis covers a panel of five waves from 2008 to 2012, which is unbalanced as more firms recorded CSR activities during the period. Within the five year interval, the number of A-share listed firms which disclosed CSR information rose from 357 in 2008 to 639 in 2012 (Table 1)^{iv3}. At the same time, the mean of CSR rating rose from 29 (scored out of a maximum 100) in 2008 to 39 in 2012 (Table 2). As we use firm level fixed effects in our analysis, we remove any sample selection bias that may arise from time invariant firm-level unobservables affecting both the decision to report CSR ratings and the rating themselves. We do not have good instruments for the reporting decision, so do not attempt further corrections for sample selection bias and our results should be interpreted as being conditional on the firm reporting CSR information.

“TABLE 1 GOES ABOUT HERE”

“TABLE 2 GOES ABOUT HERE”

Econometric Specification

Given that we are using panel data, we use a firm-level fixed effects estimator to allow for unobserved firm-level heterogeneity. The advantage of this estimator over simple regression is to remove potential biases from correlations between the firm-level fixed effects and the observed explanatory variables. A particularly important source of firm fixed effects may be selectivity: the number of firms with CSR ratings increased over the period and this was unlikely to be random.

In general terms, the model relates effects of CSR ratings, R_{it} , of firm i in year t to a set of time varying explanatory variables, X_{it} :

$$R_{it} = X_{it}\beta + a_i + e_{it} \quad (1)$$

where, a_i is unobservable and time-invariant firm-level fixed effect and e_{it} a random error term. As the firm-level fixed effects may be correlated with the explanatory variables, the model is estimated by demeaning the variables using the within groups transformation. The focus of the model, therefore, is on how short-term changes in explanatory variables over time affect CSR ratings of listed firms: it does not use long-term information on differences in variables across these firms.

While the contemporaneous model in equation (1) may be valid, we prefer a lagged specification as in equation (2):

$$R_{it} = X_{it-1}\beta + a_i + e_{it} \quad (2)$$

Equation (2) allows for probably delays in publishing information – typically, CSR ratings in a given year t are likely to be based on the corporate performance in previous years. Using lagged explanatory variables may also reduce some of the potential simultaneity problem– for example, if high CSR ratings lead to high sales and hence high profits.

Hypothesised Determinants of CSR

Before explaining the independent variables used as the hypothesised determinants of CSR ratings, we first introduce definitions in Table 3 and then provide summary statistics of these variables in Table 4. Most variables in Table 4 are presented as ratios, with the length of the supply chain, the number of employees and average wages being taken in logarithmic form.

“TABLE 3 GOES ABOUT HERE”

“TABLE 4 GOES ABOUT HERE”

We now explain the rationale for each selected independent variable in turn.

Profitability

Given the large influence of the state on the listed firms in mainland China and potential divorce between ownership and control in the private sector, it is likely that there is heterogeneity in the corporate objectives of these firms. Some listed firms may focus on profit maximisation while others may have managerial or political goals. Taking the stance of Friedman (1962), a firm that aims at profit maximisation would regard spending on social benefits as other corporate costs, which should be minimised to further the interests of owners and shareholders (Kitzmueller and Shimshack, 2012). Hence, to the investors (owners or other types of stakeholders), CSR is a luxury, or seen as the cost for virtue. One might expect those firms which aim to maximise profits to also realise more profits. Consequently, a (potentially naïve) hypothesis is that firms with higher profits will have lower CSR ratings.

Nevertheless, there are serious caveats to this hypothesis – notably that high profits may denote anti-competitive or transitory conditions, rather than a more profit-oriented firm. In the long run, under perfect competition, all surviving firms maximise profits but earn only normal levels of profit. Conversely, if a monopolistic firm is protected from competition, it may earn supernormal profits but in the words of Hicks (1935), enjoy a “quiet life” and not maximise profits. The Friedmanite view that profit maximising firms will drive out managerial firms, while intuitive, is not always valid in oligopolistic markets: for example, in a Cournot duopoly, a sales maximiser earns more profits than a profit maximiser (Vickers, 1985). A positive relation between profits and CSR ratings may also arise when firms are finance constrained, if retained profits are used to fund CSR activities.

Managers' share ownership

A firm's CEO and other senior executive managers are very important to its economic performance, but their behaviour can be difficult to monitor or to specify in a contract. Without constraints, executive managers may set non-profit maximising objectives – for example, seeking corporate growth for the managerial perks that may come with size or perhaps enjoying a quiet life, accommodating the interests of workers and other interest groups, rather than shareholders. In order to motivate them to devote their

efforts to promoting the interests of shareholders, executive managers are often allocated a shareholding in the firm. In our dataset, the mean percentage of listed firm shares held by executive managers is 2%, although it is much higher in some listed firms with 63% being the maximum. Tan et al. (2001) examine the effect of managers' share ownership on firm performance and find that the two are jointly determined. This is to say, firm performance affects managerial share ownership positively and in turn, managerial share ownership has a positive effect on corporate performance. Executive managers' share ownership affects CSR ratings, for example, by aligning the interests of managers with those of the owners or investors of the firm. If senior executive managers are given a greater shareholding in the firm, they have incentives to minimise the costs associated with CSR, potentially negatively affecting the firm's CSR rating.

Length of control chain

Many firms in China are part of a pyramid structure of control, whereby one firm at the bottom of the pyramid is partly owned by another firm above it, which in turn may be controlled by a third firm higher up and so on (Bradford et al., 2013). Pyramids are usually created by the ultimate owner as a means to take control over a chain of companies (La Porta et al., 1999). Such structures create an internal capital market with funds being able to be re-allocated from one firm to another in the pyramid (Wang and Xiao, 2009). If control chains strengthen the control of ultimate owners, they may reduce CSR ratings by strengthening the profit motive.

Tobin's Q

At a company level, Tobin's Q is defined as the ratio of the market value of its assets to their book value (James, 1969):

$$Tobin's\ Q = \frac{equity\ market\ value}{equity\ book\ value}$$

This ratio is often used as a proxy for the likely profitability of future investment. When Q is greater than 1, a firm is more likely to make capital investment as its assets are worth more than the price paid for them (Hayashi, 1982). If Q is less than 1, the firm is under-valued. Consequently, we use Tobin's Q

to see if how potential returns to investment affect CSR ratings. We hypothesise that if there are high returns to conventional firm investments, they may wish to allocate finance to those, rather than to CSR.

Average wage and size of employment

Labour often forms the bulk of a firm's costs and so, by arguments analogous to the naïve hypothesis about profits and CSR, one might expect profit maximising firm to keep labour costs low and also have a low CSR rating. High labour costs may signal a rent-sharing rather than profit maximising firm; that is to say, one where workers have secured a larger proportion of firm profits. More generally, firms paying their employees decent wages and welfare is regarded as being socially responsible narrowly defined and so likely to boost CSR ratings. Although workers do not participate in the process of decision-making on CSR activities, CSR codes of conduct regulate firms' treatment of their employees (Yu, 2009). For example, in a case study by Yu, workers' dynamic participation was found to open better communication channels, enhance training programs, and obtain a well representative position within the firm. We include the average wage as an explanatory variable, to see if increasing average wages over time contributes positively to CSR ratings. However, just as high profits do not necessarily imply profit maximisation, high wages do not necessarily imply rent-sharing – they may merely indicate a highly productive workforce (e.g. due to highly skilled employees).

Aside from the average wage, the size of employment is another proximate cause of labour costs. We control for this in our estimations, as the number of employees is typically used to measure firm size, with large firms often seen as more “managerial” in their objectives, rather than purely profit-maximising. Additionally, there are likely to be fixed costs in attaining CSR (for example, providing appropriate documentation) and it is likely to incur less of burden to large companies. Conversely, the corporate benefits of CSR – for example, if it generates customer goodwill – may well scale with firm size. Given our use of firm fixed effects, the estimated coefficient on firm size will capture variations over time (the “within groups” estimator). Growing firms may have more resources to devote to raising CSR ratings.

Corporate tax

Paying corporate tax is a one thing that links a firm to the society. Christensen and Murphy (2004:37) argued that tax revenues are “the lifeblood of democratic government and the social contract”. Standards for CSR include requirements for tax behaviour, including requirements to publish all necessary accounting information and to refrain from the use of profits-laundering vehicles created without substantial economic purpose. However, tax avoidance is common and can be done legally. Hoi, Zhu and Wang (2013: 2025) find that firms with “*excessively irresponsible CSR activities are more aggressive in avoiding taxes*” and they do so to “*enable tax avoidance in every jurisdiction*” they can. Consequently, we hypothesise a positive relation between tax payments (as a share of revenue) and CSR ratings.

RESULTS AND DISCUSSION

Table 4 presents our core results on the determinants of CSR ratings using company-level fixed effects models, estimated contemporaneously (equation 1) and with a one year lag (equation 2). Both models are estimated with robust standard errors because the random error term e_{it} could be subject to heteroscedasticity and autocorrelation. The lagged model has more explanatory power with an overall R-squared of 0.34 compared to 0.24 for the fixed-effect model; the within groups R-squared of the model with lags is more than double that without. In what follows, we focus on the results of this lagged model, which is our preferred approach on *a priori* grounds, but mention the contemporaneous model results where interesting.

“TABLE 5 GOES ABOUT HERE”

There is a significant negative relationship between firm profits and CSR ratings in the contemporaneous model, *ceteris paribus* (henceforth, statistical significance is evaluated at the 5% level unless otherwise stated). At first glance, this seems consistent with Friedman’s view that the pursuit of profits is inconsistent with adherence to CSR. However, in our preferred lagged specification, the

coefficient becomes close to zero and wholly insignificant when profits are entered with a one period lag. We interpret this lagged relation as implying that profits are *not* a robust determinant of CSR ratings. The fact that the contemporaneous relationship is negative contradicts the notion that a high CSR rating might immediately translate into higher revenues. Instead it might reflect increased costs due to CSR activities.

How much senior executive managers can directly benefit from the firm's performance has a negative relationship with CSR ratings but it is insignificant at the 5% level in both contemporaneous and lagged specifications. The negative sign is consistent with the hypothesis that incentivizing managers to increase their company's share value may come at the expense of CSR, but given our findings are insignificant in this pooled sample. Later, when we disaggregate between state owned and other firms, the effects are significant for both subsamples.

The length of the control chain is positively related to CSR ratings, but the coefficient is not statistically significant. However, it should be noted that given our fixed effects estimator, what is being captured is whether changing the length of the control chain in a given year affects CSR rating in that year (or the year after). The effects of such organizational changes may take longer to filter through and affect CSR outcomes.

The market value of a firm's shares relative to their book value (Tobin's Q) has a significant positive relationship with CSR rating in the lagged model in Table 4 (in the contemporaneous model, it is wholly insignificant). Tobin's Q was originally proposed as a determinant of investment, with $Q > 1$ implying further expansion would be profitable. Consequently, we hypothesized that it might reduce CSR ratings, as firms might wish to channel scarce funds into conventional economic investments instead of the activities that might promote CSR. Our results reject this hypothesis and present something of a puzzle. One tentative explanation is that as Tobin's Q partly reflects the intangible assets of the firm, these may include some that are favorable to CSR – such as the goodwill of potential clients. If a company is developing a favorable image for social responsibility, this may increase its market value and then be recognized by higher CSR ratings.

Both components of a company's wage bill – the size of the workforce and the average bill – are significantly and positively related to CSR ratings. This is true in both versions of the model in Table 4, but the relationship is much stronger in the version of the model using lagged values. As the two variables are in natural logs, we can interpret the coefficient as the effect on the CSR rating of doubling values. Doubling either the workforce or average wages would raise the CSR rating by around seven points in the lagged model. In terms of the standardized coefficient, the size of the workforce has the largest absolute value in the Table 5. A one standard deviation rise in the size of the workforce would raise CSR ratings by ten points (three quarters of a standard deviation of CSR), whereas for average wages, the equivalent rise would be six points. These findings suggest that increasing the size and wages of a company tends to lead to higher CSR ratings. Several tentative explanations might be given for the effect of employment on CSR. It may be that as a firm increases in size, it changes its objectives – perhaps becoming more managerial (rather than profit-maximizing) in their objectives - and thus be more willing to take on CSR activities. However, this explanation seems rather long-term whereas we are considering year-on-year changes in employment. A shorter term explanation is that some of any additional employment may be dedicated to work on such activities. Alternatively, the effect of the employment variable may capture firm growth more broadly and growing firms may be more likely to see rises in their CSR ratings (stagnant or declining firms may not have the resources, labor or otherwise, to devote to CSR). The positive effect of high wages on CSR is perhaps more straightforward to interpret. Generous remuneration may lead to the company being rewarded in CSR ratings for its treatment of one of its most important groups of stakeholders, the workforce.

Another stakeholder for the listed firms is the government, which benefits directly from taxes paid by the company. The tax rate has a positive effect on CSR in Table 5, but effect is only significant in the contemporaneous model. The coefficient in the latter model is very large, but the rate of corporate tax actually paid in the sample is rather low (less than 3% on average), so the standardized coefficient is modest – a one standard deviation rise in the tax rate being associated with only a 1.7 rise in the CSR rating, *ceteris paribus*. Given that the effect of the tax rate is insignificant in the lagged model, one must

be cautious in making strong causal inferences about the effect of the variable. It seems that rising CSR ratings are associated with rising corporate tax payments but the direction of causality is unclear.

The motivations of state owned enterprises (SOEs) may differ fundamentally from those of profit-maximizing private companies, so Table 6 splits the sample into two broad categories by ultimate ownership, separating SOEs and non-SOEs. SOEs form the majority of our sample, outnumbering the rest by around two to one. The findings discussed previously for the pooled sample largely hold for the two sub-samples. In particular, the two labor-related variables – average wages and the number of employees – both have significant positive effects on CSR ratings. The other significant explanatory variable, Tobin’s Q, in the pooled model is only significant for non-SOEs. However, it is fairly close to significance for SOEs and a Wald test does not reject equality of the coefficient across the two samples. Interestingly, manager’s share ownership, which had a negative effect that was only “suggestive” in Table 4, is significantly negative in both sub-samples in Table 6.

“TABLE 6 GOES ABOUT HERE”

CONCLUSIONS

CSR is a relatively new concept in the Chinese business community, but it has become mainstream in the past decade with the leading companies being comprehensively rated for their CSR performance. Analyzing panel data for all rated A-share listed firms in mainland China from 2008-2012, we have identified the proximate determinants of their CSR ratings. To reduce the biases from unobserved firm-level heterogeneity, we employ firm-level fixed effects estimators and so focus on the effects of year to year changes in hypothesized determinants (“within group” estimates), rather than time invariant factors or longer run differences between firms (“between group” estimates). Given the likely lags in CSR ratings and to reduce simultaneity, we focus in particular on how changes in determinants in one year affect CSR ratings in the following year. Our broad conclusion is that the CSR agenda aligns with the interests of workers, but not capital.

It is often assumed, following Friedman, that CSR comes at the expense of profits and so pure profit-maximizing firms might therefore be less likely to pursue CSR goals. Our estimates show no effect of firm profits on subsequent CSR ratings, although there is a negative contemporaneous relation that might be consistent with Friedman's position. This points to a tension between profit maximizing objectives and firms' social responsibilities. This is reinforced by our findings on managerial share ownership – at least when disaggregating between state and non-state firms. We find that giving managers more incentives – through share ownership - to maximize share-holder value is associated with lower CSR ratings, *ceteris paribus*.

Conversely, workers' interests seem to align with the CSR agenda – both wages and employment are strongly linked to CSR ratings. As companies become larger (in terms of workforce) and/or raise pay, CSR ratings rise correspondingly. This is likely to be in part because good treatment of workers – as important company stakeholders - is valued by CSR. The effect of firm size, may also reflect fixed costs of CSR activities or the increased resources likely to be available to a growing firm. Interestingly, Tobin's Q – a measure of the incentive for conventional economic investment – is also positively related to CSR performance. This may reflect some aspects of CSR – for example, a reputation for favorable treatment of various stakeholders - being valuable intangible company assets. This echoes Becker's caveat that CSR may be compatible with profit maximization to the extent that it is valued by the company's workers and customers.

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Table 1. The Sample: number of A-share listed companies with CSR Ratings by ownership and by year (2008 – 2012)

Controlling shareholder	2008	2009	2010	2011	2012	Total observations
Central government	91	123	132	157	173	676
Local government	160	189	194	213	231	987
Private national	102	119	143	180	226	770
Foreign-funded enterprise and others	4	6	6	9	9	34
Total	357	437	475	559	639	2,467

Sources: A sample of A-share listed firms at SSE and SZSE, drawn from Chinese Stock Market Financial Statements Database (CSMAR 2008-2012).

Table 2. Descriptive statistics on CSR rating by year

Variable	Mean	Std. Dev.	Min	Max	Number of firms
2008	29.4	9.7	15.2	72.1	357
2009	32.5	12.1	11.7	78.7	437
2010	34.7	13.8	13.3	81.5	475
2011	37.1	13.4	15.1	83.7	559
2012	38.9	12.3	18.5	84.0	639

Data source: Rankin CSR ratings

Table 3. Definitions of variables used for the analysis

Variable	Definition
CSR rating	Rankin Corporate Social Responsibility Rating (0-100)
Profit rate	Profits as a share of revenue
Executive share ratio	Proportion of firm shares held by executive managers
Control chain length (log)	Number of levels in corporate pyramid structure (1=standalone firm) (logged)
Tobin's Q	Equity market value divided by equity book value
Average wage (log)	Total wage bill divided by number of employees (logged)
Employees (log)	Number of employees (logged)
Tax rate	Corporate tax paid as a share of revenue

Table 4. Descriptive statistics of all variables

Variable	Mean	Median	Std. Dev.	Min	Max
CSR rating	35.169	31.900	12.893	11.690	84.019
Profit rate	0.146	0.099	0.185	-1.148	2.150
Executive share ratio	0.019	0.000	0.074	0.000	0.630
Control chain length (log)	0.787	0.693	0.401	0.000	2.079
Tobin's Q	2.060	1.588	1.544	0.705	33.674
Average wage (log)	11.341	11.283	0.827	0.000	16.972
Employees (log)	8.327	8.193	1.528	3.258	13.223
Tax rate	0.028	0.157	0.037	-0.269	0.418

Notes:

- (1) Data source: CSR rating is obtained from the Rankin CSR ratings. 'Control chain length' is collected manually from firms' CSR annual reports. Other variables are adopted from Chinese Stock Market Financial Statements Database (CSMAR 2008-2012).
- (2) The number of observations included in Table 4 is 2,437.

Table 5. Determinants of CSR ratings, company fixed effects models, contemporaneous and with a one year lag

Dependent Variables	(1) Contemporaneous model		(2) Model with lagged determinants	
	Coefficient	T-ratio	Coefficient	T-ratio
Profit rate	-7.986	-2.27*	-0.973	-0.41
Executive share ratio	-7.291	-1.64 †	-18.526	-1.52
Control chain length (log)	1.971	1.48	0.882	1.11
Tobin's Q	-0.032	-0.10	0.361	2.96 **
Average wage (log)	1.757	1.81 †	6.999	11.90 **
Employees (log)	2.587	2.77 **	6.389	11.62 **
Tax rate	45.702	2.58**	9.493	1.06
Constant	-7.754	-0.42	-97.295	-9.15**
No. of observations	2,467		1,759	
No. of companies	706		596	
R-squared				
Within company	0.08		0.16	
Between company	0.22		0.32	
Overall	0.24		0.34	

Notes:

(1) **p<0.01, *p<0.05, † p<0.10

(2) Models include fixed effects for each company. T-ratios are calculated using robust standard errors.

Table 6. Contemporaneous and one-year-lagged models: determinants by SOEs and non-SOEs

	State-owned				Non-State-owned			
	(1) Contemporaneous model		(2) Model with lagged determinants		(1) Contemporaneous model		(2) Model with lagged determinants	
	Coefficient	T-ratio	Coefficient	T-ratio	Coefficient	T-ratio	Coefficient	T-ratio
Profit rate	-4.325	-1.190	0.073	0.01	-5.405	-2.170*	-2.193	-0.79
Executive share ratio	79.713	0.910	-303.335	-2.31*	-7.866	-1.950*	-18.624	-2.46*
Control chain length (log)	3.170	2.040*	1.575	1.57	-0.388	-0.180	-1.121	-0.77
Tobin's Q	-0.548	-2.200*	0.277	1.55	-0.346	-1.910 +	0.411	2.23*
Average wage (log)	2.166	5.140**	7.144	9.85**	3.051	6.800**	6.903	7.42**
Employees (log)	2.819	1.070**	6.613**	9.98**	4.163	7.700**	5.692	6.98**
Tax rate	34.175	1.970*	9.803	0.49	24.942	0.025*	10.874	0.96
Constant	-14.602	-2.41*	-102.231	-7.66*	-32.217	-3.980**	-87.242	-6.51**
# observations	1663		1218		804		541	
# groups	446		392		271		212	
R-squared								
Within	0.0780		0.1485		0.1619		0.2302	
Between	0.2355		0.3351		0.1574		0.1841	
Overall	0.2765		0.3657		0.1621		0.1847	

Notes:

(1) **p<0.01, *p<0.05, + p<0.10

(2) Models include fixed effects for each company. T-ratios are calculated using robust standard errors.

ⁱ A variety of different measures of CSR have been used in the literature. For example, Balabanis et al. (1998) use metrics of social merits like women's position, ethnic minority, philanthropy and environmental action to show their correlations with economic performance by the top British Companies. In a recent paper, drawn from KLD data, Short et al. (2016) use a set of variables proxying for 'local community strength', 'concerns' and 'diversity strength' to examine trends in the effect of CSR.

ⁱⁱ In this analysis, we only retain the firms which disclose CSR ratings during the data period. Since our purpose is to estimate the variation in the rating not on a binary decision of whether CSR disclosure is made, we do not consider the sample is of a selection bias.

ⁱⁱⁱ Three types of shares are issued in China. A-share is denominated in RMB which can be traded on either Shanghai or Shenzhen Stock Exchanges by all investors, Chinese or international. B-share is traded in US dollars but only on Shanghai Stock Exchange whilst in Hong Kong dollars on Shenzhen Stock Exchange. B-shares can only be traded by foreign investors (i.e., non-PR Chinese nationals). H-shares are issued by Chinese companies to foreign investors on Hong Kong, New York or London Stock Exchanges (Cheung, Jiang and Tan, 2012).

^{iv} The concept of CSR has only been considered by Chinese companies relatively recently: in 2006, only 18 Chinese companies produced annual CSR reports.