**The brighter side of being socially responsible: CSR ratings and financial distress among**

**Chinese state and non-state owned firms**

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**Abstract**

We examine the effect of corporate social responsibility (CSR) quality ratings on the financial distress levels of Chinese enterprises by using the previously unexplored new China-specific Altman “*ZChina* Score” in the context of CSR and data from 749 firms over the 2009-2014 period. First, we find that CSR quality ratings significantly reduce Chinese firms’ distress levels. Second***,*** we find that the ability of CSR to reduce distress levels in non-state-owned Chinese firms is higher than state-owned ones.Finally, we find similar results when we divide the data into high-low CSR ratings and levels of distress. Our results are robust to potential endogeneities.

**Keywords**: Corporate Social Responsibility (CSR) Quality Ratings, Financial distress, Altman *ZChina*Score, State and Non-State Owned Firms, China

**JEL codes**: G33, M14, M21, M41

1. **Introduction**

A recent wave of literature (see Elamer et al. 2017; Hoi et al. 2013; Minor and Morgan 2011; Vanwalleghem 2017) has highlighted the nexus between firms’ corporate social responsibility (CSR) practices and risk management mechanisms. These studies suggest that better CSR activities and performance can decrease the levels of financial distress (Al-Hadi et al. 2017; Gross 2009); increase the credit ratings (Attig et al. 2013), and play a positive role in case of bankruptcy of firms (Gupta et al. 2016). Discernibly, the limited empirical evidence on such risk mitigating nature of CSR performance that originates mainly from developed markets has been investigated by employing different financial distress or bankruptcy models particularly that of Altman’s (1968) and Almeida and Campello’s (2007). However and as has been underlined by Altman et al. (2007), we argue that the application of these models in the context of Chinese firms may not be realistic and can lead to inconsistent results due to the wide differences between the accounting and financial reporting procedures of Chinese and Western firms. Due to this, Altman et al. (2007) developed a new and unique Chinese model named “*ZChina* Score” and determined the relationship between bond’s rating and financial distress of Chinese firms. Our objective, therefore, is to empirically investigate how CSR performance (ratings) affect financial distress by measuring the latter with this new China-specific “Altman *ZChina*Score”.

Consequently, we seek to contribute to the existing literature in several ways. First, we explore the extent to which the impact of CSR ratings on financial distress varies by the ownership type (i.e., state-owned and non-state owned Chinese enterprises). Previous studies from Chinese context have examined the effect of ownership structure on CSR ratings (Lau et al. 2016; Li and Zhang 2010) and distress resolutions of firms (Joseph et al. 2013; Poncet et al. 2010), but not on financial distress, especially using this new China-specific “Altman *ZChina*Score”. The distinctive state-ownership structure of Chinese firms, however, allows us to uniquely segregate the data into different panels according to ownership structure in order to achieve our above research objective. Second, we also allow the impact of CSR on financial distress to differ by the level of CSR ratings (high vs low CSR ratings) and the level of firm distress exposure (distressed, potentially distressed and healthy firms). Third, to control the dissimilarities in firm characteristics between state and non-state owned firms, we employ the propensity score matching (*PSM*) approach as used in some sustainability-related studies (Al Abri et al. 2017). Also, to manage potential endogeneity issues, we apply the two-step Generalized Methods of Moments (*GMM*) and two-step least squares (*2SLS*) techniques. To the best of our knowledge, the extant literature is still silent on the investigation of such relationship in the context of the Chinese market using the new China-specific “Altman *ZChina*Score”.

1. **Literature review**

CSR, defined as “actions that appear to further some social good, beyond the interests of the firm and that which is required by law’’ (McWilliams and Siegel 2001, p. 17), has generated a large volume of academic research over the past century (Haque and Ntim 2017; Ntim 2016; Ntim and Soobarooyen 2013a, b; Soobaroyen and Ntim 2013). The contemporary research on the consequences of engaging in CSR has also been extended to the field of risk management (Elamer et al. 2017; Ntim et al. 2013). Risk management perspective (Godfrey et al. 2009; Minor and Morgan 2011) argues that a firm’s CSR performance can provide shield or cover against financial qualms and adverse financial effects. Studies in this context have examined the risk shielding nature of CSR in relationship with the credit ratings (Attig et al. 2013), cost of equity capital (El Ghoul et al. 2011), tax avoidance (Hoi et al. 2013) and credit risk (Stellner et al. 2015), amongst others. However, a rather scarce literature (Al-Hadi et al*.* 2017; Gross 2009; Gupta and Krishnamurti 2016) has extended this risk shielding aspect of CSR in connection with a significant feature of firms (i.e., financial distress). For example, Gross (2009) found a significant impact of CSR performance in the determination of the firm distress level by examining CSR rating data from Kinder, Lydenberg and Domini (KLD) for 650 companies from the U.S. Gupta and Krishnamurti (2016) examined that whether CSR engagement helps firms, which are already in bankruptcy stage. While investigating the U.S. firms, Gupta and Krishnamurti (2016) divided the CSR into moral and exchange capital and found that both of these capitals increase the firm’s chances of recovering from the bankruptcy, and the ability of moral capital to take firm out of the adverse situation is more than exchange capital. Similarly, Al-Hadi et al. (2017) studied the CSR and financial distress nexus by empirically examining 651 Australian listed firms from 2007 to 2013 period. Their findings revealed that positive engagement in CSR activities significantly decreased the financial distress of Australian firms. They also investigated the moderating role of different stages of the firm life cycle on the above relationship and showed that the potential of CSR engagement to reduce firm’s financial distress level is more prevalent in the mature life cycle stages than other stages.

In addition to this, the presence of state ownership is a distinct feature of Chinese listed firm (as cited by Li and Zhang 2010; See 2009). Previous studies from Chinese context have examined the effect of ownership structure on CSR ratings (Lau et al. 2016; Li and Zhang 2010) and distress resolutions of firms, but not on financial distress (Poncet et al. 2010). Relevant studies argued that firms with state ownership have government as a last resort in case of adverse financial situations and the distress situations may be resolved by the intervention of the government in the form of financial backing or aid (Poncet et al. 2010). On the other hand, non-state-owned (private and foreign) firms lack this financial backing of the government and are more inclined to engage in those activities, which can provide protection or shield against such negative financial incidents. It brings forth an interesting research gap to explore the ability of CSR performance to reduce financial distress in different panels segregated according to the state or non-state owned firms in the context of Chinese listed firms.

However, the literature is still silent on CSR-financial distress relationship in the context of emerging markets, and this study has drawn on the arguments of Altman et al. (2007) and Zhang et al*.* (2010) that the generalizability of the findings of developed markets is not possible in the context of China. Accordingly, this study uses the Altman *ZChina*Score as main proxy for the measurement of financial distress. Further, drawing on the previous arguments on ownership structure in China, we conjecture that the mitigating effect of CSR on financial distress will be more significant in case of non-state owned firms than the state-owned firms.

1. **Data and econometric methodology**

We took “Rankins CSR ratings” from *HEXUN* Chinese website, and financial and accounting data from the *CSMAR* database, making a total of 3,171 firms’ year observations for 749 Chinese firms from 2009 to 2014. Previous studies about CSR have used these renowned databases (Li and Foo 2015; Marquis and Qian 2014). We estimated the effect of CSR ratings on the new China-specific “Altman *ZChina* Score” of the firms by applying the following regression model:

$AZ\\_CHINA\_{it}=b\_{0}+β\_{1}CSR\\_SCORE\_{it} +\sum\_{i=1}^{n}β\_{i}CONTROLS\_{it} + ε\_{it}$ **(1)**

Where *AZ\_CHINA* represents our outcome variable of the financial distress *Z-score* for China developed by Altman et al. (2007) and *CSR\_SCORE* is our proxy for primary predictor variable of CSR performance (i.e., the CSR rating score). *CONTROLS* refer to the control variables used in the study, namely firm size, quick ratio, net profit margin, sales growth, leverage, cash to assets ratio, loss, and industry and year dummies in line with previous studies (Al-Hadi et al. 2017; Elmagrhi et al., 2016; Gupta et al. 2016; Ntim, 2013a, b, 2012). The detailed description and measurement of all these employed variables are given in Appendix A.

We engaged the *PSM* technique of Rosenbaum and Rubin (1983) to control for differences in ownership structure (i.e., state-owned – treatment group and non-state owned – control group). To develop the matched sample, we first estimated a logit model with a dummy variable for state ownership on our all variables and applied the logit regression’s coefficients to determine the propensity score. The treatment and control groups were matched with the nearest propensity score, and it gave us two groups of firms, which were alike in observable characteristics, but dissimilar in ownership structure. Further, to tackle the presence of potential endogeneities due to simultaneity and reverse causality in our regression model, we used the instrumental variables technique of Wooldridge (2010) by running *2SLS* and *GMM*. We employed industry median CSR as our instrumental variable, as previous studies (Al-Hadi et al. 2017; Cui et al. 2016; Ntim et al., 2012; Tunyi & Ntim, 2017) have also used industry mean/median, as valid instruments in CSR related studies. Apart from prior findings, we argue that firms’ CSR is possible to differ substantially due to differences across industries in relevance to products, controlling environment and changes in societal norms (McWilliams and Siegel 2001), and thus, industry mean/median can be valid instruments.

1. **Empirical findings and discussion**

Appendix B illustrates the descriptive statistics and Appendix C contains the correlation and Variance Inflation Factor (VIF) values. For brevity, we do not discuss these in detail. However, detailed results can be provided upon request. The VIF values are way below the standard threshold, portraying no issues of multicollinearity. Table 1 depicts the results of post-match mean difference test between treatment and control group using *PSM* for our predictor variables. The *p*-values represent that no significant difference exists for our main predictor and almost all control variables for the panels with and without state-ownership for the matched sample.

**Table 1. Mean difference test between treatment and control group using PSM**

|  |  |  |
| --- | --- | --- |
| Variable | Mean | t-test |
| **Treated (n=1936)** | **Control (n=999)** | **t**  | **p>t** |
| CSR\_SCORE | 3.543 | 3.539 | 0.440 | 0.660 |
| Firm size | 23.239 | 23.191 | 1.110 | 0.268 |
| Quick ratio | 0.785 | 0.771 | 0.450 | 0.655 |
| NPM | 0.085 | 0.085 | -0.010 | 0.993 |
| Sales Growth | 0.150 | 0.553 | 0.240 | 0.814 |
| Leverage | 0.537 | 0.552 | -2.590 | **0.010** |
| Cash | 0.151 | 0.158 | -2.030 | **0.042** |
| Loss | 0.095 | 0.145 | -4.810 | **0.000** |

Table 2 contains the regression results and the endogeneity check for our investigated question. We find a significant result for the nexus between *CSR\_SCORE* and *AZ\_CHINA*, while controlling for industry and year fixed-effects. Altman et al. (2007) described the ranges for firm distress level: (a) distressed firms (when *ZChina*Score is less than 0.5); (b) potentially distressed firms (when *ZChina*Score is between 0.5 and0.9); and (c) healthy firms (when *ZChina*Score is higher than 0.9). The significant positive coefficient of 0.060 in Model 1 shows a decreased level of firm’s financial distress (as the higher *ZChina*Score shows healthy firms), thus depicting a negative association with firm’s CSR.

**Table 2. Regression results and endogeneity tests**

|  |  |
| --- | --- |
|  | AZ\_CHINA |
| Model (1) | Model (2) | Model (3) |
| LSDV | 2SLS | GMM |
|   |   |   |   |
| CSR\_SCORE | 0.060\*\* | 0.395\* | 0.395\* |
|  | [0.012] | [0.056] | [0.056] |
| Firm size | 0.036\*\*\* | 0.003 | 0.003 |
|  | [0.000] | [0.897] | [0.897] |
| Quick ratio | -0.065\*\*\* | -0.065\*\*\* | -0.065\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| NPM | 2.716\*\*\* | 2.750\*\*\* | 2.750\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| Sales growth | 0.114\*\*\* | 0.116\*\*\* | 0.116\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| Leverage | -1.650\*\*\* | -1.583\*\*\* | -1.583\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| Cash | 1.068\*\*\* | 1.031\*\*\* | 1.031\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| Loss | -0.351\*\*\* | -0.340\*\*\* | -0.340\*\*\* |
|  | [0.000] | [0.000] | [0.000] |
| Constant | 0.284\*\* | -0.090 | -0.090 |
|  | [0.025] | [0.721] | [0.721] |
|  |  |  |  |
| Industry FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| Observations | 2,980 | 2,980 | 2,980 |
| R-squared | 0.759 | 0.743 | 0.743 |
| F-Stat | 266.1 | 240.4 | 240.4 |
| F-Prob | 0 | 0 | 0 |
| Kleibergen-Paap rk LM statistic |  | 30.937 | 30.937 |
| p-value |  | 0 | 0 |
| Cragg-Donald Wald F statistic |  | 37.693 | 37.693 |

Robust p-value in brackets \*\*\* p<0.01, \*\*p<0.05, \*p<0.1

It implies that with increased CSR performance, the financial distress score of a firm is also likely to increase, thus overwhelming the potential bankruptcy or default and consequently reducing the financial distress level of the firm. Al-Hadi et al. (2017) also found similar coefficient, while studying Australian companies by using other models of financial distress (suited for developed markets). In Models 2 and 3, we used industry median CSR as the instrumental variable and re-estimated the regression with *2SLS* and *GMM* techniques. We again found strong positive and significant coefficient for our major predictor variable. Also, the strength of the instrumental variable used is high as the standard tests of “*Kleibergen-Paap rk LM statistic*” and “*Cragg-Donald Wald F statistic*” are significant, and the value of the latter is well above the recommended threshold of 10. Lastly, almost all of our control variables are also significantly associated with the financial distress score.

Table 3 reveals the panel regression results according to the ownership structure, levels of CSR ratings and financial distress level of Chinese firms. While comparing state and non-state owned firms, we also divided non-stated owned enterprises into “Private”, and “Foreign” owned firms. Our regression results in Models 1 and 2 indicate a positive and significant relationship between the CSR ratings and the *AZ\_*China score, which shows that the CSR ratings of both state-owned and non-owned reduce their financial distress level. The coefficient for non-state firms is higher than the state-owned ones which depict that CSR ratings reduce financial distress more in the non-state owned firms in comparison to their counterparts. In Model 3 and 4, we found significant results for private owned firms, implying the negative effect of CSR on financial distress. However, we did not find a significant relationship in case of foreign-owned firms. In Models 5 and 6, we again divided firms into panels of “high and low CSR scores” by using median value as a cutoff point (i.e., High-CSR – greater than median value and Low-CSR – less than median value). Though the coefficients are positive for both high and low CSR scores, implying that firm’s financial suffering can be lessened with enhanced CSR performance, however, we find statistical significance for Low-CSR score only. Models 7, 8 and 9 show the results for firms with different levels of financial distress score (according to the ranges defined by Altman et al. 2007).

**Table 3**. **Panel regressions according to ownership, high-low CSR and distress levels of firms**

|  |  |  |
| --- | --- | --- |
|  |  | AZ\_CHINA |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| SOE | Non-SOE | Private | Foreign | High-CSR | Low-CSR | Distressed Firms | Potentially Distressed Firms | Healthy Firms |
|  |  |  |  |  |  |  |  |  |  |
| CSR\_SCORE | 0.058\*\* | 0.117\*\* | 0.081\* | 0.228 | 0.005 | 0.163\*\*\* | -0.033 | 0.008 | 0.047 |
|  | [0.030] | [0.011] | [0.089] | [0.337] | [0.907] | [0.006] | [0.306] | [0.562] | [0.205] |
| Firm size | 0.025\*\*\* | 0.118\*\*\* | 0.106\*\*\* | 0.265\*\*\* | 0.022\*\*\* | 0.062\*\*\* | 0.028\*\*\* | 0.002 | 0.048\*\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.000] | [0.007] | [0.000] | [0.000] | [0.634] | [0.000] |
| Quick ratio | -0.076\*\*\* | -0.048\*\*\* | -0.045\*\*\* | -0.063\* | -0.074\*\*\* | -0.060\*\*\* | -0.005 | 0.005 | -0.062\*\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.086] | [0.000] | [0.000] | [0.818] | [0.543] | [0.000] |
| NPM | 2.647\*\*\* | 2.752\*\*\* | 2.977\*\*\* | 2.075\*\*\* | 2.980\*\*\* | 2.531\*\*\* | 2.375\*\*\* | 0.410\*\*\* | 2.400\*\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| Sales growth | 0.123\*\*\* | 0.097\*\*\* | 0.078\*\* | 0.072 | 0.102\*\*\* | 0.111\*\*\* | -0.005 | 0.014 | 0.172\*\*\* |
|  | [0.000] | [0.008] | [0.036] | [0.632] | [0.001] | [0.000] | [0.830] | [0.256] | [0.000] |
| Leverage | -1.628\*\*\* | -1.749\*\*\* | -1.705\*\*\* | -2.788\*\*\* | -1.714\*\*\* | -1.612\*\*\* | -0.885\*\*\* | -0.312\*\*\* | -1.312\*\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| Cash | 1.258\*\*\* | 0.774\*\*\* | 0.740\*\*\* | -0.169 | 1.113\*\*\* | 1.059\*\*\* | 0.266\*\* | 0.093\*\* | 0.923\*\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.769] | [0.000] | [0.000] | [0.030] | [0.045] | [0.000] |
| Loss | -0.329\*\*\* | -0.406\*\*\* | -0.393\*\*\* | -0.348 | -0.335\*\*\* | -0.359\*\*\* | -0.237\*\*\* | -0.072\*\*\* | -0.289\*\* |
|  | [0.000] | [0.000] | [0.000] | [0.134] | [0.000] | [0.000] | [0.000] | [0.002] | [0.021] |
| Constant | 0.280 | -1.512\*\*\* | -1.209\*\*\* | -4.478\*\*\* | 0.863\*\*\* | -0.614\*\* | 0.250\* | 0.695\*\*\* | 0.135 |
|  | [0.166] | [0.000] | [0.000] | [0.004] | [0.000] | [0.014] | [0.088] | [0.000] | [0.527] |
|  |  |  |  |  |  |  |  |  |  |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,947 | 999 | 873 | 86 | 1,416 | 1,564 | 688 | 899 | 1,393 |
| R-squared | 0.769 | 0.748 | 0.761 | 0.834 | 0.771 | 0.760 | 0.716 | 0.177 | 0.520 |
| F-Stat | 236.6 | 106.9 | 103.6 | 17.40 | 167.2 | 173.3 | 69.50 | 7.532 | 52.67 |
| F-Prob | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Robust p-value in brackets \*\*\* p<0.01, \*\*p<0.05, \*p<0.1

Note: SOE represents state-owned firms; Non-SOE represents non-state owned firms. Private means private-owned firms; and Foreign means foreign-owned firms. High-CSR shows firms with CSR Score above the median level, and Low-CSR depicts firms with CSR Score below the median level. Distressed Firms represents firms whose ZChinaScore is less than 0.5; Potentially distressed firms have ZChinaScore between 0.5 and 0.9 and Healthy firms are firms with ZChinaScore greater than 0.9.

In case of financially distressed firms, we found a statistically insignificant and negative coefficient between our main predictor and outcome variable. Despite insignificance, the negative coefficient represents the low value of *AZ*\_China and an increased level of financial distress or potential bankruptcy. Thus, financially distressed firms may need to enhance their CSR ratings and engage in more CSR activities to reverse this adverse situation. Further, Models 8 and 9 disclose the insignificant and positive coefficients (i.e., increased AZ\_China and a positive impact of CSR ratings in reducing the firm’s financial distress level).

1. **Conclusion**

This study has examined the relationship between CSR performance and financial distress levels of publicly listed firms in China by focusing on a new China-specific model of measuring bankruptcy and financial distress model developed by Altman et al. (2007). We have employed robust statistical techniques to support our claims. We found substantial evidence that CSR performance and engagement reduces the distress level in Chinese firms. Specifically, we empirically show that the ability of CSR to reduce distress levels in non-state-owned Chinese firms is higher than state-owned ones***.*** These results are justified as the state-owned firms are backed by the government or state to avoid negative financial outcomes and thus, have little inclination to engage in CSR related activities. Therefore, the mitigating impact of CSR on financial distress is less prominent in Chinese state-owned firms. On the other hand, the non-state firms (including private or foreign) do not appear to enjoy the state funding to overwhelm or cover the negative financial consequences, thus, the best option for such firms is to engage more actively in CSR related activities in order to curtail financial distress.Thus, our argument is strongly supported by panels of state-owned and private owned Chinese listed firms. This study also makes some recommendations to the Chinese government and regulatory bodies. We suggest that in order to successfully realize the benefits of CSR from risk management perspective, there is a need to reduce financial support to state-owned firms and encourage them to engage in socially responsible activities in order to attain sustainability in case of financial distress. In this case, the level of CSR engagement (which is currently below par in comparison to developed markets) is more likely to increase and the enhanced CSR reporting of Chinese firms (both state and non-state owned) will benefit them from risk management view.

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**Appendices**

**Appendix A: Variable Description**

|  |  |
| --- | --- |
| Variables | Measurement |
| AZ\_CHINA | Altman Z-Score for China (Altman et al., 2007) calculated as:0.517 - 0.460\*(Total Liabilities/Total Assets) + 9.320\*(Net profit/Total Assets) + 0.388\*(Working Capital/Total Assets) + 1.158\*(Retained Earnings/Total Assets) |
| CSR\_SCORE | CSR Ratings collected from HEXUN site (Li and Foo, 2015). |
| Control Variables:Firm size | The natural logarithm of the total assets of the firms.  |
| Quick ratio | Cash plus receivables divided by current liability. |
| NPM | The ratio of net profit to total sales. |
| Sales growth | Percentage of current year’s sales minus previous year’s sales to the previous year’s sales. |
| Leverage | The ratio of total debt to total assets. |
| Cash | The ratio of cash and cash equivalents tot the total assets. |
| Loss | Dummy variable equal to 1 if firm’s total income is negative for a year or 0 otherwise. |
| Industry  | Industries dummies to control the industry effects. |
| Year | Year dummies to control the year effects. |

**Appendix B: Summary Statistics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **N** | **Mean** | **Sd** | **P5** | **Median** | **P95** |
| AZ\_CHINA | 3096 | 0.918 | 0.652 | 0.0650 | 0.830 | 2.091 |
| CSR\_SCORE | 3171 | 36.48 | 12.98 | 21.77 | 33.120 | 65.780 |
| Firm size | 3171 | 23.13 | 1.734 | 20.81 | 22.87 | 26.43 |
| Quick ratio | 2984 | 0.987 | 1.370 | 0.144 | 0.578 | 3.345 |
| NPM | 3171 | 0.109 | 0.134 | -0.0190 | 0.0760 | 0.393 |
| Sales Growth | 3167 | 0.160 | 0.304 | -0.240 | 0.122 | 0.657 |
| Leverage | 3171 | 0.520 | 0.210 | 0.146 | 0.536 | 0.840 |
| Cash | 3171 | 0.166 | 0.126 | 0.0220 | 0.131 | 0.439 |
| Loss  | 3171 | 0.0780 | 0.268 | 0 | 0 | 1 |

**Appendix C: Variance Inflation Factor (VIF) and Correlation Table**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **VIF** | **AZ\_CHINA** | **CSR\_SCORE** | **Firm size** | **Quick ratio** | **NPM** | **Sales Growth** | **Leverage** | **Cash** | **Loss** |
| AZ\_CHINA | - | 1 |  |  |  |  |  |  |  |  |
| CSR\_SCORE | 1.47 | -0.04\* | 1 |  |  |  |  |  |  |  |
| Firm size | 1.99 | -0.25\* | 0.52\* | 1 |  |  |  |  |  |  |
| Quick ratio | 2.38 | 0.43\* | -0.04\* | -0.34\* | 1 |  |  |  |  |  |
| NPM | 1.80 | 0.54\* | 0.12\* | 0.21\* | 0.30\* | 1 |  |  |  |  |
| Sales Growth | 1.15 | 0.13\* | -0.02 | 0.05\* | 0.01 | 0.14\* | 1 |  |  |  |
| Leverage | 2.69 | -0.67\* | 0.19\* | 0.59\* | -0.62\* | -0.16\* | 0.07\* | 1 |  |  |
| Cash | 1.80 | 0.41\* | -0.11\* | -0.27\* | 0.62\* | 0.18\* | 0.03\* | -0.37\* | 1 |  |
| Loss | 1.30 | -0.44\* | -0.05\* | -0.07\* | -0.07\* | -0.39\* | -0.16\* | 0.12\* | -0.11\* | 1 |

Note: Significance level is at 10% i.e. \* p<0.10