The Impact of Media Coverage on the Agency Costs

—Evidence from Chinese Listed Manufacturing Companies

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***Abstract*—Taking manufacturing industry as an example, this paper aims to analyze the effect of media coverage on the agency costs from multiple agency cost perspective. Using the data of Chinese A-share listed companies from 2010 to 2014, this paper creatively analyzed the media environment differences and regional differences in the role of the impact of media coverage on the agency costs. Specifically, this paper used instrumental variables and got multiple regression analysis of the whole sample and two sub-samples, which were decided by the media environment and regions. It draws a conclusion that media coverage is more able to affect the agency costs in the poor media environment and in the North. Therefore, we should pay more attention to the media environment differences and location differences. Then we ought to make full use of media coverage to reduce agency costs.**

Keywords—media coverage; double agency costs; manufacturing industry; media environment; location differences

I. INTRODUCTION

Media coverage has been playing an important role in the company's agency costs. In recent years, a large number of corporate scandals, which include Enron scandal and Yin Guang Xia event, were exposed by the media. From which we can see that the problem of agency costs is more and more serious and the power of the media is stronger and stronger.

The present literatures study on the role of media coverage in the corporate governance from the perspective of all industries. For example, Joe and Robinson [5] mainly analyzed the role of media in the post-supervision. Yifeng Shen and Peigong Li [8] analyzed the difference of different types of media. Jinhui Luo [10] studied the substitution effect between the media and the market environment. Reviewing the existing literature, we find that when studying the impact of media coverage on the agency costs, people always overlook two factors' effect, which are the media environment and location differences.

Therefore, this paper studied that with the changes of the media environment and region, whether the impact of media coverage on the agency costs would change significantly or not.

This paper did research on manufacturing enterprise because manufacturing is the key industry that can promote our country's economic development and it is closely related to people's life. Meanwhile, the action platform "Made in China 2025" was put forward to upgrade the manufacturing rapidly. "Supply-side reform" also faces the manufacturing industry.

The following part of the content is organized as follows. The second section reviews the literature and puts forward the research hypothesis. The third section does demonstration research. The forth section analyzes the research result. The final section draws the conclusion.

II. LITERATURE REVIEW AND RESEARCH HYPOTHESIS

A. Literature Review

In the field of agency costs, Jenson and Meclking [4] think that as long as the management separate with ownership, the agency problem is created. Shleifer and Vishny [6] find that when equities are focused on major shareholders, the agency problem between big shareholders and small shareholders occurs.

In the literatures of media and corporate governance, Joe and Robinson [5] find that media exposes the board of directors which is lack of efficiency and the board's governance efficiency will be improved. Dyck and Zingales [2] draw a conclusion that the media play a role in corporate governance through reputation mechanism.

We can see that domestic and overseas scholars have taken up large-scale research on the impact of media coverage on the agency costs. However, few people does related research from the view of manufacturing and focuses on the media environment and location differences. So this paper conducts these studies and broadens the research on media governance.

B. Research Hypothesis

First of all, Zingales [7] find that media coverage can minimize the agency costs by regulatory path, reputation's path and media's path.

Based on above, the first hypothesis is put forward:

H1: The listed companies are reported more frequently, their agency costs are lower.

Secondly, Yong Ye [11] finds that the level of media coverage is affected by the media environment. When a place is at a good media environment, media coverage is more

efficient and competition between the media is more intense and listed companies' external transparency is higher. All of these can make media coverage restrain agency costs more efficiently.

Therefore, the second hypothesis and its sub hypothesis are put forward:

H2: If the media environment is different, the impact of media coverage on the agency costs is different as well.

H2-1: In a good media environment, the impact of media coverage on the agency costs is more significant.

Finally, Djankov, Simeon, Carilee McLeish, Tatiana Nenova and Andrei Shleifer [1], Peigong Li and Shumei Xu [9] suggest that the impact of media coverage on the agency costs is related with the degree of nationalization and media freedom. According to the "Chinese Market Index" written by Gang Fan (2011), we can know that the development degree of the non-state-owned economy and the degree of reducing government intervention are significantly different between the North and South. Thus, the degree of nationalization and media freedom between the North and South are different and the impact of media coverage on the agency costs has regional differences.

For this reason, the third hypothesis and its sub hypothesis are put forward:

H3: Between the North and South, the impact of media coverage on the agency costs is different.

H3-1: In the South, the impact of media coverage on the agency costs is more significant.

III. The Empirical Study Design

A. Sample Selection and Data Sources

This paper uses the data of Chinese A-share manufacturing listed companies from 2010 to 2014 as the study sample. These companies were listed before 2010. With the help of panel data, the author uses mixed regression model and does demonstration research.

In order to alleviate the problems of endogeneity and heteroscedasticity, this paper cuts out the data as follows: (1) The companies have been or are being ST firms during the study period; (2) The companies issue B shares or H shares at the same time; (3) The companies' net assets per share are negative; (4) The companies' partial data is missing.

After screening, this paper gets 3660 samples in all.

The data of media coverage is collected manually from "Important Newspapers Full-text Database in China" and other data comes from "CSMAR Database".

B. Variable Declaration

1) The Dependent Variable: Agency Costs

Agency costs can be divided into the first kind of agency cost and the second kind of agency cost.

The first kind of agency cost is the cost between owner and operator, which can be measured by operating expense ratio and turnover of total capital. Generally speaking, when operating expense ratio is high and turnover of total capital is low, the first kind of agency cost exists significantly.

The second kind of agency cost is the cost between the major and minor stockholders, which can be measured by the ratio of other receivables to total assets. Normally, when this ratio is high, the second kind of agency cost exists significantly.

2) The Explanatory Variable: Media Coverage

The data of media coverage is from "Important Newspapers Full-text Database in China".

This paper also collects the data of media coverage from 2010 to 2014 by "Baidu news search engine", which can be used to conduct robustness test.

3) Other Control Variables

The control variables include the companies' internal governance variables and companies' characteristic variables.

Drawing lessons from Jinhui Luo [10] and Qin Song [12], companies' internal governance variables are the size of the board of supervisors, the board size, the proportion of independent directors, the shares that executives own, the first big shareholder's shareholding ratio, equity balance degree, part-time situation, the separating degree of two rights and fixed assets ratio.

Companies' characteristic variables are company size, corporate growth capability, corporate profitability and asset-liability ratio.

In addition, this paper makes the proportion of non-tradable shares, listed years and the types of control as media coverage's instrumental variables, which can alleviate the problem of endogeneity.

4) The Division of Media Environment and Location Differences

According to "Chinese Media Development Index Report" written by Guoming Yu (2011), each listed company's media environment index is determined by the province's media environment index where the company locates. Then the sample is bounded by the mean of media environment index and divided into two groups.

Considering the political and cultural differences, a part of the manufacturing enterprises are divided into south group and north group.

The specific variables are described as Table 1 shows:

TABLE I. MAJOR VARIABLE AND COMPUTING METHOD

Variable symbol	Variable definition
Agency_cost1_1	Operating expense ratio
Agency_cost1_2	turnover of total capital
Agency_cost2	the ratio of other receivables to total assets
LnMedia	the natural logarithm of media coverage's volume
LnSup_size	the natural logarithm of the number of supervis
LnBlocks_size	the natural logarithm of the number of directors
Indboard	the ratio of independent directors to directors
Mshare	the ratio of shares that the executives hold
Top1	the ratio of shares the first majority shareholder holds
Dr10	the ratio of shares the second to tenth majority shareholders hold /Top1
CEO_dummy	the dummy variable is equal to 1 if chairman is also the general manager
Wedge_dummy	the dummy variable is equal to 1 if the shareholders' control powers are greater than cash flow rights
Tangible	the company's fixed assets/total assets
LnFirm_size	the natural logarithm of total assets
Growth	the growth rate of the main business revenue
ROA	earnings before interest and tax /total assets
Leverage	gross liability /total assets
Nontradable	non-tradable shares /total shares
Firm_age	the natural logarithm of the years when the company has listed
State_dummy	the dummy variable is equal to 1 if listed company is a state-holding corporation

C. Model Setup and Test

1) Model Setup

This paper builds the model (1) as follows (Because of the large sample, the model ignores the impact of individual effects):

$$\boldsymbol{Agency\_cost_{i,t} = \beta_0 + \beta_1 LnMedia_{i,t} + \Sigma\beta_j Governances_{i,t} + \Sigma\beta_k Control_{i,t} + \varepsilon_{i,t}} \quad (1)$$

We can know from the model (1) that $\boldsymbol{Agency\_cost_{i,t}}$ denotes the two types of agency costs, $\boldsymbol{LnMedia_{i,t}}$ denotes the natural logarithm of media coverage's volume, $\boldsymbol{\Sigma Governances_{i,t}}$ denotes companies' internal governance variables, $\boldsymbol{\Sigma Control_{i,t}}$ denotes companies' characteristic variables. $\boldsymbol{\beta_0}$ is the intercept item and $\boldsymbol{\varepsilon_{i,t}}$ is the random error term.

2) Control the Problem of Endogeneity

There is severe problem of endogeneity between media coverage and agency costs. It is because that media coverage will restrict the agency costs and the agency costs can affect the level of media coverage as well.

Thus, this paper chooses the proportion of non-tradable shares, listed years and the types of control as the media coverage's instrumental variables and carries out regressing analyses (2SLS).

IV. THE RESULTS OF EMPIRICAL TESTS AND DISCUSSION

A. The Descriptive Analysis of the Whole Sample

By analyzing the whole sample, we can see that each company's agency costs are similar, whose standard deviation is small. In the meanwhile, each company's level of media coverage has a large standard deviation, which shows the problem of endogeneity.

B. Correlation Test of the Important Variable and Multicollinearity Test

In this part, the author uses the Pearson's correlation coefficient matrix to test the correlation between the variables. Table 2 is a part of the statistical table.

TABLE II. STATISTICAL TABLE OF THE CORRELATION BETWEEN SOME IMPORTANT VARIABLES

	AC1_1	AC1_2	AC2	LnMedia	Top1	Dr10
AC1_1	1					
AC1_2	-0.1724	1				
AC2	0.1172	-0.0401	1			
LnMedia	-0.0232	0.0430	-0.038	1		
Top1	-0.1097	0.1519	-0.127	0.0654	1	
Dr10	0.0717	-0.0897	0.0078	-0.0107	-0.626	1

Note: Because of the space limitation, AC1_1, AC1_2 and AC2 are the abbreviation of Agency_cost1_1、Agency_cost1_2 and Agency_cost2.

We can know from the complete statistical table that: (1) Media coverage exists the insignificant negative correlation with operating expense ratio, significant positive correlation with turnover of total capital and significant negative correlation with the ratio of other receivables to total assets. (2) Media coverage exists the insignificant correlation with companies' internal governance variables and characteristic variables as well. (3) Companies' internal governance variables have significant effects on agency costs.

In addition, Table 2 shows that the correlation coefficients between the variables are less than 0.6, except that the correlation coefficient between Dr10 and Top1 is -0.626, which is less than 0.8. So there isn't serious problem of multicollinearity in the regression model and no variables should be eliminated.

C. The Results of Empirical Tests

1) The Empirical Tests' Results of the Whole Sample

According to the model (1), this paper gets multiple regression of the whole sample. The results are shown in Table 3. The first kind of agency cost is measured by turnover of total capital and the second kind of agency cost is measured by the ratio of other receivables to total assets.

TABLE III. EMPIRICAL TESTS' RESULTS OF THE WHOLE SAMPLE (N=3600)

Explanatory variable	Agency_cost1	Agency_cost2
LnMedia	0.2669* （1.63）	-0.0027 （-0.45）
Top1	0.7566*** （5.48）	-0.0238*** （-4.80）
Tangible	0.3433** （2.33）	-0.0286*** （-5.39）
ROA	0.6334** （2.16）	0.0183* （1.73）
Leverage	0.4097*** （3.96）	0.0244*** （6.55）
Cons	3.6537*** （2.10）	0.0653 （1.04）

Note: Because of the space limitation, Table 3, Table 4 and Table 5 aren't complete. T value is shown in bracket. Then ***, ** and * stand for the significance level of 1%, 5% and 10%.

Table 3 shows that media coverage can surely affect the agency costs in manufacturing listed companies. It is consistent with the research conclusion drawn by Jinhui Luo [10].

Media coverage affects the first kind of agency cost significantly under the 10% significance level and the coefficient is positive. It shows media coverage can quicken the manufacturing listed companies' turnover of total capital and reduce the first kind of agency cost. Thus, it verifies the first hypothesis H1.

However, media coverage has no significant influence on the second kind of agency cost and the coefficient is negative.

Now this paper draws the first research conclusion:

C1: The manufacturing listed companies are reported more frequently, companies' agency costs are lower. Specially, media coverage affects the first kind of agency cost significantly.

2) The Empirical Tests' Results under the Different Media Environment

Thinking of the different media environment, empirical tests' results are shown in Table 4.

TABLE IV. EMPIRICAL TESTS' RESULTS UNDER DIFFERENT MEDIA ENVIRONMENT (N=3600)

	Good media environment		Poor media environment	
Independent variable	***Agency_cost1***	***Agency_cost 2***	***Agency_cost 1***	***Agency_cost 2***
LnMedia	0.4461 （1.30）	0.0108 （1.11）	0.1683 （1.29）	-0.0116* （-1.69）
Top1	0.8047* （1.94）	-0.0011 （-0.10）	0.8204*** （7.00）	-0.0306*** （-4.95）
Tangible	0.4042 （1.69）	-0.0232*** （-3.41）	0.3026* （1.92）	-0.0373*** （-4.49）
ROA	-0.4984 （-0.35）	-0.0548 （-1.34）	0.6572*** （3.57）	0.0347*** （3.58）
Leverage	0.2883** （2.31）	0.0181*** （5.10）	0.406*** （3.29）	0.0209*** （3.21）
Cons	4.6674 （1.60）	0.1580* （1.90）	2.7027* （1.78）	-0.0260 （-0.32）

Note: T value is shown in bracket. Then ***, ** and * stand for the significance level of 1%, 5% and 10%.

Table 4 shows that media environment can affect the effect of media coverage on the agency costs for sure. It is similar with the second hypothesis H2.

However, different media environment doesn't affect the first kind of agency cost significantly.

As for the second kind of agency cost, the media coverage's coefficient is positive and is not significant in the good media environment. Nevertheless, in the poor media environment, the media coverage's coefficient is negative and it affects the agency cost significantly under the 10% significance level. The conclusion is in contradiction with the hypothesis H2-1. But the result is consistent with the research conclusion drawn by Ellman and Germano [3].

Thus, according to Ellman and Germano's research result, the contradiction exists possibly because there is fierce competition between the media in the good media environment. In order to survive and develop, the media will meet interest groups' needs and sometimes report the news that isn't completely true. So the media coverage can't reduce the agency costs in the good media environment.

Based on the above analysis, this paper draws the second research conclusion:

C2: When media environment is different, the impact of media coverage on the agency costs changes as well. Specifically, in the poor media environment, with the increasing of media coverage, the companies' second kind of agency cost is reduced significantly.

3) The Empirical Tests' Results under the Different Regions

Thinking of the location differences, empirical tests' results are shown in Table 5.

TABLE V. EMPIRICAL TESTS' RESULTS UNDER THE DIFFERENT REGIONS (N=3600)

	the South		the North	
Independent variable	***Agency_cost 1***	***Agency_cost 2***	***Agency_cost 1***	***Agency_cost 2***
LnMedia	-0.5684 （-0.72）	-0.1748 （-0.66）	0.0986 （1.05）	-0.0224* （-1.73）
Top1	0.7258 （1.27）	-0.0109 （-0.57）	0.7252*** （2.60）	-0.0075 （-0.20）
Tangible	-0.6598 （-0.70）	-0.0435 （-1.39）	0.3015* （1.70）	-0.0278 （-1.13）
ROA	1.5585*** （2.80）	0.0044 （0.24）	0.6600 （1.50）	0.2625*** （4.31）
Leverage	0.1426 （0.46）	0.1908* （1.87）	0.6000*** （2.81）	0.0310 （1.05）
Cons	-5.3156 （-0.64）	-0.0674 （0.24）	2.8164** （2.58）	0.0689 （0.46）

Note: T value is shown in bracket. Then ***, ** and * stand for the significance level of 1%, 5% and 10%.

Table 5 shows that location differences can affect the effect of media coverage on the agency costs for sure. It is similar with the third hypothesis H3.

More specifically, the location differences won't affect the first kind of agency cost significantly.

As for the second kind of agency cost, the media coverage's coefficient in the South is not significant. However, the media coverage's coefficient in the North is significant under the 10% significance level. It shows in the North, media coverage has a big impact on agency cost, which is contrary to the previous hypothesis H3-1.

The hypothesis H3-1 is overturned maybe because in the South, the political environment is freer, the culture is more open and manufacturing companies' transparency is greater. Because of many a restrictions, manufacturing companies reduce the agency cost between large shareholder and small shareholder by themselves without media coverage. As a result, the media can't play the role of constraints.

Thus, this paper draws the third research conclusion:

C3: The impact of media coverage on the agency costs is different between the North and South. Specifically, in the South, with the increasing of media coverage, the companies' second kind of agency cost is reduced significantly.

D. Robustness Test

The robustness test can be divided into two parts.

On the one hand, test the whole sample. Firstly, using the lagged dependent variable, the regression results are similar to the results of the former quantitative research. Secondly, the highest and lowest 1 percent of the control variables are excluded from the whole sample to eliminate the effect of extreme value. The empirical tests' results are similar as well. Table 6 is the partial statistical table of robustness test.

TABLE VI. ROBUSTNESS TEST (1)

	Lag a return		**Winsorize processing**	
Independent variable	***Agency_cost 1***	***Agency_cost 2***	***Agency_cost 1***	***Agency_cost 2***
LnMedia	0.3038* （1.72）	0.0021 （0.36）	0.2625* （1.6）	-0.0029 （-0.48）

Note: Because of the space limitation, Table 6 and Table 7 aren't complete. T value is shown in bracket. The * stands for the significance level of 10%.

On the other hand, the first kind of agency cost is measured by operating expense ratio rather than turnover of total capital and the regression results are similar. Then, the data of media coverage is measured by the search volume on Baidu's search engine and the author carries out regressing analyses. The results are similar with the third hypothesis H3 and its sub hypothesis H3-1. Table 7 is another part of the robustness test.

TABLE VII. ROBUSTNESS TEST (2)

	the South	**the North**
Independent variable	***Agency_cost2***	***Agency_cost2***
LnMedia	-0.0008 （-0.36）	-0.0057* （-1.76）

Note: T value is shown in bracket. The * stands for the significance level of 10%.

In a word, with the help of robustness test, we can know the research conclusions of this paper are robust and reliable.

V. CONCLUSIONS

Basing on the panel data of China's manufacturing listed companies from 2010 to 2014, this paper studies the impact of media coverage on the agency costs and analyzes the effect of media environment and location differences. There are two main conclusions: (1) Manufacturing listed companies are reported more frequently, companies' agency costs are lower. Specially, media coverage affects the first kind of agency cost significantly. (2) Media environment and location differences can affect the effect of media coverage on the agency costs. In particular, in the poor media environment and in the North, with the increasing of media coverage, the companies' second kind of agency cost is reduced significantly.

The innovation of this paper is that research object is manufacturing and the author creatively analyzes the impact of media environment and location differences. In addition, this paper obtains the data of media coverage from two aspects: traditional media and new media.

However, there are obvious shortcomings in this paper. (1) This paper doesn't consider the differences between positive media coverage and negative media coverage. (2) Regression results show a low level of significance. Thus, this paper will rectify the two shortcomings in the next step.

REFERENCES

[1] Djankov, Simeon, Carilee McLeish, Tatiana Nenova, Andrei Shleifer, "Who owns the media," Journal of Law and Economics, 46, pp. 341-381, 2003

[2] Dyck Alexander, Liugi Zingales, "The corporate governance role of the media," NBER Working paper 9309. 2002.

[3] Ellman M, Germanno F, "What do the oapers sell? A model of advertising and media bias," The Economic Journal, 119, pp. 680-704, 2009.

[4] Jensen M C, Meckling W H, "Theory of the firm: managerial behavior, agency costs and ownership structure," Journal of Financial Economics, vol. 3, pp. 305-360, 1976

[5] Joe J R Louis H, Robinson D, "Managers' and investor' responses to media exposure of board ineffectiveness," Journal of Financial and Quantitative Analysis, 44, pp. 579-605, 2009

[6] Shleifer A, Vishny R W, "A survey of corporate governance," Journal of Finance, 52, pp. 737-783, 1997

[7] Zingales, "In search of new foundations," The journal of Finance, 55, pp. 1623-1653, 2000.

[8] Peigong Li, Yifeng Shen, "The corporate governance role of media: empirical evidence from China," Economic Research Journal, vol. 4, pp.14-27, 2010.(In Chinese)

[9] Peigong Li, Shumei Xu, "The corporate governance role of media—agreement and difference," Journal of Financial Research, vol. 4, pp. 196-206, 2013. (In Chinese)

[10] Jinhui Luo, "The corporate governance role of media coverage—base on the view of dual agency costs," Journal of Financial Research, vol. 10, pp. 153-166, 2012. (In Chinese)

[11] Yong Ye, Ming L, Ying Zhang, "The impact of media attention on the agency costs," Soft Science, vol. 2, pp. 45-49, 2013. (In Chinese)

[12] Qin Song, "Study on the role of media in the corporate governance—base on the view of agency cost," Master's thesis of Southwestern University of Finance and Economics. (In Chinese)

