Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.5, No.24, 2014

Institutional Environment and Overinvestment in Emerging Markets-Empirical Evidence from Chinese Listed Companies

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Acknowledgement
This work was financially supported by the National Natural Science Foundation of China (71172136), and China Post-doctorate Science Foundation funded project (2014M560199).

Abstract
We use China's unique institutional environment as a basis to study the country's enterprise overinvestment behavior. In recent years, China has seen a surge in enterprise investment due to the huge availability of investment funds leading to difficulties in governing listed firms in the country. We separately analyze the impact of government intervention, rule of law and financial development of various regions on the overinvestment behavior of the listed companies. The results show that government intervention is positively related to overinvestment of listed companies. However, rule of law and financial development are negatively related to overinvestment of listed companies. In addition, the results further show that improved institutional environment can restrict overinvestment in listed companies. Further research indicates that, compared to the rule of law and financial development, government intervention is a fundamental factor which influences overinvestment the most. The study's results have implications, particularly for the regulators, as they provide useful and detailed information which can be used in the design of more appropriate and functional systems to govern listed companies and help in curbing the overinvestment problem.
Keywords: Government intervention; rule of law; financial development; overinvestment, Emerging Markets

1. Introduction

Inefficient investment is a phenomenon which currently affects many countries, particularly emerging economies, and in China, this problem has become even more critical in recent years where the government is seen to prefer state-owned enterprises over private firms as a mode of ownership. Relative to the issue of insufficient investment, the public and scholars are more critical of the ongoing overinvestment issue, thus the government has taken steps to increase interventions through the introduction of new regulations aiming at affecting enterprises' investment behavior (Chen et al. 2011).

Scholars using various research basis, including, agency theory, information asymmetry theory and corporate governance theory, have obtained considerable research successes in studying this problem. Since China is currently in the economic transition period, measures such as using special fiscal decentralization and local officials' appraisal systems have been adopted by local governments to prevent firms from engaging in undesirable investment activities in their respective regions. Also, differences in the level of law enforcement and financial development in the areas play an important role in determining the effectiveness of the constraining measures in place.

Similarly, institutional factors, such as regulations, contracts and laws, just to mention a few, directly restraint the overinvestment behavior and provide a framework which largely reduces uncertainty in economic transactions as well as investment activities. In China, the rule of law lacks the needed effectiveness and predictability which are widely available in developed economies. The developed economies are characterized with well-established external governance mechanisms to oversee enterprises' operations. Various studies such as Peng, Wang & Jiang (2008) support this view and suggest that the aforementioned weakness leads to the lack of or inefficient enforcement of the governing laws.

This paper, from the perspective of institutional environment, attempts to shade some light on the effect of local governments' intervention, rule of law and the regional difference in the level of financial development in China on the overinvestment behavior by listed companies. This paper enriches the research on overinvestment problem in the transitional economy country and expand on the "law and finance" literature, hoping to highlight the main causes of excessive investment in Chinese listed companies and contribute in finding possible remedies. The structure of this paper is as follows: the paper proceeds with the Literature review and Hypotheses development in Section 2. Section 3 discusses the Research design, giving an account of the variables and the models adopted. And, Section 4 discusses Empirical results, while Section 5 Concludes and gives some policy recommendations.

2. Literature Review and Hypotheses Development

Douglas Northrop's theory of institutional changes points that institutional environment determines the basis of production, exchange and distribution of basic political, social and legal provisions, i.e., it provides framework within which human interaction takes place. It is the most important factor that affects economic development of countries (North, 1990). Due to the existence of transaction costs, the behaviors of enterprises are certainly linked to the institutions. A number of existing theoretical and empirical literature point that governments have the motivation and capacity to promote overinvestment. Governments in developing countries are often in pursuit of industrial and technological advancement, hence encourage firms to enter over-crowded capital-intensive industries or industry segments which lack comparative advantage.

A further analysis from the study Xia et al. (2005), finds that, in places where the extent of government intervention is low, the government rarely tends to pass social burden to such region's listed companies. China Centre for Economic Research (CCER) – Peking University Macroeconomic Study Group (2004) points that, from the root-cause perspective, the essence of overinvestment and inefficient investment problem in China is the result of property rights constraints and political achievement-oriented view of regional governments. In addition, Shleifer & Vishny (1994) suggest that, government officials, following their political stance, would use their power to encourage enterprises to conduct inefficient investment.

Also, from the political promotion incentive perspective, the study Zhou (2004) finds that regional government officials have a very strong incentive to promote rapid growth of the local economy, which may prompt the officials to excessively allocate the largely available resources into certain projects or industries, hence causing overinvestment problem. In countries around the world, government interventions prompt enterprises to create a more favorable political environment for the sake of smooth business operations. As the Chinese economy is still in transition, regular government interventions bring uncertainties to all businesses which causes enterprises to seek for a closer and strengthened political connection with the government. Therefore, in order to establish a good political relation, enterprises will respond positively to development plans set forth by the regional government's officials and increase investment. This may eventually lead to the overinvestment phenomenon in the particular region.

An increasing number of studies show that the rule of law is one of the important institutional factors which affect corporate investment decisions. The research "Law and Finance", pioneered by La Porta et al. (1998) proposes that improvement in the level of rule of law can promote the development of financial markets and financial intermediaries, hence encouraging enterprises to increase investment. Moreover, a study Sun et al. (2005) suggests that, the enterprise's irrational investment behavior may be a rational choice to adapt to the existing legal system, laws and policies, market conditions, and other objective circumstances. Jensen (1993) points out that corporate managers tend to pursue for "manager imperialism" investment scale, where, the managers are able to gain massive profits through a greater control of the available resources, and the managers usually have a strong desire to engage in overinvestment activities. If the investment goes smoothly and the firm grows in size, the manager can secure government incentives and a higher salary. Due to the protection from local government administrative regulations and the absence of property rights, managers do not have to pay for their conducts in the event that investment projects fail or seriously under-achieve. This allows the managers to engage in overinvestment activities with less fear.

In addition, financial development has a crucial impact on the enterprise's investment behavior (Levine et al., 1998). Greenwood et al. (1990) suggests that financial development can improve investment efficiency, that, regions with higher levels of financial development tend to have less inefficient investments. García-Herrero et al. (2005) propose that, reduction in inefficient loans plays an important role in restraining enterprise overinvestment behavior. Since marketization of state-owned banks is more profound in regions with higher levels of financial development, the banks from these regions usually consider long-term loans, especially with the purpose of making profits rather than for political-motivated purposes. Moreover, a study Fang (2006) uses a modified Wurgler method and finds that, financial development level variable is positively related to industry investment response coefficient, meaning the more developed a financial market is, the higher investment allocation efficiency is.

Therefore, from the above analysis, we propose the following three hypotheses:

Hypothesis 1: The level of government intervention is positively related to the level of enterprise overinvestment.
Hypothesis 2: The level of rule of law is negatively related to the level of enterprise overinvestment. And;
Hypothesis 3: The level of financial development and enterprise overinvestment are negatively related.

3. Research Design

3.1 Sample Selection and Data Sources

We use data of A-Share listed companies sampled from Shenzhen Stock Exchange (SHZSE) and Shanghai Stock Exchange (SHGSE) in the period 2003-2008, and to ensure the accuracy and objectiveness of our results, we set four (4) guiding points when selecting the sample, as follows: first of all, we exclude all companies listed under

Special Treatment (ST) and Particular Treatment (PT) for the whole study period as there exist substantial abnormalities in the financial situation of these companies. We exclude their data to avoid a possible effect on the study results; we also exclude listed financial companies, as there is a relative big difference in financial situation between listed financial and non-financial firms; in addition, we exclude from our sample all companies with incomplete data; and lastly, we discard outliers below 1% and above 99% for each variable. Following the above procedure, we obtain 4396 valid observations.

The related data of listed companies are from China Center for Economic Research (CCER) databases and China Securities Regulatory Commission (CSRC) website. The institutional environment data for all regions are from Fan et al. (2006) -- (NERI Index of Marketization of China's Provinces – The 2006 Annual Report on Regional Market Development) which compiles marketization indices for various regions (including; 31 provinces, autonomous regions, and municipalities) in China.[1]

3.2 Model and Variables Definitions

We refer to Richardson (2006) in building our model for estimating the optimal level of enterprise investment expenditure. The normal estimation model of the level of enterprise capital investment is as follows:

$$INV_t = \alpha_0 + \alpha_1 Growth_{t-1} + \alpha_2 Lev_{t-1} + \alpha_3 CFO_{t-1} + \alpha_4 ROA_{t-1} + \alpha_5 Size_{t-1} + \alpha_6 INV_{t-1} + \alpha_7 Age + \Sigma Industry + \Sigma Year + \varepsilon_t \quad (1)$$

Referring to Fazzari, et al. (1988), Richardson (2003) and other related studies, we argue that, when the value of actual enterprise investment expenditures divided by its optimal investment expenditures (CISI) is near to 1, then it is an optimal level of investment. When $0.2 \leq CISI \leq 2$, it is a reasonable investment interval, and when $CISI > 2$, it indicates an existence of a relatively serious enterprise overinvestment, and the residuals at this point represent the extent of excessive investment.

Table 1: Variable Definitions of Model (1)

Variable type	Variable name	Calculation
Dependent variable	New investments (INV_t)	(Annual increase in the value of fixed assets, construction in progress, and long-term investment in the year *t*)/ (Total Assets at the beginning of year *t*)
Explanatory variables	Growth ($Growth_{t-1}$)	main business revenue growth rate in the year (*t*-1)
	Asset-liability ratio (Lev_{t-1})	Asset-liability ratio at the end of year (*t*-1)
	cash flow from operating activities (CFO_{t-1})	Operating cash flow at the end of year (t-1) / Total assets at the end of year (*t*-1)
	Profitability (ROA_{t-1})	Return on Asset (ROA) for the year (*t*-1)
	Asset size ($Size_{t-1}$)	Natural logarithm of the total assets at the end of year (*t*-1)
	Prior Investment (INV_{t-1})	Calculation method is same as (INV_{t-1})
	Firm Age (Age)	The number of years a firm has been listed
Control Variables	Industry (Industry)	11 industry dummies are set in accordance to SFC's Industry Classification Standard.
	Year (Year)	To control annual macro-economic impact, 5 year dummies are set.

Considering that agency cost is a main factor affecting the efficiency of investment, we refer to the studies Ang et al. (2002) and Richardson et al. (2006), and use free cash flow (FCF) and major shareholders fund occupancy (ORECPA) as control variables. Similarly, we add industry and year dummies to the model to control for the annual macroeconomic impact on the corporate investment decision in various industries. This study draws its basis from the existing literature and set up the following model to test the above hypotheses.

$$OVER\_INV_t = \beta_0 + \beta_1 Institution_t + \beta_2 GovD_t \times Law_t + \beta_3 GovD_t \times Fin_t + \beta_4 FCF_t + \beta_5 ORECTA_t + \Sigma Industry + \Sigma Year + \eta_t \quad (2)$$

[1] NERI INDEX of Marketization of China's Provinces - 2006 Report: The report only lists indicators of the level of marketization development for 2005 and the previous years. In this paper, the related indicators for 2006-2008 are replaced by the data for 2005).

Table 2: Variable Definitions of Model (2)

Variable type	Variable name	Definition
dependent variable	Over-investment (Over_INV$_t$)	excessive investment in Year $_t$, equals: regression residual for CISI＞2 in the model 1
Explanatory variables	Institutional Environment variable (*Institution*)	Includes: government intervention index, rule of law index, and marketization index.
	Government intervention Index (*Gov*)	Contrarian indicator, the larger the value, the lower the degree of government intervention.
	Rule of Law Index (*Law*)	Forward indicator : the higher the value, the higher the degree of the rule of law)
	Financial Development Index (*Fin*)	Forward indicator : the higher the value, the higher the degree of financial industry marketization
	Government intervention dummy (*GovD*)	When *Gov*<Median, *GovD* is assigned to 1; 0, otherwise.
	Free Cash Flow (FCF_t)	(operating cash flow in the year$_t$ – depreciation – amortization – expected new investment)/(average total assets in the year$_t$)
	Major Shareholders Fund Occupancy ($ORECTA_t$)	other receivables at the end of year$_t$)/ (total assets at the end of year$_t$)
Control Variables	Industry (Industry)	11 industry dummies are set according to SFC's industry classification standards.
	Year (Year)	To control for macro-economic impact in the year, 5 year dummies are set

4. Empirical results and Analysis

4.1 Descriptive Statistics

4.1.1 Descriptive statistics of variables

Table 3 displays descriptive statistical features of the variables in model (2), in which, the mean of overinvestment is 0.1509 and the maximum value is as high as 0.6037, indicating the degree of overinvestment in some companies as very serious. The last three rows, respectively, list institutional environment variables for each region, including; government intervention index, rule of law index, and financial development index. The mean of government intervention is 8.5597, with maximum value of 10.63, while the minimum is only -1.14. Rule of law index has a mean of 6.2972, maximum value of 13.07, while the minimum value is only 5.23. Financial development index has a mean of 7.7, maximum value of 11.48, while the minimum value is only 0.73. From the above analysis, we can easily see that there exists a huge difference in institutional environment among various regions, and that the effect of institutional environment factors on firms differs from region to region.

Table 3: Descriptive Statistics of the Variables in the Model (2)

	Sample size	Mean	Median	Min.	Max.	Std. Deviation
Over_INV$_t$	481	0.1509	0.1208	0.0006	0.6037	0.1214
FCF	481	-0.0890	-0.0782	-0.4985	0.2009	0.1224
ORECTA	481	0.0323	0.0186	0.0004	0.2008	0.0375
Gov	481	8.5597	8.6200	-1.1400	10.6300	1.4995
Law	481	6.2972	5.2300	1.4900	13.0700	3.1852
Fin	481	7.7000	7.7000	0.7300	11.4800	2.2829

4.1.2 Regional comparison of overinvestment

Taking 2006 as a case, we use World Bank (2006) regional distribution method to report regional disparity in corporate overinvestment behavior. As it can be seen from Table 4, the 2006 Southeast marketization index has a mean of 9.61, the marketization index for Bohai economic rim (BER) has a mean of 7.9, Central region marketization index has a mean of 6.44, and Southwest China marketization index has a mean of 5.86. Northeastern region's marketization index has a mean of 6.33, while the Northwest marketization index has a mean of 4.82. Specific analysis finds the Southeast marketization index as the highest. The proportion of the over-investing firms from the overall sample and the extent of overinvestment in the region stand at the lowest. The marketization index for northwest is the lowest, with the proportion of the over-investing firms and the extent of overinvestment in the region standing at the highest. Other regions follow a similar pattern. In short, with the continuous improvement of institutional environment in China, a gradual downward trend is expected in both the proportion of the regional over-investing firms as well as the extent of overinvestment among listed companies in the regions.

Table 4: Regional Marketization Index and the Status of Overinvestment in the Listed Companies (2006)

Region	Rank *	Marketization index	The number of over-investing firms	Total Sample size	The ratio of overinvesting firms to the region's total firm sample	Over_INV
Southeast region	1	9.61	35	248	14.11%	0.1045
Bohai Economic Rim	2	7.90	14	99	14.14%	0.1306
Central region	3	6.44	13	88	14.77%	0.1841
Southwest region	4	5.86	13	84	15.48%	0.1616
Northeast	5	6.33	8	49	16.33%	0.1765
Northwest	6	4.82	11	67	16.42%	0.2318

4.1.3 The comparative analysis between institutional environment factors and overinvestment

To investigate the impact of institutional environment on the enterprise's investment behavior, we use the mean of regional government intervention index, rule of law index, and financial development index, then divide the sample into two groups, where, group 1 is composed of the sample below the mean and group 2 is composed of the sample above the mean, with values 1 and 2 assigned to the groups, respectively.

Table 5 shows the effect of different levels of institutional environment factors on enterprise overinvestment. Panel A lists results of the comparative analysis between the extent of government intervention and overinvestment. The smaller government intervention index is, the more severe the level of intervention is. Data from the table show that listed companies in regions with high levels of government intervention have higher levels of overinvestment, and the mean difference between the groups is significant at the 0.01 level.

At the same time, we can see that the extent of overinvestment in listed companies from the regions with low levels of rule of law is higher than the extent in the listed companies from the regions with high levels of rule of law. Also, listed companies from regions with low levels of financial development have higher levels of overinvestment than those from regions with higher levels of financial development. However, the significance of the impact the two factors, i.e., rule of law and financial development, in restraining overinvestment behavior in listed companies is low. This also suggests that improvement of external institutional environment can constrain overinvestment behavior, and in part, confirming the study's hypotheses.

Table 5: Institutional Environment Factors and Overinvestment

Panel A: The degree of government intervention and overinvestment - comparative analysis between the groups

	Group1: Gov=1	Group2: Gov=2	Group1 VS Group2
	Mean	Mean	P Value
$Over\_INV_t$	0.1694	0.1334	0.001***
Obs.	234	247	

Panel B: The level of rule of law and overinvestment - comparative analysis between the groups

	Group1:Law=1	Group2:Law=2	Group1 VS Group2
	Mean	Mean	P Value
$Over\_INV_t$	0.1556	0.1443	0.316
Obs.	283	194	

Panel C: Financial development level and overinvestment - comparative analysis between the groups

	Group1:Fin=1	Group2:Fin=2	Group1 VS Group2
	Mean	Mean	P Value
$Over\_INV_t$	0.1565	0.1447	0.288
Obs.	255	226	

Note: ***, **, and * show significance at; 1%, 5%, and 10% levels, respectively.

4.2 Correlation Analysis

Table 6 lists Pearson and Spearman correlation coefficient matrices of the variables in Model (2). The data show that rule of law, financial development and government intervention are negatively correlated to enterprise overinvestment, which provides a preliminary support to the study's hypotheses. Government intervention is positively correlated to the rule of law and financial development, which suggests that, regions with strong

government intervention have relatively low levels of the rule of law and financial development. It is worth noting that, the pairwise correlation coefficients obtained from the three institutional environment factors are relatively large, exceeding 0.6. This suggests a possible existence of multicollinearity among the three institutional environment factors. Thus, to avoid the possibility of multicollinearity, we separately insert one institutional environment factor in the Model (2) for each time we regress.

Table 6: Correlation Coefficient Matrix of the Variables

N=481	Over_INV$_t$	FCF	ORECTA	Gov	Law	Fin
Over_INV$_t$	1.000	-0.092**	-0.126***	-0.143***	-0.061	-0.095**
FCF	-0.109**	1.000	-0.028	-0.032	0.131**	0.051
ORECTA	-0.130***	0.044	1.000	-0.116**	-0.020	-0.084*
Gov	-0.229***	0.075	-0.114**	1.000	0.627***	0.743***
Law	-0.118***	0.155***	-0.034	0.724***	1.000	0.771***
Fin	-0.152***	0.053	-0.096**	0.734***	0.771***	1.000

Note: Values above the diagonal are Pearson's correlation coefficients, and below the diagonal are the Spearman's correlation coefficients;
***, **, and * show significance at, 1%, 5%, and 10% levels, respectively.

4.3 Regression Analysis

Table 7 lists test results of the three institutional environment variables which affect enterprise overinvestment. In the first three panels, each of the three institutional environment variables are separately tested in the model (2). Panel 1 shows that, there is a significant negative correlation between government intervention and corporate overinvestment at a 0.01 significance level. This suggests that overinvestment phenomenon is more serious in regions with strong government intervention, that is, the level of government intervention is positively correlated to enterprise overinvestment. This result is consistent with hypothesis 1. Second column shows that there is a weak negative relation between rule of law (Law) and overinvestment (p=0.204), suggesting a lower occurrence of enterprise overinvestment in regions with higher levels of the rule of law. This result basically supports hypothesis 2. Third column shows that, at 0.05 significance level, financial development (Fin) and enterprises overinvestment are negatively correlated, suggesting a relatively low occurrence of enterprise overinvestment in regions with higher levels of the rule of law. This result also is consistent with the hypothesis 3.

On the fourth column in Table 7, we simultaneously run analysis of *Law* and the cross variable, *GovD*×*Law* in the model (2). The results show that the coefficient of Law remains negative and relatively less significant. Also, the coefficient of the cross variable, *GovD*×*Law*, is positive at a 0.01 significance level. This indicates that the effect of improvement to the rule of law on curbing enterprise overinvestment is relatively weak in regions with strong government intervention. On the fifth column, we simultaneously run analysis of *Fin* and the cross variable, *GovD*×*Fin* in the model (2). The results show that *Fin* and *overinvestment* remain with a weak negative correlation, and at 0.1 significance level, the cross variable *GovD*×*Fin*（P=0.073）and *enterprise overinvestment* are positively correlated. This suggests that the effect of improvement to the level of financial development on constraining enterprise overinvestment is relatively weak in regions with strong government intervention. At the same time, it can also be seen that, rule of law and financial development can play a useful role in areas with low government intervention. This further indicates that, compared to the rule of law and financial development, government intervention is the fundamental factor which affects enterprise overinvestment.

Table 7: Logistic Regression Results of Institutional Environment vs. Overinvestment

Variable	(1)	(2)	(3)	(4)	(5)
(Constant)	0.285***	0.209***	0.237***	0.182***	0.217***
	(7.269)	(8.401)	(8.176)	(6.744)	(6.994)
FCF	0.009	0.016	0.013	0.017	0.019
	(0.183)	(0.341)	(0.277)	(0.371)	(0.411)
ORECTA	-0.481***	-0.451***	-0.469***	-0.456***	-0.466***
	(-3.410)	(-3.188)	(-3.316)	(-3.235)	(-3.307)
Gov	-0.011***				
	(-2.803)				
Law		-0.002		0.000	
		(-1.272)		(-0.198)	
Fin			-0.005**		-0.004
			(-2.240)		(-1.593)
GovD×Law				0.006***	
				(2.521)	
GovD×Fin					0.003*
					(1.799)
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
F	5.999***	5.596***	5.815***	5.696***	5.713***
Adj-R^2	0.165	0.154	0.160	0.164	0.164
Obs.	481	481	481	481	481

Note: ***, **, * show significance at, 1%, 5%, and 10% levels, respectively; values in the parentheses are the T values (two-tailed).

Through the analysis, we found the sample to have certain clusters. There is a certain correlation between sample distribution and improvement in institutional environment, that is, there is a decreasing trend in the number of over-investing firms with an improvement in the institutional environment. To further investigate a possibility of the correlation between the sample distribution and enterprise overinvestment, we replace institutional environment variable with the region's overinvestment sample N as independent variables. The regression results are as shown in Table 8. Sample size N and overinvestment are insignificant (p=0.752). It can be determined that the regional disparity of enterprise overinvestment is a result of institutional environment rather than the differences in the sample distribution. Therefore, the regression results on Table 7 are reliable.

Table 8: Regression Results of the Number of Overinvesting Listed Companies N (used in place of institutional environment) vs. Overinvestment

Variable	Regression coefficient	p-value
(Constant)	0.189***	0.000
N	0.000	0.752
FCF	0.012	0.292
ORECTA	-0.444***	0.002
Industry	Control	Control
Year	Control	Control
F	5.498***	0.000
Adj-R^2	0.151	
Obs.	481	

Note: ***, **, * show significance at, 1%, 5%, and 10% levels, respectively.

4.4 Robustness Test

One of the assumptions of the Richardson's model is; the overall capital investment of a listed company is normal, i.e., no occurrence of systematic under-investment or overinvestment. Otherwise, measuring under-investment or overinvestment using model (1) will likely be affected with a systematic bias. We divide residuals of model (1) equally into three groups according to size and exclude the middle group, then set the group with the largest residuals as a group with excessive investment and the group with the smallest residuals as a group with insufficient investment.[1] The above method is also applied to the model (2) accordingly and regress. At the

[1] Similar studies have shown that, using methods similar to the one above to measure corporate overinvestment is feasible. We introduce enterprise investment spending index, mainly to show that the use of other methods does not affect our

same time, we also use a direct check, where, residuals greater than 0 are regarded as overinvestment, which is a common measurement method, and regress model (2). We find no substantial difference between the above regression results and our main results. This further verifies the validity of the study's empirical results.[1]

5. Conclusion

This paper is based on China's unique institutional environment and its transitional economy background. From the country's unique institutional perspective rather than confined to just the corporate level factors, this paper seeks for the relationship between institutional environment factors and corporate overinvestment. The study uses data of Chinese firms listed in Shanghai and Shenzhen stock exchanges from 2003 to 2008 as a sample to analyze the impact of regional government intervention, financial development, and the rule of law in the country. Below is a summary of the results from the study's theoretical analysis and empirical tests:

- First, enterprise overinvestment is positively related to government intervention but it is negatively related to the rule of law and financial development. After running logistic regression analysis on institutional environment factors and overinvestment, we found that, in the regions with high level of government intervention, low level of the rule of law, and less developed financial industry, the problem of overinvestment in listed companies is more severe.
- Also, further investigation shows that, compared to the rule of law and financial development, government intervention is the fundamental factor affecting enterprise overinvestment. This study runs regression analysis by adding cross-variables with the original variables and finds that, in regions with strong government intervention, the rule of law and financial development cannot better constrain enterprise overinvestment. Thus, among the country's institutional environment factors, government intervention has the most important effect on enterprise overinvestment. And,
- Lastly, as there exists certain clusters in the sample, we replaced institutional environment variable with each region's overinvestment sample, N, as independent variables and regress. The result at the end showed that regional differences in enterprise overinvestment is caused by the institutional environment rather than differences in the sample distribution.

This paper gives an account of the overinvestment problem of listed companies in China and the firms' governing tools, that is, institutional environment. Though we have fairly touched most related areas and analysed several angles, still there is more that can be offered to the literature. Thus, in future, we plan to further the study by enriching more institutional environment factors and incorporating them in the study so as to see whether the modified study design will affect our current results. Also, we plan to widen the study by conducting an international comparison with other emerging market economies with similar institutional settings.

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[1] Due to space limitation, this study does not list results of the robustness test. Interested readers can be provided with the results per request

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Note

The 2006 World Bank Survey Report (Governance, Investment Environment & Harmonious Society: Improvement in Competitiveness of China's 120 Cities) divides China's 30 provinces (excluding Tibet) into 6 regions: Southeast (Jiangsu, Shanghai, Zhejiang, Fujian and Guangdong); Bohai Rim (Shandong, Beijing, Tianjin and Hebei); Central region (Anhui, Henan, Hubei, Hunan and Jiangxi); Northeast (Heilongjiang, Jilin, Liaoning) ; Southwest China (Yunnan, Guizhou, Guangxi, Sichuan, Chongqing and Hainan); Northwest Territories (Shanxi, Shaanxi, Inner Mongolia, Ningxia, Qinghai, Gansu and Xinjiang). Tibet is not taken into account as in 2006 there was no overinvestment in listed companies.

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