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## Research of transparency of government investment and its influencing factors

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### ABSTRACT

To improve transparency is an important factor in government investment project supervision. By building index system of government investment transparency evaluation, using manual scoring to evaluate provincial government investment transparency, we found that government investment transparency could differ drastically in each province. To identify the specific reasons for the differences, empirical analysis in influencing factors are conducted—we found that real estate development projects invested by government, population and consumer spending have a significant impact on the transparency of government investment.

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### KEYWORDS

Government investment;  
Transparency;  
Influencing factors.

### INTRODUCTION

Projects invested by government always provoke serious concern of different sectors of the society, which is a field where corruption and scandal frequently occur. Distorted incentive mechanism and defective regulatory structure turn the government investment projects into shortcuts that only benefit a relatively small number of people. Emerging shoddy constructions have brought huge potential security problems to people's lives and assets and definitely hinder the healthy development of the economy. It has been an issue that needed to be addressed as a matter of urgency to improve and perfect the mechanism of the government investment supervision and make civil society organizations act as supervisors of government investment projects.

Improving transparency is an important factor in government investment project supervision, as well as an

effective way of ensuring the security of government investment. The unopened governmental information and opaque procedures are a breeding ground for corruption. Setting up the mechanism to make government-invested projects information known to the public is of great significance to reduce the asymmetric information and compress the space of rent-seeking and corruption.

### LITERATURE REVIEW

Research on government investment transparency of China's scholars can be roughly divided into two groups.

The first group analyzes the present status and problems of government investment transparency. Zhang wei, Zhu Hongliang<sup>[1]</sup> make a study of information communication relationship and information failure that existed

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within the phases of agent construction projects. They explored solutions against the problem of information failure and proposed ten kinds of systems of information communication and information disclosure. Chen Huihong(2008) thinks that as budget surpluses couldn't be distributed to executor, the performance of spiriting and restricting system would be limited. Thus, she recommends that public sectors should build up a binding external mechanism to decrease the degree of financial information dissymmetry. Xiao Junqi<sup>[4]</sup> thinks there is need for launching a special campaign to promote the disclosure of government-invested projects information, which ensures the sufficiency, timeliness and accuracy of government-invested projects. Zhang Zhao, Ma Zhiguo, Cui Jianjun(2012) make deep analysis on relevant legal system of developed countries, and offer proposals to improve the legal system which ensures the openness of information, procedure and content of decision-making. Shen Liang, Wang Yuyan<sup>[5]</sup> find that the execution of government-invested projects information opening is not ideal; government investment transparency could differ drastically in each province; and the open information can't satisfy the general public after studying the the condition of transparency of China's government-invested projects. The formation of this pattern heads from the weak will that the current government possess to accept public supervision and the inaction of the legislature and inadequate public participation. It is necessary to improve the relevant system, improve the transparency of government investment.

The other group focuses on the evaluation of government-invested projects. Zhao Lifang(2007) puts forward government investment decision tree via grey target decision model, which takes society, economy, technology, environment, politics and national defense into account. Chen Bin(2007) builds an evaluation system that can tell the government investment projects success or not from the project itself, harmonious society, stakeholder perspective, using analytic hierarchy process. Cai Wenting, Lu Bo, Chen Yejian(2011) puts forward a sound after-government -investment projects evaluation system, evaluating investment returns on government investment projects and decision-making level.

From the domestic research we can see that the disclosure of government investment still need to be im-

proved, the government needs to further enhance the transparency of investment. Evaluation systems, regarding to government investment projects, mostly are from the decision-making and implementation perspective, the case for transparency in government investment evaluation rarely involved. In this paper, we builds an evaluation index system on transparency of government investment. an empirical evaluation on Government transparency is conducted through the the data acquired from the Development and Reform Commission and Statistical Yearbook. Factors that influence Government transparency were analyzed, combined with the development of provinces and cities, filling the gaps that domestic literature spends little time discussing.

## GOVERNMENT INVESTMENT TRANSPARENCY EVALUATION

### The choosing of evaluation indexes

Improving the transparency of government investment has been an issue that the international community attaches great importance to. There are some countries sponsored the "Construction Industry transparent items" (CoST) jointly, which requires government investment projects to open fund information, contract information and regulatory information to the public and set up a stakeholder committee to ensure that the government disclose information on investment projects, meantime evaluate the effect of information disclosure. CoST hopes that through accountability and oversight, the management level of government investment projects can be effectively improved, the corruption can be reduced.

In this paper, we employ an international reference developed by CoST, and learn from valuation methodology of Government Investment Transparency developed by Li Jianjun. Evaluation index to estimate the transparency of government investment are built as follows: fiscal expenditure budget and final accounts, total investment, project construction necessity, project investment estimates, bidding details, implementation of investment. Expenditure budget and final accounts and the total investment are adopted to grasp the overall situation of government investment, measuring the overall government investment situation from the macro. And the evaluation of project construction necessity and

project investment estimates is to analyze the decision-making of government investment projects. Decision-making stage is the most important part to determine the project's success. The link of bidding is a "disaster area" where corruption in government investment can be very serious. The open for bidding information is conducive to greater transparency and concretization of government investment. The summary of the project implementation helps the government summarize the investment experience and analyze the construction conditions, which is of great significance for "shabby" prevention. Due to the above factors are related and restricted mutually, its evaluation is a multi-target, multi-attribute problem. In this paper, Analytic Hierarchy Process (AHP) is adopted to determine the index weight. The stratified structure model is established as shown in Figure 1:

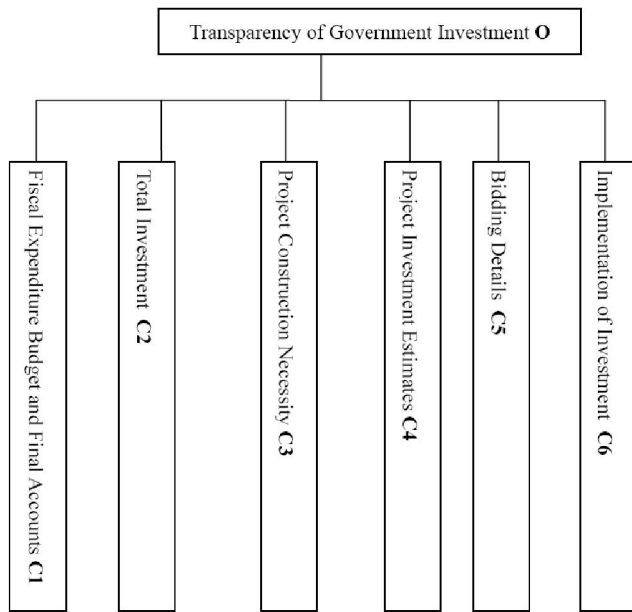


Figure 1 : System of government investment transparency evaluation

We use 1-9 scale method to compare every two elements, constructing a judgment matrix  $A = (a_{ij})_{max}$  as below,

$$A = \begin{matrix} & 1 & 7 & 1/2 & 3 & 2 & 2 \\ 1 & 1 & 7 & 1/6 & 1 & 1/3 & 1/3 \\ 7 & 1/7 & 1 & 5 & 2 & 3 & 3 \\ 2 & 1/2 & 1/5 & 1 & 1/3 & 1/2 & 1/2 \\ 1/3 & 1 & 1 & 3 & 1 & 2 & 2 \\ 1/2 & 1/3 & 1/2 & 1/3 & 2 & 1/2 & 1 \end{matrix}$$

Use matlab to find characteristic roots of the judg-

ment matrix, compute the maximum characteristic root with the formula  $\lambda_{max} = AW = \lambda_{max} W$ . Find its corresponding eigenvector W, the weights obtained are shown in TABLE 1. Check on the results's consistency, calculate consistency index  $CI = \frac{\lambda_{max} - n}{n - 1}$  (n is the order of judgment matrix), consistency ratio  $CR = \frac{CI}{RI}$ ,  $CR = 0.032 < 0.1$ , pass the consistency check. The resulting weights can be used as a measure of transparency in government investment judgment basis.

TABLE 1: Index and weight

Index	Weight
(1) Fiscal Expenditure Budget and Final Accounts	0.239438
(2) Total Investment	0.060129
(3) Project Construction Necessity	0.325451
(4) Project Investment Estimates	0.073811
(5) Bidding Details	0.174027
(6) Implementation of Investment	0.127144

**Empirical analysis**

Local governments are the subject of government investment, they have important significance for regional economic development, urban and rural distribution, optimize the industrial structure. Ford, Poret (1991), Easterly Rebelo (1993) found that public capital investment plays an important role for economic growth. Government investment stimulates economic growth. However, due to the region varies, the policies are different, each local government's investment regime is not the same, the total amount of investment and economic growth aren't at the same level. Local government investment also exists a series of problems. Xie Ying (2005) thinks that in local government investment, there is a blurring of investment autonomy, lack of standardized and scientific investment management and the supervision and management system of investment behavior is not perfect. In recent years, despite the investment in order to regulate behavior, local governments have issued their own government investment management approach. However, government investment still differs from regions. To further analyze the transparency of government investment situation in different regions, this paper employs provinces and cities

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TABLE 2 : Provincial and municipal NDRC public investment projects

province	Total Investment	The total number of production project	Newly-commenced projects	Number of project investment	Project usage	Investment volume	2013 bidding and tendering
Jiangxi	1368.86 billion yuan	55	99				500
Hebei	special investment management column	-	-	40	40	40	-
Anhui	15055 billion yuan (investment in fixed assets)			165	165	165	152
Jiangsu	overall situation			200	110	110	-
Zhejiang	departmental budgets			-	-	-	411
Henan	special financial information column	-	-	-	-	-	having notice
Hubei	special investment management column, financial information			134	134	134	having notice, no specific information
Hunan	special investment management column	-	-	532	532	532	
Shanxi	development planning			612	rough estimate list in details updated to 2009		procurement bidding
Sichuan	-			-			
Shanxi	no specific information, only Fiscal Expenditure Budget and Final Accounts		-	-	-	-	
Fujian	no specific information, only Fiscal Expenditure Budget and Final Accounts			221	221	221	local tender notice
Guizhou	7809.05 billion yuan, introduction about investment structure			32	32	32	79
Heilongjiang				82	-	required application	-
Gansu	200 major projects at provincial level (120 ongoing projects, 40 planning new projects, 40 preparing projects), with a total investment 10621.78 billion yuan, annual plans to invest 1550.90 billion yuan. Analyze the investment of fixed assets of the whole province	details of invested projects, disclosure of 2013 is better than 2012		189	189	189	-
Shandong					record construction project		
Liaoning				44	required application	updated to 2012-07	set up special bidding regulation website, disclosing government and enterprise bidding information, rich in content
Yunnan					projects are classified and counted project pre-stage, project construction, project auditing		-
Qinghai	special investment management column				172	introduction is rough	-

province	Total Investment	The total number of production project	Newly-commenced projects	Number of project investment	Project usage	Investment volume	2013 bidding and tendering
Jilin	special investment management column			no specific projects, only a summary			
Hainan				Y	Y	Y	Y
Tianjin	departmental budgets			2	2		special investment management column, administrative measures
Xizang	special investment management column			introduction on key projects			
Xinjiang	special investment management column						
Neimenggu	fixed assets, a special investment management column, project audit, Summary Report on invested projects	including government investment, bidding and project audit					
Guangxi	special investment management column, project approval			106	106	106	
Chongqing				Y			
Shanghai				54	54	54	

nationwide for the study sample, using the evaluation system explained above to rate local government investment transparency, according to the NDRC website data by manual collation.

By manually checking provinces NDRC data, we can find public situations of government investment obvious different among the provinces. Some provinces set up a special investment management column for government investment projects' approval and public notification and the government's bidding situation. However, some provinces' data updates slower, the data is publicized upon application. Public disclosure of information required to complete the application form in order to obtain valid information, obtaining investment information is not convenient.

Based on the above analysis, we conduct manual scoring according to the six evaluation index. Each item out of 1 minute, 0-0.2 points said we could not obtain valid information; 0.2 to 0.4 points, said access to information is cumbersome; 0.4-0.6 points, said access to information is more convenient; 0.6 to 0.8 points, said information voluntarily disclosed and transparent, 0.8 -1 points represent a high transparency of information. Right then multiply evaluation system scores by determined weight, the final score of each province can be obtained. The higher the score, the higher transpar-

ency the provincial government investment possess. Which indicates that government investment is relatively more open and transparent, the public can easily access to government information for investment, the supervision of government investment situation is effectively. Municipalities scores as follows:

As can be seen from TABLE 3, Guizhou, Gansu Province score as high as 0.8 or more, the transparency of government investment is relatively high. Beijing ranked third, government investment information is also more open and transparent. In contrast, Ningxia, Sichuan Province, public information is less. Transparency in government investment should be further enhanced and improved.

From TABLE 3, the provincial governments' disclosure of fiscal expenditure budget and final accounts information is relatively good, for the case of project approval also have a more open system. However, for the total investment, the specific categories of investment, some provinces offered less specificity, according to the application needs to open or choose not to open. For the follow-up to the implementation of government investment projects, only Guangxi Zhuang Autonomous Region scores higher. Its Development and Reform Commission website also makes photographs of key projects audit situations public to the society,

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TABLE 3 : Provincial and municipal government investment transparency score

Province	Fiscal Expenditure Budget and Final Accounts	Total Investment	Project Construction Necessity	Project Investment Estimates	Bidding Details	Implementation of Investment	score
Guizhou	1	1	0.95	0.9	0.96	0.35	0.886742
Gansu	0.96	0.98	0.96	0.9	0.9	0.35	0.868775
Beijing	1	1	0.9	0.6	0.5	0.45	0.780988
Anhui	0.96	0.95	0.95	1	0.2	0.33	0.746736
Fujian	0.9	0.2	0.9	1	0.65	0.29	0.744226
Shanxi	0.67	0.23	0.9	0.9	0.5	0.8	0.722318
Guangxi	0.3	0.2	0.8	0.8	0.9	0.9	0.674321
Hubei	0.65	0.15	0.95	0.9	0.6	0.2	0.670107
Jiangxi	0.8	0.8	0.6	0.2	0.96	0.3	0.654895
Shanghai	0.6	0.2	0.8	0.6	0.8	0.2	0.624986
Hainan	0.2	0.35	0.9	1	0.8	0.2	0.6003
Hunan	0.65	0.1	0.95	0.9	0.2	0.2	0.59749
Jiangsu	0.6	0.2	0.65	0.7	0.3	0.9	0.585537
Neimenggu	0.9	0.2	0.6	0.6	0.3	0.5	0.582857
Chongqing	0.4	0.32	0.6	0.7	0.8	0.5	0.564748
Xizang	0.3	0.4	0.7	0.7	0.6	0.6	0.556069
Liaoning	0.2	0.2	0.7	0.9	1	0.2	0.553615
Xinjiang	0.3	0.3	0.6	0.6	0.7	0.7	0.540247
Hebei	0.3	0.8	0.9	0.8	0.23	0.21	0.538616
Zhejiang	0.75	0.2	0.2	0.2	0.96	0.25	0.470308
Jilin	0.3	0.55	0.36	0.3	0.5	0.6	0.407508
Shandong	0.9	0.5	0.23	0.3	0.2	0.2	0.40279
Guangdong	0.2	0.3	0.6	0.2	0.25	0.6	0.395752
Qinghai	0.65	0.5	0.36	0.4	0.2	0.21	0.393892
Shanxi	0.9	0.2	0.22	0.2	0.2	0.3	0.38683
Heilongjiang	0.2	0.2	0.5	0.4	0.3	0.4	0.355229
Henan	0.5	0.21	0.2	0.2	0.6	0.2	0.342043
Yunnan	0.2	0.21	0.55	0.5	0.2	0.2	0.336653
Tianjin	0.2	0.2	0.4	0.3	0.5	0.2	0.324679
Ningxia	0.2	0.2	0.2	0.3	0.2	0.5	0.245524
Sichuan	0.2	0.25	0.15	0.1	0.2	0.3	0.192067

while the open of other provinces have yet to be further enhanced and strengthened.

Overall, the transparency of our government invest-

ment has made remarkable progress, the supervision mechanism of government information publicity is more sophisticated, appropriate policies are further reformed

and introduced. However, a series of problems still exist in the Chinese government investment, such as the total public investment is not open enough, the implementation of the projects are difficult to trace, access to information is more cumbersome than in Western countries, there is still a long way to go in information openness and transparency of government investment in public.

### STUDY OF INFLUENCING FACTORS ON GOVERNMENT INVESTMENT TRANSPARENCY

Through the above analysis, we can found that the provincial and city governments investment transparency score difference is large, the highest score in Guizhou province is as much as four times of that in Sichuan province. Provincial and municipal governments investment transparency condition behavior quite differently from each other. So, what kind factors bring these differences?

#### Research hypothesis

Real estate development and government investment transparency. He Yuanbin(2006) found that “Because of asymmetric information, market players are not standardized and other reasons, there is still the power of China’s real estate market “rent-seeking” phenomenon, the government and the real estate agency are closely linked. Many real estate companies are actively seeking to associate the government, in order to meet its considerable development. And real estate investment, as an important part of fixed asset investment, has a great influence upon the government in-

vestment. Based on this, the hypothesis 1: the more the provinces invest in real estate, the lower the transparency of government investment is.

Imports and exports and government investment transparency. According to the National Bureau of Statistics data, in 2011 China’s foreign trade exports ranked second in the world, and foreign trade give a strong boost to development of China’s economy. More and more foreign Investment comes to China, stimulating our economy growth. In order to promote foreign investment, governments also introduced a series of policies and measures accordingly, to create a favorable investment environment for foreign merchant. Therefore, assuming that the total import and export has indirect contact with the local investment environment, and higher transparency in government investment, means that the government encourages the formation of a more open and transparent investment environment. Hypothesis 2: Total import and export is proportional to the government investment environment.

Population and government investment transparency. By analyzing the scores we can found many populous provinces have a higher transparency of government investment. The greater the number of the population, may mean that the provinces have a relatively abundant labor, as well as more developed economic environment, the public monitoring mechanism will be more effective. Accordingly, hypothesis 3: The number of population is proportional to the government investment environment.

#### Empirical analysis

In order to test the above hypothesis, the paper carried a multiple regression analysis. Data is from the

TABLE 4 : Coefficient

model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	standard error	Book Edition		
(constant)	.492	.030		16.393	.000
Zscore (import and export)	.129	.089	.718	1.442	.163
Zscore (real estate development)	.139	.078	.775	1.785	.088
Zscore (population)	.244	.115	1.358	2.121	.045
Zscore (proportion of the tertiary industry)	.058	.045	.325	1.289	.210
Zscore (total unemployment)	-.082	.061	-.456	-1.348	.191
Zscore (unemployment rate)	-.058	.038	-.324	-1.529	.140
Zscore (Consumer Spending)	-.418	.181	-2.329	-2.312	.030

a. Dependent Variable: transparency

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China Statistical Yearbook and corresponding provincial and municipal Development and Reform Commission. In order to remove dimension impact of the data, the data were first standardized by building multivariate model. Use SPSS regression analysis, the regression results are shown below:

According to the regression results, real estate development Coefficient is 0.139, and in 10% of the levels significantly, verifying the hypothesis 1; regression coefficient of the import and export is 0.129, but not significantly, hypothesis 2 is false; population number of the regression coefficient is 0.244, and in a significant level of 5%, verifying the hypothesis 3.

### CONCLUSION

Through the above analysis, we can see that our provincial and municipal investment transparency differs significantly. Real estate development, population, consumer spending have a more significant impact on the transparency of government investment, transparency in government investment has yet to be improved.

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