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RESEARCH ON INTERNAL CONTROL COST AND BENEFIT OF POWER ENTERPRISES

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ABSTRACT
Most of China's power companies have different performances from private enterprises in corporate governance because of their state-owned characteristics. In order to deeply explore the impact of internal control cost of power companies on overall efficiency, this paper analyzes the literature through theoretical review, and proposes research hypotheses. Based on the financial data of 30 power listed companies in 2015-2017, the paper analyzes the relationship between the internal control cost of power companies and the benefits and risks of enterprises. The research shows that the internal control design cost, execution cost and assessment cost of the power enterprise have significant effects on the benefit and risk of the enterprise, and the increase of each cost will improve the enterprise benefit and reduce the enterprise risk.

KEYWORDS: power enterprise, internal control, cost, benefit, risk

1.   INTRODUCTION
Today, with the continuous development of our country's economy and the aggravation of the market competition, the corporate financial fraud incidents have occurred frequently. A series of related events have led to the emergence of internal control failures, which poses great risks to the development of enterprises. It can be seen that the establishment of an internal control system is essential for the health and sustainable development of enterprises. In 2008 and 2010, China's Ministry of Finance and other five ministries and commissions promulgated the "Basic Standards for Internal Control of Enterprises" and "Guidelines for Enterprise Internal Control Support", which marked the formation of a system of internal control standards for Chinese enterprises. However, if a company's internal control costs are too high, even more than the benefits it brings, it will make the company's internal control system tend to be ineffective. Along with the country's electric power system reform gradually thorough, the higher requirements have been placed on the cost management of these companies. Therefore, this paper intends to use empirical analysis to research specific impact of internal control costs on the benefit of power companies.

2.   THEORY ANALYSIS AND RESEARCH HYPOTHESIS
Internal control is the general term for various business management systems, organizational measures, management methods and business processing processes. Its main objectives are to improve operational efficiency, control operational risks and prevent fraudulent behaviors [1]. Cost is the comparative relationship between internal input and output of the enterprise. It is a special economic indicator that reflects the consumption and work quality of the enterprise. The total labor consumption cost of the enterprise during production and operation will be directly reflected in the cost. In this paper, we refer to Liyan Tan (2018) and subdivide the internal control cost into design cost, execution cost and assessment cost, then we discuss its impact mechanism on enterprise benefits respectively [2]. In addition, internal control is an important part of risk management. The analysis of internal control cannot be based solely on cost and benefit, but also introduces the concept of risk control.

2.1 Internal Control Design Cost, the Benefits and Risks of Enterprises

Internal control design refers to the preparation of the enterprise before implementing internal control by clearly controlling the target, integrating the control flow, identifying the control point and selecting control measures [3]. Reasonable and complete internal control design is the prerequisite for effective implementation of internal control. KITORA Yuko (2017) proposed the concept of "preventive financial control" and explained that appropriate preventive financial controls are the cornerstone of financial control activities [4]. Zhengkuan Du (2018) believed that enterprises needed the financial department to systematically manage costs through detailed calculation and analysis, what's more the financial should combined the cash inflow and outflow factors to prepare a stage budget. A perfect budget can reduce the cost of the enterprise, strengthen the financial efficiency and improve the benefits of the enterprise. The budget can be called the first key in the target cost control work [5].

Therefore, this paper proposes the following research hypotheses:
H1: Increasing the cost of internal control design will promote the benefit of power companies.
H2: Increasing the cost of internal control design will reduce the risk of power companies.

2.2 Internal Control Execution Cost, the Benefits and Risks of Enterprise

Internal control execution refers to the strict internal control management activities in accordance with the "Basic Standards for Internal Control of Enterprises" and the supporting guidelines, combined with the actual business content and in accordance with the process of designing the internal control system of the enterprise. Yu Zhong et al. (2018) used the principal-agent theory to empirically study the panel data of China's A-share listed companies from 2007 to 2016, and found that improving the quality of internal control can significantly reduce the costs of two types of agent, thereby enhancing the company's performance [6]. At the same time, Yujing Man et al. (2018) put forward that we should make a comprehensive analysis according to the classification of production indicators, so as to ensure the effective circulation of funds within enterprises [7].

Therefore, this paper proposes the following research hypotheses:
H3: Increasing the cost of internal control execution will promote the benefit of power companies.
H4: Increasing the cost of internal control execution will reduce the risk of power companies.

2.3 Internal Control Assessment Cost, the Benefits and Risks of Enterprise

Internal control assessment refers to the evaluation of the rationality, integrity and effectiveness of execution according to internal control systems design. Dragomir Dimitrijevic et al. (2015) argued that the emergence of internal controls for specific activity components is related to the management needs for assessing the consistency between actual and development objectives [8]. Yulan Zhang et al. (2018) took 1962 sample data of 16 categories of heavy polluting industries in A-share of Shanghai and Shenzhen stock markets from 2014 to 2016 as the research object, analyzed the relationship between internal control quality and enterprise value by using multiple regression model, and found that there was a direct positive correlation between internal control quality and enterprise value [9].

Therefore, this paper proposes the following research hypotheses:
H5: Increasing the cost of internal control assessment will promote the benefit of power companies.
H6: Increasing the cost of internal control assessment will reduce the risk of power companies.

3.   MODEL DESIGN

Based on the above theoretical analysis and research hypothesis, this paper will use the return on total assets and the asset-liability ratio as the evaluation indicators of the company's benefits and risks, and set it as the dependent variable of the model. The independent variables are design cost, execution cost and assessment cost. Based on the previous research, this paper designs model 1 to verify H1, H3 and H5, and model 2 to verify H2, H4 and H6. The names and meanings of the selected variables are shown in Table 1.

Model 1:
$$ROA = \alpha + \beta_1 DCOST + \beta_2 ECOST + \beta_3 ACOST + \beta_4 TIME + \beta_5 EC + \beta_6 CEO + \beta_7 IDR + \beta_8 TAF + \beta_9 TAO + \beta_{10} TE + \varepsilon$$

Model 2:

$$RISK = \alpha + \beta_1 DCOST + \beta_2 ECOST + \beta_3 ACOST + \beta_4 TIME + \beta_5 EC + \beta_6 CEO + \beta_7 IDR + \beta_8 TAF + \beta_9 TAO + \beta_{10} TE + \varepsilon$$

Table 1. Variable name, code and meaning

Variable Type	Variable Name	Variable Code	Variable Meaning
Dependent variable	Return on total assets	ROA	= net profit / total assets at the end of the year * 100
	Asset-liability ratio	RISK	= total liabilities at the end of the year / total assets at the end of the year *100
Independent variable	Design cost	DCOST	= [administrative fees (consultation fees) - internal control audit fees] / total assets at the end of the year * 10000
	Execution cost	ECOST	= management fee (salary salary) / total assets at the end of the year * 10000
	Assessment cost	ACOST	= company annual internal control audit fee / total assets at the end of the year *1000000
Control variable	Time to market	TIME	The number of days from the date of listing of the company to the end of the reporting year /365
	Equity concentration	EC	The shareholding ratio of the largest shareholder
	Chairman and general manager concurrently	CEO	The chairman and the general manager are both in one to take 1, the other take 0.
	Independent directors ratio	IDR	The proportion of independent directors to the total number of directors
	Type of accounting firm	TAF	Hire the international four major accounting firms to take 1, the other take 0
	Term of accountant office	TAO	Years in which an accounting firm provides continuous audit services to a company
	Type of enterprise	TE	State-owned enterprises are 1, and non-state-owned enterprises are 0.

4.   EMPIRICAL ANALYSIS

This paper selects 30 power companies listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange as samples, and conducts empirical analysis based on the financial data and audit data of each company from 2015 to 2017. The selected data are derived from the annual financial reports of each listed company.

4.1 Descriptive Statistics

In this paper, SPSS software was used to conduct descriptive statistics on each variable, and the results are shown in table 2.

Table 2. Descriptive statistics of variables

Descriptive Statistics				
Variable	Minimum	Maximum	Mean	Standard Deviation
ROA(%)	0.00	13.45	3.61	2.69
RISK(%)	6.88	81.33	59.14	16.79

DCOST	0.03	78.57	8.37	17.05
ECOST	4.11	727.39	73.40	128.69
ACOST	4.94	264.36	49.64	61.60
TIME	1.56	23.70	16.43	6.01
EC	13.58	70.40	46.60	14.88
CEO	0.00	1.00	0.03	0.18
IDR	0.32	0.50	0.36	0.05
TAF	0.00	1.00	0.14	0.35
TAO	2.00	20.00	5.70	4.98
TE	0.00	1.00	0.97	0.18

According to Table 2, the average ROA of power companies is 3.61%, indicating that the general benefits of power companies are not high. The mean and maximum value of RISK indicate that most power companies have high asset-liability ratios and high risks. The DCOST's maximum value is 78.57, and the minimum value is only 0.03, indicating that the power companies have a large gap in internal control design investment. Compared with DCOST, the difference between the maximum and minimum values of ECOST and ACOST is more obvious. The maximum value of ECOST is as high as 727.39, which is much higher than the minimum value of 4.11. It indicates that the investment of different power companies in the internal control execution level is very different. The standard deviation of 128.69 further verifies this situation. The ACOST's indicators show that there is also a gap among the costs of various power companies in the internal control assessment. The minimum value of EC is 13.58 and the maximum value is 70.40, indicating that the degree of equity concentration in power enterprises is generally high, which is related to the fact that most power enterprises in China are controlled by the state. The CEO's mean value of 0.03 indicates that the separation of the positions of the chairman and general manager of China's power listed companies is relatively good. Further analysis of IDR shows that the proportion of independent directors of power companies is higher than 0.3, which is mainly affected by the mandatory regulations of China Securities Regulatory Commission. The minimum and mean values of TE indicate that there are non-state-controlled power companies in China, but the number is small, which is related to the characteristics of power itself.

4.2 Correlation Analysis
Based on the above sample data, Pearson correlation analysis results of all variables were further obtained by using the software, as shown in table 3.

Table 3. Pearson correlation test of variables

	ROA	RISK	DCOST	ECOST	ACOST	CEO	TIME	EC	TAF	IDR	TAO	TE
						Correlation						
ROA	1											
RISK	-0.628	1										
DCOST	0.298	-0.457	1									
ECOST	0.384	-0.469	0.123	1								
ACOST	0.362	-0.501	0.104	0.066	1							
CEO	0.056	-0.125	0.225	-0.011	0.146	1						
TIME	0.096	-0.21	0.254	0.225	0.29	0.019	1					
EC	0.47	-0.411	-0.204	-0.209	-0.108	-0.148	-0.205	1				
TAF	-0.081	0.122	-0.091	-0.031	-0.186	-0.079	0.034	0.112	1			
IDR	-0.027	-0.292	0.027	0.095	0.141	0.351	0.086	0.063	-0.235	1		
TAO	0.279	-0.278	0.212	0.138	0.197	-0.102	0.239	-0.094	-0.145	0.201	1	
TE	0.021	0.115	-0.117	-0.061	0.005	0.034	-0.11	0.285	0.079	0.128	-0.042	1

As shown in table 3, the costs of DCOST, ECOST and ACOST are positively correlated with the benefits of power enterprises and negatively correlated with risks, indicating that increasing the investment in internal control could effectively improve the benefits of power enterprises and reduce the operating risks of power enterprises. EC is positively and negatively correlated with ROA and RISK respectively, which indicates that with the increase in the shareholding ratio of the largest shareholder, the benefits of power companies will increase, while the risk will decrease. TAO is positively related to ROA and negatively related to RISK, indicating that the length of the continuous service provided by the accounting firm for the power company has a positive impact on the company's benefits and a negative impact on the risk. IDR has little correlation with ROA while a strong negative correlation with RISK, which indicates that high proportion of independent directors corresponds to low risk of power enterprises. The variables of the CEO, TIME, TAF and TE are less relevant to ROA and RISK.

4.3 Multiple Regression Analysis

According to the model design, multiple linear regression analysis was performed using software. The results are shown in Table 4.

Table 4. Multiple regression results

Model 1			Model 2		
	β	Sig.		β	Sig.
ε	-0.594		ε	8.3	
DCOST	0.105	0.078	DCOST	-0.002	0.075
ECOST	0.174	0.035	ECOST	-0.249	0.026
ACOST	0.121	0.062	ACOST	-0.195	0.012
TIME	0.071	0.183	TIME	-0.322	0.53
EC	0.392	0.021	EC	-0.557	0.033
CEO	0.005	0.247	CEO	-2.948	0.347
TAF	-1.053	0.546	TAF	0.443	0.96
IDR	-2.459	0.772	IDR	-3.235	0.097
TAO	0.101	-0.084	TAO	-0.152	0.085
TE	0.612	0.949	TE	2.771	0.41

Model 1 studies the relationship between DCOST, ECOST, ACOST and ROA. According to Table 4, the internal control design cost, execution cost and assessment cost of the independent variables are significantly positively correlated with the return on total assets at the level of 1%. It indicates that improving the design, implementation and evaluation cost of internal control of power enterprises will significantly increase the benefits of enterprises. Therefore, hypotheses 1, 3 and 5 are all established.

Model 2 studies the relationship between DCOST, ECOST, ACOST and RISK. Table 4 shows that the three costs of internal control are significantly negatively correlated with the asset-liability ratio at the level of 1%. It indicates that increasing the investment in the design, implementation and evaluation of internal control in power enterprises could effectively reduce the enterprise risk, so as to verify hypothesis 2, hypothesis 4 and hypothesis 6.

5.   CONCLUSION

With the deepening of the power system reform, the importance of internal control to the benefit of power companies has been becoming increasingly prominent. Based on the theoretical analysis of internal control, this paper puts forward the research hypothesis about the cost-effectiveness of internal control of power companies, and selects the financial data of 30 listed power companies in 2015-2017 to study the relationship between internal control cost and enterprise benefit and risk. The results show that increasing the internal control design cost, execution cost and assessment cost of the power enterprise will increase the benefit of the power enterprise and reduce the enterprise risk. Therefore, power companies should pay attention to the investment of all aspects of internal control, strictly control the implementation process of internal control design, execution and assessment, and do their best to reduce the risks and improve the benefits of enterprises, so as to promote the benign and healthy development of enterprises.

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