CSCanada
International Business and Management
Vol. 5, No. 2, 2012, pp. 37-43
DOI:10.3968/j.ibm.1923842820120502.1095

ISSN 1923-841X [Print]
ISSN 1923-8428 [Online]
www.cscanada.net
www.cscanada.org

Research on the Internal Controls Efficiency of the Real Estate Enterprise Based on Factor Analysis

LI Qingdong[a], *; CUI Zhixin[b]

[a] Doctoral Candidate, Associate professor, School of Economics and Management, Liaoning Shihua University, 113001, China.
[b] Master Candidate, School of Economics and Management, Liaoning Shihua University, 113001, China.
*Corresponding author.

Received 10 August 2012; accepted 25 October, 2012

Abstract

In the beginning, this paper researches on the operating efficiency of the 45 Chinese Real estate listed companies through DEA method. It could use technological efficiency of these as a variables and the internal controls efficiency of the real estate enterprise to do factor analyze. Thus, we can draw of comprehensive evaluation of internal control efficiency of the Chinese real estate enterprise. Analysis shows that at the top of internal control efficiency of the real estate enterprise is good only in one or two factor level, which is illustrated that the level of overall efficiency of the Chinese real estate enterprises need to be improved.

Key words: The real estate enterprise; Internal control efficiency; DEA; Factor analysis

LI Qingdong, CUI Zhixin (2012). Research on the Internal Controls Efficiency of the Real Estate Enterprise Based on Factor Analysis. *International Business and Management, 5*(2), 37-43. Available from: http://www.cscanada.net/index.php/ibm/article/view/j.ibm.1923842820120502.1095
DOI: http://dx.doi.org/10.3968/j.ibm.1923842820120502.1095

With the real estate market's competition being fierce increasingly, they found that the internal control efficiency is directly related to the development of the enterprise in long-term and stable development. Of course, the real estate enterprises have high internal control efficiency, which they can discover shortages in time, and constantly adjust the more suitable target location in the market environment of survival of the fittest. Therefore, scholars and researchers constantly research on this subject of enterprise internal control efficiency.

Combining the current research achievements in the industries, this article selects data of 45 the Chinese real estate listed companies by June 30, 2012 to analyze. The data mainly come from annual report, eastern wealth and financial circles website. Its innovation mainly is that the input-output efficiency is introduced into the enterprise internal control efficiency, and then draws of comprehensive results of 45 Chinese enterprises internal control efficiency by the methods of DEA and factor analysis.

1. RESEARCH ON INPUT-OUTPUT EFFICIENCY OF THE REAL ESTATE ENTERPRISES BASED ON DEA

1.1 The Basic Principle and Selection of DEA Model

Data Envelopment Analysis (DEA for short), which was brought up in 1978 by A. Charnes and W. W. Cooper *et al.*, is an evaluation method for efficiency of multiple inputs and multiple outputs based on the concept of relative efficiency (WEI, 2004). By using the mathematical programming models, it gets data results about relative efficiency comparisons among Decision Making Units (DMU for short). This paper uses the C^2R model to evaluate the technological efficiency and scale efficiency of the DMU. On the premise of keeping at least DMU output, it devotes minimal resources. Its concrete model as follows:

$$\min[\theta-\varepsilon(\sum_{i=1}^{m}S_i^-+\sum_{r=1}^{s}S_r^+)]$$

$$s.t.\begin{cases}\sum_{j=1}^{n}x_{ij}\lambda_j+S_i^-=\theta x_{ij}, i=(1,2,...,m)\\ \sum_{j=1}^{n}y_{rj}\lambda_j-S_r^+=\theta y_{rj}, r=(1,2,...,s)\\ \theta,\lambda_j,S_i^-,S_r^+\geq 0\\ j=(1,2,...,n)\end{cases}$$

Among them, θ represents relative efficiency; S_i^- and S_r^+ represent slack variables; ε represents non-Archimedean infinitesimal. Using this model,we can tell whether effective DMU. Suppose $\theta^*, \lambda^*, s^{-*}, s^{+*}$ are the optimal solution in C^2R model, it can be as follows: If meet θ^*=1, then DMU is weak DEA efficient; If $\theta^* = 0, s^{-*} = 0, s^{+*} = 0$, then DMU is DEA efficient; If $\theta^* < 1, s^{-*} \neq 0, s^{+*} \neq 0$, then DMU is non-DEA effective (CHENG & QUAN, 2010).

1.2 Research on Input-Output Efficiency of the Real Estate Enterprises

This paper researches on the operating efficiency of 45 Chinese listed companies in the real estate enterprises which are as DMU. Considering situation of the Chinese real estate enterprises and the possibility of acquired data, it selects the concrete input indexes which include total assets, current assets, the total cost and the total liabilities, and output indexes which include the net profit and gross income. Using Deap2.1 software, it mainly receives the data result of comprehensive technical efficiency and pure technical efficiency and scale efficiency (see Table 1).

Table 1
The Companies' DEA Evaluation Results

DMU	CRSTE	VRSTE	SCALE	SE	DMU	CRSTE	VRSTE	SCALE	SE
YANG GUANG GUFEN	0.475	0.707	0.672	drs	CHANG CHUN JING KAI	1.000	1.000	1.000	-
WAN KE	0.590	1.000	0.590	drs	CHUANG XING ZI YUAN	1.000	1.000	1.000	-
BAI LI DI CHAN	0.594	1.000	0.594	drs	YIN RUN TOU ZI	0.432	1.000	0.432	irs
RONG SHENG FA ZHAN	0.767	1.000	0.767	drs	SHI MAO GU FEN	0.635	0.987	0.643	drs
SHI LIAN DI CHAN	1.000	1.000	1.000	-	TIAN LUN ZHI YE	0.413	0.501	0.824	irs
JIN DI JI TUAN	0.488	0.909	0.536	drs	WAN YE QI YE	0.326	0.327	0.999	-
RONG AN DI CHAN	0.466	0.746	0.625	drs	ZHAO SHANG DI CHAN	0.655	1.000	0.655	drs
TIAN YE GU FEN	0.431	0.434	0.994	irs	TIE LING XIN CHENG	0.379	0.384	0.987	irs
JING NENG ZHI YE	0.572	0.809	0.707	drs	ZHONG LIANG DI CHAN	0.428	0.751	0.570	drs
LU SHANGZHI YE	0.345	0.601	0.574	drs	SHOU KAI GU FEN	0.450	0.865	0.521	drs
YI HUA DI CHAN	0.388	0.438	0.887	irs	TIAN BAO JI JIAN	0.659	0.770	0.856	drs
WAN TONG DI CHAN	0.446	0.724	0.616	drs	GE LI DI CHAN	0.528	0.867	0.609	drs
SONG DU GU FEN	0.747	0.927	0.805	drs	SHU YUAN KE JI	0.665	0.705	0.944	drs
ZHONG GUAN CUN	0.928	1.000	0.928	drs	ZHANG JIANG GAO KE	0.435	0.758	0.573	drs
BEI JING CHENG JIAN	0.582	1.000	0.582	drs	WAI GAO QIAO	0.634	0.917	0.691	drs
DA MING CHENG	0.504	0.790	0.638	drs	MIAN SHI GU FEN	0.718	0.825	0.870	irs
JIN FENG TOU ZI	0.476	0.681	0.700	drs	XIN HUANG PU	0.488	0.730	0.668	drs
YUN NAN CHENG TOU	0.316	0.525	0.601	drs	DING LI JI TUAN	0.819	0.820	0.999	irs
ZHONG GUO WU YI	0.595	0.741	0.804	drs	ZHONG YIN GU FEN	0.703	0.782	0.899	drs
CHONG QING SHI YE	0.856	0.888	0.964	drs	SHEN CHANG CHENG	0.774	0.919	0.843	drs
XIN HU ZHONG BAO	0.485	0.853	0.569	drs	GAO XIN FA ZHAN	0.726	0.731	0.993	irs
GUANG YU JI TUAN	1.000	1.000	1.000	-	XI ZANG CHENG TOU	0.473	0.730	0.648	drs
DONG FANG YIN XING	0.274	1.000	0.274	irs	MEAN VALUE	0.593	0.803	0.748	-

According to the calculated results of Table 1, we can see that SHI LIAN DI CHAN, GUANG YU JI TUAN, CHANG CHUN JING KAI, CHUANG XING ZI YUAN and WAN YE QI YE reached the optimum of technology efficiency and scale efficiencies; in addition to the above enterprises, they achieve optimal in terms of pure technical efficiency, which include WAN KE, BAO LI DI CHAN, RONG SHENG FA ZHAN, ZHONG GUAN CUN, BEI JING CHENG JIAN, DONG FANG YIN XING, YIN RUN TOU ZI and ZHAO SHANG DI CHAN. The changes of scale efficiency: 68.89% in decreasing returns to scale; 20% in increasing return to scale; 11.11% in constant return to scale state. Mean values of efficiency: technical efficiency value is 0.593,

pure technical efficiency values is 0.803, efficiencies of scale values is 0.748.

Input-output efficiency of the real estate business is not optimal, because they emphasis on the efficiency of economies of scale. Low levels of technical efficiency lead to high input and low output, which waste a lot of human resources and material resources. Efficiency is an important factor in the impact of the real estate business, especially technical efficiency played a crucial role.

2. ANALYZE ON THE INTERNAL CONTROLS EFFICIENCY OF THE REAL ESTATE ENTERPRISE

2.1 Sample and Variable Design

The sample data is mainly the above 45 companies' data as the basis, according to the factors of the real estate enterprise internal control efficiency selected the following variable (see Table 2).

Table 2
The Design and Explanation of Variable Index

Symbol	Variable	Explanation
DSJR	The chairman of the board concurrently general manager	If they are part-time, the value is 0; or else it is 1.
QYJX	Performance -appraising system of enterprise	Performance -Appraising System is divided into five grades, {best, better, good, in general, bad} = {5, 4, 3, 2, 1}.
XXXT	Perfect information system or not and effective communication	The enterprise information system is divided into five grades for the degree of the establishment and timely communication, {best, very perfect, healthy and timely, general, bad} = {5, 4, 3, 2, 1}.
QYWH	The construction of enterprise culture	The degree of attention of the enterprise for the construction of enterprise culture is divided into five grades, {very seriously, seriously, importance, in general, bad} = {5, 4, 3, 2, 1}.
JSNK	The internal control activities of the board of supervisors	The level of internal control activity is divided into five grades in the board of supervisors, {most detailed, very detailed, more detailed, general, bad} = {5, 4, 3, 2, 1}.
JSYJ	Opinions of The board of supervisors	The level of enterprise annual report is divided into five grades for internal control information disclosure, {most detailed, very detailed, detailed, general, bad} = {5, 4, 3, 2, 1}.
DSGM	The scale of the board of directors	The total number of the board of directors
DLDS	The proportion of independent directors	The proportion of independent director in the board of directors
DYGD	the percentage of the first major stockholder	The percentage of major shareholders accounted for the total number of the entire enterprises'.
CWBB	The design report of financial statements	The enterprise for the design report of financial statements is divided into three grades, if the design is very good, value is 1; If design is the general, value is 0.5; If the design is very insufficient, value is 0.
NBFX	Risk warning and coping strategies in annual report	Risk warning and coping strategies in annual reports, in accordance with from the very full to poor, is divided into 5 grades, {most full, more full, full, in general, no} = {5, 4, 3, 2, 1}.
ESGD	The sum of the percentage of the second to the tenth largest shareholder	The sum of the percentage of the second to the tenth largest shareholder accounted for the total number of the entire enterprises'.
JSGM	The size of the board of supervisors	The total number of board of supervisors in enterprises
NBSJ	The selection of the accounting firm for annual audit	The selection of accounting firm for annual audit is divided into three grades, if enterprises choose the first four ones, value is 3; If the enterprises choose the top ten ones, value is 2; If the choice of accounting firm not ranked in the top 10, the value is 1.
ZCGM	Asset scale	The total assets of the enterprise is taken the logarithm
DEA	Technology efficiency	Technical efficiency value is calculated by data envelopment analysis.

2.2 The Principal Component Analysis of Internal Controls Efficiency of Real Estate Enterprise

We must check whether sample variable is suitable for factor analysis. Through the KMO and Bartlett inspection (see Table 3): KMO statistic test value is 0.773; Bartlett spherical degree test approximate chi-square value is 518.036 is bigger; and associated probability value is 0.000 less than 0.05 significant level, so variable is suitable for factor analysis (WEI, 2004).

Table 3
KMO and Bartlett Inspection

The Degree of Kaiser - Meyer - Olkin		0.773
Bartlett Spherical Degree Test	Approximate Chi-Square	518.036
	df	120
	Sig.	0.000

Table 4
The Total Variance Explained

Factor	Initial characteristic value			Extraction sums of squares loadings			Rotary sum of squares loadings		
	Total	%of Variance	Cumulative%	Total	%of Variance	Cumulative%	Total	%of Variance	Cumulative%
1	6.861	42.882	42.882	6.861	42.882	42.882	6.578	41.111	41.111
2	1.823	11.395	54.277	1.823	11.395	54.277	1.805	11.281	52.391
3	1.458	9.113	63.390	1.458	9.113	63.390	1.595	9.971	62.362
4	1.305	8.153	71.543	1.305	8.153	71.543	1.423	8.896	71.258
5	1.304	8.147	79.690	1.304	8.147	79.690	1.349	8.432	79.690
6	0.870	5.437	85.127						
7	0.580	3.628	88.755						
…	…	…	…						
16	0.046	0.287	100.000						

Seen from Table 4, the initial characteristics value of the first principal component is 6.861, which explains the reason variable 42.882% of the total variance; initial characteristic value of the second principal component is 1.823, which explains the reason variable 11.395% of the total variance; the initial characteristics value of the three principal components is 1.458, which explains the reason variable 9.113% of the total variance; initial characterization value of the fourth principal component is 1.305, which explains the reason variable 8.153% of the total variance; initial characterization value of the fifth principal component is 1.304, which explains the reason variable 8.147% of the total variance. Judging from the characteristic values, cumulative variance contribution rate of the first five principal components is 79.690%, which explain all the basic information (ZHANG, 2008).

Factor loading matrix with Kaiser Standardization of orthogonal rotation, make its coefficient value to the polarization of 0 and 1 differentiation, thus it will arrive at a better rotated component matrix (see Table 5).

Table 5
Rotated Component Matrix

Variable	Component				
	1	2	3	4	5
ZCGM	0.941	0.130	0.047	-0.135	-0.093
QYWH	0.931	0.151	-0.039	-0.045	-0.123
JSNK	0.895	0.087	-0.120	-0.112	-0.079
QYJX	0.891	0.050	-0.015	-0.030	-0.090
NBFX	0.866	0.207	-0.099	-0.094	0.016
JSYJ	0.847	-0.062	0.001	-0.140	-0.095
XXXT	0.807	0.180	0.115	0.084	0.104
CWBB	0.783	0.081	0.121	0.168	0.309
DSGM	0.464	0.782	0.133	-0.080	0.035
DLDS	-0.007	-0.695	-0.108	0.225	0.416
JSGM	0.248	0.632	-0.296	0.419	0.164
DEA	0.208	-0.089	0.775	-0.014	-0.271
DYGD	0.351	-0.391	-0.670	0.114	-0.228
NBSJ	0.218	0.099	0.153	-0.761	0.243
ESGD	-0.040	-0.007	0.584	0.688	0.074
DSJR	-0.075	-0.072	-0.089	-0.165	0.897

a. Rotation converged in 14 iterations.

Table 6
Component Score Coefficient Matrix

Variable	Component				
	1	2	3	4	5
DEA	0.055	-0.148	0.501	-0.045	-0.171
DSJR	0.006	-0.019	-0.011	-0.095	0.661
QYJX	0.146	-0.064	0.002	0.012	-0.049
XXXT	0.128	0.021	0.076	0.092	0.104
QYWH	0.140	-0.004	-0.021	0.004	-0.073
JSNK	0.137	-0.033	-0.064	-0.041	-0.046
JSYJ	0.146	-0.134	0.026	-0.071	-0.057
DSGM	-0.003	0.432	0.033	-0.033	0.051
DLDS	0.088	-0.419	-0.005	0.166	0.303
DYGD	0.088	-0.229	-0.405	0.113	-0.191
CWBB	0.143	-0.036	0.092	0.154	0.258
NBFX	0.123	0.046	-0.059	-0.026	0.028
ESGD	0.034	-0.038	0.348	0.468	0.094
JSGM	-0.011	0.406	-0.251	0.338	0.137
NBSJ	0.006	0.018	0.138	-0.537	0.174
ZCGM	0.143	-0.026	0.041	-0.063	-0.049

Extraction Method: Principal Component Analysis.
Rotation Method:Varimax with Kaiser Normalization Component Scores.

Combined with Table 5, it can be seen that we will extract five main components to class: the first principal component will be named the internal control environment, which include asset scale, enterprise culture construction, the internal control activities of the board of supervisors, risk warning and coping strategies in annual report, performance-appraising system of enterprise, opinions of the board of supervisors, and perfect information system or not and effective communication; the second principal component will be named the monitoring scale, which include the size of the board of supervisors, the scale of the board of directors and the proportion of independent directors; the third principal component will be named technical efficiency, which include technical efficiency and the percentage of the first major stockholder; the fourth principal component will

be named external audit, which include the selection of the accounting firm for annual audit and the sum of the percentage of the second to the tenth largest shareholder; the fifth principal component will be named authority structure, which include the chairman of the board concurrently general manager.

According to the component score coefficient matrix (see Table 6), we can build function of factor score:

F1=0.055×DEA+0.006×DSJR+0.146×QYJX+0.128×XXXT+0.140×QYWH+0.137×JSNK+0.146×JSYJ-0.003×DSGM+0.088×DLDS+0.088×DYGD+0.143×CWBB+0.123×NBFX+0.034×ESGD- 0.011×JSGM+0.006×NBSJ+0.143×ZCGM

F2=-0.148×DEA-0.019×DSJR-0.064×QYJX+0.021×XXXT-0.004×QYWH-0.033×JSNK-0.134×JSYJ+0.432×DSGM-0.419×DLDS-0.229×DYGD-0.036×CWBB+0.046×NBFX-0.038×ESGD-0.406×JSGM+0.018×NBSJ-0.026×ZCGM

F3=0.501×DEA-0.011×DSJR+0.002×QYJX+0.076×XXXT-0.021×QYWH-0.064×JSNK+0.026×JSYJ+0.033×DSGM-0.005×DLDS-0.405×DYGD+0.092×CWBB-0.059×NBFX+0.348×ESGD- 0.251×JSGM+0.138×NBSJ+0.041×ZCGM

F4=-0.045×DEA-0.095×DSJR+0.012×QYJX+0.092×XXXT+0.004×QYWH-0.041×JSNK-0.071×JSYJ-0.033×DSGM+0.166×DLDS+0.113×DYGD+0.154×CWBB-0.026×NBFX+0.468×ESGD+0.338×JSGM-0.537×NBSJ-0.063×ZCGM

F5=-0.171×DEA+0.661×DSJR-0.049×QYJX+0.104×XXXT-0.073×QYWH-0.046×JSNK-0.057×JSYJ+0.051×DSGM+0.303×DLDS-0.191×DYGD+0.258×CWBB+0.028×NBFX+0.094×ESGD+0.137×JSGM+0.174×NBSJ-0.049×ZCGM

Among them, the F1, F2, F3, F4 and F5 respectively represent internal control environment, monitoring scale, technical efficiency, external audit and authority structure. Those can be calculated in the original data (see Table 7), which scores reflect the comprehensive level of enterprise in different factor.

Table 7
Component Score and Ranking

Firm	F1	Rank	F2	Rank	F3	Rank	F4	Rank	F5	Rank
YANG GUANG GUFEN	3.033377	26	3.886601	31	0.316082	8	-1.06958	42	1.728473	8
WAN KE	5.319733	1	5.006509	12	0.658902	1	-1.61832	45	1.41033	19
BAI LI DI CHAN	5.261207	3	4.174114	25	0.41647	4	-0.77157	40	0.59525	41
RONG SHENG FA ZHAN	4.148548	14	4.452474	18	0.362638	5	0.065396	16	0.71946	36
SHI LIAN DI CHAN	1.814956	40	4.574081	16	0.434421	3	-0.33443	26	0.928566	32
JIN DI JI TUAN	4.943428	5	7.391107	1	0.265321	11	-0.77923	41	2.143106	1
RONG AN DI CHAN	3.53644	19	5.256052	8	-0.66884	44	0.630874	5	0.704771	37
TIAN YE GU FEN	2.351426	37	5.696436	4	-0.56609	43	0.145631	15	1.175337	28
JING NENG ZHI YE	2.975924	29	3.201993	38	0.097827	14	-0.55423	32	1.197326	27
LU SHANGZHI YE	4.19233	13	6.088343	2	-0.40636	41	0.52887	7	1.783941	4
YI HUA DI CHAN	1.527388	43	3.73034	35	-0.12973	31	-0.38884	27	1.6511	12
WAN TONG DI CHAN	3.810031	15	5.235259	9	-0.11653	30	-1.10479	43	1.682671	9
SONG DU GU FEN	3.58209	18	3.172543	40	0.059617	20	-0.5625	34	1.262675	26
ZHONG GUAN CUN	2.895655	31	4.199061	24	-0.13575	32	0.30072	11	0.624101	40
BEI JING CHENG JIAN	4.403802	9	5.90466	3	-0.15056	33	-0.0637	21	1.755189	6
DA MING CHENG	3.241664	24	3.194431	39	-0.02112	25	0.17251	14	0.493248	43
JIN FENG TOU ZI	3.163215	25	4.2094	23	0.094313	15	-1.28787	44	1.544586	15
YUN NAN CHENG TOU	4.345237	10	2.955148	43	0.077604	16	-0.60759	36	1.351793	21
ZHONG GUO WU YI	3.2957	21	4.823002	14	-0.37022	38	0.61378	6	1.514264	16
CHONG QING SHI YE	2.148981	38	5.696366	5	-0.37444	39	0.184201	13	1.838074	2
XIN HU ZHONG BAO	4.893293	6	3.765603	34	0.203023	12	-0.58157	35	0.693684	38
GUANG YU JI TUAN	3.259379	23	4.075651	27	0.548975	2	-0.50563	31	0.72308	34
DONG FANG YIN XING	1.417639	44	4.418691	20	0.344421	6	-0.43235	28	1.641221	13
CHANG CHUN JING KAI	2.753787	33	5.216914	10	0.132362	13	-0.17018	23	0.938452	31
CHUANG XING ZI YUAN	1.794026	41	3.65066	37	0.341897	7	0.424665	9	1.682528	10

To be continued

Continued

Firm	F1	Rank	F2	Rank	F3	Rank	F4	Rank	F5	Rank
YIN RUN TOU ZI	1.327616	45	3.949527	28	0.0231	24	0.707263	3	1.743593	7
SHI MAO GU FEN	4.618893	7	4.423499	19	-0.19638	34	0.716745	2	0.721628	35
TIAN LUN ZHI YE	1.819276	39	3.766237	33	-0.09974	28	0.310794	10	1.636123	14
WAN YE QI YE	3.490501	20	5.004995	13	-0.80196	45	0.644853	4	1.657132	11
ZHAO SHANG DI CHAN	5.269834	2	5.366593	7	0.07509	17	-0.65662	39	1.770622	5
TIE LING XIN CHENG	2.904965	30	5.199879	11	-0.56112	42	0.876657	1	1.836458	3
ZHONG LIANG DI CHAN	4.574927	8	3.942921	29	0.057242	21	-0.06248	20	1.322127	23
SHOU KAI GU FEN	5.136017	4	5.377573	6	-0.33752	37	0.481445	8	0.659064	39
TIAN BAO JI JIAN	2.84958	32	3.166027	41	-0.25869	36	-0.64796	38	0.305947	44
GE LI DI CHAN	3.730031	16	3.830259	32	-0.06698	26	-0.19493	24	0.19443	45
SHU YUAN KE JI	3.011255	28	4.342095	21	-0.22796	35	0.002262	17	0.556851	42
ZHANG JIANG GAO KE	4.256177	12	2.999753	42	0.06724	18	-0.55488	33	1.312288	24
WAI GAO QIAO	4.325711	11	4.726853	15	-0.39878	40	-0.0484	18	1.5075	17
MIAN SHI GU FEN	1.679188	42	3.94219	30	0.032241	22	-0.0541	19	1.288225	25
XIN HUANG PU	2.751265	34	4.482334	17	0.285004	9	-0.44544	29	0.984595	30
DING LI JI TUAN	2.527049	36	2.780965	44	-0.11207	29	-0.14942	22	1.05052	29
ZHONG YIN GU FEN	3.012332	27	2.159128	45	-0.07852	27	-0.60967	37	0.904159	33
SHEN CHANG CHENG	3.278333	22	4.223353	22	0.267447	10	0.217576	12	1.389698	20
GAO XIN FA ZHAN	2.641881	35	4.141502	26	0.061353	19	-0.19596	25	1.339463	22
XI ZANG CHENG TOU	3.658174	17	3.65816	36	0.025706	23	-0.48792	30	1.438177	18

2.3 The Comprehensive Evaluation of Internal Control Efficiency of Real Estate Enterprise

Based on the principal component analysis, we know that the first five each principal component can describe the total variance contribution rate of 41.111%, 11.281%, 9.971%, 8.896%, and 8.432%, and cumulative variance accounted for 79.69%. So we can structure comprehensive evaluation function of internal control efficiency of the real estate enterprise, through the main factors variance contribution rate as the weight:

F = (F1*0.41111 + F2*0.11281 + F3*0.09971 + F4*0.08896 + F5*0.08432) / 0.7969

Table 8
Score and Ranking of the Comprehensive Evaluation of Internal Control Efficiency

Firm	Score	Rank	Firm	Score	Rank	Firm	Score	Rank
YANG GUAN GU FEN	2.218108	27	DA MING CHENG	2.193344	29	ZHAO SHANG DI CHAN	3.601782	2
WAN KE	3.504119	3	JIN FENG DI CHAN	2.259212	25	TIE LING XIN CHENG	2.456703	22
BAO LI DI CHAN	3.334039	5	YUN NAN TOU ZI	2.7449	14	ZHONG LIANG DI CHAN	3.058389	10
RONG SHENG FA ZHAN	2.899277	12	ZHONG GUO WU YI	2.565376	18	SHOU KAI GU FEN	3.492106	4
SHI LIAN DI CHAN	1.699097	40	CHONG QING SHI YE	2.083213	33	TIAN BAO JI JIAN	1.845917	37
JIN DI JI TUAN	3.769513	1	XIN HU ZHONG BAO	3.091326	9	GE LI DI CHAN	2.45692	21
RONG AN DI CHAN	2.629765	17	GUAN YU JI TUAN	2.347177	24	ZI YUAN KE JI	2.198788	28
TIAN YE GU FEN	2.089251	32	XI ZANG CHENG TOU	2.505978	19	ZHANG JIANG GAO KE	2.705677	15
JING NENG ZHI YE	2.065576	35	DONG FANG YIN XING	1.525344	43	WAI GAO QIAO	3.004924	11
LU SHANG SHI YE	3.221592	7	CHANG CHUN JING KAI	2.256015	26	MIAN SHI GU FEN	1.558633	42
YI HUA DI CHAN	1.431093	45	CHUANG XING ZI YUAN	1.710519	39	XIN HUANG PU	2.143979	31
WAN TONG DI CHAN	2.746785	13	YIN RUN TOU ZI	1.510332	44	DI LI JI TUAN	1.7778	38
SONG DU GU FEN	2.37533	23	SHI MAO GU FEN	3.140816	8	ZHONG YIN GU FEN	1.877455	36
GONG GUAN CUN	2.170874	30	TIAN LUN ZHI YE	1.667026	41	SHEN CHANG CHENG	2.493906	20
BEI JING CHENG JIAN	3.267499	6	WAN YE QI YE	2.656199	16	GAO XIN FA ZHAN	2.076716	34

From the above results, the top five real estate enterprise is JIN DI JI TUAN, ZHAO SHANG DI CHAN, WAN KE, SHOU KAI GU FEN and BAO LI DI CHAN; bottom five enterprise is TIAN LUN ZHI YE, MIAN SHI GU FEN, DONG FANG YIN XING, YIN RUN TOU ZI and YI HUA DI CHAN; there is a big gap between BAO LI DI CHAN and YI HUA DI CHAN in the efficiency of internal control.

CONCLUSIONS

The research of DEA efficiency shows that the overall level of efficiency of the enterprise is not good. The specific situation: only 11.11% of real estate enterprises in the aspects of input and output achieve the best condition; 68.89% of the real estate enterprises is in the scale diminishing returns, due to the lack of technical level or the serious waste of resources; 20% of the real estate enterprises is in the stage of increasing return to scale, due to the aspects of financial and material shortage.

Through the comprehensive analysis found that the comprehensive ranking of enterprise internal control efficiency in the front of the company, are in front mostly in one or two factor. Those show that an aspect of highlighting plays a great role in the development of enterprises. But we also found that an enterprise only has two or three factors in the front, that is to say, not all rankings are in front. They illustrate that internal control efficiency is very low in the development of Chinese real estate market.

Through the comprehensive analysis of internal control efficiency to the real estate enterprises, we believe that in order to improve the efficiency of the internal control of real estate enterprises can be considered from the following aspects.

First, promoting the technical level of enterprises and encouraging innovation. With the constant increase in industrial concentration, Chinese real estate listed firms should towards the direction of group development quickly technical efficiency and rapidly scale expansion, requiring enterprises transition from monoculture to diversified (KANG, 2002).

Second, setting of fair and reasonable authority structure, and improving of decision-making ability. In the decision-making level, complicated company structures go against timely and accurate information communication. They should constantly adjustment themselves to improve decision-making ability.

Third, expanding the scale of independent directors, and perfecting its system and increasing its independence. For independent directors in the enterprises, they should increase its members. The independent director system should be perfected, which ensure each independent directors are able to exertion rights and to express their opinions. The introduction of external force and add of some external independent directors can make restrict each other between internal forces and external forces in the independent directors.

REFERENCES

CHENG, X. J., & QUAN, C. G. (2010). Research on the Operating Efficiency of the Coal Industries in Listed Companies Based on DEA. *Mineral Engineering Research*, (1).

KANG, W. Z. (2002). *How to Performance Evaluation to Performance Management*. Beijing: China Labor.

WEI, H. Y. (2004). *SPSS 10.0 for Windows in the Economic Management Application*. Beijing: China Statistical Publishing House.

WEI, Q. L. (2004). *Data Envelopment Analysis*. Beijing: Science Press.

ZHANG, X. Y. (2008). Based on the Factor Analysis and Clustering Analysis of Mathematics Performance Analysis. *Journal of Weifang University*, (4).