The Impacts of Intellectual Capital and Anti-risk Capability on Corporate Value

A research based on listed constituent stock

Hongyi Zhang[*]
School of Business
Macau University of Science and Technology
Macau, China
1132727628@qq.com

Xingyu Wang
School of Business
Macau University of Science and Technology
Macau, China

Abstract—**Intellectual capital is an extremely important non-financial intangible asset owned by the company. Anti-risk capability refers to the ability of a company to integrate its own resources against external risks in the face of uncertainties. Intellectual capital is the driving force for corporate development, while anti-risk capability provides protection for the company. Both are indispensable in the long-term development of a company. This study selected the balanced panel data of 50 listed companies from constituent stock in China between 2011 and 2015 and explored the relationship between intellectual capital, anti-risk capability, and corporate value. Results show that the application of intellectual capital and the ability to resist risks vary greatly among different companies. At the same time, companies with higher levels of intellectual capital have higher corporate value.**

Keywords—intellectual capital; anti-risk capability; corporate value

I. INTRODUCTION

With the advent of the era of knowledge economy, the traditional economic model has gradually been broken. The competition among companies is no longer solely dependent on material capital, but more depends on the professional knowledge, technique skills, and other intangible assets owned by the company. In recent years, the academic community generally believes that intellectual capital has a significant positive impact on corporate value, that is, the higher the level of intellectual capital, the higher the corporate value [1]. Currently, the corporate value has increasingly deviated from the book value, which means that intellectual capital has contributed more and more to the development of companies. At the same time, the anti-risk capability also brings value to the company to a certain extent. Higher anti-risk capability can reduce the financial loss of the company, and also help the company maintain a higher risk level to a certain extent, which is conducive to the company exploring new areas and creating new value.

Intellectual capital and anti-risk capability are the keys to the competitiveness of companies. Nowadays, corporate competition has entered the pattern of knowledge competition. More and more companies are paying attention to intangible assets. For example, in Ericsson, intangible assets account for 95% of its total assets. Therefore, it is especially important to include intellectual capital and anti-risk capability in the assessment of corporate value.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

A. The Relationship Between Intellectual Capital and Corporate Value

The concept of intellectual capital was first proposed by Canadian economist Galbraith. He believed that the difference between market value and book value is the intellectual capital, which emphasizes the role of mental labor rather than knowledge and intelligence. Edvinsson & Malone proposed that intellectual capital, the difference between the value of a company in the stock market and its financial value, is a non-financial intangible asset [2]. Intellectual capital is a supplement to the company's financial statements, which is the true value of the company. Ross et al. defined the concept of intellectual capital from the perspective of knowledge management and believed that intellectual capital is the sum of employees' intellectual knowledge and technical experiences [3]. If these elements are transformed into specific forms, such as trademarks, patents, registrations, etc., it will help companies create more values. Mavridis analyzed the relationship between intellectual capital and corporate value based on data from several commercial banks in Greece and Japan [4]. Results show that in different countries the intellectual capital has different impacts on corporate value, but in general, intellectual capital can promote the creation of corporate value. Yang Xiao dan and Yan Chao selected the listed companies in high-tech industries and traditional industries in Jiangxi Province and used the data to study the impact of intellectual capital and its components on corporate performance in different industries [5]. Results show that the structural capital has played a significant role in promoting corporate performance in traditional industries in Jiangxi Province, while the human capital has no significant promoting effect on corporate performance. There is a negative correlation between material capital and corporate performance. At the same time, high-tech companies are mainly driven by human capital and material capital, and the role of structural capital is

not obvious. A preliminary judgment is that human capital, structural capital and relationship capital are positively correlated with corporate value.

- Hypothesis 1. Human capital has a significant positive impact on the corporate value of listed constituent stock.

- Hypothesis 2. Structural capital has a significant positive impact on the corporate value of listed constituent stock.

- Hypothesis 3. Relationship capital has a significant positive impact on the corporate value of listed constituent stock.

B. The Relationship Between Anti-Risk Capability and Corporate Value

Risk is an uncertainty of future losses. In 1895, John introduced the concept of risk into the field of economics for the first time in his article Risks as An Economic Factor. John considered risk to be a probability of loss. Yates and Stone proposed a three-factor model of risk structure in 1992. They believed that risk includes three parts, that is, the potential loss, the size of loss, and the uncertainty of potential loss. This model becomes the basis of modern risk theory. Young and Kenneth believed that in an uncertain environment, the company's tolerance for risk is the anti-risk capability [6]. Girmscheid divided a company's anti-risk capability into three dimensions, that is, the risk recovery resource, the limit of anti-risk capability, and the distribution of risk-recovery resource, and further graded the three dimensions. The research results show that the anti-risk capability has an important impact on the normal operation of the company. Only when the risks that a company is exposed to are limited to the scope of its anti-risk capability, can the company maintain normal operations. Tang Yong proposed that the anti-risk capability is the ability of companies to integrate and update their resources to prevent external risks when facing uncertainties [7]. He believed that the stronger the company's anti-risk capability, the more stable the environment can be provided for the implementation of the company's development strategy, which is conducive to the long-term development of the company and can enhance the corporate value to a certain extent.

- Hypothesis 4. Anti-risk capability has a significant positive impact on the corporate value of listed constituent stock.

III. RESEARCH METHODOLOGY

A. Data Collection and Variables Definition

This paper selects 180 companies from the SSE 180 Index from 2011 to 2015 as the initial research sample.

Input relevant data of companies' financial statements and exclude 105 companies that have no disclosure of variable data and 25 companies with extreme values. Then 50 companies are left as valid samples. The data are from the CSMAR database, the wind database, and the annual financial report of each listed company. We used STATA analysis software to process data,

and test hypotheses. Variables and designations are presented in Table I.

B. Models Building

This paper has employed panel data models to simulate multi-variable regressions. Panel data can provide more degrees of freedom, information, variation, and less collinearity; and it allows for individual unobserved heterogeneity. From the proposed hypotheses, we have the following mathematical equations:

$$RROA_{i,t}=a_0+a_1HCE_{i,t}+a_2SCE_{i,t}+a_3RCE_{i,t}+a_4OA_{i,t}+a_5LN\_OP_{i,t}+a_6DAR_{i,t}+a_7GDP_{i,t}+a_8CPI_{i,t}+\varepsilon_{i,t} \quad (1)$$

$$RROE_{i,t}=\beta_0+\beta_1HCE_{i,t}+\beta_2SCE_{i,t}+\beta_3RCE_{i,t}+\beta_4OA_{i,t}+\beta_5LN\_OP_{i,t}+\beta_6DAR_{i,t}+\beta_7GDP_{i,t}+\beta_8CPI_{i,t}+\varepsilon_{i,t} \quad (2)$$

IV. RESULTS AND DISCUSSION

Panel data sets include two dependent variables (RROA and RROE), and four independent variables (human capital efficiency, structural capital efficiency, relationship capital efficiency and operational ability indicator).

TABLE I.   VARIABLES AND MEASURES

Category	Variable	Symbol	Formula
Dependent variable	Risk-adjusted return on assets	RROA	Return on assets/Standard deviation
	Risk-adjusted return on equity	RROE	Return on equity /Standard deviation
Independent Variable	Intellectual capital efficiency	HCE	Value added/Human cost
		SCE	Value added /Supervise cost
		RCE	Value added /Retail Cost
	Anti-risk capability	OA	$[(CH_t-CH_{t-1})/CH_{t-1}+(ZC_t-ZC_{t-1})/ZC_{t-1}]/2*100\%$
Control variables	Debt asset ratio	DAR	Liabilities /total assets
	Operating profit	LN_OP	LN(operating profit)
	Gross domestic product	GDP	$(GDP_t-GDP_{t-1})/GDP_{t-1}*100\%$
	Consumer price index	CPI	$(CPI_t-CPI_{t-1})/CPI_{t-1}*100\%$

From Table II, Human Capital Efficiency (HCE) is negatively correlated with the risk-adjusted return on assets. Therefore, the H1 is verified. Structural Capital Efficiency (SCE) and Relationship Capital Efficiency (RCE) are positively correlated with the risk-adjusted return on assets at a significant level of 1%. The H2 and H3 are verified. The company's Operational Ability indicator (OA) is positively correlated with the risk-adjusted return on assets, but not in a significant way. Therefore, the H4 is not true.

From Table III, Human Capital Efficiency (HCE) is positively correlated with the risk-adjusted return on equity at a significant level of 10%. The H1 is verified. Structural Capital Efficiency (SCE) is positively correlated with the risk-adjusted return on equity at a significant level of 1%. The H2 is verified. Relationship Capital Efficiency (RCE) is positively correlated with the risk-adjusted return on equity at a significant level of 5%. The H3 is verified. The company's Operational Ability indicator (OA) is positively correlated with the risk-adjusted return on equity, but not in a significant way. The H4 is not true.

TABLE II.   REGRESSION ANALYSIS (1)

Variable	Coefficient	Std. Error	T-Statistic
C	-6.525725***	0.839371	-7.774543
HCE	-0.001046	0.000679	-1.539950
SCE	0.102945***	0.019092	5.392082
RCE	0.008422***	0.002116	3.980692
OA	0.048901	0.097906	0.499472
GDP	6.590628***	0.767614	8.585861
DAR	-2.258847***	0.393685	-5.737702
LN_OP	0.371309***	0.037286	9.958423
CPI	-4.042744*	2.069685	-1.953314
R-Squared	0.585464	F-Statistic	42.54655
Adjusted R-squared	0.571703	Prob(F-statistic)	0.000

TABLE III.   REGRESSION ANALYSIS (2)

Variable	Coefficient	Std. Error	T-Statistic
C	-8.890982***	0.864968	-10.27898
HCE	0.001260*	0.000703	1.792631
SCE	0.072769***	0.019579	3.716705
RCE	0.007033**	0.002190	3.210856
OA	0.024862	0.101952	0.243858
GDP	6.649887***	0.800890	8.303123
DAR	0.258310	0.404743	0.638207
LN_OP	0.418083***	0.038464	10.86943
CPI	-4.988223**	2.160090	-2.309266
R-Squared	0.577464	F-Statistic	41.17067
Adjusted R-squared	0.563438	Prob(F-statistic)	0.000

V. CONCLUSIONS AND POLICY IMPLICATIONS

When using the risk-adjusted return on assets (RROA) to assess the corporate value, Structural Capital Efficiency (SCE) and Relational Capital Efficiency (RCE) are positively correlated with the corporate value. Human Capital Efficiency

is negatively correlated with the corporate value, but not in a significant way. The company's Operational Ability indicator (OA) is positively correlated with the corporate value, but not in a significant way. When using the risk-adjusted return on equity (RROE) to measure the corporate value, Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relationship Capital Efficiency (RCE) are positively correlated with the corporate value. The company's Operational Ability indicator (OA) is positively correlated with the corporate value, but not in a significant way.

This paper proposes the following suggestions: 1) Companies should pay attention to the accumulation of intellectual capital. Intellectual capital can enhance the corporate value to a certain extent. Companies should not only pay attention to the value of tangible assets in financial statements, but also focus on the value of intangible assets. The accumulation of intellectual capital has increasingly become the key to corporate competition, and the focus of intellectual capital accumulation is whether the company possesses sufficient intellectual capital. 2) Improve the corporate value assessment model. The traditional corporate value assessment report cannot fully reflect the investment value of the company. For investors, companies' financial reports are far less effective than the financial market assessment. Therefore, companies need to improve the value assessment model. Including the corporate value created by intellectual capital efficiency into the listed companies' performance reports could be a reasonable choice, which can give investors a more objective and reliable perception.

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