

# Religious Culture and Corporate Risk taking

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**Abstract**—This paper takes Shanghai-Shenzhen A-share listed companies as research samples from 2010-2018, and empirically tests the impact of religious culture on the level of corporate risk-taking. The study found that religious culture is negatively correlated with the level of corporate risk tolerance. The research results of this paper show that the religious culture atmosphere will have a significant impact on the investment decision of the enterprise. The strong religious culture atmosphere will make the investment decision of the enterprise more conservative and may give up some high-risk but expected net present value is positive investment opportunities. The research in this paper enriches and expands the related research on religious culture and enterprise risk commitment, which has certain theoretical and practical significance for us to understand and understand the investment decision of enterprises.

**Keywords**—religious culture; enterprise risk commitment; corporate investment decision

## I. INTRODUCTION

Risk selection in corporate investment decisions has an important impact on business development and economic growth. From a micro perspective, higher levels of risk taking are usually higher in corporate capital expenditures[1], reflecting the fuller use of investment opportunities. At the same time, high-risk companies also reflect more investment and higher innovation enthusiasm [2], which is conducive to enhancing the competitive advantage of enterprises. Moreover, the level of risk-taking of firms is positively correlated with asset growth rates and sales revenue growth rates[3], indicating that risk-taking can promote long-term growth. From a macro perspective, although the choice of relatively safe investment opportunities can bring a relatively stable return, it will also keep the productivity of the whole society at a low level [4]. Since high-risk projects can deliver higher expected returns than low-risk projects, choosing higher-risk investment opportunities can accelerate capital accumulation across society and make economic growth faster [5].

The level of enterprise risk commitment reflects the choice of investment projects when managers make investment decisions. In a complete market, the margin can predict the level of real investment, and the investment behavior of the company depends only on the investment opportunities represented by the margins. In other words, managers should select all investment projects with expected net present value to make the margin equal. However, in the real economy, managers' choice of investment projects is affected by many factors. For example, better investor protection can reduce the likelihood of managers pursuing personal self-interest, curb

managers' risk aversion, and enable companies to take on higher levels of risk. Conversely, stronger creditor rights will lead companies to be more inclined to participate in diversified mergers and acquisitions and reduce corporate risk exposure [6]. If the compensation arrangement mechanism makes the wealth more sensitive to corporate stock volatility, it will tend to be more risky investment decisions. Similarly, the nature and degree of decentralization of shares held by major shareholders can also affect the level of risk-taking of firms [7].

The above research provides extensive evidence for the impact of external institutional arrangements and internal governance mechanisms on corporate risk-taking, but unfortunately, the existing literature rarely studies the influence of religious culture on corporate investment risk selection. Managers are the direct decision-making body of corporate investment behavior, and their decision-making behavior is significantly affected by personal values, social norms and ethics. Therefore, based on the relevant theories of religious economics, this paper empirically tests the influence of religious culture on the choice of corporate investment risk. Specifically, the question in this paper is whether the religious culture atmosphere of the company's location will have an impact on the level of risk-taking of the company.

This paper takes the Shanghai-Shenzhen A-share listed company in 2010-2018 as a sample to conduct an empirical test on the above issues. The study found that religious culture is significantly negatively correlated with the level of corporate risk tolerance. This shows that the religious culture atmosphere will have a significant impact on the investment decisions of enterprises. The strong religious culture atmosphere will make managers' investment decisions more conservative, and give up high-risk but expected net present value as positive investment opportunities.

The theoretical contribution of this paper may be reflected in the following two aspects: First, the existing literature focuses on the impact of various external systems or governance mechanisms on corporate risk taking based on the relevant theories of religious economics, this paper provides a new explanation for corporate risk taking from the perspective of religious culture. Second, the literature has studied the religious culture's decision on corporate religion[8], IPO pricing[9], capital structure[10], corporate innovation[11], stock price collapse risk [12] and other corporate finance. The impact of this paper is on risk selection and risk-taking in corporate investment decisions, and further studies the impact of religious culture on corporate investment decisions from the perspective of risk-taking.

The remaining structural arrangements of this paper are as follows: the second part is the theoretical analysis and the hypothesis; the third part is the research design and the empirical test results; the fourth part is the robustness test; the fifth part is the research conclusion.

## II. THEORETICAL ANALYSIS AND HYPOTHESIS PROPOSED

As a social norm, religious belief affects the individual's behavior and risk attitude, which in turn affects decision-making behavior at the enterprise level. Specifically, religious culture may influence corporate risk-taking through three ways: individual, organization, and external environment:

First, religious culture affects corporate risk-taking by affecting individual risk attitudes and wealth perceptions of managers. First, religious culture reduces individual risk propensity and opportunistic behavior [13]. Religion affects the attitude of believers to risk. Individuals with religious beliefs have a stronger sense of risk aversion, which leads to more cautious social behaviors and higher levels of risk aversion [14]-[15]. Further, differences in attitudes between different religions on risk also affect institutions' perceptions of risk [16]. For example, [17] found that Protestantism regards gambling as a sinful act, while Catholicism has a higher tolerance for gambling. In areas where Catholics have a higher proportion of Protestants, listed companies are more The employee stock option plan is widely adopted, and the market premium of negative lottery type stocks is greater, and the market return rate of the company's IPO on the first day is higher. Second, religious culture influences the individual's wealth concept. Buddhism believes that money is not good, not beautiful, not ugly, and merchants should be blessed with the Dharma in their attitude toward money and wealth. It is reasonable to have a good fortune and to use wealth and technology. Buddhism's ethical proposition on the concept of money and wealth practices charity and accumulation of merit. When the uncertainty in the future is high, managers may regard high-return projects as wealth that should not be pursued and beyond, and the moderately conservative concept of wealth creates a lower risk-taking willingness. Based on this, this paper believes that religious culture will enable managers to have lower risk appetite and more conservative wealth concept, which will affect the decision-making at the enterprise level and ultimately reduce the risk-taking level of enterprises.

Second, religious culture affects corporate risk-taking by affecting the formation of corporate culture. Religious culture influences the investment behavior of enterprises through three paths: corporate culture, management style and employee preference. Enterprises located in areas with strong religious culture usually employ a large number of religious believers to take up positions at different levels. The higher the proportion of believers, the risk aversion of business managers. The stronger the degree. If the intensity of the company's influence on religion is greater, then the manager's own cognitive and decision-making behavior will be more biased towards the ethical standards of religion. The religious culture outside the enterprise will influence the corporate culture in a subtle way, which indirectly affects the manager's risk investment decision.

Third, religious culture affects corporate risk-taking by affecting the development of regional institutional environment. Religion affects the legal system and law enforcement efficiency of the region[18], which in turn affects investor protection, corporate finance, etc. Therefore, religious culture can indirectly affect corporate decision-making behavior by influencing the external legal environment. For example, the Protestant countries of the common law tradition and the Protestant countries of the statute tradition, the law emphasizes the creditor's rights, while the stronger creditor protection will reduce the enterprise's risk-taking [19].

Based on the above analysis, we summarize the mechanism of religious culture's role in corporate risk-taking as individual preference effect, corporate culture effect and regional environmental effect. In areas with strong religious and cultural atmospheres, the corporate culture may be more conservative, the management's tendency to avoid risks is stronger, the decision-making is more stable, and the corresponding enterprise's risk-taking level is lower. The assumptions are as follows.

Assumption: Under the same conditions, the more religious culture atmosphere of the enterprise location, the lower the risk tolerance of the enterprise.

## III. EMPIRICAL RESEARCH DESIGN

### A. Sample Selection and Data Source

In this paper, the Shanghai and Shenzhen A-share listed companies in 2005-2018 are used as research samples, and the data are processed according to the following principles: (1) Excluding financial insurance listed companies; (2) Excluding ST companies; (3) Excluding financial data missing (4) Excluding samples that cannot determine the latitude and longitude, that is, other variables are missing; (5) To better investigate the religious influence, the sample scope is limited to 26 provinces and municipalities in the Han area of the mainland (ie not including Xinjiang, Inner Mongolia, Guangxi, Ningxia and Tibet 5 autonomous regions). At the same time, because the three provinces of Gansu, Qinghai and Hainan do not contain national-level key temples, this paper excludes them and finally obtains samples of listed companies in 23 provinces (municipalities); (6) in order to avoid the influence of singular values, this paper is also continuous Winsorize processing is performed 1% above and below the variable. Finally, 26,235 observation samples were obtained. The financial data in this paper is from the CSMAR and WIND databases.

### B. Variable Definition and Measurement

1) *Corporate risk exposure* ( $Risk_{i,t+1}$ ): Since higher risk exposure will lead to an increase in the company's future cash inflow uncertainty, the volatility of corporate earnings is used by a large number of mainstream literature to measure corporate risk-taking. Therefore, this paper draws on existing literature, this paper uses the volatility of corporate profitability, namely  $\sigma$  (ROA) to measure corporate risk-taking, ROA is the ratio of the company's EBIT to the total assets at the end of the year. The future excludes the impact of industry factors on the

company's earnings volatility, This paper first adjusts the industry average value of the ROA of the company every year, and then calculates the standard deviation of the ROA adjusted by the industry in each year. The specific formula is as follows: (In order to eliminate the impact of industry factors on the ROA of the enterprise, we first reduce the annual ROA of the enterprise by the average of the industry in which the enterprise is located, and then calculate the ROA standard of the enterprise adjusted by the industry in each observation period. Poor, used to measure the level of risk taking in the corresponding period of the enterprise).

$$RiskT_i = \sqrt{\frac{1}{N-1} \sum_{n=1}^N (ADJ\_ROA_n - \frac{1}{N} \sum_{n=1}^N ADJ\_ROA_n)^2 / N=3} \quad (1)$$

among them:

$$ADJ\_ROA_{in} = \frac{EBIT_{in}}{ASSET_{in}} - \frac{1}{X_n} \sum_{k=1}^X \frac{EBIT_{kn}}{ASSET_{kn}} \quad (2)$$

2) *Religious culture*: Drawing on the practice of the existing literature, the distance between the place of registration of the listed company and the venue of religious activities is used to measure the influence of the religious traditions of the listed companies. Use Google-Earth, Baidu map and other Internet tools to manually collect the registered address of the sample listed company and the latitude and longitude coordinates corresponding to 148 provincial key temples. Using the above coordinates, calculate the distance between each listed company and 148 key temples. If there are influential temples near the place where the listed company is registered, listed companies are more susceptible to religious traditions. Religion\_200 and Religion\_300 represent the number of key temples within 200/300 km of the registered company's registered location, respectively.

3) *control variables*: Referring to the existing literature, this paper also controls the following variables: the company's asset size (Size), equal to the natural logarithm of the total assets; company performance (ROA), equal to the profit before interest and taxes / total assets at the end of the year; company age (Age), Equivalent to the definition of the establishment of the enterprise plus the natural logarithm, that is,  $\ln(1 + \text{enterprise establishment years})$ ; company growth (Growth), equal to the annual growth rate of business income; asset-liability ratio (Lev), equal to total The ratio of liabilities to total assets; whether it is a dual job, such as the chairman and general manager, the second job is 1, otherwise 0; the proportion of independent directors (Indep), equal to the number of independent directors / the total number of boards; The shareholding ratio of the first largest shareholder (First); the nature of ownership of the ultimate controller (SOE), if it is a state-owned enterprise, it is 1, otherwise it is 0.

4) *Model design*: In order to test the hypothesis proposed in this paper, this paper establishes a regression model (1) to test the impact of religious culture on the risk-taking of enterprises, as follows:

$$Risk_{i,t+1} = \beta_0 + \beta_1 Religion_{i,t} + \beta_2 SOE_{i,t} + \beta_3 Growth_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Size_{i,t} + \beta_6 Age_{i,t} + \beta_7 ROA_{i,t} + \beta_8 Dual_{i,t} + \beta_9 Indep_{i,t} + \beta_{10} First_{i,t} + \sum \beta_i Year + \sum \beta_j Industry + \varepsilon \quad (3)$$

Where  $\beta_0$  is the intercept term and  $\varepsilon$  is the residual term, and  $\beta_1 - \beta_{10}$  is the regression coefficient.

#### IV. THE EMPIRICAL RESULTS AND ANALYSIS

##### A. Descriptive Statistical Analysis

Table I lists the descriptive statistics for the main variables. It can be seen from the table that the average value of the index of the interpreted variable (company risk exposure) Risk<sub>i,t+1</sub> is 0.0279, the standard deviation is 0.0196, and the maximum and minimum values are 0.1120 and 0.0030, respectively, indicating that they are in different regions. Under the environmental background, the level of corporate risk-taking has great differences; there are an average of 10 temples within 200 km of the enterprise registration, with a maximum of 31, and a minimum of only 0. When the range is extended to 300 km, the average number of temples is about 18, up to 44, and the minimum is still 0.

Table II shows the test results of the influence of religious culture on the risk exposure of enterprises. It can be seen that in the regression (1), the coefficient of Religion\_200i,t is significantly negative without controlling other variables, indicating that the company's risk-taking level is decreasing with the increase of religious culture atmosphere; In the case of controlling other variables, the coefficient of Religion\_200i,t is also significantly negative, further verifying that as the religious culture atmosphere increases, the company's risk-taking level continues to decline, Hypothesis 1 is verified; in return (3) And the coefficients of Religion\_300i,t in (4) are both significantly negative and significant at the 5% level, consistent with Hypothesis 1 herein.

#### V. ROBUSTNESS TEST

##### A. Metrics for Changing Religious Culture

Referring to [20], this paper re-separated by 20 km, and counted the number of religious sites within 120, 140, 160, 180, 220, 240, 260 and 280 km of the company's registered place, and re-examined the hypothesis and returned. The results remain basically unchanged.

TABLE I. DESCRIPTIVE STATISTICAL ANALYSIS OF THE MAIN VARIABLES

Variable	Sample size	Mean	standard deviation	minimum	median	maximum
Riski, t+1	26235	0.0279	0.0196	0.0030	0.0188	0.1120
Religion_200i, t	26235	8.1100	7.1200	0	6	29
Religion_300i, t	26235	14.1500	12.4200	0	11	44

### B. Regression Analysis

TABLE II. HYPOTHETICAL TEST RESULTS

VARIABLES	(1)	(2)	(3)	(4)
	Riski, t+1	Riski, t+1	Riski, t+1	Riski, t+1
Religion200i, t	-0.0028** (0.0376)	-0.0027** (0.0465)		
Religion300i, t			-0.0007** (0.0311)	-0.0005** (0.0411)
SOE		0.0027* (0.0855)		0.0006* (0.0721)
Growth i, t		0.0008* (0.0619)		0.7248*** (0.0002)
Lev i, t		0.0267** (0.0193)		0.0301* (0.0524)
Size i, t		0.0032* (0.0582)		0.0056* (0.0682)
ROA i, t		0.0538*** (0.0000)		0.1304*** (0.0000)
Age i, t		0.0115*** (0.0000)		0.0116*** (0.0000)
Duali, t		3.0116*** (0.0001)		0.1566*** (0.0011)
Indep i, t		-0.0860*** (0.0000)		-0.0583*** (0.0000)
Firsti, t		-0.4380*** (0.0097)		-0.4840** (0.0223)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	-0.0207*** (0.0000)	-0.0209*** (0.0000)	-0.0211*** (0.0000)	-0.0225*** (0.0000)
Observations	26235	26235	26235	26235
Adjusted R-squared	0.044	0.044	0.045	0.044

<sup>a</sup> Note: \*\*\*, \*\*, and \* indicate the significance levels of 1%, 5%, and 10%, respectively, and the numbers in parentheses are the p-values of the two-tailed test.

### C. Metrics for Changing Risk Exposure

This paper draws on the practices of the existing literature and uses other four methods to measure enterprise risk exposure, as follows: (1) R&D expenditure. Since China's new accounting standards were implemented in 2007, the R&D information disclosure of listed companies has improved significantly. Therefore, this paper takes Shanghai-Shenzhen A-share listed companies from 2010 to 2018 as samples, and uses the research and development expenses of listed companies to account for total assets. The ratio to measure the

company's risk-taking level; (2) the difference between the company's largest ROA and the smallest ROA. Referring to the existing literature [21], the difference between the maximum and minimum ROA of the company during the observation period is used to measure the volatility of profit; (3) capital expenditure. Referring to [18], this paper uses the company's annual capital expenditure to measure the company's risk-taking level; (4) the volatility of operating income. This paper also uses the volatility of the company's annual operating income to measure the level of risk taking, namely  $Risk = \sigma(\text{Sales}/\text{Assets})$ .

Substitute the enterprise risk-taking level measured by the above four methods into the model (1) and re-test, and the regression results show that the original hypothesis is still established.

### D. Endogenous Problems

The above regression results show that religious culture has a significant negative impact on corporate risk exposure. However, there may be some missing variables that affect religious culture and corporate risk taking, which leads to deviations in empirical results. In order to solve this potential endogeneity problem, this paper draws on the existing literature[22] to introduce the number of award-winning religious sites owned by the province where the enterprise is registered, divided by the province's population as a tool variable of religious culture. 2SLS regression. The test results show that the original hypothesis is still established after controlling for potential endogeneity problems.

## VI. RESEARCH CONCLUSIONS

This paper takes the Shanghai-Shenzhen A-share listed company in 2010-2018 as a sample to study the influence of the informal institutional factors of religious culture on the level of corporate risk-taking. The study finds that the religious culture atmosphere of the enterprise location will affect its investment risk preference. Decision-making, the more religious culture atmosphere of the enterprise location, the more conservative its investment decision-making, the stronger the risk aversion consciousness, and the lower the corresponding risk-taking level. On the contrary, the less religious culture atmosphere of the enterprise location, the more aggressive its investment decision-making, the weaker the risk aversion awareness, and the higher the corresponding risk-taking level.

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