The Income Tax Burden of Enterprises and the Willingness to Give to Charity

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Abstract. Taxation is an important distributive policy tool that influences corporate behavior. This paper takes 4,051 A-share listed companies from 2009 to 2022 as a research sample to examine the impact of corporate income tax burden on corporate charitable donations. The study finds that the impact of corporate income tax burden on their charitable giving is inverted U-shaped.

Keywords: Corporate income tax burden; Charitable giving; Inverted U-shaped relationship.

1 Introduction

The report of the 20th National Congress of the Communist Party of China proposed that "we should guide and support enterprises, social organizations and individuals who are willing and able to actively participate in public welfare and charity", and in such an environment, philanthropy is constantly developing. According to the "Blue Book of Philanthropy: Report on China's Philanthropy Development (2023)", the total amount of social welfare resources in the country is expected to reach 450.5 billion yuan in 2022, of which the total amount of social donations will reach 140 billion yuan. As an important part of social giving, the use of corporate donation data for research is of great significance to motivate enterprises to deeply participate in donations and promote the third distribution, so this paper studies the relationship between corporate income tax burden and charitable donations based on the data of China's A-share listed companies from 2009 to 2022.

2 Theoretical Analysis and Research Hypotheses

At present, there is no agreement on the relationship between income tax and charitable donations at home and abroad. Carroll and Joulfaian[1] have found that corporate philanthropic giving is price-sensitive. Du Lanying et al. [2] found that the government's tax incentives and tax rates for private enterprises can increase the probability of donations. Navarro [3] argues that the impact of tax rates on corporate giving manifests differently under different target utility functions. Baker and Dawson [4] found that

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corporate donations have an inverted U-shaped relationship with income tax rates, with donations reaching a maximum at a tax rate of 27%. Based on the above literature, this paper proposes the following hypothesis: the influence of income tax burden of enterprises on their charitable donations is inverted U-shaped. When the tax burden is low, the income tax burden is positively related to charitable donations. When the income tax burden exceeds the critical point, the income tax burden will inhibit charitable donations.

3 Study Design

3.1 Sample Selection and Data Sources

This study takes A-share listed companies from 2009 to 2022 as a sample, and excludes as follows: (1) financial listed companies; (2) ST companies; (3) Samples that have been on the market for less than one year; (4) Data that the donation amount is less than 0; (5) Observations of etr<0 and etr >1; (6) Enterprises with missing relevant sample data; (7) Winsorize the continuous variables involved in this paper at the levels of 1% and 99%. Through the above data processing, 22,805 observations involving 4,051 enterprises were obtained.

The relevant data at the enterprise level is mainly obtained from the CSMAR database, the corporate income tax rate is queried and manually sorted by the Wind database, and the rest of the data is obtained from the EPS database.

3.2 Metrological Model Setting

In order to test the above hypothesis, a regression model is set up:

$$\text{lndon}=\alpha_0+\alpha_1\times\text{etr}+\alpha_2\times\text{etr}^2+\alpha_3\times\text{lev}+\alpha_4\times\text{lnsize}+\alpha_5\times\text{roe}+\alpha_6\times\text{yysr}+\alpha_7\times\text{cash}+\alpha_8\times\text{lnage}+\alpha_9\times\text{in}+\alpha_{10}\times\text{fu}+\alpha_{11}\times\text{mn}+\alpha_{12}\times\text{dual}+\mu+\delta+\varepsilon i,t$$

α0 denotes a constant term; μ is a fixed effect of the industry; δ is a fixed effect of the year; ε is a random perturbation term.

3.3 Variable Definitions

Explanatory Variables. Charitable Giving (lndon) indicates the size of corporate giving. The natural logarithm of +1 in the amount of corporate charitable donations.

Explanatory Variables. The corporate income tax burden is measured at the Effective Income Tax Rate (etr). It is calculated as follows: (Income Tax Expense - Deferred Tax Expense) / (Profit Before Tax - Deferred Tax Change/Statutory Tax Rate)[5-6]

Control Variables. Debt-to-asset ratio (lev: total liabilities at the end of the year/total assets at the end of the year); The size of the enterprise (lnsize: the natural logarithm of

total assets); Return on equity (roe: Net Profit/Average Balance of Shareholders' Equity); Growth rate of operating income (yysr: (amount of operating income for the current period of the year - amount of operating income for the same period of the previous year)/amount of operating income for the same period of the previous year); Cash holding level (cash: closing cash and cash equivalents balances/total assets); Age of the enterprise (lnage: the natural logarithm of the age of the enterprise + 1); Proportion of independent directors (in: number of independent directors/number of directors); Fiscal surplus (fu: (fiscal revenue of a province - fiscal expenditure)/GDP of the province); Management shareholding ratio (mn: number of shares/total number of shares held by directors, supervisors and senior executives); The two positions are combined (dual: 1 when the chairman and general manager are the same person, otherwise 0). In addition, the year and industry (ind) are also controlled.

4 Empirical Results and Analysis

4.1 Descriptive Statistics

The descriptive statistics of the main variables involved in this article are presented in Table 1. The overall distribution of lndon was right-skewed. The standard deviation of the etr is large, with a value range of 0-76.28, indicating that the etr difference among enterprises is large, with an average value of 19.51, indicating that the etr of most enterprises is lower than the statutory tax rate of 25%, and the income tax burden is more reasonable.

Table 1. Descriptive statistics of the main variables

	N	mean	SD	min	median	maximum
lndon	22805	12.649	2.583	0.000	12.890	17.702
etr	22805	19.509	13.898	0.000	16.663	76.281
etr2	22805	573.739	917.307	0.000	277.670	5818.797
lev	22805	0.422	0.196	0.058	0.417	0.855
lnsize	22805	22.339	1.266	20.119	22.148	26.326
roe	22805	0.097	0.078	-0.138	0.086	0.388
yysr	22805	0.193	0.364	-0.455	0.129	2.217
cash	22805	0.162	0.117	0.014	0.129	0.577
lnage	22805	2.832	0.365	1.609	2.890	3.497
in	22805	0.375	0.053	0.333	0.333	0.571
fu	22805	-0.074	0.066	-0.358	-0.045	-0.015
mn	22805	0.141	0.197	0.000	0.011	0.680
dual	22805	0.285	0.452	0.000	0.000	1.000

4.2 Baseline Regression

Table 2 reports the regression results for Model 1. Column 1 shows the regression under the control for industry-only and year effects, and the results show that there is no significant difference between the two. Column 2 introduces etr2 from Column 1, and the results show that the coefficient estimate of etr is significantly positive at the 1% level, and the coefficient estimate of etr2 is significantly negative. After the control variable was added to column 3 on the basis of column 2, this characteristic still existed and the coefficient did not change much, which preliminarily verified that there was an inverted U-shaped relationship between etr and lndon during the sample observation period. The Utest test was used to identify the P-value less than 0.01, which could be considered to be a U-shaped relationship between the two. In order to confirm the relationship between the two, the Utest test was used to identify the results, and the results showed that the P value was less than 0.01, which could reject the null hypothesis at the statistical level of 1%, and The slope of etr and lndon showed the characteristics of positive (0.017, P<0.01) and then negative (-0.02, P<0.01), and the extreme value point was 34.79, which was between the value range of etr (0-76.28), which proved the existence of an inverted U-shaped relationship.

Table 2. Benchmark regression results

VARIABLES	lndon	lndon	lndon
etr	0.0007	0.0395***	0.0169***
	(0.5403)	(11.0216)	(5.0980)
etr^2		-0.0006***	-0.0002***
		(-11.8347)	(-5.0058)
lev			-0.9703***
			(-8.8669)
lnsize			0.9309***
			(58.1399)
roe			3.7396***
			(17.4150)
yysr			-0.1104**
			(-2.4860)
cash			-0.2734*
			(-1.7911)
lnage			-0.1676***
			(-3.3512)
in			-0.5324*
			(-1.9582)
fu			0.7214***

			(3.0644)
mn			0.9477***
			(11.6860)
dual			0.0823**
			(2.5173)
Constant terms	12.6356***	12.2322***	-7.6543***
	(418.3403)	(260.3598)	(-20.1773)
Ind	YES	YES	YES
Year	YES	YES	YES
N	22805	22805	22805
R^2-a	0.157	0.164	0.311

Note: *, **, and *** are significant at the 10%, 5%, and 1% levels, respectively; The values in parentheses are t-values (the same below).

4.3 Robustness

1Measurement of Etr. Income tax burden is measured below in terms of (income tax expense - deferred tax expense)/EBIT[7], and the measures of charitable donations and control variables are consistent with the previous section. The regression results in Table 3 show that the inverted U-shaped relationship between the two still exists. This adjustment proves that the proposed model is robust. It should be noted that the inconsistency between the sample size and the baseline regression is caused by the exclusion of samples with etr>1 and etr<0 on the basis of the existing sample size.

Adjust the Sample Size. Delete major macro events. Corporate philanthropic giving behavior can change due to the occurrence of major natural disasters, and the impact is often temporary. Therefore, this paper examines the original model again on the basis of excluding samples during the Yushu earthquake (2010), Ya'an earthquake (2013), and during the epidemic period (2020-2022), and the results are shown in Table 3. The coefficient estimates for etr and its squared terms do not change substantially in sign and significance, indicating that the above conclusions are robust.

The above series of adjustments did not have a substantial impact on the conclusions in the benchmark regression, which further verified the robustness of the model estimation in this paper.

Adjust the Sample Size. Excluding the samples of municipalities directly under the central government. Because the policies of municipalities directly under the central government are different from those of other provinces in many aspects, the samples of Beijing, Tianjin, Shanghai and Chongqing are excluded from the total sample to avoid this estimation bias. The regression results are shown in Table 3, Column 3. The results show that the conclusion that there is an inverted U-shaped relationship between the

actual income tax rate and charitable donations is still stable after excluding the samples of municipalities directly under the Central Government.

Table 3. Robustness test

VARIABLES	lndon	lndon	lndon
tax	0.0210***	0.0197***	0.0148***
	(4.7564)	(4.1403)	(3.9894)
tax^2	-0.0004***	-0.0003***	-0.0002***
	(-4.0348)	(-3.7809)	(-4.1683)
Control variables	YES	YES	YES
Constant terms	-7.7186***	-8.4524***	-7.5028***
	(-20.2808)	(-14.8528)	(-17.1140)
Ind	YES	YES	YES
Year	YES	YES	YES
N	22522	13193	18649
R^2-a	0.311	0.285	0.311

5 Conclusions and Implications

Based on the data of A-share listed companies from 2009 to 2022, this paper finds that the impact of corporate income tax burden on corporate charitable donations is inverted U-shaped.

Based on the above conclusions, this paper suggests: (1) strengthening tax collection and management. Most corporate tax burdens are below the extreme value, so a modest increase in corporate tax burden can promote charitable giving. At present, the tax system is relatively stable, and by strengthening tax collection and management, we can reduce tax evasion by enterprises, increase the actual tax burden of enterprises, and thus promote charitable donations. (2) Strengthen government guidance. Strengthening government guidance can form a good atmosphere of actively undertaking social responsibilities in the whole society, so that more enterprises can actively and consciously fulfill their social responsibilities.

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