"The effects of government ownership and the global financial crisis on implicit taxes of Chinese companies"

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BUSINESS PERSPECTIVES

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THE EFFECTS OF GOVERNMENT OWNERSHIP AND THE GLOBAL FINANCIAL CRISIS ON IMPLICIT TAXES OF CHINESE COMPANIES

Abstract

The government has implemented various tax incentive policies to support the generation and growth of corporate profits, leading to what is known as an implicit tax. In actuality, there is no implicit tax phenomenon because this phenomenon occurs in a perfectly competitive market where there are no barriers to entry, transaction costs, or transaction friction. Since most Chinese companies are owned by the Chinese government and are not fully capitalist markets, the possibility of more implicit taxes is not expected to occur. Therefore, the purpose of this study is to investigate whether the Chinese government's ownership of enterprises and the global financial crisis have had an effect on the realization of the implicit tax phenomena. The results of this study are as follows. First, the pre-tax return on equity (PTROE) of listed Chinese companies had a statistically significant positive relationship with the pre-tax subsidy on equity (PTSE). Second, for companies with a higher level of Chinese government-owned interest, PTROE had a statistically significant positive relationship with PTSE; so this result shows that Chinese companies receive tax benefits, but an implicit tax in the market is not realized. Third, during the global financial crisis, the PTROE of Chinese companies showed an insignificant negative relationship with PTSE. In addition, companies owned by the Chinese government showed an insignificant negative relationship between PTROE and PTSE during the global financial crisis. This study provides policy implications that government ownership equity and macroeconomic events influence the level of freedom in a market economy.

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INTRODUCTION

Implicit taxes, along with explicit taxes, affect corporate profits or government tax revenues. Implicit tax is defined in the total tax burden model proposed by Scholes and Wolfson (1992) based on Miller's (1977) tax arbitrage theory. Unlike other countries, China is a socialist country, and there are relatively few empirical studies of an implicit tax, with some studies arguing that the implicit tax phenomenon is rare in listed Chinese companies. In other words, because Chinese companies receive tax benefits without paying implicit tax, they earn excess profits equal to the tax benefits. Implicit tax is a phenomenon in which the after-tax return increases by the amount of a tax reduction established by awarding tax incentives to a specific industry, though this refers to a phenomenon in which the pre-tax return of the relevant industry decreases to reach a level identical to the after-tax return ratio of other industries (Qi et al., 2006; Chen, 2006).

Given the moderating effect on supply and demand mechanisms in the market, as the demand for tax-benefit assets increases, the pre-tax return of assets without tax incentives decreases by an amount equal to the after-tax return of tax-benefit assets. Eventually, the demand

and supply of the tax-benefit asset is balanced at the same level as the after-tax return of the tax-benefit asset. Therefore, investors in tax-benefited assets bear the implicit tax as much as this reduced pre-tax return (Wilkie, 1992; KO, 1996; Lee & Lee, 1997; Callihan & White, 1999; Kim, 2001; Chen, 2006; Qi et al., 2006).

The ownership system of Chinese enterprises depends on political and economic factors. In political terms, social conflict stems from differential treatment by the government. In addition, in terms of economics, such a system has a negative impact on the welfare level of the Chinese people by reducing total social welfare due to inefficient resource allocation (Li, 2012; Yang, 2012). And Yang (2012) argues for the differentiation of the ownership system of Chinese companies, categorizing this concept into four aspects: differentiation in market entry, differentiation in financing, differentiation in taxes, and differentiation in implicit burdens. First, the level of openness to private enterprises remains low. Accordingly, in terms of differentiation of market entry, private enterprises are relatively less likely to receive benefits due to the higher market entry barriers they face, compared to foreign-invested enterprises. Second, when problems such as the cancellation of a credit loan occur, state-owned enterprises can find a resolution through the government, whereas private enterprises mainly allow their credit rating to degrade due to irregular borrowing in the form of, for instance, private loans and private equity funds. Third, the level of tax benefits enjoyed by foreign-invested companies is higher than that of domestic-capital companies, and foreign-invested companies undergo accounting based on Chinese tax laws rather than accounting standards. Fourth, the competitiveness of state-owned companies is relatively low in terms of profitability because private companies fulfill their domestic social responsibilities at a lower level than that adhered to by state-owned companies. Therefore, the Chinese government grants market entry benefits and tax benefits to compensate for the profitability of state-owned enterprises.

Due to the differentiation of companies' ownership systems, the Chinese market is not a completely competitive market that can realize an implicit tax; rather, it is an imperfect competitive market that leads to a monopoly situation or excess profits by a company.

Huang et al. (2009) and Hou (2008), examining macroeconomic indicators, argue that the global financial crisis had an effect on the vitality of China's economy and business operations. The PMI index fell to 38.8% from July to November 2008 but rose again in December. Looking at how long the PMI index remained below 50% and the callback trends, it was suggested that China has not yet entered a serious economic recession. However, according to statistics from the Bureau of Statistics of China, in 2008 the total profit of state-owned enterprises decreased by 19.11%, compared to the same period in 2008, while that for foreign-invested enterprises increased by 8.69% in the same period and that of private enterprises rose by 39.13% in the same period. This means that the financial crisis has a greater negative impact on state-owned industrial enterprises than on private industrial enterprises and foreign-invested enterprises in China.

The purpose of this study is to investigate the existence of implicit tax phenomena in companies in China and to analyze how the Chinese government's ownership interest and the global financial crisis have affected the realization of implicit taxes.

The remainder of the study is organized as follows: Section 1 provides a review of the literature on implicit taxes and introduces the research hypotheses. Section 2 presents the research models and data as the empirical research design. The last section discusses the empirical results and their implications, in particular policy implications.

1. LITERATURE REVIEW AND HYPOTHESES

1.1. Literature review

As a representative precedent study on implicit tax, Wilkie (1992) analyzes whether an implicit tax phenomenon occurred, by examining the relationship between tax incentives and pre-tax profit variables, arguing that an implicit tax is realized in a realistic capital market, although not at the level of a perfectly competitive market.

Lee and Kim (2010) used Wilkie's (1992) methodology to analyze the implicit tax hypothesis and classified samples into start-up venture firms, general venture firms, non-venture SMEs, and non-venture SMEs. They argued that the tax benefits of start-up ventures were greater than those of other companies, and their results showed a negative (-) relationship between tax benefits and pre-tax returns, but not at a statistically significant level. In addition, they pointed out the limitation of not being able to select a large sample due to the difficulties associated with data collection despite the fact that the majority of venture companies are not listed on the KOSDAQ.

Jennings et al. (2012) analyzed the effect of changes in the tax environment according to TRA86 on implicit tax. Comparing before and after TRA86, most of tax benefits decreased before TRA86, but after TRA86, most of tax benefits decreased by 1. Only about a third claimed that implicit tax decreased. These results show that tax benefits are used to support industries or enterprises according to the government's tax policy, rather than to reduce the pre-tax rate of return according to the market mechanism. Also, recently, Roh and Kim (2019) analyzed the implicit tax of domestic and multinational corporations on a sample of Korean companies. In both multinational and domestic corporations, the reduction in the effective tax rate is partially offset by implicit tax, but an implicit tax was lower for multinationals. This result provides policy implications that measuring the difference in explicit tax without measuring implicit tax will lead to incomplete analysis results.

Several previous studies that analyzed implicit tax phenomena in relation to listed companies in China can be summarized as follows. Chen (2006) analyzed the relationship between implicit tax and market structure in a sample of 454 companies listed on the Chinese stock market in 2003, finding that there was a statistically significant negative (–) relationship between implicit tax and pre-tax returns. They posited that the S-W model can be applied to Chinese companies as long as there is an implicit tax. Moreover, because the degree of the implicit tax depends on the market structure, companies with tax benefits and those without tax benefits can realize the same after-tax return because companies in a completely competitive market cannot avoid implicit taxes. On the other hand, due to the weakening of the market control function, market friction and barriers (e.g., imperfect competitive market), there is a difference in the after-tax returns between companies with tax benefits and those without tax benefits.

Qi et al. (2006) analyzed whether Chinese companies bear implicit tax by examining 508 companies listed on the Chinese stock market. They found no significant negative relationship between the effective tax rate and the pre-tax return for companies in the textile and apparel and the electronics industries. Although the petrochemical industry, metal and non-metal industry, biopharmaceutical industry, and communication technology industry were directly managed by the Chinese government, there was a significant positive relationship between the tax benefit levels and the pre-tax returns in these cases. In addition, there was a negative relationship between market share and pre-tax return in the monopolistic petrochemical industry and in public utilities (water, gas, and electricity), whereas for the remaining industries, this relationship was statistically insignificant, as companies do not have implicit taxes due to the market structure in China.

Li (2011) also analyzed 511 companies listed on the Chinese stock market as to whether they bear implicit taxes and whether market factors affect the implicit tax. A statistically significant positive relationship was shown, indicating an absence of any implicit tax.

In general, prior studies in China have analyzed the implicit tax phenomena of companies from a macroeconomic point of view. If this is identical to

other conditions in a completely competitive market, it is assumed that the difference exists as an implicit tax equals the tax benefit incurred by enterprises. Listed companies in China rarely show any implicit tax phenomena.

This can be due to several reasons. First, a market structure exists in which implicit tax phenomena do not arise. As market reforms are in progress to ensure China's economic growth, and changes in the industrial structure are underway, the degree of competition is not high for each industry in the market, though entry barriers are relatively high. Second, there is a possibility that tax avoidance may exist, depending on the market structure. In China's imperfect competitive market, tax-favored companies can avoid implicit taxes. Third, the sample of listed companies used in research can influence the results of previous studies. Analyses of implicit tax have been limited to a sample of specific industries and/or companies or years.

1.2. Hypothesis development

Since 1994, the year of the tax reform in China, many new tax policies have been implemented. However, systematic studies of such policies in China have not been actively conducted. Therefore, this study aims to investigate the implicit tax phenomena for listed companies in China based on the hypothesis of an implicit tax.

According to the hypothesis of Wilkie (1992) and Jannings et al. (2012), the price of investments or companies with tax benefits, according to the market function, is higher than that of investments or companies without tax benefits such that the pre-tax return on an investment or company with tax benefits is lower than that of an investment or company without tax benefits. At this time, there is a statistically significant negative relationship between tax return on equity (PTROE) and the pre-tax subsidy on equity (PTSE).

In a situation where the level of economic freedom or management discretion is limited for firms, this acts as an obstacle to the market mechanism and does not become a perfectly competitive market (Yoon & Choi, 2013). Also state-owned companies prioritize the government's management policy over decision-making by internal management.

These companies can receive more benefits, such as creating a good external environment with government investments and policy support. In particular, the more state-owned companies have more incomplete competitive market factors, such as entry barriers and transaction friction, which can affect the realization of implicit tax. Therefore, the following null hypothesis is established:

Research hypothesis 1: The ownership of the Chinese government does not affect the relationship between PTROE and PTSE.

Due to the outbreak of the global financial crisis in 2008, most countries around the world have implemented numerous countermeasures. However, unlike other countries, China has mitigated various regulations to enhance flexibility in capital markets, and has enacted direct tax benefits policies such as those that affect tax rate and tax benefits positively. This has had a positive effect with regard to removing imperfect competition factors in the capital market. Therefore, this study predicts that the global financial crisis had an impact on the realization of implicit taxes in China. Thus, the study establishes the following null hypothesis:

Research hypothesis 2: The global financial crisis is unrelated to the realization of implicit taxation by Chinese companies.

2. RESEARCH METHODOLOGY AND DATA

2.1. Research methodology

This study develops the research model expressed here as Equation (1) to analyze the implicit tax phenomena experience by Chinese companies. In Equations (1)–(3), the pre-tax return on equity (PTROE) is the dependent variable, and the main variable of interest, PTSE, is measured by the pre-tax subsidy on equity. That is, PTROE is defined by standardizing net income before tax as equity capital, as in Wilkie (1992), Ko (1996), and Kim (2000). In addition, the Chinese government's ownership interest (GOV) is assigned a value of 1 if it is a state-owned company, and 0 otherwise.

When there is a negative (–) relationship between tax benefits and PTROE (β_1 has a negative sign), this means that there is an implicit tax. In other words, under a perfectly competitive market structure, the larger the tax benefit is, the more PTROE decreases, resulting in an implicit tax rather than an explicit tax.

As in the results of Ko (1996) and Kim (2000), if there is no implicit tax in the Chinese capital market (if it is not realized), which is the structure of an imperfectly competitive market due to certain types of market friction, such as barriers to market entry, β_1 presents a positive (+) sign or a statistically insignificant level.

$$PTROE_{it} = \beta_0 + \beta_1 PTSE_{it} + \beta_2 GOV_{it} + \\ + \beta_3 PTSE_{it} \cdot GOV_{it} + \beta_4 ETR_{it} + \beta_5 SIZE_{it} + \\ + \beta_6 MTB_{it} + \beta \sum YD + \beta \sum GICS + \varepsilon_{it}, \quad (1)$$

$$PTROE_{it} = \beta_0 + \beta_1 PTSE_{it} + \beta_2 POST_{it} + \\ + \beta_3 PTSE_{it} \cdot POST_{it} + \beta_4 ETR_{it} + \beta_5 SIZE_{it} + \\ + \beta_6 MTB_{it} + \beta \sum YD + \beta \sum GICS + \varepsilon_{it}, \quad (2)$$

$$PTROE_{it} = \beta_0 + \beta_1 PTSE_{it} + \beta_2 GOV_{it} + \\ + \beta_3 PTSE_{it} \cdot GOV_{it} + \beta_3 PTSE_{it} \cdot POST_{it} + \\ + \beta_4 GOV_{it} \cdot POST_{it} + \beta_5 PTSE_{it} \cdot GOV_{it} \times \\ \times POST_{it} + \beta_6 ETR_{it} + \beta_7 SIZE_{it} + \\ + \beta_8 MTB_{it} + \beta \sum YD + \beta \sum GICS + \varepsilon_{it}, \quad (3)$$

where $PTROE$ – Pre-tax return on equity, $PTI \div SE$; $PTSE$ – Pre-tax subsidy on equity, $\left[\left(PTI \cdot t - TAX \div SE\right)\right] \div \left(1 - t\right)$; TS – Tax subsidy, $PTI \cdot t - TAX$; PTI – Net income before tax; t – Maximum tax rate, 25%; TAX – Actual paid tax amount; TSE – Tax subsidy on equity, $TS \div SE$; SE – Equity; GOV – 1 if it is a state-owned company, 0 otherwise; ETR – Effective tax rate, $TAX \div$ net income before tax; $SIZE$ – Firm size, the natural logarithm of total assets; MTB – Market value to book value as the ratio of market value to book value; YD – Year dummy; $GICS$ – Industry dummy.

2.2. Sample selection

In this study, final samples were selected from the Osiris database (Osiris.bvdinfo.com) for 15 years of Chinese listed companies from 2005 to 2019 that met the following conditions:

- Chinese companies in the Osiris database;

- Listed companies that share financial statements from 2005 to 2019;

- Excluding companies with negative (-) net income before tax;

- Excluding the financial industry;

- Companies whose settlement date is December 31.

The final sample is listed companies in China, totaling 4,686 firm-years. In Table 1, which shows the distribution of the sample by GICS industry, industrial goods are companies with a total of 1,304 firm-years, ranking first among all industries by 27.83%. Next are a total of 996 firm-years for the information and communication technology industry, a total of 691 firm-years for the materials industry, a total of 551 firm-years for consumer discretionary products, a total of 368 firm-years for the healthcare industry, a total of 250 firm-years for consumer staples, and a total of 158 firm-years for the telecommunications service industry. Real estate businesses show a total of 156 firm-years. In order, these account for 21.25%, 14.75%, 11.76%, 7.85%, 5.34%, 3.37%, and 3.33% of the total industry, respectively. Finally, a total of 109 firm-years in the utility industry and 103 firm-years in the energy industry account for 2.33% of all industries.

Table 1. Distribution of samples

GICS code	Frequency (Observations)	Percent
ENERGY	103	2.20
MATERIALS	691	14.75
INDUSTRIALS	1304	27.83
CONSUMER DISCRETIONARY	551	11.76
CONSUMER STAPLES	250	5.34
HEALTH CARE	368	7.85
INFORMATION TECHNOLOGY	996	21.25
COMMUNICATION SERVICES	158	3.37
UTILITIES	109	2.33
REAL ESTATE	156	3.33
TOTAL	4686	100.00

3. EMPIRICAL RESULTS

3.1. Descriptive statistics and correlation analysis

Table 2 shows the descriptive statistics of the variables. Pre-tax return on equity (PTROE) has an average value of 0.7663, ranging from 0.1797 to 2226.589, and pre-tax subsidy on equity (PTSE) shows an average of 0.0692, ranging from 0.0027 to 139.5406. State-owned companies (GOV) average 3.67%, which is a very small proportion of the total sample, while the post-global financial crisis sample (POST) is 33.33%, accounting for 1/3 of the total sample. In addition, the effective tax rate (ETR) averages 13.3%, ranging from 9.71% to 28.18%, and the firm size (SIZE) has an average value of 1.9437, ranging from 11.0966 to 19.7896. The market value to book value (MTB) shows an average value of 3.7856, with a wide range of 1.0290–4227.

Table 3 shows the Pearson correlation outcomes with all of the majors. For PTROE, PTSE presents a statistically significant efficiency of 0.194, meaning that an implicit tax is not realized. In other words, in an imperfectly competitive market, the higher the level of tax benefits is, the higher pre-tax returns are, indicating the absence of an implicit tax. In addition, GOV, POST, and ETR are not statistically significant and have a statistically significant correlation with SIZE, which means that larger companies enjoy higher pre-tax returns.

In addition, PTSE and SIZE show a statistically significant efficiency of −0.013, which means that larger companies have higher tax benefit levels. Moreover, GOV and SIZE also show a statistically significant value of 0.228, which means that state-owned enterprises are larger.

3.2. Regression analysis results

Table 4 shows the results of the analysis of the governmental ownership (state-owned enterprise (GOV)) impact on the realization of an implicit tax. In Model 1-1, which shows the implicit tax phenomenon in the Chinese capital market, PTSE has a statistically significant coefficient of 1.615 ($p<0.001$), which supports the results of Chen (2006) and Qi et al. (2006), who argued that implicit taxes are not realized in China. On the other

Table 2. Descriptive statistics

Variables	N	Mean	STD	MIN	Max
PTROE	42907	0.7663	13.5323	0.1797	2226.589
PTSE	42643	0.0692	0.8994	0.0027	139.5406
GOV	70290	0.0367	0.1880	0	1
POST	70290	0.3333	0.4714	0	1
ETR	47513	0.1330	0.3109	0.0971	0.2818
SIZE	48074	12.2104	1.9437	11.0966	19.7896
MTB	28245	3.7856	51.1292	1.0290	4227

Note: The variables are defined as follows: PTROE = Pre-tax return on equity, $PTI \div SE$; PTSE = Pre-tax subsidy on equity, [($PTI \times t − TAX \div SE$] ÷ (1−t); TS = Tax subsidy, $PTI \times t − TAX$; PTI = Net income before tax; t = Maximum tax rate, 25%; TAX = Actual paid tax amount; TSE = Tax subsidy on equity, $TS \div SE$; SE = Equity; GOV = 1 if it is a state-owned company, 0 otherwise; ETR = Effective tax rate, $TAX \div$ net income before tax; SIZE = Firm size, the natural logarithm of total assets; MTB = Market value to book value as the ratio of market value to book value.

Table 3. Correlation analysis

Variables	PTROE	PTSE	GOV	POST	ETR	SIZE
PTSE	0.194***					
GOV	−0.001	−0.004				
POST	−0.004	−0.003	0.001			
ETR	0.001	−0.008	0.003	0.006		
SIZE	0.018***	−0.013***	0.228***	−0.036***	0.006	
MTB	−0.002	−0.001	−0.009	−0.012*	0.001	0.053***

Note: 1. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively (two tailed). 2. Refer to the note in Table 2 for definitions of the variables.

hand, in Model 1-2, GOV has statistically an insignificant value of –0.4241 of the coefficient, meaning that its result shows that the pre-tax returns of state-owned enterprises (GOV) in China are not higher than those of private companies.

In particular, in Model 1-3, PTSE×GOV has a statistically significant coefficient of 3.9167 ($p < 0.1$), indicating that state-owned enterprises, unlike private enterprises, do not have a large degree of implicit tax realization. In other words, state-owned enterprises do not bear implicit taxes and receive tax benefits equal to their explicit tax. Therefore, this result rejects hypothesis 1, which states that governmental ownership does not affect the realization of an implicit tax. Also, among the control variables, SIZE has statistically significant coefficients of 0.418 ($p < 0.001$) ~ 0.4375 ($p < 0.001$), which means that the larger the firm size is, the greater the pre-tax returns are.

Table 5 shows the results of analyzing the impact of the global financial crisis (POST) on the realization of an implicit tax. In Model 2-1, POST has a statistically insignificant coefficient of 0.3494, which means that although the pre-tax returns of Chinese companies have improved since the global financial crisis, they are not statistically significant. In addition, in Model 2-3, PTSE×POST also has a statistically insignificant coefficient of -0.01, which indicates that there is no implicit tax in China after the global financial crisis. In other words, China is an imperfectly competitive market, which shows that there has been no significant improvement since the global financial crisis. Therefore, this result supports hypothesis 2, which holds that the global financial crisis does not affect the realization of implicit taxes.

Table 6 shows the results of analyzing the effects of governmental ownership and the global financial crisis on the realization of an implicit tax. PTSE has statistically significant coefficients of 1.6057 (p

Table 4. Regression results: effects of governmental ownership on the realization of an implicit tax

Variables	Model 1-1		Model 1-2		Model 1-3	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
PTSE	1.6150***	15.30	1.6151***	15.30	1.6054***	15.19
GOV	–	–	−0.4241	−0.91	−0.6338	−1.32
PTSE×GOV	–	–	–	–	3.9167*	1.86
ETR	0.0049	0.08	0.0049	0.08	0.0057	0.09
SIZE	0.4180***	4.56	0.4375***	4.65	0.4350***	4.62
MTB	0.0003	0.07	0.0003	0.08	0.0003	0.07
∑YEAR	Included					
∑IND	Included					
F-stat.	2.09***		2.08***		2.09***	
Adj R^2	0.0062		0.0062		0.0063	

Note: 1. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively (two tailed). 2. Refer to the note in Table 2 for definitions of the variables.

Table 5. Regression results: effects of the global financial crisis on the realization of an implicit tax

Variables	Model 2-1		Model 2-2	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.
PTSE	1.615***	15.29	1.6150***	15.30
POST	0.3494	0.47	−0.3496	0.47
PTSE×POST	–	–	−0.0107	−0.01
ETR	0.0049	0.08	0.0049	0.08
SIZE	0.418***	4.56	0.4180***	4.56
MTB	0.0003	0.07	0.0003	0.07
∑YEAR	Included			
∑IND	Included			
F-stat.	2.08***		2.09***	
Adj. R^2	0.0061		0.0063	

Note: 1. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively (two tailed). 2. Refer to the note in Table 2 for definitions of the variables.

Table 6. Regression results: effects of governmental ownership and the global financial crisis on the realization of an implicit tax

Variables	Model 3-1		Model 3-2		Model 3-3	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
PTSE	1.6150***	15.29	1.6059***	15.19	1.6057***	15.19
GOV	–	–	−0.6330	−1.32	−0.7060	−1.33
POST	0.3496	0.47	0.3947	0.53	0.3685	0.49
PTSE×GOV	–	–	3.9423*	1.86	4.0256*	1.84
PTSE×POST	−0.0107	−0.01	−0.3521	−0.14	−0.2863	−0.11
GOV×POST	–	–	1.6059***	15.19	0.3948	0.34
PTSE×GOV×POST	–	–	–	–	−1.1202	−0.14
ETR	0.0049	0.08	0.0056	0.09	−1.1549	−0.14
SIZE	0.4180***	4.56	0.4351***	4.62	0.0057	0.09
MTB	0.0003	0.07	0.0003	0.07	0.4360***	4.63
∑YD	Included					
∑GICS	Included					
F-stat.	2.08***		2.08***		2.05***	
Adj. R^2	0.0061		0.0062		0.0062	

Note: 1. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively (two tailed). 2. Refer to the note in Table 2 for definitions of the variables.

< 0.001) to 16015 ($p < 0.001$), which indicates that China has no implicit tax due to an imperfect market. In addition, the main variables of interest in this study, GOV and POST, both have statistically insignificant coefficients, which means that state-owned enterprises and the global financial crisis have no effects on pre-tax returns.

In particular, PTSE×GOV has statistically significant coefficients of 3.9423 ($p < 0.1$) and 4.0256 ($p < 0.1$), which means that a higher level of governmental ownership means a lower degree of implicit tax realization. In short, for a state-owned enterprise, the explicit tax is reduced by as much as the tax benefit. In contrast, PTSE×POST has statistically insignificant negative (–) coefficients. This result means that after the global financial crisis, China reduced various regulations on its capital markets and attempted to become a perfectly competitive market by introducing a market mechanism system, which was statistically insignificant, but which also increased the realization of implicit taxes.

In addition, PTSE×GOV×POST, which shows the effect of being a state-owned enterprise and the global financial crisis on the realization of implicit taxes at the same time, has a statistically insignificant coefficient of –1.1202. This result is not statistically significant, but it means that state-owned enterprises and the global financial crisis both improved the factor of perfect competition in China's capital market and increased the feasibility of implicit taxes. In other words, this finding presents evidence that China also attempted to transform into a perfectly competitive market system by reforming its capital market or easing regulations on companies.

Among the control variables, SIZE has statistically significant coefficients of 0.418 ($p < 0.001$) and 0.4351 ($p < 0.001$), indicating that the larger the firm size, the larger the pre-tax return. In addition, in Model 3-3, MTB shows a statistically significant coefficient of 0.436 ($p < 0.001$), which means that companies with higher growth potential have higher pre-tax returns.

CONCLUSION

The aim of this study was to investigate the effects of governmental ownership and the global financial crisis on the realization of implicit taxes for Chinese companies. China has numerous regulations on enterprises and has more imperfect market factors compared to those in other countries due to the low level of freedom in economic activity. This suppresses the increased demand in a perfectly competitive

market, leading to the phenomenon by which pre-tax returns do not decrease or increase by an amount equal to the size of the tax benefit.

This study found that, first, governmental ownership of Chinese companies negatively affects the realization of an implicit tax. State-owned enterprises are more controlled and regulated by the government than private companies, and investors are also subject to investment restrictions; accordingly, investment demand has not increased. This means that pre-tax returns are higher than those of tax-unflavored companies because the explicit tax decreases equally to the tax benefit.

Second, after the global financial crisis, although the result was statistically insignificant, some degree of implicit taxation of Chinese companies was found. Therefore, this result shows that China eased regulations on corporations in the wake of the global financial crisis, and because the level of trade freedom in the capital market has increased, a certain level of implicit tax, although not complete, has been realized. In particular, an analysis of the degree of the realization of implicit taxes by companies with high levels of government ownership after the global financial crisis showed a statistically insignificant but positive impact on the realization of implicit taxes.

The results of this study expand on previous studies that show that China does not realize implicit taxes when compared to other countries. After the global financial crisis, the level of competitive freedom of Chinese companies increased and the degree of government regulation decreased.

Finally, this study provides policy implications that, following the global financial crisis, economic and capital market regulation policies created a capital market atmosphere approaching a perfectly competitive market in China.

AUTHOR CONTRIBUTIONS

Conceptualization: Di Qu.
Data curation: Di Qu.
Formal analysis: Di Qu.
Investigation: Di Qu.
Methodology: Di Qu.
Project administration: Sung Man Yoon.
Resources: Sung Man Yoon.
Software: Sung Man Yoon,
Supervision: Sung Man Yoon,
Writing - original draft: Di Qu.
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