The Effect of Cash Transactions on Corporate Tax Evasion

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Abstract. This article analyzed the problems of cash transaction and the tax evasion of enterprises based on the sample survey data of the small and micro enterprises of 10 provinces in Southeast, using the method of multiple linear regression models. It's found that compared with the sale behavior, the cash transaction in the production activity has more significant impact on the problem of tax evasion of enterprises. Therefore, the standardized production and procurement behavior of enterprises can help solve the tax evasion problem of small and micro enterprises.

Keywords: Cash transaction; tax evasion; multiple linear regression model.

1. Introduction

The tax evasion problem of enterprises is widely concerned by the government and the society for a long time. After the implementation of the reform and opening up policy, the small and micro enterprises represented by the handicrafts and the light industry have been developed rapidly in Southeastern coastal province. However, there are tax evasion problems along with fast development because of the unsound systems. This paper is focus on the tax evasion problem of the small and micro enterprises from the aspect of cash transaction. Different from the previous analysis, this paper concerns not only about the sales behavior of the enterprises, but also the production behavior, and compares and analyzes the different performances of cash transaction in these two aspects. Therefore, the tax evasion problem of small and micro enterprises is studied in terms of both cash cost and cash income, and strives to draw reasonable policy conclusions and policy recommendations.

2. Literature Review

The tax evasion problem is a hot issue which is widely concerned by the society. The scholars of China analyzed the tax evasion problem from different aspects. For example, Shuchun Liu and other scholars analyzed the motive of tax evasion from the perspective of enterprises.

Shuchun Liu (2013) analyzed the reasons of tax evasion of SME in the article "Discussion on Tax Evasion in SME Accounting", by analyzing the case of tax evasion of SME in Southern Jiangsu, the author thought that the reasons of tax evasion including excessive taxes and fees, difficulties in financing, rising costs and lax review system. The means of tax evasion adopted in accounting calculations include false reporting costs, concealing income and so on. Besides, the author proposes corresponding measures such as strengthening publicity and standardizing review in the article. Jiachen Zhang(2012) pointed out the necessity and importance of controlling small and micro enterprises to evade taxation in his paper "Analysis of the behavior of small and micro enterprises to evade taxation and countermeasures", and recorded the main manifestations of small and micro enterprises' tax evasion. In addition, the author analyzes the root causes of the tax evasion of small and micro enterprises and proposes measures to control the tax evasion of small and micro enterprises. Qingchu Xiao(2008) analyzed the bad effect which caused by the tax evasion and gave the solutions in the article "The effect and governance of tax evasion". The author used two models when analyzing the effects. The first model of the relationship between tax rate changes and initial tax rates demonstrates the limitations of the program to increase tax rates. The second model of social welfare proves that tax evasion has a serious negative impact on society. Finally, the author borrowed probabilistic analysis to emphasize the feasibility of strict tax collection and severe punishment.

Hu Yang (2011) analyzed the motive of tax evasion in the article "Analysis of game model based on corporate tax evasion behavior" based on the method of game theory and considering the impact of collusion on corporate tax evasion. The author draws on the Nash equilibrium method in game

theory and finds that in the case of collusion, the enterprise and collusion participants who may be governments, intermediary organizations or other enterprises realize the Nash equilibrium. Hua Liu (2008) used the A-S model and established a decision-making model for cash transaction evasion in dual-control main enterprise, and analyzed the impact of factors such as VAT rate, seizure rate, penalty rate and cash transaction discount, product price and other factors on the proportion of cash transactions in his paper "Study on VAT Tax Evasion of Dual-Controlling Subjects Based on Cash Transaction". It is considered that cross-inspection difference strategy, penalizing operators and purchasers, and improving the effectiveness of the VAT chain can effectively reduce VAT tax evasion.

Guangrong Ma and other scholars analyzed the causes of tax evasion and its social influence from the macroscopic point of view, taking the underground economy as the starting point. Guangrong Ma (2012) used the province financial and industry enterprises data of China from 1998 to 2015 in his article "Government size, local governance and corporate tax evasion". And regression analysis was carried out by OLS and 2SLS models, and the endogenous problem was solved by cluster method. It was found that due to the unreasonable governance structure, there was a positive correlation between government scale and corporate tax evasion. Xingjian Yi (2004) estimated the size of the underground economy and the scale of tax evasion caused by the underground economy in China from 1985 to 2002 by the method of cash ratio in his paper "The estimation of the scale of tax evasion in China and the analysis of its economic impact". The author thought that the tax evasion has the negative impact on the development of the economic and was not conducive to the rational allocation of resources. Based on the analysis of the GiNi coefficient, the author also found that the tax evasion has the negative impact on the fairness of the income distribution. Peng Liang (2001) estimate the underground economic and the scale of tax loss of China and analyzed the causes tax loss in the article "The scale of tax loss: the analysis of the perspective of the underground economy". The author found that improving the tax system, especially strengthening tax collection and management can reduce the scale of tax loss by using the method of Cash ratio method and income and expenditure difference method.

3. Methodology and Data

This paper starts from the Cobb-Douglas production function in equation (1) and drawing on the analysis logic of production factors in the production function. In the Cobb-Douglas production function, capital investment and labor input are considered to have complementary effects, and their respective contribution ratios are α and β respectively. This paper draws on this function to analyze the tax evasion problem of enterprises, and divides the production cost of the enterprise into cash cost C and non-cash cost NC, thus obtaining the formula (2). In the same way, the income Y of the enterprise can be divided into two parts, cash income I and non-cash income, and the formula (3) is obtained. In the model of perfect competition market, the enterprise pursues profit maximization, the profit π of the enterprise can be expressed as the difference between income and cost, and formula (2) and formula (3) are substituted into the enterprise profit function formula (4), which can be obtained. The functional formula of corporate profits on costs (5).

$$\mathbf{Y = AK^\alpha L^\beta} \tag{1}$$

$$\mathbf{Y = AC^\alpha NC^\beta} \tag{2}$$

$$\mathbf{Y = I + NI} \tag{3}$$

$$\mathbf{\pi = I + NI - C - NC} \tag{4}$$

$$\mathbf{\pi = AC^\alpha NC^\beta - C - NC} \tag{5}$$

Cash transaction and the underground economic which can be represented by cash transaction have always been the blind point in the tax collection. Many scholars in China have discussed this issue, and the focus is on the process of selling products. While in fact, the problems of cash transaction involve two aspects: the production process and the sales process. There are the problems of cash transaction and tax evasion during the process of purchasing production materials, among which most are small-scale taxpayers, and most of the performances are cash transactions on VAT issues. In the process of selling products, companies' products with low unit price and high sales volume are more likely to be represented as cash transactions. This paper analyzed the action of tax evasion from the two perspective of the production process and sales process. The least squares method is used to construct an empirical analysis model and analyze the relationship between tax evasion and cash transactions using multiple linear regression. The specific function form is shown in equation (6).

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + u \tag{6}$$

This paper sets the dependent variable as the binary variable of whether the enterprise evades taxes, sets the independent variable as the cash transaction of the purchase cost and the cash transaction of the sold product, sets the control variable as the non-cash transaction of the purchase cost and the non-cash transaction of the sold product. The data used in the regression analysis came from the sampling data of the 10 provinces in the southeast by the national tax authorities in 2015.

For a long time, the analysis about the tax evasion has always been ended at the theoretical level and the empirical macro level, a large part of which is due to data problems. The data that this paper used is from the sample survey conducted by the national taxation department in 2015 on the scale of enterprises in the southeastern provinces. The provinces covered include Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and other 10 provinces and cities. The subjects of the sample survey are the small and micro enterprises whose annual turnover is less than 5 million. In the research process, a combination of self-inspection and external audit is adopted. For the sake of confidentiality, the data used in this article has deleted the information of specific provinces. This paper uses the stratified random sampling method to re-sample from the database of 10 provinces and cities, and extracts more than 300 companies for analysis according to the ratio of 5% when the data was used. Descriptive statistics show that among the sample companies, the company with the lowest annual turnover is 23,000 yuan, and the enterprise with the largest annual turnover is 8.12 million yuan, among which, enterprises with an annual turnover of less than 5 million accounted for 98.39% of the total sample, which satisfies the requirements for analyzing the tax evasion problem of SMEs. From the perspective of variables, this sample survey includes both corporate accounting information and off-book information. For the cash transaction of enterprises, this sampling survey has designed 13 questions, which basically covers the requirements of this paper for cash transaction and non-cash transaction analysis.

This paper conducts an empirical analysis based on multiple linear regression equations, and selects whether the enterprise has a binary variable as the dependent variable, cash cost and cash income as independent variables, and non-cash cost and non-cash return as control variables. The results of the regression analysis of Stata are shown in the above table.

4. Results

Table 1. Results of OLS

VARIABLES	(1) Te	(2) Te	(3) Te
cinc	0.00110*** (0.000343)	0.000520 (0.000514)	-0.000410 (0.000612)
ccost	0.00247*** (0.000922)	0.00368** (0.00142)	-0.00103 (0.00107)
ncinc	5.68e-05 (0.00110)	0.00235 (0.00164)	-0.00265* (0.00156)
nccost	-0.0335*** (0.00309)	-0.0170*** (0.00529)	-0.0534*** (0.00334)
Constant	1.401*** (0.136)	0.856*** (0.239)	2.346*** (0.151)
Observations	310	120	190
R-squared	0.586	0.347	0.665

Standard errors in parentheses ***$p<0.01$, **$p<0.05$, *$p<0.1$.

The first column is the regression result of all sample companies, and the regression coefficient of cash income is 0.001. This shows that with the control of other variables, the cash income will increase by 10,000 yuan, and the possibility of corporate tax evasion will increase by 0.1%. The regression coefficient of cash cost is 0.002, which means that when the other variables are controlled, the cash cost will increase by 10,000 yuan, and the tax evasion of enterprises may increase by 0.2%. From the level of significance, cash income and cash cost have a significant impact on corporate tax evasion. The regression results of the control variables show that non-cash income has no significant impact on corporate tax evasion. The regression coefficient of non-cash cost is -0.03, which means that the non-cash cost increases by 10,000 yuan when the other variables are controlled, and the probability of tax evasion is reduced by 3%, and this result is statistically significant. The second column is the regression result of the company whose total income is larger than the average income of the sample enterprises. From the perspective of regression coefficient, cash cost and non-cash cost have significant effects on corporate tax evasion, but the direction of impact is different. The increase in cash costs increases the probability of a company evading taxes, while the non-cash costs are the opposite. From a revenue perspective, both cash and non-cash income have no significant impact on the small and micro enterprises whose scale is larger. The third column is the regression result of the company whose total income is smaller than the average income of the sample enterprises. From the perspective of regression coefficient, both non-cash income and non-cash cost have a significant impact on corporate tax evasion, but the latter is more significant. The increase in non-cash income or non-cash costs will reduce the probability of corporate tax evasion. From the perspective of cash transactions, both cash income and cash cost have no significant impact on small micro-enterprises whose scale is larger.

From the total regression results, the R-square minimum is 0.35 and the maximum is 0.67, both of which are above the 30% basic requirement, which can meet the statistical test requirements for the results.

The analysis of problems with corporate tax evasion has been focused on motivation analysis. The empirical analysis of this paper shows that for small and micro enterprises, their tax evasion behavior is greatly affected by cash transactions and non-cash transactions. In general, the increase in cash

income and t cash costs for small and micro enterprises will increase the probability of tax evasion, with a probability ranging from 0.1% to 0.2%. The increase in non-cash costs can effectively curb tax evasion of small and micro enterprises. From the regression results of sub-sample analysis, the large-scale micro-enterprises are more affected by cost transactions. Non-cash costs whose effect is more significant than the effect of cash cost can effectively curb tax evasion from the perspective of impact. The impact of the cash and non-cash transaction on the small-scale small and micro enterprises is different from the large-scale small and micro enterprises. And the increasing in the non-cash income and cost can curb the tax evasion effectively. In comparison, non-cash costs have a greater impact on corporate tax evasion.

5. Conclusions and Future Research

The cash transaction is the main reason in the underground economic and tax evasion, and the small and micro enterprises are the main serious parts of them. The empirical analysis result shows that the cash transaction behavior not only exits in the sales revenue, but also in the cost occurrence of the enterprises. In comparison, the cash cost has more significant effect on the tax evasion. Therefore, in order to solve the tax evasion of the small and micro enterprises, not only should we pay attention to the sales process of the enterprises, but also pay attention to the cash transactions in the production process of raw materials procurement and personnel employment, which can effectively curb the tax evasion of small and micro enterprises behavior.

At the same time, it should be noted that the data in this paper are from the sample surveys of 10 provinces and cities in the southeastern region. Whether the research conclusions can be extended to the whole country remains to be further analyzed. The specific production behavior of enterprises will also have an impact on tax evasion. Subsequent research will be conducted on the basis of more detailed data.

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