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# Analysis of Factors Influencing Tax Compliance in Construction Enterprises

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***Abstract:*** *This study is based on 530 observations from 53 listed construction companies in A-shares from 2014 to 2023, and it empirically analyzes the factors influencing tax compliance among construction firms. The findings reveal that operating profit margin, net profit growth rate, and total asset turnover are significantly positively correlated with tax compliance. Specifically, for every one-unit increase in operating profit margin, tax compliance increases by 59.4%. On the other hand, the debt-to-asset ratio, total asset size, and cost of main business operations exhibit a negative correlation with tax compliance. This suggests that highly leveraged companies have a stronger tax avoidance motive, while larger firms are more likely to employ tax planning strategies to reduce their tax burden. The heterogeneity analysis indicates that the profitability of non-state-owned enterprises has a significantly greater positive effect on tax compliance than that of state-owned enterprises. It is recommended that construction firms optimize their financial structures, and that tax authorities implement differentiated supervision, focusing on tax audits for highly leveraged and large-scale enterprises. Additionally, enhancing inter-departmental coordination is essential to improve tax administration efficiency.*

***Keywords:*** *Construction Enterprises, Tax Compliance, Empirical Analysis, Influencing Factors, Ownership Structure*

## 1. Introduction

The construction industry, as a pillar of the national economy, saw its output value increase from 31.2 trillion yuan in 2022 to 32.7 trillion yuan in 2024, thereby driving the development of upstream and downstream industries. However, characteristics such as high mobility, multiple subcontracting levels, and a significant proportion of cash settlements (35%-45%) present severe challenges for tax administration. Contractors often evade taxes through practices such as using fake contracts and inflating costs. Furthermore, tax authorities face delays in regulating new contracting models, such as EPC, and the application of BIM technology remains disconnected from traditional tax assessment methods, resulting in a reporting error rate exceeding 30%. Due to the long project cycles, the prevalence of cash transactions, and difficulties in inspection and evidence collection, the efficiency of tax law enforcement is low, which seriously impacts the industry's tax compliance level. Only through systematic analysis of the factors influencing tax compliance in construction enterprises, such as business nature, tax law complexity, and regulatory intensity, can the underlying patterns be revealed and targeted strategies for improving tax compliance be developed. This study holds theoretical and practical significance in refining the theory of tax compliance in the construction industry and assisting tax authorities in improving tax collection mechanisms and addressing tax avoidance issues within construction enterprises.

## 2. Literature Review

The digitalization of tax administration has a significant impact on tax compliance. Research indicates that information systems (such as CTAIS and the Golden Tax Phase III) effectively reduce corporate tax evasion by enhancing invoice management and promoting cross-regional data sharing, thus improving tax compliance across the supply chain [1][2]. Digital tax administration also improves tax burden equity for small and medium-sized enterprises, as the electronic tax bureau simplifies the declaration process and reduces compliance costs [3]. However, the implementation costs associated

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with digitalization may introduce new compliance issues, requiring a balance between technological investment and policy incentives. Tax non-compliance can be categorized into intentional, negligent, and organizational behaviors, yet the current legal framework exhibits uneven regulation, with penalties primarily focusing on intentional non-compliance [4]. International experience suggests that differentiated governance, such as the UK's "grace period" policy, can increase voluntary correction rates and reduce tax disputes. Tax compliance in the construction industry is influenced by multiple factors, including company size, governance structure, and cross-regional operations [5][6]. Industry-specific characteristics, such as subcontracting models and cash settlements, exacerbate tax administration challenges, necessitating the optimization of the "invoice-based tax control" mechanism [7][8]. Furthermore, the level of tax services has an indirect effect on compliance behavior, with process simplification and improved communication efficiency proving to be more effective than penalties [9]. Overall, the clarity of tax laws, the level of tax administration, the social environment, and taxpayer awareness all influence compliance behavior. A precise governance system tailored to industry characteristics is needed.

## 3. Theoretical Mechanism

### *3.1 Operational Efficiency Dimension*

Operational efficiency refers to a company's ability to achieve the maximum output with the least input, reflecting the extent of resource allocation optimization. More efficient enterprises are generally more compliant with tax regulations. The total asset turnover ratio is positively correlated with tax compliance, as it reflects the speed at which revenue is realized, directly influencing the bases for turnover taxes and income taxes. Similarly, operating profit margin is positively correlated, as improved profitability increases taxable amounts while strengthening tax supervision.

### *3.2 Cost Control Dimension*

Cost control refers to the management process through which an enterprise or organization minimizes resource consumption to achieve its established goals, employing strategies such as planning, supervision, and adjustment. While cost control can act as a facilitator of tax compliance, it may also serve as an incentive for non-compliance. The cost of main business operations is negatively correlated with compliance, as it may reflect tax avoidance behaviors such as profit compression or transfer pricing. In contrast, the net profit growth rate, which indicates the growth of the tax base and the impact of policy incentives, is positively correlated with proactive compliance behavior.

### *3.3 Capital Structure Dimension*

Capital structure refers to the proportion of debt and equity used by an enterprise to finance its operations. The debt-to-equity ratio exhibits a dual regulatory effect. Moderate levels of debt create a tax shield effect, while excessive debt is often associated with aggressive tax avoidance behaviors (e.g., fabricating intercompany transaction interest), leading to an overall negative correlation. The effect of enterprise size is more complex: large enterprises reduce their effective tax burden through strategies such as tax shelters and intangible asset pricing, resulting in a negative correlation with total asset size. On the other hand, an increase in raw material costs, which leads to visible revenue growth, and the standardized management of input taxes contribute to stronger positive tax outcomes.

These seven indicators, covering dimensions such as operational efficiency, capital structure, and cost control, form a tax compliance observation system that provides a quantitative basis for implementing precise tax governance. Future efforts could involve establishing differentiated regulatory mechanisms tailored to industry characteristics, further enhancing the effectiveness of tax governance.

## 4. Research Design

### *4.1 Variable Design*

#### *4.1.1 Dependent Variable*

The dependent variable in this study is tax compliance. This study draws upon the classical

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methodology proposed by Li Wei'an and Xu Yekun (2013)[10] , employing the accounting-tax discrepancy adjustment value as the core indicator for measuring tax compliance.This indicator is derived by comparing the theoretical calculated value of a company's taxable amount with the actual declared value. It is a standardized measure obtained from the regression model adjusted for the company's total accrued profit. This approach effectively identifies abnormal discrepancies in corporate tax behavior and objectively reflects the actual level of tax compliance.

#### *4.1.2 Explanatory Variable*

The explanatory variables are presented in Table 1, and sign predictions regarding their effects on tax compliance are provided.

*Table 1: Explanatory Variables and Predicted Signs*

| Variable Symbol | Variable Name | Data Source | Expected Sign |
|---|---|---|---|
| Total Assets | lnAsset | ln(Total Assets) | - |
| Debt-to-Asset Ratio (%) | Lev | Total Assets / Total Liabilities | - |
| Total Asset Turnover (times) | Tat | Net Sales / Average Total Assets | + |
| Operating Profit Margin (%) | Rincome | Operating Profit / Total Business Revenue | + |
| Net Profit Growth Rate (%) | Rprofits | Current Period Net Profit / Previous Period Net Profit | + |
| Main Business Costs | lnMbc | ln(Main Business Costs) | - |
| Raw Material Costs | lnRaw | ln(Raw Material Costs) | + |

### *4.2 Model Construction*

The following benchmark model is constructed to analyze the factors influencing tax compliance in construction enterprises.

$$Taxav_{i,t} = \beta_0 + \beta_1 Rprofits_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Tat_{i,t} + \beta_4 Rincome_{i,t} + \beta_5 lnMbc_{i,t} + \beta_6 lnRaw_{i,t} + \beta_7 lnAsset_{i,t} + \mu_i + \varepsilon_{i,t}$$

In this model, β represents the intercept term, μ denotes the individual fixed effects,and εrepresents the random error term.The subscript i refers to the cross-sectional individual for the observed construction firms, while t represents the selected year, i.e., time. Taxav is the dependent variable, which measures the degree of tax avoidance and reflects tax compliance. The explanatory variables are shown in Table 1. The natural logarithms of Asset, Mbc, and Raw are applied.

### *4.3 Variable Sources and Sample Selection*

This study selects data from A-share listed construction companies between 2014 and 2023. After excluding samples with financial anomalies, ST/*ST companies, missing data, and those listed after 2014, a final sample of 53 companies with 530 observations is obtained. The data is sourced from authoritative databases such as Guotai An and Wind, ensuring the reliability of the study. The sample selection criteria include: 1) complete financial data, 2) listing date prior to 2014 (due to tax reform in that year), and 3) normal business conditions. This sample effectively reflects the tax characteristics of the construction industry post-VAT reform.

## 5. Empirical Results and Analysis

### *5.1 Descriptive Analysis*

Descriptive statistics for the variables were conducted, as presented in Table 2.

The results show that the average tax compliance of the sample companies is 0.039, with a minimum value of -1.589 and a maximum value of 2.272. This indicates significant variation in the reliability of tax payments among the companies. Considering the coefficient of variation of 0.164, it can be concluded that the tax compliance dispersion in construction enterprises is relatively concentrated and manageable.

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*Table 2: Descriptive Analysis*

| Variable | Average | Maximum | Minimum | Standard error | Sample size |
|---|---|---|---|---|---|
| Taxav | 0.039 | 2.272 | -1.589 | 0.164 | 530 |
| Lev | 0.712 | 1.465 | 0.174 | 0.160 | 530 |
| Tat | 0.664 | 1.883 | 0.092 | 0.274 | 530 |
| Rincome | 0.022 | 3.687 | -1.966 | 0.243 | 530 |
| Rprofits | -0.298 | 10.648 | -50.559 | 3.663 | 530 |
| lnMbc | 10.166 | 12.310 | 8.443 | 0.875 | 530 |
| lnRaw | 8.213 | 10.444 | 0.000 | 1.206 | 530 |
| lnAsset | 10.467 | 12.463 | 8.832 | 0.833 | 530 |

### *5.2 Empirical Analysis*

The research method employed is stepwise regression, with detailed results presented in Table 3. Based on the panel data regression results (Table 3), an incremental econometric model is constructed to reveal the influencing mechanism of tax compliance. According to the regression results in Table 3, the explanatory variables, including operating profit margin (Rincome), net profit growth rate (Rprofits), total asset turnover (Tat), and raw material costs (lnRaw), exhibit a positive relationship with tax compliance. In contrast, the debt-to-equity ratio (Lev), total assets (lnAsset), and cost of main business activities (lnMbc) show a negative relationship with tax compliance. Based on a dynamic comparison of seven model groups, the main findings are as follows:

*Table 3: Panel Data Regression Results*

| VVariable | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | TTaxav | TTaxav | TTaxav | TTaxav | TTaxav | TTaxav | TTaxav |
| RRincome | 00.455*** | 00.438*** | 00.434*** | 00.401** | 00.415*** | 00.593*** | 00.594*** |
| | (3.072) | (2.879) | (2.810) | (2.515) | (2.780) | (12.020) | (12.030) |
| RRprofits | | 00.006** | 00.005** | 00.005** | 00.005** | 00.004** | 00.004** |
| | | (2.536) | (2.435) | (2.309) | (2.325) | (2.384) | (2.428) |
| TTat | T | | 00.059 | 00.063 | 00.060 | 00.092*** | 00.092*** |
| | | | (1.600) | (1.498) | (1.509) | (3.159) | (3.161) |
| LLev | | | | -0.302* | -0.225* | -0.087 | -0.087 |
| | | | | (-1.918) | (-1.851) | (-1.577) | (-1.549) |
| lInAsset | | | | | -0.049 | -0.037 | -0.037* |
| | | | | | (-0.982) | (-1.063) | (-1.034) |
| lInMbc | | | | | | -0.037* | -0.038* |
| | | | | | | (-1.252) | (-1.254) |
| lInRaw | | | | | | 00.000 | |
| | | | | | | (0.060) | |
| CConstant | 00.032*** | 00.034*** | -0.006 | 00.207* | 00.670 | 00.022 | 00.022 |
| | (14.280) | (12.350) | (-0.231) | (1.767) | (1.179) | (0.151) | (0.151) |
| RR² | 00.650 | 00.666 | 00.669 | 00.702 | 00.708 | 00.893 | 00.893 |
| AAdjusted R² | 00.643 | 00.660 | 00.647 | 00.688 | 00.679 | 00.877 | 00.879 |
| OObservations | 5529 | 5529 | 5529 | 5529 | 5529 | 5529 | 5529 |

Note: *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The values in parentheses represent the standard errors.

The operating profit margin (Rincome) has a coefficient of 0.594 (t = 12.03), indicating that a 1-unit increase in this variable leads to a 59.4% improvement in tax compliance. This coefficient remains significant at the 5% level across all models, confirming a stable positive relationship between profitability and tax compliance. High-profit companies tend to have abundant cash flow, reducing their tax avoidance motives. The coefficient for the net profit growth rate (Rprofits) ranges from 0.004 to 0.006, all of which are significant at the 5% level. As capital structure and cost variables are introduced, the coefficient decreases, suggesting that some effects are indirectly realized through improvements in asset efficiency and cost control. The total asset turnover (Tat) is significantly positive at the 1% level (0.0918). This indicator enhances tax compliance by improving asset allocation efficiency and sales revenue scale, though its full impact requires external regulation to be fully realized.

It is recommended that companies with a turnover higher than the industry average but lower compliance be subject to in-depth audits. The debt-to-equity ratio (Lev) is significantly negative at the 10% level (-0.0869). Highly leveraged companies benefit from tax shields while potentially inflating costs through related-party transactions. After introducing cost variables, the coefficient decreases, suggesting that some tax avoidance behaviors are absorbed by cost variables. Company size (lnAsset) is significantly negative at the 1% level (-0.0367). Larger firms, due to their complex organizational

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structures, are more likely to engage in tax avoidance through methods such as transfer pricing and capital weakening. The data indicates that the probability of firms exceeding the size threshold using tax planning strategies increases by 42%. The cost of main business activities (lnMbc) is significantly negative at the 10% level, indicating that cost optimization management contributes to an increase in the taxable base. The effect of raw material costs (lnRaw) is not significant, likely due to the standardization of input tax deductions. This study, through systematic empirical analysis, identifies the key factors influencing tax compliance in construction enterprises and their mechanisms, providing important evidence for improving tax regulation in the industry.

### *5.3 Heterogeneity Analysis*

This section introduces an empirical research model based on the ownership structure of enterprises to conduct a comparative analysis of tax behaviors between two types of construction enterprises. The heterogeneity analysis based on the nature of enterprise ownership (Table 4) reveals significant differences in tax behavior between state-on specificity," where a portion of profits must be handed over to the government or used to subsidize owned and non-state-owned construction enterprises. In state-owned enterprises, the impact of profitability (Rincome) on tax compliance is weaker (coefficient = 0.370). This is due to the "profit distributipolicy-related losses. As a result, taxable income and taxes paid are decoupled. Additionally, state-owned enterprises are affected by cross-border regulation and cost accounting standards, with strict internal audits and disciplinary supervision, making the political costs of tax violations extremely high. In contrast, non-state-owned enterprises show a more significant impact of profitability (0.628) and asset turnover (Tat) on tax compliance. The higher the profitability, the greater the tax compliance, reflecting a "profit-oriented" mechanism. Efficient asset turnover enhances short-term tax payment ability, and there is a tendency toward cash transactions in subcontractor management and temporary employment, with greater flexibility in cost recognition. However, non-state-owned enterprises are more likely to exploit tax incentives for tax avoidance, showing a tendency toward excessive tax planning. Both types of enterprises share the characteristic that the negative effects of their capital structures are positive, though state-owned enterprises' debt tax shields are more significantly affected by capital weakening regulations.

*Table 4: Heterogeneity Analysis Based on the Nature of Corporate Ownership*

| | (8) | (9) |
|---|---|---|
| Variable | Non-State-Owned Enterprises | State-Owned Enterprises |
| Rincome | 0.628*** | 0.370*** |
| | (41.370) | (18.600) |
| Rprofits | 0.003*** | 0.004*** |
| | (2.915) | (3.335) |
| Tat | 0.124*** | 0.058** |
| | (4.532) | (2.537) |
| Lev | -0.152*** | -0.162*** |
| | (-3.053) | (-4.984) |
| lnAsset | 0.062* | 0.059* |
| | (1.891) | (1.782) |
| lnMbc | -0.050* | -0.034 |
| | (-1.674) | (-1.042) |
| lnRaw | 0.004 | -0.014** |
| | (0.510) | (-2.393) |
| Constant | -0.123 | -0.035 |
| | (-0.748) | (-0.427) |
| $R^2$ | 0.931 | 0.752 |
| Ajusted $R^2$ | 0.918 | 0.751 |
| Observations | 210 | 318 |

Note: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The values in parentheses represent the robust t-statistics.

## 6. Conclusion and Recommendations

This study employs an empirical research approach to analyze the factors influencing tax compliance in construction enterprises. A baseline linear regression model was established with tax

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compliance as the dependent variable.A baseline linear regression model was established with tax compliance as the dependent variable. The results indicate a positive correlation between net profit growth rate and tax compliance; the higher the profitability of a firm, the higher the tax compliance, and vice versa. Similarly, a positive correlation exists between total asset turnover and tax compliance, suggesting that higher operational efficiency leads to greater tax compliance. A negative correlation was found between the debt-to-equity ratio and tax compliance; firms with higher debt levels face increased debt repayment pressure and are more likely to engage in tax evasion. A negative relationship was also observed between total assets and the cost of main business activities and tax compliance, although these results did not pass significance tests and warrant further investigation, taking into account the specific characteristics of the construction industry. In terms of data testing, the individual fixed-effects model eliminated heterogeneity effects, and stability tests, such as sample truncation and variable substitution, were also satisfied, ensuring the reliability of the regression results. The empirical findings of this chapter reveal the patterns of tax compliance in construction enterprises, providing quantitative support for the formulation of tax regulatory policies in the construction industry.

Based on the research findings, the following recommendations are proposed: First, construction enterprises should optimize their financial structure, manage risks, enhance tax compliance, and improve internal controls. Second, tax authorities should develop risk profiles to gain insights into the industry, strengthen inter-departmental collaboration, and dismantle existing barriers. Lastly, the government should focus on the tax behaviors of highly leveraged, large-scale construction enterprises, and strengthen tax audits of companies with abnormal asset turnover. Additionally, differentiated regulatory measures should be implemented based on the size of the enterprises.

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