

**FINANCIAL AND STATISTICAL ANALYSIS
OF THE RELATIONSHIP BETWEEN VOLUME
PROFIT AND INCOME TAX**

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Abstract: The article analyzes the relationship between financial performance of organizations and amounts of income tax. The object of the study were selected several regions of CFA. The paper presents the correlation and regression analysis. The study constructed regression models.

Company profits are one of the most important indicators, which can influence the development of the internal environment (the growth of investment, innovation, creating new jobs, diversification and expansion of products, etc.), and the external environment (increase in employment rate, expanding the scope services, improvements in the banking sector, the growth of investment attractiveness and the tax region potential).

There is a relationship between financial performance and different types of income tax. If the enterprise has the tax periods with a loss every year, it means that management of the company must eliminate organization or change the kind of the business activity. The closest link is observed between the profit of the organization and the income tax.

Regions with similar characteristics of the level of tax capacity, financial and economic activity and unemployment level have been selected as the object of the study [2]. Tambov, Lipetsk, Kursk, Ivanovo, Voronezh, Tula and Orel regions have been selected by the results of a multidimensional classification. All of the regions are located in one of the clusters. For the study statistical data for the period from 2005 to 2010 has been used [1]. The indicators “Income tax per capita, thousand rbl./person” y and “Profit of enterprise per capita, thousand rbl./person” x at 2005 prices have been analyzed. These indicators were chosen for reduce the effect scale and inflation.

The correlation coefficient indicates a weak positive relationship between the analyzed indexes ($r_{xy} = 0.24$).

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A closer interdependence is observed between the indicators:

– the logarithm of the index “Income tax per capita, thousand rbl./person” and the index “Profit of enterprise per capita, thousand rbl./person” ($r_{x \ln y} = 0.56$);

– the logarithm of the index “Income tax per capita, thousand rbl./person” and the logarithm of the index “Profit of enterprise per capita, thousand rbl./person” ($r_{\ln y \ln x} = 0.61$).

The multiplicative models and parameter estimates have been obtained through the regression analysis models:

$$\hat{y} = b_0 b_1^x \quad (1)$$

and

$$\hat{y} = b_0 x^{b_1}. \quad (2)$$

After the procedure of equation linearization (1) and calculating the parameters of the transformed regression equation the following model has been obtained:

$$\ln y = 0.137898 + 0.033819x; \quad (3)$$

(2.03) (3.95)

$$R^2 = 0.31459; \quad F_{\text{obs}} = 15.606.$$

The regression equation is significant by the F -criterion, because $F_{\text{obs}} = 15.606 > F_{\text{tabl}}(1; 34) = 4.13$.

The regression coefficients are significant by the Student's criterion.

$$b_0 : t_{\text{obs}} = 2.03 > t_{\text{tabl}}(v = 34, \alpha = 0.05) = 0.53;$$

$$b_1 : t_{\text{obs}} = 3.95 > t_{\text{tabl}}(v = 34, \alpha = 0.05) = 0.53.$$

The coefficient of determination is equal to $R^2 = 0.31459$. It means that 31.459 % of the variation of the dependent variable (natural logarithm of the index “income tax per capita, thousand rubles”) is defined to the variation of the independent variable.

After conversion, the regression equation (3) has acquired the following form:

$$y = 1.148 \cdot 1.034^x. \quad (4)$$

Thus, if the amount of income per capita increases by a thousand rubles, then the amount of income tax per capita will increase by 1.034 times.

After the procedure of equation linearization (2) and calculating the parameters of the transformed regression equation the following model has been obtained:

$$\ln y = 0.137898 + 0.033819 \ln x; \quad (5)$$

(-0.15) (4.45)

$$R^2 = 0.3681; \quad F_{\text{obs}} = 19.806.$$

The regression equation is significant by the F -criterion, because $F_{\text{obs}}(1; 34) = 19.806 > F_{\text{tabl}}$. The regression coefficient was also significant. So, the calculated of the Student's criterion value is greater than its table value.

The coefficient of determination is equal to $R^2 = 0.3681$. It means that 36.81 % of the variation of the dependent variable (natural logarithm of the index “Income tax per capita, thousand rubles”) is defined to the variation of the independent variable.

After conversion, the regression equation (5) has acquired the following form:

$$y_x = e^{0.138} x^{0.034} = 1,148x^{0.034}. \quad (6)$$

So, if income per capita increases by 1 %, then income tax per capita will rise by 0.034 %.

The absence of a strong correlation between the analyzed indicators is a consequence of the state's tax policy. Organizations should provide a set of benefits that enable to reduce the volumes of taxable income.

References

1. Попова, Г.Л. Региональная налоговая система: финансово-экономический анализ и качество : монография / Г.Л. Попова. – Германия : LAP LAMBERT Academic Publishing, 2012. – 196 с.

Финансово-статистический анализ взаимосвязи объемов прибыли и налога на прибыль

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Ключевые слова и фразы: анализ; бюджет; модель; налог на прибыль; прибыль; регион; статистика.

Аннотация: Проведен анализ взаимосвязи между финансовыми результатами организаций и объемами поступления налога на прибыль. В качестве объекта исследования был выбран ряд регионов ЦФО. Представлен корреляционный и регрессионный анализы. По результатам исследования построены регрессионные модели.

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