

## Problematic Aspects of Corporate Tax Risk Empirical Analysis

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### Abstract

Theoretically corporate tax risk is defined as the probability of deviations of the tax burden from the planned values. From the standpoint of tax law there are much more taxation risk factors. The revenue authorities considered as a risk factor not only the amount of the tax burden, but also its fluctuation relative to the average industry value. Besides these, taxation risk factors are: low level of the average wage in a corporation, losses in the company's several tax periods, increase of costs, compared with revenues exceeding the growth rate of tax deductions for VAT, the inconsistency of profitability indicators to average industry values, etc. So, the following question arises: whether the selection of these factors in terms of their relationship to the cost management is justified? Do the taxes and taxation risk in the value of a corporation is essentially? This article is devoted to research these problematical issues.

**Keywords:** risks, tax risks, corporate risks, risk of tax control, tax burden, value based management

### 1. Introduction

Risk category in the broad sense of the term implies at least two approaches to its definition: classical and neoclassical. The classical approach defines risk as a certain probability of an unfavorable outcome of the situation, the loss or damage of any kind, including financial ones. The neoclassical approach considers the risk primarily as a statistical measure of the probability of deviation (in both large and smaller side) of the actual value from the expected. From this viewpoint, tax risk can also be interpreted in two ways. As a rule, the first thing associated with tax risk is the penalties for violation of tax laws or penalties for late payment of taxes. From the standpoint of business practices such interpretation is clear, reasonable and easy to estimate, it is enough to study the chapters 15 and 16 of the Russian Tax Code, and for corporate structures is also a new section V.1 about affiliates.

If we consider the tax risk from a scientific point of view, it is necessary to take into account the neoclassical interpretation and study legal documents. In particular, it is necessary to study in detail the Order of the Federal Tax Service of May 30, 2007 NMM-3-06/333 @ "On approval of the Concept of planning on-site tax audits", where one of the section describes the criteria for self-assessment of the risks to taxpayers. For this purpose, the Federal Tax Service proposes to use the twelve main indicators, one of which is recently introduced for the Russian business practice and theory - the tax burden.

In the years 2004 - 2006 there were a lot of scientific studies of Russian scientists dedicated to the tax burden. If about the calculation of the absolute tax burden a little dispute arises, the majority of authors agree that the figure should include the entire set of taxes and fees paid by the organization, then in terms of the calculation of the tax burden ratio authors suggested various solutions.

Virtually point in this discussion put the Federal Tax Service, defining the tax burden as a ratio of the amount of taxes paid according to the reporting of tax authorities and turnover (revenue) of organizations according to the Federal State Statistics Service (Rosstat). In this case, the tax risk arises if the tax burden of the taxpayer is below its average level for the economic entities in a particular industry (economic activity).

If the tax risk defined as the probability of indicator of the tax burden deviation, in both large and smaller side from the expected value, will be acceptable to designate certain "tax corridor" of indicator values, indicating a risk-free zone. Tax risk arises as a value in excess of the "corridor", and in low value of the index of the tax burden. Too high tax burden means that the organization will pay more taxes than is possible with a certain budget level of economic activity - it will have a negative impact on cash flow and profitability. Too low,

compared with the average, the tax burden can be a consequence of such actions of the tax authorities, as a request for the documents confirming the data declarations, extraordinary tax audits, etc.

From the viewpoint of corporate finance studying of tax risk in the neoclassical interpretation is extremely important because it affects the choice of effective tax planning strategies. In this case, a measurement of efficiency could be, for example, reduction or complete elimination of penalties for violation of tax laws, reducing or eliminating penalties for late payment of taxes, determination of the tax burden within the risk-free "corridor". However, a more in-depth study of the tax risk requires a scientific approach and finding ways of linking tax indicators with market efficiency indicators, which requires an empirical analysis to identify key indicators associations.

## 2. Method

The main objective of our study was to investigate the relationship between the indicators established by the Federal Tax Service as a tax risk and performance indicators that determine the efficiency of the organization.

For this purpose we have tested the following additional hypotheses.

Hypothesis 1: The negative impact of tax risk indicators (tax burden ratio, the net loss/net income for the fiscal year, the amount of tax deductions for VAT, the average wage, revenue growth, growth of costs, return on assets, the number of affiliates) to market-to-book ratio (MBr) and economic value added (EVA).

Hypothesis 2: Number of company's affiliates weakly negatively correlated with the tax burden of the corporation, i.e. the greater is the number of affiliates, the lower is the tax burden of the company.

To our study we selected 27 large Russian companies (mainly oil and gas industry, metallurgy and mechanical engineering), among which are OJSC "Tatneft", OJSC "Nizhnekamskneftekhim", "Lukoil", JSC "Kazanorgsintez", OJSC "Surgutneftegas", JSC "KAMAZ" and so forth. We analyzed the company's financial statements under RAS for 2009 - 2012 years, according to information posted in the Professional Analysis of Markets and SPARK database.

As the dependent variables we used company's performance indicators, as close as possible to that of the tax risk, recommended by the Federal Tax Service. In our study we analyzed 10 variables (see Table1). In particular we have chosen such factors as: the tax burden (ratio), the net loss/net income for the fiscal year, the amount of tax deductions for VAT, the average wage in the corporation, revenue growth, and growth of costs, return on assets, and the number of affiliates within the organization.

Table 1. The list of variables used to construct the regression model

	Variable	Type of variable	
1	Economic value added	the dependent variable	EVA
2	Market-to-book ratio	the dependent variable	MBR
3	Tax burden (ratio)	the independent variable	HH <sub>ratio</sub>
4	Net loss/net profit	the independent variable	Ub
5	Deductions for VAT	the independent variable	NV
6	Average wage	the independent variable	ln(Zp)
7	Revenue growth	the independent variable	TR
8	Return on assets	the independent variable	ROA
9	Tax burden, fictitious	the independent variable	HH
10	Number of affiliates	the independent variable	Ln(Af)

We obtained the following general model (1):

$$EVA (MBr) = \alpha + \beta_1 * HH_{ratio} + \beta_2 * Ub + \beta_3 * NV + \beta_4 * \ln(Zp) + \beta_5 * TR + \beta_6 * ROA + \beta_7 * \ln(Af) + \varepsilon \quad (1)$$

In general model, as indicators of company's market efficiency the ratio of the market price of the shares to the account assessment (market-to-book ratio - MBr) and economic value added (EVA) were chosen.

## 3. Results

Impact on the MBr indicator have X6 (wages) and X10 (affiliates) variables. The model is significant to test the Fisher-Snedecor ( $P < 0,01$ ). R-squared is equal to 0.143849, which means almost no material impact on the company's performance of the tax risk ratio to the market price of shares and to the share price in accounting estimate (market-to-book ratio). The results of analysis are presented in the Table 2 and formula 2.

Table 2. The regression results for the MBr as dependent variable

Indicators	Coefficient	St. error	t-statistics	P-criteria	Correlation
const	2,45768	1,59548	1,5404	0,12804	no correlation
LN_Zp_X6	0,445214	0,213747	2,0829	0,04097	strong
LN_Af_X10	-0,435832	0,256213	-1,7011	0,09344	weak

$$MBr = 1,56 + 0,32 * \ln(Zp) - 0,13 * \ln(Af) - 0,33 * TR \quad (2)$$

As to the association between risk and tax indicator of economic value added the presence of a weakly negative correlation is observed. The greatest influence on the rate of economic value added indicators provide the tax burden, revenue growth and whether the company has losses (see Table 3 and formula 3).

Table 3. The regression results for the EVA dependent variable

Indicators	Coefficient	St. error	t-statistics	P-criteria	Correlation
const	-1,84431	0,497101	-3,7101	0,00042	perfect
UB_X8	-2,73279	1,39009	-1,9659	0,05339	weak
TR_fik_X11	1,35942	0,591452	2,2984	0,02462	strong
NN_X1	0,097741	0,0460785	2,1212	0,03755	strong
Nnfik_X3	1,26373	0,64177	1,9691	0,05301	weak

$$EVA = -3,31 - 2,83 * Ub + 0,76 * TR + 2,02 * NN + 0,22 * \ln(Af) \quad (3)$$

Due to the fact that one of the hypotheses was confirmed, we performed a more detailed analysis of the regression for companies representing particular industry. Table 4 shows the results of the regression analysis for the oil and gas industry.

Table 4. The regression results for oil and gas companies

Variable	Coefficient of partial correlation	t-statistics (tcr=1,734)	The coefficient of determination, R <sup>2</sup>	F- statistics (Fcr=3,179)
Const	-10,9405	-2,811		
NN	3,20191	2,6915	0,53	3,686
LN(Af)	0,934992	1,9835		

For the oil and gas industry hypothesis about the impact of tax risk indicators measure on economic value added is confirmed. Statistically significant for the model were the two variables: the tax burden and affiliation of the company. Standardized form of the equation is (4):

$$EVA = -10,94 + 3,20 * NN + 0,93 * \ln(Af) + \varepsilon \quad (4)$$

The regression results for the energy industry are presented in the Table 5.

Table 5. The regression results for energy companies

Variable	Coefficient of partial correlation	t-statistics (tcr=1,734)	The coefficient of determination, R <sup>2</sup>	F- statistics (Fcr=3,179)
Const	2,242	2,027		
NN	-0,009	-0,264	0,681	3,551
TR	-2,041	-2,161		
ROA	-0,739	-0,243		

Standardized form of the equation for energy companies is (5):

$$EVA = 2,242 - 0,009 * NN - 2,041 * TR - 0,739 * ROA + \varepsilon \quad (5)$$

According to this equation (5) it can be concluded that the growth rate has inverse effect on the value added indicator.

The regression results for the iron and steel industry are presented in the Table 6.

We obtained significant regression equation for iron and steel industry, but, all the regression coefficients are not significant.

The regression results for the chemical industry are presented in the Table 7.

Table 6. The regression results for iron and steel companies

Variable	Coefficient of partial correlation	t-statistics (tcr=1,734)	The coefficient of determination, R <sup>2</sup>	F- statistics (Fcr=3,179)
Const	1,97188	2,4191	0,277	2,955
NN	0,0286	2,242		
Ln(Af)	-0,1401	-0,8313		
ROA	0,02965	1,7113		

Table 7. The regression results for chemical companies

Variable	Coefficient of partial correlation	t-statistics (tcr=1,734)	The coefficient of determination, R <sup>2</sup>	F- statistics (Fcr=3,179)
Const	12,695	2,1884	0,336	3,037
Ln(Zp)	-1,49226	-2,2531		
Ln(Af)	-1,98096	-1,9153		

We obtained significant regression equation for chemical industry. Association of studied factors with the resulting index (EVA) coincides with the hypotheses set. However, from the resulting regression coefficients were statistically significant only wage (Ln (Zp)) and number of affiliates (Ln (Af)).

The regression results for the engineering industry are presented in Table 8.

Table 8. The regression results for engineering companies

Variable	Coefficient of partial correlation	t-statistics (tcr=1,734)	The coefficient of determination, R <sup>2</sup>	F- statistics (Fcr=3,179)
Const	-0,5528	-0,2595	0,739	8,53
TR	-2,001	-4,0546		
Ln(Af)	0,49568	1,2798		

A situation similar to the energy industry is experiencing in the engineering industry. The model is significant to the Fisher-Snedecor test, where the rate of  $P < 0.01$ . However, statistically significant for the model was the revenue growth rate (TR).

#### 4. Conclusion

Regression analysis by industry show that tax risk, as well as for the total sample, has no significant effect on the company's market capitalization, estimated by MBr and EVA coefficients. Analysis of the impact of tax risk indicators on the value of the company shows mixed results. On the one hand, the study of the total sample of companies shows that this effect is insignificant. On the other hand, the analysis of individual industries such as oil and iron and steel, found a positive correlation. Chemical, energy and engineering industry concluded the opposite: there is a negative association, although not so significant. Hence it can be said that the results comply with hypothesis. With the accumulation of information is expected to hold a series of clarifying studies of this phenomenon.

The negative impact of the tax burden on the economic added value of the company (EVA) was partially confirmed by the regressions, this relationship is significant only in the oil and gas, iron and steel industries, where the impact is positive. Number of affiliates and average wages has a significant positive impact on the indicator EVA in all industries except the energy. Indicators of tax deductions, the return on assets did not have any significant effect on the company's market efficiency.

Number of affiliates does not correlate with tax burden of corporations, the correlation coefficient is 0.09. The significance of the model for the hypothesis 2 was not confirmed, there is no correlation, Snedecor-Fisher criterion exceeds a value of 0.01. Overall, the model is not significant.

The use of metrics offers multiple benefits for the company, among which are the following: early identification of trends and issues, represents a source of critical information for control, provides information about the likelihood of achieving target sites, if there is a sign of improvement or contrary a worsening of the situation, helps to make decisions based on information, helps in evaluating performance, leads to a proactive management, improves future estimates and performance, evaluates success and failure and improves customer satisfaction. Businesses are constantly changing, like this modifying risk exposures. It may be that certain key risk indicators which were relevant last year but they might not be this year as well. The measurement of the risk indicators will

provide added value to the company, if they are implemented in accordance with its operations, they will be reviewed and will be updated continuously (Emil Scarlat, Nora Chirita, Ioana Al. Bradea).

In conclusion, it should be noted that we should continue the research, due to the fact that the sample we used was not sufficiently representative, and includes only 120 observations together. First, it is necessary to expand the panel data by industry, because now the firm conclusions can not be done due to the lack of data for analysis.

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