

## Tax Burden in KPI System of Corporation

E.U. Strelnik, D.S. Usanova, I.G. Khairullin, G.I. Shafigullina and K.T. Khairullina  
Kazan Federal University, 420008 Kazan, Russia

**Abstract:** This study discusses the construction of KPI systems of corporation. This question is very important for the Russian companies where the KPI system is implemented in almost all areas from commercial organizations to state municipal organizations. The study focuses on the question of the need to include in the number of KPI the tax burden indicator. As the researcher point out, the question is debatable and requires further research and scientific substantiation. This is due to the fact that the severity of taxation is influenced by many external factors. The reasoning and analytical calculations on this subject and presented in this study.

**Key words:** Tax burden, KPI, VBM, EVA, IC, regression analysis

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### INTRODUCTION

One of the current interests of strategic management is to develop competent, evidence-based KPI system. Key performance indicators are strategic reference points of any company. Implementation of this management tool is carried out not only in industrial corporations, banks and insurance companies but also in health, education, public administration, etc. (Koike and Sueda, 2016; Kompalla *et al.*, 2016; Korableva and Kalimullina, 2016; Leszczuk *et al.*, 2016). Therefore, attention to the determination of key performance indicators is justified.

Among the issues of managers concern we summarized the following: which indicators are best explaining the system of interrelations within the company (Kattner *et al.*, 2016) a method of automatically detecting key performance indicators (Abe and Kudo, 2016) how the phase transition in internet of things changes the key performance measure (Koike and Sueda, 2016) what main indicator should be selected on the top level and how many indicators should be on every management level (Suwattananon *et al.*, 2016) how to segregate the responsibility between the divisions correctly (Ramish and Aslam, 2016) how to allocate the financial and non-financial indicators between the responsibility centers optimally (Langen, 2015), etc. Also, these issues are discussed in applied researches (Celebic and Breu 2015; Garay *et al.*, 2014; Lindberg *et al.*, 2015; Korableva and Kalimullina, 2016).

One of such kind of issues we set out in the study: "Does it reasonable to implement the tax burden indicators in the key indicators system of the corporation?" It should be noted that this question is debatable. On the one hand, the tax burden is a very important indicator and it is necessary to incorporate it into the calculations for the future. On the other hand, the

management of the company in most cases is very limited in their impact on the value of the tax burden. The tax burden is very difficult to be considered as an indicator of the effectiveness of any selected responsibility center. In this regard, the inclusion of the tax burden in the corporate KPI system requires separate research.

**Theory:** Key performance indicators of the corporation have two main functions. First, KPI provide strategic guidelines for the future activities and allow setting goals. Secondly, the KPI used to staff motivation because the achievement of the goals depends largely on the efficiency of employees. Those KPI it is a tool of strategic management as we mentioned earlier in the study "Key performance indicators in corporate finance" (Strelnik *et al.*, 2015).

Any perspective solution requires justification. This means that the decision criteria must exist. For example, the criterion for investment decisions is traditionally the NPV indicator. It should not be just greater than zero but also provide a return of capital invested.

More global financial measure is Economic Value Added (EVA). This figure occupies top positions in the KPI structure as evidenced by a number of studies, including studies (Ankudinov *et al.*, 2013). Financial structure determinants analysis of Russian oil companies (Ankudinov *et al.*, 2013).

In order for the company KPI system was really a system, not a chaotic set of indicators it is necessary to use the mechanism of decomposition. This mechanism suggests that the complex index generates a field of smaller indicators that are linked to it by means of the appropriate formulas. Sometimes in this model (initial parameter calculation formula) introduces additional variables such as for example in Du Pont Model. Economic value added is more suitable for the formation

of corporate KPI system because it affects almost the entire spectrum of private financial performance indicators in the area of cost management, sales, prices, profitability.

The level of taxation directly affects the amount of economic value added. However, this raises at least two questions: what kind of influence the level of profit taxation has on EVA whether all other taxes affect EVA, expressed in terms of the tax burden.

As regards the first question, we have not been able to do the definitive findings on the Russian financial market. Separate calculations for different periods of time in different sectors show the positive impact, then the negative. So, we'll leave that question for further research.

As for the second question, in our view, the influence of the total tax burden on the index EVA exists. To date, the taxation linked to virtually all areas of the corporation. Current management decisions in the field of sales, prices, purchases, investments all clearly affect the amount of tax payments.

With regard to the perspective decision making, it is not so clear. Theoretically, tax payments seem to have no significant effect on the company's strategy and management solutions dependence of the tax burden should be minimal. In practice, however serious, key decisions are never made without consideration of tax consequences, since, they, being the most powerful tool of economic regulation in some cases are capable of forcing companies to change strategy. Starting a project without first having considered as necessary in this case paying taxes and contributions, it seems, at least irrational. It is obvious that the investor will seek to invest their capital in a sphere with a lower level of taxation as the return on capital, *ceteris paribus* will be higher due to the higher profitability and turnover. If the tax rate increased, the investor interest, expressed in terms of the percentage of use of capital will be higher because the higher is the tax risk. Tax risk, in turn, depends on the level of corporation tax burden as well as a number of factors which the legislation connects with the probability of an extraordinary tax audit.

Scientific studies on this subject show different results. For example, Kim *et al.* (2011) based on a sample of US companies for the period from 1995-2008, studied the relationship between tax savings and the risk of a collapse of share prices on the stock exchange. As a result of analysis, the researcher concluded that a reduction of the tax burden even though management practices brings benefits in the short term but leads to a collapse of the stock shares in the long term.

A similar study was also hold by Desai and Dharmapala (2009) "Corporate Tax Avoidance and Firm Value". The sample consisted of 3658 observations -687

Table 1: List of variables

Variables	Type	Designation
The ratio Of economic value added to the invested capital	Dependent	EVA/IC
The relative measure of the tax burden	Independent	TB
The amount of accounts payable to the budget in taxes and fees	Independent	Ln(APB)
The current income tax	Independent	Ln(T)
Financial leverage	Independent	G
Return on sales	Independent	ROS
The cash ratio	Independent	CR
The assets mobility indicator	Independent	AMI

companies from 1993-2001, served as a source of base "standard and Poor's" data. In this study, researcher concluded that tax evasion does not lead to an increase in value of the company. Positive effect has been found only for the subsample of firms with a high level of corporate governance.

The researcher from the University of Texas in their study "firm valuation effects of the expatriation of US corporations to tax-haven countries" (Lindberg *et al.*, 2015) considering the effect on the value of company it expatriation in tax havens. The results of the study showed no statistically significant market reaction to such announcements (Cloyd *et al.*, 2003).

Thus, we could not make definitive conclusions. In this regard, we decided to start study of the effect of the tax burden on the measure of economic value added, putting the hypothesis of a statistically significant relationship between these indicators in conjunction with other common KPI.

## MATERIALS AND METHODS

For the empirical analysis we selected 45 Russian companies (Fig. 1) in the following sectors: oil and gas production and refining, transportation of petroleum products, electric power, chemical industry, machine building, transport and communications as well as other companies from the sectors of construction, diamond mining, manufacturing non-ferrous metals, machinery and equipment trading and the rental of non-residential real estate. Thus, in the sample included companies representing almost all major economic sectors which make up a significant share of GDP. The analysis was performed for the four consecutive years.

The following indicators have been tested in the composition of the regression model: the relative measure of the tax burden, the amount of accounts payable to the budget in taxes and fees, the current income tax. At the same time in the model presented such traditional performance indicators such as: financial leverage, return on sales, the cash ratio, the mobility of assets indicator. The list of variables is described in Table 1 and 2.

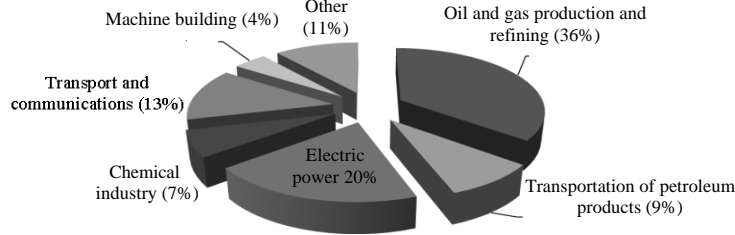


Fig. 1: The sectorial structure of the sample

Table 2: The matrix of pairwise correlation coefficients

Variables	EVA/IC	TB	Ln(APB)	Ln(T)	G	ROS	CR	AMI
EVA/IC	1	0.2769	0.3637	0.3130	-0.2182	0.4014	-0.3837	0.2507
TB	0.2769	1	0.3508	0.1692	0.0032	0.0165	0.0519	0.0822
Ln(APB)	0.3637	0.3508	1	0.3730	-0.1519	-0.0502	-0.2134	-0.1692
Ln(T)	0.3130	0.1692	0.3730	1	-0.1223	-0.1620	-0.1286	-0.0445
G	-0.2182	0.0032	-0.1519	-0.1223	1	0.0049	-0.0349	0.2023
ROS	0.4014	0.0165	-0.5020	-0.1620	0.0049	1	-0.3122	0.1360
CR	-0.3837	0.0519	-0.2134	-0.1286	-0.0349	-0.3122	1	0.1945
AMI	0.2507	0.0822	-0.1692	-0.0445	0.2023	0.1360	0.1945	1

Table 3: The regression results for the total sample

Variables	Coefficient	t-statistics ( $t_{crit} = 2.605$ )	The coefficient of determination ( $R^2$ )	F-statistics ( $F_{crit} = 2.745$ )
Const	-0.6521670	-4.670	0.56	31.3
TB	0.3971160	2.761		
Ln(APB)	0.0359225	3.416		
Ln(T)	0.0129198	3.673		
G	-0.0234624	-4.646		
ROS	0.0234530	5.365		
CR	-0.0606797	-5.256		
AMI	0.6461460	6.395		

Table 4: The results of the regression analysis of oil and gas production and oil refining companies

Variables	Coefficient	t-statistics ( $t_{crit} = 2.605$ )	The coefficient of determination ( $R^2$ )	F-statistics ( $F_{crit} = 2.745$ )
TB	0.4069540	1.939	0.4	5.417
Ln(T)	0.0178295	2.190		
G	-0.0424405	-2.542		

Table 5: The regression results in the electric power industry

Variables	Coefficient	t-statistics ( $t_{crit} = 2.605$ )	The coefficient of determination ( $R^2$ )	F-statistics ( $F_{crit} = 2.745$ )
TB	1.98599	1.841	0.87	27.27
ROS	1.11344	11.080		

To calculate the tax burden in the study used a technique developed by the Ministry of Finance of the Russian Federation. According to this method, the tax burden of the company is the share of all paid tax payments in the revenue from sales of goods (works, services) for the reporting period including other income (Eq. 1) (Table 3-5):

$$TB = \left[ \frac{T}{(S + I)} \right] \times 100\% \quad (1)$$

Where:

- TB = The relative measure of the tax burden
- T = The amount of all taxes paid by company
- S = Sales revenue
- I = Other income

The amount of accounts payable to the budget for taxes and fees disclosed in the appendix to the statement of financial position (Form No. 5). The document can be found both on the official websites of the companies in the “Disclosures” section and on a centralized information server disclosure “Interfax”.

## RESULTS AND DISCUSSION

To test the hypothesis, we carried out correlation and regression analysis using software Gretl and Microsoft Excel package. The matrix of pairwise correlation coefficients and regression results are presented in Table 2 and 3, respectively.

In general, the obtained results are at a high level of significance. Multiple correlation coefficient is 0.75. In the case, the multiple correlation coefficient indicates a close connection between the indicator (EVA/IC) and independent variables. The coefficient of determination is equal to 56% which confirms quite a close relationship of the factors with the result. The adjusted coefficient of determination is equal to 54%. The adjusted coefficient of determination is close to the coefficient of determination that is also indicates good specification of the regression equation.

The significance of the overall model is assessed using Fisher’s F-test. The evaluation showed that the model is statistically significant at a significance level of 90, 95 and 99%. The significance of the individual variables was evaluated using Student’s t-test. According to the study, it turned out that the empirical coefficient of dependent and all independent variables are statistically significant at a significance level of 90, 95 and 99% indicating that the model included significant variables.

Then, we carried out similar calculations within individual sectors, particularly in oil and gas production and oil refining and electric power as they represented the largest number of companies 36 and 20% of the sample respectively.

In oil and gas production and oil refining the model is statistically significant at a significance level of 90, 95% and 99%. Multiple correlation coefficient is 58%. An analysis of the correlation matrix allows us to conclude that tax burden of organization and financial leverage (correlation coefficients equal to 0.4) have considerable influence on the value of the company.

For the electric power industry hypothesis about the influence of corporate tax rates on the economic value added of a company is confirmed. From regression analysis for the industry were statistically significant two variables: the relative tax burden and the return on sales.

The model is statistically significant at a significance level of 90, 95 and 99%. Multiple correlation coefficient is 0.93, indicating a close relationship between the index of EVA/IC and included into the model independent variables. The coefficient of determination is equal to 87%. With regard to the direction of connection of investigated factors on the result indicator (EVA/IC) in the industry observed a significant impact of the return on sales ratio on the value of the company.

Thus, the hypothesis about the influence of indicators of corporate taxation such as the relative tax burden, the amount payable to the budget in taxes and fees, the current corporate income tax as well as financial leverage, return on sales, absolute liquidity and asset mobility, to measure of economic value added divided by the invested capital (EVA/IC), confirmed.

## CONCLUSION

In the study, we hypothesized and proved the hypothesis that a number of corporate tax rates affect the amount of economic value added which we have divided on the value of the invested capital to eliminate the influence of company size. The calculations were carried out in respect of 45 of the largest Russian corporations for 4 years. Studies were also carried out on two samples with regard to local companies in the oil and gas production and oil refining as well as electric power industry. In local samples we also confirmed the hypothesis. Moreover, the greatest impact of the tax burden indicators identified in the field of oil and gas production and oil refining which is objectively due to an increased level of tax burden in these industries.

This means that in the KPI structure on the basis of economic value added indicator for major Russian corporations in particular relating to the oil and gas production, oil refining and electric power industry, it is advisable to take into account the tax burden and other indicators of corporate taxation. As for small and medium businesses as well as a number of other sectors of the economy, they should be carried out in respect of a separate study.

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