

ACTION OF TAX LOAD ON FIRM FINANCIAL FLOWS

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Intensification of international competition demands new approaches to appreciate of tax load. Firms have to plan their activity and support competitive level [1]. Governments have to collect taxes but have to create good conditions for firms' and national economic competitiveness [2].

Especially the problem may be during investment business planning or law adopting. Usually firms account tax load as in the previous period. Government uses expert experience and appreciation. Differences between tax law systems in counties define the profits of firms and fields of the most competitive activity. So objective calculating of tax load is needed for firms and Governments. In the case following method may be useful.

The method was borrowed from natural and technical sciences. In Physics (Mechanics and Electric) it is wide used methods of efficiency counting. The process of tax confiscation for firm money is like the process of energy waste in energy systems.

For example, there is image a car engine. If potential chemistry energy of the fuel (E_o) is 100%, mechanical energy in the engine will be:

$$E_{\text{engine}} = E_o \cdot \eta_{\text{engine}}$$

there η_{engine} is the efficiency of engine.

Transmission has its own energy waists and energy on the wheel will be:

$E_{\text{wheel}} = E_{\text{engine}} \cdot \eta_{\text{trans}}$, there η_{trans} is the efficiency of transmission.

As a result:

$E_{\text{wheel}} = E_{\text{engine}} \cdot \eta_{\text{trans}} \cdot \eta_{\text{engine}} = E_o \cdot \eta_{\Sigma}$, there η_{Σ} is the efficiency of hole system.

At any energetic system:

$\eta_{\Sigma} = \eta_1 \cdot \eta_2 \cdot \dots \cdot \eta_i \cdot \dots \cdot \eta_n$, there η_i is the efficiency of the i-stage and η_n is the efficiency of the last stage of energy transformation.

By analogy, gross income of a firm is 100%. Then we pay tax. It is waist for firm. Call **output coefficient** as K_{out} (like energy efficiency - η). Then:

$K_{\text{out}} = F_{\text{in}}/F_{\text{out}}$,

there F_{in} is the input cash flow;

F_{out} is the output cash flow.

Output cash flow may be determinate as:

$F_{\text{out}} = F_{\text{in}} - T$, there T is tax payment.

$T = B \cdot R$, there B is tax base; R is tax rate.

If R in percent, the equation will be: $T = B \cdot R\%/100\%$.

If we pay tax several times from the cash flow *summary output coefficient* ($K_{\text{out-}\Sigma}$) will be:

$K_{\text{out-}\Sigma} = K_{\text{out-}1} \cdot K_{\text{out-}2} \cdot \dots \cdot K_{\text{out-}i} \cdot \dots \cdot K_{\text{out-n}}$, there $K_{\text{out-}i}$ is the output coefficient of the i-stage and $K_{\text{out-n}}$ is the output coefficient of the last time of tax pay.

At the beginning we calculate indirect tax load, then financial flow split into two flows: costs and profits. Now we calculate every flow separately. The costs again split into two flows: cost of labor and other costs. Every flow has its own tax load. Therefore we calculate every branch of cash flow separately after spiting.

First group of taxes – indirect taxes (figure 3).

Tax on additional value. If the tax base is production cost (C) plus gross profits (P) the output coefficient will be:

$$K_{\text{out-add_value}} = \frac{C+P}{B} = \frac{C+P}{(C+P) + \frac{(C+P) \cdot R_{\text{add_value}}\%}{100\%}} = \frac{100\%}{100\% + R_{\text{add_value}}\%},$$

there $R_{\text{add_value}}\%$ is the rate of additional value tax.

Second group of taxes – profit taxes.

If the tax base is gross profits (P) the output coefficient will be:

$$K_{\text{out-profit}} = \frac{P - \frac{P \cdot R_{\text{profit}}\%}{100\%}}{P} = \frac{100\% - R_{\text{profit}}\%}{100\%},$$

there $R_{\text{profit}}\%$ is the rate of profit tax.

Usually dividends have additional tax.

If the tax base is dividends (D) the output coefficient will be:

$$K_{\text{out-divid}} = \frac{D - \frac{D \cdot R_{\text{divid}}\%}{100\%}}{D} = \frac{100\% - R_{\text{divid}}\%}{100\%},$$

there $R_{\text{divid}}\%$ is the rate of dividend tax.

Third group of taxes – on salary and individual profits.

Tax (allocation) on social insurance - S_{ins} . If the tax base is salary (S) output coefficient will be:

$$K_{out-salary} = \frac{S}{S + S_{ins}} = \frac{S}{S + \frac{S \cdot R_{ins} \%}{100\%}} = \frac{100\%}{100\% + R_{ins} \%},$$

there $R_{ins}\%$ is the rate of social insurance tax (allocation).

Employees have to pay income-tax from their salary. Real salary will be fewer. If the tax base is salary (S) output coefficient will be:

$$K_{out-income} = \frac{S - S_{income}}{S} = \frac{S - \frac{S \cdot R_{income} \%}{100\%}}{S} = \frac{100\% - R_{income} \%}{100\%},$$

there S_{income} is income-tax; $R_{income}\%$ is the rate of income-tax.

But income-tax acts on individual income.

Sum output coefficients for the financial flows will be follows.

1. Nonlabor costs (including depression): $K_{sum-\Sigma-cost} = K_{out-add_value}$
2. Salary (without income-tax): $K_{sum-\Sigma-salary} = K_{out-add_value} \cdot K_{out-salary}$
3. Profits: $K_{sum-\Sigma-profits} = K_{out-add_value} \cdot K_{out-profits}$
3. Dividends: $K_{sum-\Sigma-divid} = K_{out-add_value} \cdot K_{out-profits} \cdot K_{out-divid}$

Tax load in deferent countries has national features, but the method gives possibility to compare tax load. Output coefficient (K_{out}) allows comparing tax conditions in different countries.

Let us use information from [3-6] and appreciate tax load on different cash flows. It is also interesting compare tax load on profit cash flow and depression cash flow. It is essentially important for assets growing, especially technology equipment. Let coefficient $KA = K_{sum-\Sigma-cost} / K_{sum-\Sigma-profits}$.

Coefficient KA is calculated for different countries, too. And results are placed in the table.

Table – Tax load on cash flows in different countries illustrated by output and KA coefficients.

Country	Output coefficients after tax paying					KA
	After indirect costs, $K_{sum-\Sigma-cost}, K_{out-add_value}$	For pure profit, $K_{sum-\Sigma-profits}$	For pure salary, $K_{sum-\Sigma-salary},$ maximum	For pure salary, $K_{sum-\Sigma-salary},$ minimum	For dividends, $K_{sum-\Sigma-divid}$	
Republic of Belarus	0,82	0,57	0,60	0,60	0,48	1,44
Russian Federation	0,85	0,65	0,59	0,59	0,46	1,31
France	0,84	0,49	0,80	0,36	0,32	1,71
Austria	0,83	0,51	0,75	0,42	0,37	1,63
Germany	0,88	0,44	0,71	0,39	0,31	2,00
Holland	0,85	0,55	0,53	0,34	0,46	1,56
Portugal	0,86	0,52	0,72	0,52	0,39	1,65
Great Britain	0,87	0,58	0,70	0,52	0,70-0,52	1,50
Sweden	0,80	0,56	0,78	0,27	0,39	1,43
Denmark	0,82	0,41	0,64	0,26	0,29	2,00
Ireland	0,80	0,48	0,57	0,38	0,48	1,67

Let us compare Belarusian tax load with load in other countries. Our tax load more than in Russia (output coefficients 0.82 and 0.85, accordingly). In the European Union the coefficient is spread from 0.80 (Sweden and Ireland) to 0.88 (Germany). This load effects indirectly on all cost items, including depression.

Belarusian tax load on profit investments is more than in Russia (output coefficients 0.57 and 0.65, accordingly). In the European Union the coefficient is spread from 0.41 (Denmark) to 0.58 (Great Britain). So, it is on the good EU level for Belarus. In Russia this index is the best. Therefore Russia promotes investments in business.

One of the important index is tax load on dividends. The Belarusian index is better than in Russia (output coefficients 0.48 and 0.46, accordingly). In European countries this index lays from 0.29 (Denmark) to 0.70 (Great Britain). In Great Britain this index spreads from 0.52 to 0.70 and besides the less load for the miner investors.

Coefficient KA shows ability of state amortization policy. It is 1.44 in Belarus and 1.31 in Russia. Therefore it is better in our country. In the European Union this index lays between 1.43 (Sweden) and 2.00 (Denmark, Germany). So, in the EU this index is mostly better.

The tax load on salary in the European Union is mostly less than in Belarus and Russia. In Europe tax rate on salary is progressive: the more income the larger tax rate. For example, in Luxemburg there are eighteen grades of the tax rate. It is fairer but our tax rate is not very high. It is only 12%.

Social insurance is compulsive in Belarus. And it is quite logistical and natural. Rate of allocation on salary social insurance is 35% (34% of duty on employer and 1% on employee). It is more convenient for employee and automatically solves the problem of social insurance. The allocation rate of social insurance ranges almost from 30 to 40%. So the rate in Belarus is quite average.

In this work custom duties and excises are not touched because they are very variety for goods in different countries. But in other cases Belarusian tax load is not very high comparing with the European Union.

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