THE WAYS OF MODELLING AND FORECASTING PROFIT TAX REVENUE IN LITHUANIA

Elena Mačiulaitytė

Vilnius Gediminas Technical University
Saulėtekio al. 11
LT-10223 Vilnius, Lithuania
e-mail: elemac@takas.lt

The aim of this paper is to propose the ways of profit tax revenue modelling and forecasting when changes of the legitimate order are considered in time series modelling. To this end, profit tax-related legislative changes are reviewed in the first part of the paper. The basic elements of the profit tax, such as the tax object, subject, the order of carry-over of losses, tax rates, methods of computing a profit tax advance payment, due dates of a yearly profit tax have been changed several times over the period of profit tax application. The second part of the paper presents the stages of profit tax revenue modelling. At the first stage, the indicator of profit is suggested to be modelled and forecast using a linear regression of economic indicators. At the second stage, the function of profit tax revenue, depending on the profit indicator and other different legitimate elements of profit tax, has to be found.

Keywords: profit tax revenue, statutory elements of the profit tax, changes of legitimate order, modelling and forecasting.

Introduction

Several methodologies for profit tax revenue modelling and forecasting have been introduced (A. Budrytė, E. Mačiulaitytė, 2005). A major problem is related to the application of econometric models to profit tax revenue. It is based on the assumption of the stationarity of indicators. The indicator of quarterly profit tax revenue in Lithuania is unlikely to meet this type of assumption. To ascertain this fact, the evolution of profit tax-related regulations should be analyzed. It is notable that profit tax-related legislative revisions have changed several tax elements at one time. It is obvious that after some changes of laws on the profit tax the time series of quarterly profit tax revenue before

changes cannot be compared, without reservations, to this series after changes.

Changes of the basic tax elements, such as the tax object, subject, tax rates, etc. significantly influence collection of any tax revenue. A qualitative valuation of such changes is known or foreseen, but it is more important to find the quantitative valuation of changes. That is the reason why mathematical implements – various tax models for the forecast of tax revenue and valuation of policy changes have been created in many countries. The wide possibilities of microsimulation models are limited by the lack of necessary data in Lithuania (A. Budrytė, E. Mačiulaitytė, 2005), but some ideas of microsimulation modelling could be used even in a simpler time series model.

In the first part of the paper, the author reviews the main statutory elements of profit tax, with an emphasis on their changes. In the second part, the author presents the stages of profit tax revenue modelling and the possibility of including statutory tax elements in the model.

Legitimate regulation of profit taxation

In Lithuania, profit has been taxed when the Law on Taxes on Profits of Legal Persons came into force in 1990. This law had about 40 revisions. It had been in force until 2002 when it was changed by a new law – the Law on Profit Tax. This law came into force on January 1, 2002. The new law has been already edited more than once. Further down, the basic changes of the profit tax legislation will be reviewed.

By the Law on Taxes on Profits of Legal Persons (LRS, 2001a), the tax on profit of legal persons had to be paid by all legal persons except individual (personal) enterprises and partnerships and legal persons engaged in non-commercial activities or not receiving income from economic-commercial activities (also the Bank of Lithuania, the State enterprise Deposit Insurance Fund, budgetary institutions). The profit tax had also to be paid by foreign state enterprises and other organizations (whose activity was regulated by the laws of foreign states and whose headquarters were located in foreign states), permanent establishments. As a matter of fact, income received by foreign enterprises[1] was been taxed later, on April 1, 1997.

The tax payer's taxable profit was defined as an object of the profit tax. It was computed as a difference between the total of sales and non-operating revenue and all legal person's actual costs of gaining the income. Dividends received by Lithuanian legal persons from other Lithuanian companies and foreign legal persons, dividends received by foreign legal persons or other organizations from Lithuanian legal persons were taxed on January 1, 1999. The rate of the profit tax applied to dividends was 29 percent.

By the new Law on Profit Tax (E. Buškevičiū-tė, 2005; A. Marcijonas, B. Sudavičius, 2003; LRS, 2001b), the circle of the profit tax payers was expanded. In 2002, individual (personal) enterprises, partnerships, etc. which had paid income tax were included into profit tax payers. Even though the tax object has been differently described in the new law, its point remains unchanged.

The Law on Taxes on Profits of Legal Persons allowed loss shifting. If was allowed to carry the sum of gained losses over to the next taxable year, but no longer than for a period of 5 taxable years measured from the year following the formation of losses. The period of 5 years was introduced in 1998. Until then, losses had been permitted to carry over to the next taxable year no longer than for a period of 3 taxable years.

The new Law on Profit Tax has changed the order of carrying-over of losses. The losses gained from the disposal of securities and derivative financial instruments have been distinguished from the total losses. It was noticed that some enterprises usually suffered this kind of losses not by accident. They sought to reduce the profit and the profit tax. For this reason, it was allowed to carry the losses gained from disposal of securities and derivative financial instruments over to the next taxable year even if these losses could be covered by the revenue from the financial activities. It was allowed to carry losses of a taxable year over to the next taxable year no longer than for a period of 5 taxable years, except losses gained from the disposal of

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[1] The tax rate of 15 percent had been applied to their income at source.

securities and derivative financial instruments. These losses (or their part) could be transferred over to the next taxable year no longer than for a period of 3 taxable years.

The Law on Taxes on Profits of Legal Persons set several rates of profit tax, which later on were changed several times. In 1990, when the profit tax was introduced first, the main profit tax rate of 35 percent was established. After a year (on July 1, 1991) it was changed into a 29 percent rate. Later on, the main profit tax rate was reduced once again: in order to compute the taxable profit for the year 2000 and the following years, the taxable profit was taxed at the rate of 24 percent. This rate had been valid until January 1, 2002, when it was reduced once again to 15 percent in compliance with the new Law on Profit Tax.

A reduced profit tax rate on taxable profit used for capital investment was introduced on May 21, 1993. The profit tax rate of 10 percent started to be applied to this profit, while as of April 1, 1997 the taxable profit used for investment started to be taxed at zero (0% rate). In order to compute the taxable profit for the year 1998 and later, it was allowed to choose one of the two methods for investment calculation. According to one method, the profit used for investment into one's own enterprise was taxed at zero (0% rate), i. e. it was not taxed. According to the other method, in order to compute the total taxable profit, one had to deduct funds used for investment from the total revenue. Hence, not only profitable enterprises but also enterprises that suffered losses could take advantage of the opportunity to make use of the tax concession (0% rate), because, in order to compute the final taxable result, funds for investment were deducted from the total revenue, thus creating the possibility for the negative result as well. The zero percent tax rate for funds assigned for investment had been

applied until the new Law on Profit Tax came into force.

Dividends were taxed at a 29 percent rate. Later on, this rate was reduced to 15 percent by the new law in January 1st 2002; 15 percent tax rate on income received by foreign state enterprises and by the permanent establishments of foreign state enterprises was reduced to 10 percent in 2002.

The Law on Taxes on Profits of Legal Persons provided different tax concessions (reduced tax or reduced tax rate, etc.) to some legal persons who were allowed to pay a reduced tax or not to pay it at all. Tax concessions were applied to legal persons producing agricultural products and to specialised enterprises providing services for agriculture, to creative unions as well as their companies and organisations, to enterprises which employed handicapped workers, to free economic zone enterprises, to non-profit organisations.

The statistics of revenue of the national budget is related with the moment of tax revenue receiving or tax revenue getting to the budget but not with the profit gaining period. Therefore, due dates of the tax are very important, because they determine fluctuations of tax revenue during a year. Changes of due dates of the tax may determine a saltatory change (change of the level) of tax revenue which could not be explained by any laws of economics. Even though a year is a taxable period of the profit tax (it usually coincides with the calendar year), the advance amount of the profit tax (the profit tax advance payment) is paid several times per year.

Until the end of 1997 the computed taxable profit, the values of the profit tax advance payments had been determined using the withdrawal coefficient. This coefficient was determined as a ratio of the sum of the tax paid in the previous year and sales revenue of the same year. In

particular cases the withdrawal coefficient could be determined as a ratio of the sum of the profit tax calculated for the previous quarter and sales revenue of the same quarter. The profit tax advance payment was computed from the actual sales revenue using the withdrawal coefficient. The withdrawal coefficient of the previous year was used until the 10th of February of the new taxable year. The computed amount of the payment was transferred to the budget three times per month.

Later on, a new order of computing was applied in 1998. The tax payer could choose one of the two ways of tax calculation. The first was based on the amount of the profit tax computed for each month of the current year. The second was based on the amount of the profit tax computed for a certain periods in the past. Profit tax advance payments for the first four months of the taxable period were calculated based on the profit tax amount actually estimated for the taxable period prior to the preceding taxable period. Profit tax advance payments for the fifth to twelfth months of the taxable period were calculated according to the amount of the profit tax actually estimated for the preceding taxable period. Each month's profit tax advance payment supposed to amount to 1/12 of the amount of the profit tax actually calculated over the said period. The profit tax advance payment ought to be paid after the close of each month of the taxable period or before the 15th day of the following month (LRS, 2001a).

After the new Law on Profit Tax came into force in 2002, the calculation procedure of the profit tax advance payment and due dates of payment of the tax have changed a little. As before, the tax payer could calculate the amount of the profit tax advance payment in to ways. It could be calculated based on the results of activity of the last years or on the predictable

amount of the profit tax of the current taxable year. In the first case, the profit tax advance payment for the first nine months of the taxable period was calculated based on the profit tax amount actually estimated for the taxable period prior to the preceding taxable period. The profit tax advance payment for the tenth to twelfth months of the taxable period was calculated according to the amount of profit tax actually estimated for the preceding taxable period (LRS, 2001b). The law have set quarterly profit tax advance payments. The tax ought to be paid before the last day of a quarter of the taxable year. Therefore, each quarter's profit tax advance payment supposed to amount to 1/4 of the amount of profit tax actually calculated over the said period or 1/4 of the predictable amount of the profit tax of the current taxable year. Hence, profit tax advance payment supposed to be paid every quarter, so quarterly changes (fluctuations) of profit tax revenue could be determined by other payments of the profit tax.

The provision which prevents from lowered tax calculation has been established only in the new Law on Profit Tax. The law provides that, if the amount of the forecasted profit tax calculated in profit tax advance payment report makes less than 80 percent of a yearly profit tax reported in a profit tax statement, then interest will be calculated from the difference reported in advance payments and not paid every quarter. Thus, it could be expected that about 80 percent of profit tax revenue would be received in profit tax advance payments.

Both laws have provided for the condition when a tax payer was no under obligation to pay the profit tax advance payment. If the gross income received over the preceding taxable year is not in excess of LTL 100 000, the tax payer has no obligation to make profit tax advance payments in the current taxable year.

The due dates of the yearly profit tax also changed. Until 1998, the profit tax was calculated every quarter. After the end of each quarter the taxpayers ought to submit to the territorial state tax inspectorates the financial statement and the profit tax report till the 15th day of the first month of the following quarter and after the end of a taxable year till the 1st of February of the following year. If the profit tax report showed that the paid amount of the tax was less than appropriate, the taxpayer had to pay into the budget the underpaid amount of the profit tax in 10 days following the expiry of the time period prescribed for the submission of profit tax reports (LRS, 2001a). The overpaid amount of the tax could be refunded or admitted of another tax payment by the taxpayer's request.

In 1998, the taxable period of one calendar year for computing the profit of the year 1998 and of the subsequent years was established. The report had to be submitted only once, after the end of the calendar year (taxable period). The due date of the submission of the financial statement and the profit tax report was the 1st of May of the following year (the 1st day of the fifth month of the following taxable year). The tax payer had to make a payment of the profit tax the next working day after the end of the term of the profit tax report submission. The overpaid amount of the tax was refunded to the tax payer or admitted to another tax payment.

According to the new Law on Profit Tax, a yearly profit tax report (for the year 2002 and subsequent years) together with the financial statements (if required) has to be submitted after the end of a taxable period until the 10th month's 1st day of the following taxable period. The due date of tax payment is the same as the due date of submitting the profit tax report. The main changes of basic profit tax elements are summarized in Table in Appendix.

Stages of profit tax revenue modelling

In many cases, elements of legitimate order are not included in the tax revenue models, such as elasticity models[2], extrapolation models, and regression of economic indicators. The profit tax-related legislative revisions, which affect or even change the basic tax elements, force to search for the unusual ways of profit tax revenue modelling and forecasting. In macro econometric models (D. Celov, E. Vilkas, D. Grinderslev, F. M. Andersen, 2003; J. Braley, A. Kangur, I. Kearney, 2001; A. Willman, M. Kortelainen, H.-L. Mannisto, M. Tujula, 1998; A. Clopper, M. Farhat, 1997; D. Rea, 1996), the simple equality where a tax base is multiplied by an exogenous tax rate is used for fiscal sector revenue modelling. The tax revenue equality where the tax levies are subtracted from the tax base (this means that one more tax element is included in the equation) is rare (A. Sentance, S. Hall, J. O'Sullivan, 1998; A. Willman, M. Kortelainen, H.-L. Mannisto, M. Tujula, 1998). Certain specific features of legitimate regulations also come from the lag functions applied to the tax base indicator (J. Braley, A. Kangur, I. Kearney, 2001; A. Willman, M. Kortelainen, H.-L. Mannisto, M. Tujula, 2000). Therefore, such models could be used not only for the revenue forecast but also, in certain instances, for estimating the impact of policy changes. It is obvious that with the more legitimate elements of the tax included in the model, the impact of more complex and different policy changes could be analysed.

The microsimulation models (J. Creedy, G. Kalb, 2005; W. B. Trautman, 1999; J. Aasness,

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[2] An exception is such tax element as tax rate. It is used in the type of models when modelling the tax revenue the dependence of revenue on tax rate is assumed (J. W. Diamond, P. H. Moomau, 2003; J. G. Gravelle, 1995).

E. Fjaerli, H. A. Gravningsmyhr, A. M. K. Holmoy, B. Lian, 1995) are the most relevant tool for quantitative evaluation of policy changes. These models are based on the modelling of stochastic distributions. A lot of detailed data, usually taken from tax return forms and special surveys, are necessary for the modelling. Detailed information about the tax system and a particular tax is also needed for such modelling. So, the complexity of the model is directly dependent on the data used in the model.

The obstacles for microsimulation modelling in Lithuania were reviewed (A. Budrytė, E. Mačiulaitytė, 2005). The problems of the quality of data in tax reports were mentioned earlier (A. Budrytė, E. Mačiulaitytė, 2004). That is the reason why the possibility of modelling the time series of profit tax revenue is discussed here. Similar ideas could be seen in both macroeconometric and microsimulation models. Elements of taxation order are applied to the profit indicator which is used as a profit tax base for profit tax revenue estimation.

It is doubtful whether the time series of quarterly profit tax revenue in 1995–2004 satisfies the condition of stationarity, so it would not be advisable to use econometric models for tax revenue estimation. Thus, the author suggests estimating the profit indicator by econometric methods first, and then suggests applying a legitimate order to this indicator for the purpose of tax revenue calculation (estimation). In this case, two stages of profit tax revenue estimation could be distinguished.

At the first stage, an indicator of the profit (*PPA*) as a profit tax base should be modelled applying methods of correlation and regression. The basic model of the profit indicator is

$$PPA(t) = f(X_i(\ ),\ PPA(t-\tau)) + \xi(t),$$

where $X(t)$ denotes the vector of i possible regressors which are picked using the economic

logics and correlation analysis. $\xi(t)$ is a white noise error term. When the types of models are narrowed down to linear, the form of the model is

$$A(L)PPA(t) = m(t) + B(L)X(t) + \xi(t),$$

where $m(t)$ is a trend or $m(t) = m_0$.

At the second stage of the modelling, the function of profit tax revenue should be found. The function depends on the profit indicator and different legitimate tax elements. Profit tax revenue (*PM*) should be calculated (estimated) with the help of this function as precisely as possible. Here, the elements of legitimate order which should be included into the function follow: tax rate (*TR*), the due date of the tax payment (*TER*), the methods of calculation of advance profit tax (*IST*), and the order of carryover of losses (*N*). Other additional profit tax objects (e. g., dividends (*DIV*), income of foreign companies (*UIP*)) also could be included into the function. The form of the profit tax function is

$$PM(t) = f(\boldsymbol{b},\ PPA(t),\ TR(t),\ TER(t),\ IST(t),$$
$$N(t),\ DIV(t),\ UIP(t)),$$

here $\boldsymbol{b}$ is a vector of unknown parameters.

The most straightforward function of profit tax revenue could be based on the main formula of the tax calculation – the tax is equal to the product of tax base and tax rate:

$$PM(t) = b_0 + b_1 TR(t) * PPA(t) + \xi(t). \quad (1)$$

One can notice from the legitimate regulation that profit tax revenue consists of the profit tax paid in advance (for a current year) and yearly profit tax (for the previous year; the tax has to be paid until a stated term) and also of tax on dividends, on income of foreign companies, etc. The indicator of the profit tax base (object) for advance tax and yearly tax is basically the same. Only the periods of time when the indicator is used for calculation of these taxes differ. Thus, the profit indicator has to be modified

in one way for the calculation of the yearly tax and in another way for the calculation of the profit tax advance payments. An indicator of tax rate is also modified for this calculation in a similar way. The indicator of term could be applied for the calculation of the yearly profit tax: $TER(t) = 1$, when $t \in T$, $TER(t) = 0$, when $t \notin T$. One of the two methods could be applied for calculation of the profit tax advance payment (from 1998). Therefore, this component splits into two parts (IST^I and IST^{II}) according to the chosen method of calculation. These notations could be not only indicators but also functions (e.g., the function of the n-th lag). The dividends and income of foreign companies, as profit tax bases (objects), should be multiplied by tax rates applied to these objects. These tax rates should be considered, because they have changed. Here is an example of the function of profit tax revenue:

$$PM(t) = b_0 + b_1 TR^M(t) * PPA^M(t) *$$
$$* TER(t) + b_2 TR^A(t) * PPA^A(t) \, IST^I(t) +$$
$$+ b_3 TR^A(t) * PPA^A(t) * IST^{II}(t) + \qquad (2)$$
$$+ b_4 TR^{DIV}(t) \, DIV(t) +$$
$$+ b_5 TR^{UIP}(t) \, UIP(t) + \xi(t).$$

Since all indicators or their formations are known, this function is a linear (in regard to parameters b_i, $i = 1, 2, ..., m$) regression. After evaluation of the parameters, using the least square method, the expression of the function of profit tax revenue is obtained.

In order to verify whether the mentioned above profit tax revenue models are relevant, their adequacy for Lithuanian data should be estimated. The data of Statistics Department of Lithuania have been used for identification of the models. The quarterly series for the period 1998q1–2005q3 have been taken of the following indicators: profit tax revenue (PM), the profit of profitable enterprises before taxes (P), losses of loss-making enterprises (N).

Every quarterly value of the tax rate indicator (TR) corresponds to the main tax rate valid for the same period. This indicator is used for the calculation of the profit tax advance payment of the current period ($TR^A = TR$), while the indicator of a yearly profit tax rate (TR^M) is synchronized with the taxable period of the yearly profit tax which is paid in the current period. The indicator of the term (due date of the yearly profit tax payment) $TER(t) = 1$, if the due date is in the quarter t, otherwise $TER(t) = 0$.

Let us assume that the model of the profit indicator P is known, the parameters of the model have been estimated, and the suitably close predicted values of the profit indicator have been obtained with the help of this model. The suitability of profit tax revenue models for the forecast will be estimated with the mean absolute percent error of prediction for one year (four quarters):

$$\delta_{PM}(\tau) = \frac{1}{4} \sum_{k=1}^{4} \left| P\hat{M}(\tau + k) - \right.$$
$$\left. - PM(\tau + k) \right| / PM(\tau + k),$$

here $t \in \{2000q1–2004q3\}$. The model statistics R^2 is also presented. The significance level p of t-statistics of the model parameters is presented under the model. EVews program applications were used for estimating the parameters of profit tax revenue models and calculating the forecast.

The estimated function (1) and prediction error (δ_{PM}) are presented below:

$$PM = -310,98 + 1.87 \ P * TR$$
$$0.0001$$

$\delta_{PM}^{(1)} = 27.48\%$, $R^2 = 0.513$. It is noticeable that an adequate model was obtained only estimating it for the period 2000q1–2005q3. Such simple equations were usually used in many of the macroeconometric models mentioned above. It is obvious that this model is not accurate enough to explain the distribution of

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data and not accurately predicts profit tax revenue in the Lithuanian case.

A special indicator of tax base (P^l) for advance profit tax payment calculation (in the case when advance profit tax payment is calculated using the amount of the profit computed for a certain period in the past) have been made to estimate the function (2):

$$P^l = PV\_1 * IQ1 + PV\_2 * IQ2 ,$$

here PV_1 is the indicator of profit (P) mean of the previous year (4 quarters), PV_2 is the indicator of profit (P) mean of the year (4 quarters) followed by the previous year. Indicators $IQ1$ and $IQ2$ indicate quarters t $(IQ1(t) = 1, IQ2(t) = 1)$ when the respective data of PV_1 or PV_2 were used for profit tax advance payment calculation $(IQ1(t) = 0, IQ2(t) = 0$ in other quarters $t)$. The profit indicator (P) is also used for advance profit tax payment calculation (in the case when advance profit tax payment is calculated using the amount of the profit of the current year). According to law provisions, the indicator of losses (N) was included with a time lag of k periods (lag(N, k)). The indicator PM with a time lag of l periods (lag(PM, l)) is also included into the model, as the current period revenue could be dependent on the revenue received before (because of overpaid tax and tax refund or admission for another tax). The indicators of dividends and income of foreign companies have not been included into the model, whereas an assumption of the insignificance of the revenue share of profit tax in these types of income has been made. An example of this type of profit tax revenue models is presented below:

$$PM = 168.84 + 0.3612 \, TR^M * PV\_1 * TER +$$
$$0.0305$$

$$+ 0.522 \, TR^A (t) * P(t) - 0.508 \, TR^A (t) * P^l (t) -$$
$$0.114 \qquad\qquad 0.0428$$

$$- 0.202 \, lag(N, 6)(t) + 0.751 \, lag(PM, 4)(t).$$
$$0.0526 \qquad\qquad 0.0082$$

$\delta_{PM}^{(2)} = 6.83\%$, $R^2 = 0828$. All parameters of the model, except $TR^A * P$, are significant at the level $p = 0.06$. The indicator $TR^A * P$ is left in order not to lose the accuracy of prediction. According to the results of the model estimation, this model is better to explain the distribution of data than the model (1) presented above. The error of prediction of this model is also significantly lower. The mathematical and statistical aspects of specification, selection of parameters for the models and identification of profit and profit tax revenue models will be presented by the author in another article.

Conclusions

After analysis of changes of profit tax-related regulation, several main changes of the tax elements, such as profit tax object, subject, tax rate, methods of tax calculation and due dates of tax payment, have been identified. These changes possibly influence the change of profit tax revenue.

While searching for the possibility to estimate the influence of changes of profit tax regulation on revenue and after summarizing the experience of tax revenue modelling, the author suggests including into the model as much information as possible on the elements of legitimate order when modelling profit tax revenue.

Since the time series of quarterly profit tax revenue are allegedly non-stacionary, the author suggests a profit tax revenue model based on two equations: a linear regression of the profit tax base (object) and the function of profit tax revenue which is dependent on the indicator of tax base and elements of legitimate order. Profit tax revenue modelling in two stages allows forecasting two indicators: the profit indicator and the profit tax revenue indicator. Moreover, the importance of various changes of legitimate order could be identified and the influence on the revenue of these changes could be estimated.

The estimation of profit tax revenue modelling and forecasting could be obtained when has shown that more accurate results of model-changes of tax elements are considered.

Appendix

*Table. **Main changes of basic tax elements included into the tax revenue function***

Tax elements	The Law on Taxes on Profits of Legal Persons valid trough 1990–2001	The Law on Profit Tax valid from January 1, 2002
Main tax rate	35 percent	15 percent
	from July 1st 1991 – 29 percent	
	for the year 2000 and the following years – 24 percent	
Profit tax advance payment	Until the end of 1997, the values of the profit tax advance payments had been determined using withdrawal coefficient This coefficient was determined as a ratio of the sum of the tax paid in the previous year and sales revenue of the same year. The computed amount of payment was transferred to the budget three times per month	The law have set quarterly profit tax advance payments. The tax payer could calculate amount of the profit tax advance payment in to ways. It could be calculated based on the results of activity of last years or on the predictable amount of the profit tax of the current taxable year.

The tax ought to be paid before the last day of the quarter of the taxable year |
| | From 1998 the tax payer could choose one of two ways of tax advance payment calculation The first was based on the amount of the profit tax computed for each month of the current year. The second was based on the amount of the profit tax computed for a certain periods in the past.

The profit tax advance payment ought to be paid after the close of each month of the taxable period or before the 15th day of the following month | |
| Due dates of the yearly profit tax | Until the end of 1997, the profit tax was calculated every quarter. After the end of each quarter the taxpayers ought to submit to the territorial state tax inspectorates the financial statement and the profit tax report till the 15th day of the first month of the following quarter and after the end of taxable year – till the 1st of February of the following year.

The taxpayer had to pay into the budget the profit tax in 10 days following the expiry of the time period prescribed for the submission of profit tax reports | A yearly profit tax report (for the year 2002 and subsequent years) together with the financial statements has to be submitted after the end of the taxable period until the 10th month's 1st day of the following taxable period.

The due date of tax payment is the same as the due date of submitting the profit tax report |
| | In 1998, the taxable period of one calendar year for computing profit of the year 1998 and of the subsequent years was established. The report had to be submitted only once, after the end of the calendar year (taxable period). The due date of the submission of the financial statement and the profit tax report was the 1st of May of the following year.

The tax payer had to make a payment of the profit tax the next working day after the end of term of the profit tax report submission | |

Continuation of table

Tax elements	The Law on Taxes on Profits of Legal Persons valid trough 1990–2001	The Law on Profit Tax valid from January 1, 2002
Order of carry-over of losses	Until the end of 1997, losses had been permitted to carry over to the following taxable year for a period no longer than 3 taxable years	The losses gained from the disposal of securities and derivative financial instruments have been distinguished from the total of losses. One was allowed to carry these losses over to the following taxable year even if these losses could be covered by the revenue from the financial activity. These losses (or their part) could be carried over to the following taxable year for a period no longer than 3 taxable years.
	From 1998, it was allowed to transfer the sum of gained losses to the following taxable year for a period no longer than 5 taxable years	

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LIETUVOS BIUDŽETO PAJAMŲ IŠ PELNO MOKESČIO MODELIAVIMO IR PROGNOZAVIMO BŪDAI

Elena Mačiulaitytė

Santrauka

Siūloma taikyti įvairias pelno mokesčio biudžetinių pajamų modeliavimo ir prognozavimo metodologijas. Tačiau ekonometrinius modelius taikant pelno mokesčiui iškyla esminė problema. Ekonometrinių modelių taikymas remiasi rodiklių stacionarumo prielaida, kurią vargu ar gali tenkinti pelno mokesčio ketvirtinių biudžeto pajamų rodiklis. Išanalizavus pelno mokesčio įstatyminio reglamentavimo raidą, galima įsitikinti, kad po kai kurių šio mokesčio įstatymo pakeitimų, kai buvo keičiami net keletas mokesčio elementų, pelno mokesčio biudžetinių pajamų (ketvirtinė) eilutė prieš įstatymo pakeitimą ir po įstatymo pakeitimo negali būti lyginama be išlygų. Vis dėlto labai svarbus yra kiekybinis tokių pakeitimų įvertinimas. Todėl daugelyje šalių kuriami matematiniai įrankiai – įvairūs mokesčių modeliai – prognozuoti mokestines pajamas ir vertinti įvairius įstatyminius pokyčius. Plačias mikrosimuliacinių modelių galimybes Lietuvoje riboja duomenų stoka, tačiau tam tikros idėjos gali būti panaudotos ir taikant nesudėtingą laiko eilučių modelį.

Šio straipsnio tikslas – supažindinti su pelno mokesčio biudžetinių pajamų modeliavimu ir prognozavimu, kai, modeliuojant laiko eilutę, atsižvelgiama į įstatyminio reglamentavimo kaitą. Dėl to pirmoje straipsnio dalyje apžvelgiami pagrindiniai pelno mokestį reglamentavusių įstatymų – Juridinių asmenų pelno mokesčio ir Pelno mokesčio – pakeitimai. Per šių įstatymų galiojimo laikotarpį įstatymų redakcijos keitė ir dažnai ne viena kartą pagrindinius mokesčio elementus: mokesčio objektą, mokesčio subjektą, nuostolių perkėlimo į kitus metus tvarką, mokesčio tarifus, avansinio pelno mokesčio skaičiavimo būdus, metinio pelno mokesčio mokėjimo terminus.

Antroje dalyje aptariami pelno mokesčio modeliavimo etapai. Autorė akcentuoja makroekonometrinių ir mikrosimuliacinių modelių taikymo idėją – į mokesčio pajamų modelį įtraukti įstatyminius mokesčių elementus. Straipsnyje siūloma pelno mokesčio biudžetinių pajamų rodiklį modeliuoti dviem etapais. Pirmu etapu siūloma modeliuoti ir prognozuoti pelno mokesčio bazę atitinkantį pelno rodiklį naudojant koreliacinius-regresinius metodus. Antru etapu reikia rasti pelno mokesčio pajamų funkciją, priklausančią nuo pelno rodiklio ir nuo įvairių įstatyminių mokesčio elementų, kurie padėtų kuo tiksliau apskaičiuoti (įvertinti) pelno mokesčio pajamas. Čia taip pat pateikiami pelno mokesčio pajamų funkcijų pavyzdžiai ir jų vertinimo rezultatai.