



**Algirdas BUTKEVIČIUS**

**INCREASE OF VALIDITY OF THE NATIONAL  
BUDGET EXPENDITURE PLANNING**

**Summary of Doctoral Dissertation  
Social Sciences, Economics (04S)**

**1511–M**

**Vilnius**  **LEIDYKLA  
TECHNIKA 2008**

VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

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## 1. General characteristic of the dissertation

**Topicality of the scientific work.** All states, irrespective of their size, political system, economic power and other characteristics, perform certain functions. Understandably, this requires funds. The extent of such a need is determined by a multitude of factors, of which some are objective (the size of a state, scope of the functions performed, economic power, etc.), while others – subjective (methods of calculation of the need for funds, legal norms, institutional decisions, etc.).

A typical feature is allocation of state funds in all countries in the course of budget (state, municipal, national, social insurance, etc.) making process. A large number of various-level institutions participate in the budgeting process, which is equivalent to the allocation of funds. Some institutions develop draft budgets, others consider and revise the developed drafts, yet others approve them. When adopting the drafts developed by state and municipal institutions in the form of a law, allocation of state funds depends on decisions of institutions of both the executive and the legislature.

To what extent are such decisions objective and valid? This is a question to which there is no simple answer. A factor increasing the objectivity of decisions is the large number of participants in the process. Each of them holds certain values, a different qualification, interests, etc. The greater their diversity is, the more likely is the objectivity.

From the methodical perspective, the budgeting practice is not uniform worldwide as various methodical principles and their combinations are applied. Practitioners and theoreticians are continuously working on their improvement and are searching for the more suitable ones allowing a greater validity of allocation of state funds. Taking into consideration the scope of the funds subject to allocation, each step towards increase of the validity, though a minor one, is highly significant, which also determines the unquestionable topicality of such research.

**Research problem.** The budget management reforms carried out actively in the second half of the past century are directly associated with theoretical works in this field. On the one hand, the increasingly greater requirements raised for the efficient use of financial resources of a state provided a stimulus for research works, especially those of applied nature, and on the other, the created theoretical and methodical potential enabled to solve practical problems. Generalising the theoretical and methodical potential of the field under consideration as mentioned in a variety of sources, one needs to

acknowledge that this potential is not sufficient to meet the requirements raised within the framework of present-day challenges for the use of financial resources of a state. Increase of efficiency of the use of the state's financial resources, which account for a considerable portion of the created national product, requires the methodical, technological and managerial measures which would be adequate for a specific time period. This fact determines the necessity of continuous research in this field and the need for new advanced decisions by applying the created theoretical potential and making use of the accumulated practical experience.

**Research subject** – planning of a country's budget expenditure has been considered from the perspective of the systems theory viewing it as a sub-system of a higher-level system (management of a state's financial resources) having the characteristics of complex systems. The systemic approach has been applied for the structuring of research subject, that is, the identified tasks of budget expenditure planning are analysed within a broad framework together with their interrelations.

**Research aim** – to develop the model of planning of a country's budget expenditure creating preconditions for its users working in the area of advanced information technologies to take quantitatively-based planning decisions.

**Research tasks:**

1) to analyse the role of a country's budget, highlight the impact of the structure of its expenditure on the social and economic development of a state;

2) to consider the legal regulation of the Lithuanian national budget and practice of budget expenditure planning;

3) to consider the theoretical models and methodical potential of planning the expenditure of a country's budget and its component parts, determine the relevance of increase of the validity of budget expenditure planning;

4) to develop methods of complex evaluation of new and continued budget programmes, test their practical acceptability;

5) to develop methods of objective inter-budgetary reallocation of funds, test them by means of empirical modelling;

6) to establish requirements for information technologies in respect of the effective application of proposed methods and models of a country's budget planning;

7) to develop the basic provisions of a database required for the effective application of the proposed methods and models and a decision support system.

**Methodology of the research.** For the purposes of this research, the methodology of analytical and empirical research as well as methods of synthesis, analogy, comparison and logical abstraction were applied.

Integrated evaluation of budget programmes is based on the methods of multiple-criteria evaluation. Their application enabled to carry out the empirical multiple-criteria programme evaluations which determine criteria significance with the help of the method of expert review. Empirical research of inter-budgetary reallocation of funds employed a sensitivity analysis to search for solutions, whereas causal relations were subject to a quantitative evaluation by means of the method of correlation and regression analysis.

The proposed concept of increase of the validity of a country's budget expenditure planning is based on principles of the budget theory, the synergy effect of integrated totality of various methods and models.

### **Defended theoretical results**

1. The method of multiple-criteria evaluation based on the quantitative benchmarking of programmes according to the integrated complex evaluation criterion has been applied for the evaluation of new and continued budget programmes thus providing preconditions for objective evaluation.

2. The transition of horizontal equalisation from equalisation of disparities in respect of actual states towards that in respect of desired states as proposed for inter-budgetary reallocation of funds creates financial preconditions for the goal-oriented development of administrative units of a territory, and the objectivity of decisions is ensured through basing of the content of controlled parameters and their values on the results of quantitative research.

3. Preparation and adoption of planning decisions is based on an integrated budget database as well as intellectual support of decision-making, thus creating preconditions for achieving the reliability of information and compatibility of decisions.

**Scientific novelty.** In light of changing requirements for public administration, the thesis assesses the budget reforms which were and are being carried out by various countries, establishes tendencies towards improvement of budget expenditure planning and formulates largely unique methodical provisions of budget expenditure planning. The thesis also proposes an original model of budget expenditure planning covering the entire cycle of planning works, links between the components of which as well as decision drafting and adoption are based on an integrated database focusing on a user working in the field of a decision support system.

**Results of the research.** The practical acceptability of the suggested model of budget expenditure planning has been tested by way of empirical research. The anticipated controlled parameters of the basic components of the model – integrated multiple-criteria evaluation of budget programmes and inter-budgetary reallocation – make the model a flexible and easily adaptable one under different conditions.



The formulated principles of organisation of an integrated budget database and specified requirements for a decision support system incorporating elements of expert review, multiple-criteria evaluation, individual and group decision-making support as well as negotiations create preconditions for the application of the proposed model in the field of modern information technologies and hence provision of a new stimulus for the implementation of modern public administration.

**Approval and publication of results.** Results of the conducted research are presented in 11 scientific publications, of which 9 are included in reviewed periodical scientific editions. The author of the thesis has prepared and delivered 5 reports on the topic of the present research at the scientific conferences organised at the university level. The results of the research are being gradually implemented in practice through revision of the legal acts regulating the administration of state and municipal budgets.

**Scope of the scientific work.** The thesis consists of an introduction, four discussion parts, conclusions and proposals. The work contains 37 pictures, 14 tables and 18 annexes as well as has made use of 198 sources of literature.

## **2. Preconditions for reforms of budget expenditure management**

This part focuses on the following aspects of the research: role of a budget, principles of budget expenditure planning and planning practice, directions of improvement of budget expenditure planning. These aspects have been considered within the framework of the budget reforms carried out in various countries over the past two decades.

A consideration of directions of the development of the budget reforms has established that at the current stage of a political and economic development, the administration of state expenditure as implemented through budgeting and implementation of the budget covers the following three problem areas: aiming at fiscal consistency, rational allocation of financial resources, and efficient use of the financial resources. All the three problem areas are closely interrelated. The absence of fiscal management invalidates the setting of strategic goals, without them the tasks of rational allocation of limited resources may become meaningless, and no preconditions for the efficient use of the resources would exist in the absence of allocation as a reference point of planning. Moreover, the goals of fiscal management cannot be achieved unless the tasks of other two problem areas are implemented. Nevertheless, the key question within the framework of these problem areas is that of a way of achieving a greater validity in the allocation of financial resources when budgeting. A search for a

reply to it is presented in the form of a complex of the tasks viewed as priority ones.

### **3. Integrated evaluation of budget programmes**

Upon generalising the budgeting reforms as carried out by various countries as well as the theoretical research conducted in this field, a conclusion was drawn that a programmatic method is the most appropriate and having the greatest potential in terms of the allocation of financial resources of a state. On the other hand, ensuring of the validity and objectivity of allocation of financial resources for budget programmes requires a complex evaluation of the programmes.

Investigation of characteristics of budget programmes according to a number of classification features (budget level, stage of functioning of a programme, functions of a state, nature of the programme's goals, time span of the programme, definiteness of the programme, innovativeness of the programme) and the practice-driven preconditions for benchmarking of the programmes as the basic principle of evaluation has allowed to attribute evaluation of the budget programmes to the category of complex multiple-criteria tasks. In order to solve such a task, two target models have been developed: one model for the evaluation of new programmes, and another one – for the evaluation of continued programmes. The models take account of peculiarities of the new and continued budget programmes.

The set of the complex evaluation criterion has been divided into three subsets of the elements similar to each other from the point of view of meaning: relevance, efficiency and suitability. The vector of the criterion of expedience should consist of the following principal partial criteria:

- 1) compliance of a programme with the goals of a state;
- 2) compliance of the programme with programmatic documents of the government;
- 3) compliance of the programme with the mission and goals of an institution;
- 4) ratio of the potential of the programme's supporters to that of its opponents;
- 5) possibility of alternative ways of attaining the programme's goals.

Itemisation of the list's criteria is possible in two ways: by dividing all or only certain local criteria into several criteria of the same level or by dividing them into criteria of a lower level, i.e., by forming the vector of a local criterion.

Evaluation of the efficiency of programmes provides for the following partial criteria:

- 1) per unit expenditure;
- 2) productivity of expenditure;
- 3) value of expenditure.

When evaluating programmes according to these criteria, discounted amounts of both effect and expenditure should be used. Moreover, for the purposes of ensuring the comparability of the programmes, the indicators of unit costs, productivity of expenditure and value of expenditure should be calculated for the entire cycle of functioning of a programme, i.e., for a time period from the commencement of implementation of the programme until it ceases to bring benefit.

Evaluation of suitability of new budget programmes is rather of testing nature (assessment of the quality of preparation of the programmes). The suitability evaluation criterion has been itemised by means of identifying the following partial criteria:

- 1) compliance of a programme with legal acts;
- 2) purity of the programme;
- 3) logic of the programme's structure;
- 4) validity of the programme.

The value of the programme's complex evaluation criterion ( $V$ ) is calculated according to values of partial criteria ( $v_i$ ) taking account of the importance of criteria ( $\tau_i$ ) and probabilities of achieving the efficiency indicators ( $p_i$ ):

$$V = \tau_1 \sum_{i=1}^n \tau_{1i} v_{1i} + \tau_2 \sum_{i=1}^n \tau_{2i} p_{2i} v_{2i} + \tau_3 \sum_{i=1}^n \tau_{3i} v_{3i}. \quad (1)$$

This basic model of multiple-criteria evaluation of new budget programmes has been itemised in light of the potential variety of the programmes, and appropriate alternatives of the evaluation algorithm have been prepared.

Taking into consideration the peculiarities of continued budget programmes, a model of multiple-criteria evaluation of the efficiency of their implementation has been developed. It comprises an analysis of two stages of a different content: the first stage involves a situation analysis of implementation of a programme, while the second – a benchmarking (multiple-criteria) analysis of efficiency.

In general terms, the essence of a situational analysis lies in determination of the degree of a programme's implementation by identifying the implemented elements of the programme (tasks, measures of implementation of the tasks) and calculating the actual expenditure on implementation of the programme per each implemented element of the programme.

The essence of the multiple-criteria analysis of evaluation of the efficiency of a programme's implementation is to compare the actual and planned indicators of the implemented programme elements (tasks, measures of implementation of the tasks) and to identify the differences existing between them. The content of the multiple-criteria analysis is determined by the nature of evaluation of efficiency (from the perspective of the purpose of its results) and can be twofold: autonomous evaluation of efficiency of a programme's implementation or inter-programme benchmarking of efficiency.

In respect of an autonomous evaluation of the efficiency of a programme's implementation, benchmarking of indicators of both implementation results and expenditure for elements of the programme (tasks, measures) is recommended. The present thesis compiles a list of recommended criteria and presents their formalised representations as well as algorithms of their reduction taking into consideration the life cycle of a task.

With regard to inter-programme benchmarking of efficiency, a relative integrated criterion ( $E$ ) summing up the value of partial criteria for the evaluation of efficiency of the implemented programme elements has been proposed. Its formalised representation is as follows:

$$E = \left( \sum_{j=1}^n \frac{\sum_{i=1}^m \lambda r_{ji}}{m} \right) \frac{1}{n}, \quad (2)$$

where:  $\lambda r$  – ratio of productivity of actual to planned expenditure for measures of a task;  $i$  – index of a measure of the task,  $j$  – index of the programme's task.

The thesis considers the application conditions of models of multiple-criteria evaluation of the proposed budget programmes: methods of determination of the importance of evaluation criteria, value normalisation procedures in respect of different-content criteria, discount peculiarities of the expenditure and results of programme implementation taking into consideration the phase of the programme implementation cycle.

The proposed methods of multiple-criteria evaluation of budget programmes have been applied to carry out non one-time test calculations of a

different scope. Their essence lies in the evaluation of the budget programmes according to a variety of criteria by calculating integrated values of partial criteria and the complex criterion and in benchmarking of the programmes and their ranking according to the values of the complex evaluation criterion.

#### **4. Increase of validity of inter-budgetary allocation of funds**

The thesis views the inter-budgetary allocation of funds as a measure of equalisation of social and economic disparities with a view to attaining the following goals: 1) to compensate for the external effects arising due to the fact that a part of administrative territorial units gain benefit from the activities of other administrative territorial units; 2) to equalise the revenues of a lower-level budget; 3) to eliminate the obstacles posed by shortcomings of a tax system to a sustainable social and economic development of the administrative units of the territory of a state. In searching for a greater efficiency in attaining these goals, i.e., to increase the validity of reallocation of budget funds, an analysis of the practice of Lithuanian and foreign states in this field, legal regulation, and the models used for this purposes has been conducted. Moreover, the latest theoretical works of this field have been considered. A conclusion has been made that the main controlled parameters which may be modified when reallocating the budget funds are the following:

- 1) coefficient of equalisation, whose value determines the level by which horizontal disparities in revenues and expenditure are reduced;
- 2) composition of the indicators determining municipal expenditure and relative importance of these indicators;
- 3) criteria of reallocation of funds.

When reallocating the budget funds allocated for equalisation of disparities in municipal revenues from personal income tax and related expenditure, the actual indicators of revenues and expenditure are applied in practice. Taking account of the active role of a state in respect of social and economic development, i.e., with a view to achieving a harmonious development of a country, it is suggested to replace the criterion of actual state equalisation with the one focusing on desired states. These decisions have been incorporated into the proposed models of inter-budgetary reallocation of funds. Their representation is as follows:

$$L_i^m = \left[ \alpha G_i + (1 - \alpha) G_i' \right] \left[ \alpha (h\bar{p} - \bar{p}_i) + (1 + \alpha)(h\bar{p} - \bar{p}_i') \right] - D_i^m, \quad (3)$$

$$L_i^v = P^v \left[ \alpha \sum_e r_e \frac{R_{ei}}{\sum_i R_{ei}} + (1-\alpha) \sum_e r'_e \frac{R'_{ei}}{\sum_i R'_{ei}} \right], \quad (4)$$

where:  $L^m$  – the funds allocated for equalisation of disparities in municipal revenues from personal income tax;  $L^v$  – the funds allocated for equalisation of changes in the expenditure structure by a municipality;  $\alpha$  – relative importance of an actual state;  $G_i$  – number of residents in the municipality;  $\bar{p}$  – average revenues from personal income tax per one resident;  $h$  – importance of equalisation of disparities;  $D^m$  – a gross grant from the state budget allocated for equalisation of municipal revenues from personal income tax;  $P^v$  – threshold amount of the funds allocated for equalisation of disparities in the municipal expenditure structure;  $R$  – value of the indicator determining the structure of municipal budget expenditure;  $r$  – importance of the indicator;  $i$  – index of a municipality;  $e$  – index of the indicator; the symbol “'” marks the characteristics of a desired state.

For the purpose of verifying the proposed decisions on inter-budgetary reallocation of funds, the following empirical research has been conducted:

- 1) modelling of equalisation of disparities in municipal taxation revenues (from personal income tax);
- 2) modelling of equalisation of disparities in municipal expenditure;
- 3) modelling of equalisation of municipal taxation revenues through application of different equalisation principles;
- 4) testing of importance of the indicators determining municipal expenditure.

Empirical research enabled to establish the following main patterns:

1. According to all modelled alternatives ( $\alpha = 0,75$ ;  $\alpha = 0,5$ ;  $\alpha = 0,25$ ;  $\alpha = 0,1$ ;  $\alpha = 0$ ), values of the average of deviations from the basic alternative ( $\alpha = 1$ ) in respect of the amount of the funds allocated to municipalities for the equalisation of revenues from personal income tax are rather small by the absolute value, although the limit value, as compared to the average, differs by 0,98, while deviation variance – by 2,2 times (is larger). The values of deviation ranges clearly indicate that a reduction of the importance of an actual state (which is equivalent to a proportionate increase of the importance of a desired state) results in a considerable difference between the largest and the smallest values of deviation and also dispersion of the values. Taken according

individual municipalities, deviations of values of the alternatives which are similar according to the actual state importance coefficient differ to a considerably smaller extent.

2. The calculated structural coefficients of municipal actual and desired state expenditure differ to a considerable extent and indicate a large dispersion of deviation between the modelled and the basic alternatives by section of municipalities, which makes up considerable amounts for municipalities, and taking into consideration the number of municipalities – also for the state budget. An analysis of modelled alternatives of equalisation of disparities of municipal taxation revenue (from personal income tax) and expenditure has confirmed the raised hypothesis of a gradual transition from focusing on actual states to focusing on desired states when reallocating funds of the state budget to municipal budgets.

3. The dispersion of values of municipal revenues from personal income tax after equalisation is evidently smaller in the case of application of the principle of equally diminished amount as compared with the analogous indicators obtained when applying the principle of proportionate deviation. With the increase of the importance of a desired state, the dispersion of values is increasing at a greater rate when the principle of equally diminished amount is applied for calculations, as compared with the principle of proportionate deviation.

4. Out of eight indicators determining municipal expenditure, the statutorily established importance of as few as three indicators (length of local roads and streets, area of a territory, area of territorial development) approximately corresponds to the data obtained during research, while those of others are considerably different. This is confirmed by the raised hypothesis regarding the permanent nature of research on importance of the indicators determining municipal expenditure.

## **5. Preconditions for implementation of the proposed models**

The proposed complex of models of budget expenditure planning is intended for application in the field of database and intellectual support systems. A model of the required database has been developed. Its structure is based on the established patterns of characteristics of information objects. A variety of characteristics unified in such a manner creates preconditions for making use of a typical software of database control systems, and in a more general context – for increasing the efficiency of provision with information. The thesis establishes the principles of formation, updating and use of the proposed database and proposes a scheme of transition from the current

autonomous provision of institutions with information to a common integrated database. The following four unique-content stages of database integration, namely, pre-project analysis; benchmarking analysis; co-ordination, and consolidation, have been identified, and the content of each stage has been itemised.

The identified features of functional tasks of budget planning have enabled, by underlining the nature of relations between participants, to specify peculiarities of the intellectual support need in the case of each task within a decision support system. The need for intellectual support established according to its nature was used for the formulation of requirements for an integrated budget decision support system, i.e., when specifying the objects and content of support. This served as a basis for preparation of specifications of components of the decision support system, i.e., expert, individual decision-making, group decision-making and negotiations support specifications. A module-type structure of a decision support system has been selected displaying an advantage from the following perspectives: economic effect due to replication of modules at a variety of institutions, inter-institutional compatibility at the national level, due to favourable preconditions for the development of the system in respect of both expansion of a list of the tasks being solved and improvement of the applicable decision-making methods.

## **6. Main conclusions and recommendations**

1. The national budget is the principal means of regulation of not only a country's economic development, but also, in a broader sense, of development of its society. The budget as a means of governance is attributed the following roles: reallocation of revenues, social support, economic development, stabilisation of economy, control, and information of the public. These hypothetic provisions are confirmed by the conducted empirical research of the Lithuanian national budget.

2. At the current stage of political and economic development, the most pressing problem in the field of management of state expenditure is allocation of financial resources in light of the established strategic priorities of a state and the guidelines of its fiscal policy. Rational allocation of financial resources is among the principal tasks of state governance and is treated in the present thesis as a means of implementing state priorities on the basis of programmatic documents, promoting activities in certain fields taking account of the efficiency of use of funds, and reallocating financial resources according to the changing external and internal factors. From the technological perspective,



allocation of resources is viewed as an iterative process carried out by sections of appropriation managers, institutions, programmes, goals and tasks.

3. Proposals for increase of the validity and objectivity of budget expenditure allocation are based on the following principles: programme planning, integrated multiple-criteria evaluation, transition of horizontal equalisation of disparities in revenues and expenditure from actual states towards desired states, adaptation of models by applying controlled parameters, organisation of an integrated database, and application of intellectual decision support. Application of these principles permitted to develop the basic methods of budget expenditure planning, namely, methods of complex evaluation of new and continued programmes as well as inter-budgetary reallocation of funds.

4. The developed model of complex evaluation of new budget programmes (draft programmes) consists of four evaluation components: programme relevance, programme efficiency, programme suitability and a synthesis of these evaluations by calculating an integrated complex evaluation indicator. Such an evaluation creates preconditions for the quantitative benchmarking of programmes and also increase of objectivity of decision-making.

5. The developed model of evaluation of continued budget programmes has been divided into two stages, namely, that of a situation analysis and of a comparative analysis. The situation analysis stage establishes the implemented part of a programme, whereas the comparative analysis stage compares the actual and planned indicators of the efficiency of implementation of the programme by calculating a relative integrated indicator of efficiency. Taking into account practical needs, two modifications of the model have been developed: for the purposes of evaluation of autonomous efficiency of programme implementation and of inter-programme benchmarking of efficiency. This facilitates adaptation of the model to current conditions and reduces non-productive labour costs when carrying out a multiple-criteria analysis of the efficiency of implementation of the programmes.

6. The practical acceptability of models of multiple-criteria evaluation of budget programmes has been verified by test calculations. Certain patterns established during an experiment (a change in the importance of local criteria within the limits of the confidence interval is not of a major effect; the criterion of programme relevance is more sensitive to changes in the importance of partial criteria than the criterion of programme suitability; changes in the importance of local criteria of relevance have a twofold greater effect on values of the programme complex evaluation criterion than respective changes in the importance of local criteria of suitability) may be employed for goal-oriented management of a multiple-criteria evaluation model as the underlying component of a budget decision support system.

7. The key controlled parameters of inter-budgetary reallocation of funds have been identified to be as follows: coefficient of equalisation, its value specifies the level by which horizontal disparities in revenues and expenditure are reduced; a set of the indicators determining municipal expenditure and importance of these indicators; criteria of reallocation of funds. Two innovative elements of the developed model of inter-budgetary reallocation of funds, namely, transition of horizontal equalisation from equalisation of disparities in actual states to those in desired states and basing of the content of controlled parameters and their values on the results of quantitative research, increase the validity and objectivity of decision-making. Empirical research of the developed model of inter-budgetary reallocation of funds has confirmed the raised hypotheses regarding the need for permanent research on importance of the indicators determining municipal expenditure and the content of the proposed coefficient of equalisation.

8. Taking into account the broad scope of information, an integrated database is proposed as one of the principal conditions of implementation of the developed models. A model of such a database has been developed, and the principles of its formation, updating and use have been specified. Transition from the current autonomous provision of institutions with information to a common integrated database is viewed as a four-stage process: pre-project analysis, benchmarking analysis, co-ordination, and consolidation. Such an organisation of information provision would ensure the required reliability and speediness of evaluation of budget programmes as well as a smooth budgeting process.

9. The proposed complex of models is intended for application in the field of intellectual support systems. To this end, the thesis formulates the requirements set forth for each component of a decision support system and prepares expert, individual decision-making and group decision-making as well as negotiations support specifications in line with functional tasks. The established patterns of support according to its nature and objects of support have enabled to identify the structure of an integrated budget decision support system. Taking into account the iterations dominant according to both mentioned features, priority has been given to a module-type system structure displaying an advantage from the following perspectives: economic effect due to replication of modules at various institutions, inter-institutional compatibility at the national level, due to favourable preconditions for the development of the system in respect of both expansion of a list of the tasks being solved and improvement of the applicable decision-making methods.

## **Publications on the topic of the dissertation**

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### **About the author**

Algirdas Butkevičius was born on 19 November 1958 in the village of Paežeriai of Radviliškio District. In 1984, he acquired the qualification of an engineer and economist (at Vilnius Civil Engineering Institute), in 1991 – the qualification of a technical manager (at the Lithuanian Academy of

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## **NACIONALINIO BIUDŽETO IŠLAIDŲ PLANAVIMO PAGRĮSTUMO DIDINIMAS**

**Disertacinio darbo aktualumas.** Visos valstybės, nepaisant jų dydžio, politinės sandaros, ekonominės galios ir kitų savybių, atlieka tam tikras funkcijas. Suprantama, tam reikia lėšų. Jų poreikio dydį lemia daugybė veiksnių, kurių dalis yra objektyvūs (valstybės dydis, vykdomų funkcijų mastas, ekonominė galia ir kt.), kita – subjektyvūs (lėšų poreikio skaičiavimo metodai, teisės normos, institucijų sprendimai ir pan.).

Tipinis bruožas yra tas, kad visose šalyse valstybės lėšos skirstomos sudarant biudžetus (valstybės, savivaldybių, nacionalinį, socialinio draudimo ir kitokius). Sudarant biudžetus, kas tolygu lėšų paskirstymui, dalyvauja daug įvairaus rango institucijų. Vienos institucijos rengia biudžetų projektus, kitos parengtus projektus nagrinėja, tikslina, trečios juos tvirtina. Valstybės ir savivaldybių institucijų parengtus projektus priimant kaip įstatymą valstybės lėšų paskirstymas priklauso tiek nuo vykdomosios, tiek nuo įstatymų leidžiamosios valdžios institucijų sprendimų.

Kiek tokie sprendimai objektyvūs ir pagrįsti? Klausimas, į kurį atsakyti nėra lengva. Sprendimų objektyvumą didinantis veiksnys yra daug proceso dalyvių. Kiekvienas jų turi tam tikras vertybines nuostatas, skirtingą kvalifikaciją, interesus ir t. t. Kuo jie skirtingesni, tuo didesnės prielaidos, kad bus objektyvu.

Metodiniu požiūriu biudžetų sudarymo praktika pasaulio šalyse nevienoda – taikomi įvairūs metodiniai principai ir jų deriniai. Praktikai ir teoretikai nuolat juos tobulina, ieško tinkamesnių, leidžiančių pagrįsčiau paskirstyti valstybės lėšas. Atsižvelgiant į skirstomų lėšų mastą, kiekvienas, nors ir menkas, žingsnelis pagrįstumo didinimo kryptimi yra labai reikšmingas. Tai ir lemia neabejotiną tokių tyrimų aktualumą.

**Mokslinė problema.** Aktyvios praėjusio šimtmečio antros pusės biudžeto valdymo reformos tiesiogiai siejamos su šios srities teoriniais darbais. Viena,

keliami vis didesni reikalavimai efektyviau naudoti valstybės finansinius išteklius skatino tiriamuosius, ypač taikomojo pobūdžio darbus, kita vertus, sukurtas teorinis metodinis potencialas leido spręsti praktines problemas. Apibendrinant įvairiuose šaltiniuose paskelbtą nagrinėjamos srities teorinį metodinį potencialą, tenka konstatuoti, kad jis nėra pakankamas šiandienos iššūkių kontekste keliamiems reikalavimams dėl valstybės finansinių išteklių naudojimo. Valstybės finansinių išteklių, kurie sudaro gana nemažą sukuriama nacionalinio produkto dalį, naudojimo efektyvumo didinimas reikalauja adekvačių laikmečiui metodinių, technologinių ir vadybos priemonių. Tai ir lemia šios srities nuolatinių tyrimų būtinybę, naujų pažangesnių sprendimų poreikį taikant sukurtą teorinį potencialą ir panaudojant sukauptą praktinę patirtį.

**Tyrimo objektas** – šalies biudžeto išlaidų planavimas nagrinėtas sistemų teorijos požiūriu, interpretuojant jį kaip aukštesnės sistemos (valstybės finansinių išteklių valdymo) posistemę, turinčią sudėtingoms sistemoms būdingus bruožus. Sisteminis traktavimas taikytas struktūrizuojant tyrimo objektą – išskirti biudžeto išlaidų planavimo uždaviniai nagrinėjami bendroje aplinkoje su jų tarpusavio ryšiais.

**Tyrimo tikslas** – sukurti šalies biudžeto išlaidų planavimo modelį, sudarantį prielaidas jo vartotojams, dirbantiems pažangių informacinių technologijų terpėje, kiekybiškai pagrįsti planinius sprendimus.

**Tyrimo uždaviniai:**

- 1) išanalizuoti šalies biudžeto vaidmenį, išryškinti jo išlaidų struktūros įtaką valstybės socialinei ir ekonominei plėtrai;
- 2) išnagrinėti Lietuvos nacionalinio biudžeto teisinį reglamentavimą ir biudžeto išlaidų planavimo praktiką;
- 3) išnagrinėti šalies biudžeto ir jo sudėtinių dalių išlaidų planavimo teorinius modelius bei metodinį potencialą, nustatyti biudžeto išlaidų planavimo pagrįstumo didinimo aktualumą;
- 4) parengti naujų ir tęstinių biudžeto programų kompleksinio vertinimo metodus, patikrinti jų praktinį priimtinumą;
- 5) parengti objektyvaus tarpbiudžetinio lėšų perskirstymo metodus, patikrinti juos empirinio modeliavimo būdu;
- 6) nustatyti siūlomų šalies biudžeto planavimo metodų ir modelių efektyvaus taikymo reikalavimus informacinėms technologijoms;
- 7) parengti siūlomų metodų ir modelių efektyviam taikymui reikalingos duomenų bazės ir sprendimų paramos sistemos principines nuostatas.

**Tyrimo metodai.** Atliekant tyrimą taikyta analitinio ir empirinio tyrimo metodologija bei sintezės, analogijos, lyginimo ir loginės abstrakcijos metodai.

Integruotas biudžeto programų vertinimas grindžiamas daugiakriterinio vertinimo metodais. Juos taikant atlikti empiriniai daugiakriteriniai programų vertinimai, kuriuose kriterijų reikšmingumai nustatomi ekspertinių vertinimų metodu. Atliekant empirinius tarpbiudžetinio lėšų perskirstymo tyrimus, sprendimų paieškai taikyta jautrumo analizė, priežastiniai ryšiai kiekybiškai įvertinti koreliacinės regresinės analizės metodu.

Siūloma šalies biudžeto išlaidų planavimo pagrįstumo didinimo koncepcija grindžiama biudžeto teorijos principais, įvairių metodų ir modelių integruotos visumos sinergijos efektu.

**Mokslinis naujumas.** Kintančių reikalavimų viešajam valdymui kontekste darbe įvertintos įvairių šalių vykdytos ir vykdomos biudžeto reformos, nustatytos biudžeto išlaidų planavimo tobulinimo tendencijos ir suformuotos iš esmės savitos biudžeto išlaidų planavimo metodinės nuostatos. Pasiūlytas originalus biudžeto išlaidų planavimo modelis, aprėpiantis visą planavimo darbų ciklą, kurio komponentų ryšiai ir sprendimų parengimas bei priėmimas grindžiami integruota duomenų baze, orientuojantis į vartotoją, dirbančių sprendimų paramos sistemos terpėje.

**Praktiniai tyrimo rezultatai.** Siūlomo biudžeto išlaidų planavimo modelio praktinis priimtumas patikrintas empiriniais tyrimais. Numatyti valdomi modelio bazinių komponentų – biudžeto programų integruoto daugiakriterinio vertinimo ir tarpbiudžetinio lėšų perskirstymo – parametrai daro modelį lankstų ir pritaikomą įvairioms sąlygoms.

Suformuoti integruotos biudžeto duomenų bazės organizavimo principai ir specifikuoti reikalavimai sprendimų paramos sistemai, kurioje įkomponuoti ekspertinio vertinimo, daugiakriterinio vertinimo, individualių ir grupinių sprendimų paramos bei derybų blokai, sudaro prielaidas taikyti siūlomą modelį šiuolaikinių informacinių technologijų terpėje ir taip suteikti naują impulsą įgyvendinti modernų viešąjį valdymą.

**Tyrimo rezultatų aprobavimas ir skelbimas.** Atliktų tyrimų rezultatai pateikti 11 mokslinių publikacijų, iš kurių 9 yra recenzuojamuose periodiniuose mokslo leidiniuose. Tyrimo tematika parengti ir perskaityti 5 pranešimai universitetų organizuotose mokslinėse konferencijose. Darbo rezultatai palaipsniui įgyvendinami tikslinami valstybės ir savivaldybių biudžetų valdymą reglamentuojančius teisės aktus.

**Darbo struktūra.** Darbą sudaro įvadas, keturios probleminės dalys, išvados ir pasiūlymai. Darbe yra 37 paveikslai, 14 lentelių ir 18 priedų. Naudotasi 198 literatūros šaltiniai.

Pirmoje dalyje išanalizuotas valstybės biudžeto vaidmuo, išryškinta jo išlaidų struktūros įtaka valstybės socialinei ir ekonominei plėtrai, išnagrinėtas Lietuvos nacionalinio biudžeto teisinis reglamentavimas ir biudžeto išlaidų

planavimo praktika, taip pat mokslinėje literatūroje pateikiami biudžeto ir jo sudėtinių dalių planavimo modeliai ir metodai. Antroje dalyje aprašyti parengti biudžeto programų daugiakriterinio vertinimo modeliai bei jų praktinio priimtimumo patikrinimo empirinių tyrimų rezultatai. Naujų biudžeto programų (programų projektų) daugiakriterinio vertinimo modelis sudarytas iš keturių vertinimo komponentų: programų tikslingumo, programų efektyvumo, programų tinkamumo ir šių vertinimų sintezės, apskaičiuojant integruotą vertinimo rodiklį. Tęstinių biudžeto programų vertinimo modelį sudaro du komponentai: situacinės ir lyginamosios analizės. Pastarojo parengtos dvi modifikacijos: autonomiškam programų įgyvendinimo efektyvumui vertinti ir tarpprograminiam efektyvumui lyginti. Trečioje dalyje aprašytas parengtas tarpbiudžetinio lėšų perskirstymo modelis ir eksperimento jį taikant rezultatai. Du inovatyvūs šio modelio elementai – horizontaliojo išlyginimo perorientavimas nuo faktinių prie pageidautinų būklių skirtumo išlyginimo ir valdomų parametrų sudėties bei jų reikšmių permanentinis pagrindimas kiekybinių tyrimų rezultatais – padidina sprendimų pagrįstumą ir objektyvumą. Ketvirtoje dalyje aprašytos siūlomo biudžeto išlaidų planavimo modelių komplekso įgyvendinimo prielaidos. Parengtas reikalingos duomenų bazės modelis, nustatyti siūlomos duomenų bazės formavimo, aktualizavimo ir naudojimo principai. Parengtos visų sprendimų paramos sistemos komponentų (ekspertinės, individualių sprendimų, grupinių sprendimų, derybų paramos) specifikacijos.

### ***Svarbiausios darbo išvados ir rekomendacijos***

1. Nacionalinis biudžetas yra svarbiausia ne tik šalies ūkio plėtros, bet ir plačiau – visuomenės raidos reguliavimo priemonė. Biudžetui, kaip valdymo priemonei, priskiriami tokie vaidmenys: pajamų perskirstymo, socialinio aprūpinimo, ūkio plėtros, ekonomikos stabilizavimo, kontrolės, visuomenės informavimo. Šios hipotezinės nuostatos patvirtintos atliktais Lietuvos nacionalinio biudžeto empiriniais tyrimais.

2. Dabartiniame politinės ir ekonominės raidos etape valstybės išlaidų valdymo srityje opiausia problema yra finansinių išteklių paskirstymas atsižvelgiant į nustatytus valstybės strateginius prioritetus ir fiskalinės politikos gaires. Racionalus finansinių išteklių paskirstymas yra vienas iš svarbiausių valstybės valdymo uždavinių, darbe traktuojamas kaip priemonė įgyvendinti valstybės prioritetus vadovaujantis programiniais dokumentais, suaktyvinti tam tikrų sričių veiklą atsižvelgiant į lėšų panaudojimo efektyvumą, perskirstyti finansinius išteklius atsižvelgiant į besikeičiančius aplinkos ir vidaus veiksnius. Technologiniu požiūriu išteklių paskirstymas traktuojamas kaip iteracinis procesas, atliekamas asignavimų valdytojų, įstaigų, programų, tikslų ir uždavinių pjūviais.

3. Pasiūlymai biudžeto išlaidų paskirstymo pagrįstumui ir objektyvumui didinti grindžiami tokiais principais: programinio planavimo, daugiakriterinio integruoto vertinimo, horizontaliojo pajamų ir išlaidų skirtumų išlyginimo perorientavimo nuo faktinių prie pageidautinų būklių, modelių adaptacijos taikant valdomus parametrus, integruotos duomenų bazės organizavimo, intelektinės sprendimų paramos taikymo. Taikant šiuos principus parengti baziniai biudžeto išlaidų planavimo – naujų ir tęstinių programų kompleksinio vertinimo bei tarpbiudžetinio lėšų perskirstymo metodai.

4. Parengtas naujų biudžeto programų (programų projektų) kompleksinio vertinimo modelis sudarytas iš keturių vertinimo komponentų: programų tikslingumo, programų efektyvumo, programų tinkamumo ir šių vertinimų sintezės, apskaičiuojant integruotą kompleksinį vertinimo rodiklį. Toks vertinimas sudaro prielaidas kiekybiniam programų palyginimui ir kartu sprendimų objektyvumui padidinti.

5. Parengtas tęstinių biudžeto programų vertinimo modelis išskaidytas į du etapus: situacinės analizės ir lyginamosios analizės. Situacinės analizės etape nustatoma įgyvendinta programos dalis, o lyginamosios analizės etape lyginami faktiniai ir planiniai programos įgyvendinimo efektyvumo rodikliai, apskaičiuojant santykinį integruotą efektyvumo rodiklį. Atsižvelgiant į praktikos reikmes, parengtos dvi modelio modifikacijos: autonomiškam programų įgyvendinimo efektyvumui vertinti ir tarpprograminiam efektyvumui lyginti. Tai supaprastina modelio adaptavimą susiklosčiusioms sąlygoms ir sumažina neproduktyvias darbo sąnaudas atliekant programų įgyvendinimo efektyvumo daugiakriterinę analizę.

6. Biudžeto programų daugiakriterinio vertinimo modelių praktinis priimtumas patikrintas eksperimentiniais skaičiavimais. Tam tikri eksperimento metu nustatyti dėsningumai – lokalinių kriterijų reikšmingumų keitimas pasikliautojo intervalo ribose esminės įtakos neturi, programų tikslingumo kriterijus jautriau reaguoja į dalinių kriterijų reikšmingumo pokyčius negu programų tinkamumo kriterijus. Programų kompleksinio vertinimo kriterijaus reikšmės lokalinių tikslingumo kriterijų reikšmingumo pokyčiai turi apie du kartus didesnę įtaką negu atitinkami lokalinių tinkamumo kriterijų reikšmingumo pokyčiai – gali būti panaudoti kryptingai valdant daugiakriterinio vertinimo modelį, kaip biudžeto sprendimų paramos sistemos bazinį komponentą.

7. Nustatyta, kad svarbiausi tarpbiudžetinio lėšų perskirstymo valdomi parametrai yra: išlyginimo koeficientas, jo reikšmė nustato lygį, kuriuo sumažinami horizontalūs pajamų ir išlaidų skirtumai; savivaldybių išlaidas lemiančių rodiklių rinkinys ir šių rodiklių reikšmingumas; lėšų perskirstymo kriterijai. Du inovatyvūs parengto tarpbiudžetinio lėšų perskirstymo modelio



elementai – horizontaliojo išlyginimo perorientavimas nuo faktinių prie pageidautinų būklių skirtumų išlyginimo ir valdomų parametru sudėties ir jų reikšmių pagrindimas kiekybinių tyrimų rezultatais – padidina sprendimų pagrįstumą ir objektyvumą. Empiriniai parengto tarpbiudžetinio lėšų perskirstymo modelio tyrimai patvirtino iškeltas hipotezes dėl savivaldybių išlaidas lemiančių rodiklių reikšmingumo permanentinių tyrimų poreikio ir dėl siūlomo išlyginimo koeficiento turinio.

8. Atsižvelgiant į didelį informacijos mastą, kaip viena iš kertinių parengtų modelių įgyvendinimo sąlygų, siūloma integruota duomenų bazė. Parengtas tokios duomenų bazės modelis, nustatyti jos formavimo, aktualizavimo ir naudojimo principai. Perėjimas nuo dabartinio autonomiško institucijų informacinio aprūpinimo prie bendros integruotos duomenų bazės traktuojamas kaip keturių etapų procesas: ikiprojektinė analizė, lyginamoji analizė, suderinimas, apjungimas. Toks informacinio aprūpinimo organizavimas užtikrintų reikiamą biudžeto programų vertinimo patikimumą ir operatyvumą bei sklandų biudžeto formavimo procesą.

9. Siūlomas modelių kompleksas orientuotas taikyti intelektinės paramos sistemų terpėje. Tam suformuoti reikalavimai, keliami kiekvienam sprendimų paramos sistemos komponentui, pagal funkcinius uždavinius parengtos ekspertinės, individualių sprendimų, grupinių sprendimų ir derybų paramos specifikacijos. Nustatyti paramos pagal jos pobūdį ir paramos objektų dėsningumai leido apsispręsti dėl integruotos biudžeto sprendimų paramos sistemos struktūros. Atsižvelgiant į pagal abu minėtus požymius dominuojančius pasikartojimus, pasirinkta modulinė sistemos struktūra, kuri turi pranašumą tokiais aspektais: ekonominio efekto dėl modulių tiražavimo įvairiose institucijose, tarpinstitucinio suderinamumo šalies mastu, dėl palankių prielaidų sistemos plėtrai tiek sprendžiamų uždavinių sąrašo didinimo, tiek taikomų sprendimo metodų tobulinimo požiūriais.

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**INCREASE OF VALIDITY OF THE NATIONAL BUDGET  
EXPENDITURE PLANNING**

**Summary of Doctoral Dissertation  
Social Sciences, Economics (04S)**

**Algirdas Butkevičius**

**NACIONALINIO BIUDŽETO IŠLAIDŲ PLANAVIMO PAGRĮSTUMO  
DIDINIMAS**

**Daktaro disertacijos santrauka  
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