



# Research on Government Budget Efficiency: A Literature Review

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**Abstract.** This paper adopts the literature research method to systematically sort out and summarize the literature related to the efficiency of the Chinese government, and conducts a literature review in the order of the connotation of budgetary efficiency, the assessment of budgetary efficiency and the improvement of budgetary efficiency. It refines two analytical approaches of government budget efficiency; assessment method model and efficiency optimization path.

**Keywords:** government budget, efficiency, assessment methods

## 1 Introduction

In 2018, the Central Committee of the Communist Party of China and the State Council issued the Opinions on Comprehensively Implementing Budget Performance Management, which formed a top-level design for the comprehensive implementation of budget performance management in terms of the basic connotation, all-round management pattern, all-process management chain, and all-coverage management system, making it possible to enhance the efficiency of the government's budget with a law to be relied upon. However, from the perspective of practice in recent years, the Chinese government budget efficiency management related policies on the ground practice path is still not clear, the system foundation is still very weak, the efficiency evaluation results of how to enter into the management chain of the study is not enough, the service target orientation is not distinct. The current lack of quantitative research on budgetary efficiency quantitative research, and management science methods and techniques can promote the construction and development of macro policies and systems, budgetary efficiency research should be from the macro background to the micro background of the transition, but also a combination of macro and micro research methodology guide, the reform of the economic system and the combination of management science methodology can effectively promote the implementation of budgetary efficiency related systems, this paper is a comprehensive review of the literature in the field of budgetary efficiency management. This paper summarizes the literature in this field.

## 2 Connotation of Budgetary Efficiency

Efficiency is a reflection of the degree of transformation or utilization of resources from resource inputs to resource outputs, the use of resources associated with outputs, and the relationship between goods, services and other outputs associated with a planned level and the resources used to produce them.

There are two general types of analysis for budgetary efficiencies

One is to analyze the efficiency of each part of the budget from the budget content, and then collectively analyze the overall efficiency, such as Xu Jiu et al [1] according to the government budget, including the general public budget, government fund budget, state-owned capital operating budget and social insurance fund budget of the four parts of the established regulations, that the government budget payment efficiency can be by the general public budget payment efficiency, government fund budget payment efficiency, the state-owned capital operating budget payment efficiency and the social insurance fund budget payment efficiency of the four components of the pooled measurement.

Secondly, from the budgetary system, the general efficiency of providing public products includes configuration efficiency and operational efficiency, such as Sun Honghong et al [2] that configuration efficiency, i.e., the efficiency of resource allocation, through the rational allocation of a variety of resource inputs, to achieve the output maximization of a given combination of inputs, and the operational efficiency refers to the public sector under the established resource allocation, the public sector at the lowest possible cost to provide public products, which depends on the degree of effort of the organizational structure and the decision to make efforts, is the behavioral efficiency within the organization, the operational efficiency of the defense budget is mainly related to the military decision-making level and the behavior of the military budget execution unit. Cheng Guoqin [3] proposes that the analysis of budget efficiency is a continuous process of advancing, including not only the effectiveness of budget allocation, but also budget execution efficiency and final performance, and gives a clear definition of the efficiency of budget allocation, that is, how to optimally allocate budgetary funds between the types and quantities of public products and public services when the total amount of expenditure of the public budget is given. Tang Yanhua [4] believes that the budget efficiency evaluation should have the ability of closed-loop management, budget performance efficiency evaluation should be aimed at the whole process of budget implementation, including the funding plan, fund allocation, fund benefit return three different stages, to ensure that the efficiency evaluation of the use of funds with the project has a certain degree of continuity and tracking, to ensure that the results of the budget performance has a practical significance and catalyzes the optimization of budgetary efficiency. The budget performance efficiency evaluation index system should not only contain quantitative indicators for budget management of financial funds, but also developmental indicators of concern to all parties in the government, such as indicators of economic status, economic risks, and benefits, etc., so as to evaluate the results of the government's work from various dimensions.

### 3 Methodology for Assessing Budgetary Efficiency

In terms of budgetary efficiency assessment, the assessment methods have undergone a transformation from the "3E" evaluation method, cost-benefit analysis, balanced scorecard, volume cost-benefit analysis to semi-parametric analysis and data envelopment analysis. Current research on budgetary efficiency assessment mainly includes the DEA data envelopment method and its extension, the stochastic frontier analysis model, factor analysis, and so on.

Since its creation in the 1980s, the DEA method has been used by most researchers as a means of calculating government efficiency and public service efficiency, mainly because DEA's multi-input and multi-output evaluation method can meet the needs of all parties. Studies using DEA are mainly divided into two categories: first, horizontal comparison of the input and output efficiency of different decision-making units, such as the relative static efficiency based on the DEA method to analyze the performance budget of public financial expenditure projects proposed by Li Jiefa [5], which can be evaluated on a non-sustainable one-time investment project, or one year of a sustainable multi-year project. Secondly, the DEA efficiency of the same decision-making unit is compared vertically, such as Cao Min et al [6] used the BCC model of DEA to measure the fiscal expenditure efficiency of each province from 2000 to 2018, and used the double difference model to conduct a regression analysis to examine the impact of the budget performance management reform on the efficiency of fiscal expenditure.

Since the DEA method itself ignores the influence of random factors on efficiency, Cheng Wenhui [7] proposes a budget efficiency evaluation model for public cultural services based on the DEA three-stage model, describes the budget efficiency evaluation method for public cultural services based on the DEA three-stage model, establishes a performance indicator system in accordance with the performance causality of inputs, processes, outputs, outcomes and impacts, and distinguishes between the input-output and output-benefit levels for efficiency evaluation. efficiency evaluation at two levels, and at the same time proposes to adjust the scale of inputs and improve the budget efficiency by improving the pure technical efficiency level of input-output and output-benefit. In analyzing the influencing factors of budgetary efficiency, the most commonly used method is to combine DEA efficiency evaluation with Tobit regression equation to analyze the efficiency and influencing factors, such as Zhou Hui [8] adopts the most basic C2R model of DEA to analyze the supply efficiency of basic public services and combines it with the Tobit regression equation to analyze the influencing factors of the supply efficiency of basic public services. The above analysis based on DEA method is still in the analysis of static efficiency, Li Jinfa combines DEA with Malmquist index method, and proposes the dynamic efficiency analysis of persistent multi-year public expenditure projects, to provide reference and suggestions for the project performance budgeting decision-making and implementation departments, including the reform of the budget accounting system, the legal guarantee of performance budgeting, the construction of information technology platform, the performance budgeting management scientific methods and technologies, financial management and its related professional and technical talents and training.

Compared with the DEA method which only considers only the inefficiency factors, the parametric method SFA stochastic frontier distribution model also takes into account the impact of the random disturbance term, which is more in line with the reality, and Wang Liangqing [9] applies the C-D cost function model in the SFA model to establish the efficiency model of the local financial budget expenditures.

The data envelopment analysis methods mentioned above are usually used to calculate relative efficiency values, while the results of the stochastic frontier analysis methods are based on strict assumptions about the production function. The factor analysis method is able to reduce several indicators to several factors on the basis of the original several indicators without reducing the level of retained information, and reflect the main characteristics of the object system through the score of the factors. Wang Xingming [10] establishes corresponding indicators in the aspects of budget organization and management, budget preparation, approval and allocation, budget execution, etc., and adopts the R-type factor analysis method to rank and evaluate and analyze the related situation.

#### **4 Ways to Improve Budgetary Efficiency**

In the optimization of budget management, Bai Xi [11] believes that the optimization of the budget mechanism helps to improve the efficiency of the use of funds; the use of refined budget quantitative control mechanism is more conducive to the improvement of the efficiency of the use of funds by the budget management mechanism; compared with the incremental budget, the zero-base budget model is more conducive to the improvement of the efficiency of the use of funds. At the same time, in the allocation of funds should be strengthened in the budget management of the planning and quantitative control of the use of funds, in the budgeting should pay attention to the use of funds in the environment and the assessment of the expected output; on the other hand, the supervisory authorities should strengthen the supervision of financial management activities, and further refine the budget and the allocation of funds for the institutionalization of the construction. Shao Jing [12] and others believe that improving the level of budgetary control is mainly from the "static optimization" and "dynamic optimization" two latitudes. Static optimization includes "project feasibility study stage", "investment plan stage" and "preliminary estimate stage" three parts of the content, clear procedures and key matters at each stage, strengthen the project declaration and The scientific and rigorous nature of the proposed budget is strengthened. Dynamic optimization mainly includes budgeting, budget execution and adjustment, investment budget auxiliary analysis and assessment and evaluation modules. It further improves the scientificity and accuracy of the budget, further standardizes the budget preparation and reporting process, strengthens the overall budget control, and improves the informationization level of budget management.

In terms of the innovation of the budget system operation mechanism, Sun Honghong [13] and others found through game analysis that the establishment of the communication and incentive system between decision makers and budget execution units will help to improve the operational efficiency of the defense budget system.

Wu Junpei [14] and others design a budget incentive mechanism for efficiency by constructing a departmental budget performance management model under the condition of incomplete information, distinguishing between the three stages of preparation, decision-making, and implementation, and putting forward suggestions such as integrating project budgets, optimizing the setting of performance objectives, strengthening the coordination with departmental target management work, and constructing a mechanism of inter-departmental efficiency competition. Jiang Xuying [15] and others believe that the technical strategic innovation lies in the introduction of real induced budget, through the introduction of scientific incentive and constraint mechanisms, inducing the agent to consciously provide the budget base toward the principal's expected goals, so that the principal and the agent to reach the equilibrium of the game. The results of the study by Jung Hoyong [16] are in line with the hypothesis, that is, the budget transparency can improve the efficiency of the budget. The introduction of an online public budgeting system significantly reduces the amount of unused budget, realizes the budget principle, and ensures fiscal democracy. Meanwhile, Johansson-Berg Tobias [17] investigated the extent to which budgetary efficiency is perceived to be adjusted to change by the security of individual managers' psychological climate. The innovation of management strategy lies in the construction of scientific budget management feed-forward mechanism, in the stage of budget preparation, the budgeting policy as a benchmark for control, in the stage of budget execution, the use of rolling budget, the "feed-forward" and "feedback" combination.

## 5 Conclusion

As China's government budgetary efficiency management enters the stage of full implementation, budgetary efficiency management has begun to change from a relatively independent fund control management system to the concept of integrating performance concepts and management methods deeply into the whole process of budgetary management. This paper combed the literature in this field, analyzed the connotation of budget efficiency through the budget content and budget system in two ways, sorted out the development and evolution of budget efficiency assessment methods, understood the budget efficiency assessment of the relevant methods and approaches, and finally, in the optimization of budget management, the budget system operation mechanism innovation in two aspects of the ways to improve the budget efficiency is summarized, so as to clarify the research vein of the field, and provide a boost to the future. Finally, it summarizes the ways to improve budget efficiency in terms of budget management optimization and budget system operation mechanism innovation, so as to clarify the research lineage in this field and provide assistance for further research.

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