Adel Azar[1], Nooshin Rahmani[2], Ameneh Khadivar[3]

THE IMPACT OF BUDGETARY SLACK ON PERFORMANCE-BASED BUDGETING

In this paper, we investigate the impact of budgetary slack on the allocated budget and the achievement of organizational goals under a centralized performance-based budgeting (PBB) strategy. A mathematical model is developed to select the strategic portfolio of activities and allocate budget to them. Since each department can influence input data, they may introduce some level of slack into their forecasts. To analyze the effects of budgetary slack, a case study is presented and sensitivity analysis is conducted for different levels of slack in order to provide managerial insight for decision makers and scholars. Despite the general assumption that budgetary slack creates resources misallocation, we conclude that slack could have a negative, neutral or even positive role for overall organizational goals.

Keywords: *budgetary slack; performance-based budgeting; optimization; strategic portfolio of activities.*

Адель Азар, Нушін Рахмані, Амєне Хадівар

ВПЛИВ БЮДЖЕТНИХ ВИКРИВЛЕНЬ НА БЮДЖЕТУВАННЯ ЗА РЕЗУЛЬТАТАМИ

У статті досліджено вплив бюджетних викривлень на розмір виділеного бюджету і на досягення організаційних цілей в умовах централізованого бюджетування за результатами діяльності. Побудовано математичну модель для вибору стратегічного портфеля видів діяльності та розподілу бюджетів за ним. Оскільки кожен відділ надає свої внутрішні дані для прогнозу діяльності, відділи можуть тією чи іншою мірою викривляти таку інформацію при поданні. На прикладі реально функціонуючої організації проведено аналіз чутливості впливу таких бюджетних викривлень. Незважаючи на поширену думку, що бюджетні викривлення призводять до невірного розподілу ресурсів, автори доводять, що такі викривлення можуть мати як негативний, так і нейтральний або навіть позитивний вплив на досягнення цілей організації.

Ключові слова: *бюджетне викривлення; бюджетування за результатами; стратегічний портфель видів діяльності.*

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Адель Азар, Нушин Рахмани, Аменэ Хадивар

ВЛИЯНИЕ БЮДЖЕТНЫХ ИСКАЖЕНИЙ НА БЮДЖЕТИРОВАНИЕ ПО РЕЗУЛЬТАТАМ

В статье исследовано влияние бюджетных искажений на размер выделенного бюджета и на достижение организационных целей в условиях централизованного бюджетирования по результатам деятельности. Построена математическая модель для выбора стратегического портфеля видов деятельности и распределения бюджетов по ним. Поскольку каждый отдел подаёт свои внутренние данные для прогноза деятельности, отделы могут в какой-то мере искажать такую информацию при подаче. На примере реально действующей организации проведён анализ чувствительности влияния таких бюджетных искажений. Несмотря на распространённое мнение, что бюджетные искажения приводят только к неправильному распределению ресурсов, авторы доказывают, что такие искажения могут иметь как негативное, так и нейтральное или даже позитивное влияние на достижение целей организации.

[1] Tarbiat Modares University, Tehran, Iran; Statistical Center of Iran, Tehran, Iran.
[2] Tarbiat Modares University, Tehran, Iran.
[3] Alzahra University, Tehran, Iran.

Ключевые слова: *бюджетное искажение; бюджетирование по результатам; стратегический портфель видом деятельности.*

Introduction. The world as we know today has limited resources, which foments competition among people to access and control these resources to maximize their self-interest. The same concept applies to most organizations, especially the public ones, where there are limited resources to support the activities that derive the desired results and contribute to reaching the organizational goals. One of the foremost resources, which plays a critical role in the success of organization is budget. Budgeting is the science of determining organization's financial goals and allocating resources to different departments and activities to reach these goals. Budgeting is a tool to control operations efficiently and effectively. During the course of time, several methods have been proposed and implemented to deal with the challenges of budgeting, such as incremental budgeting, planning-programing budgeting, zero-based budgeting, management by objectives, and performance-based budgeting (Folscher, 2007).

One of the recent approaches is performance-based budgeting (PBB) which allocates necessary resources to the most effective activities and derives the desired results in order to achieve short- and long-term goals of organization. In other words, PBB is a budgeting system that links the expected results to budget (Folscher, 2007). In order to achieve this, the PBB system requires specific information from several layers of organization to measure and manage the performance of different operations as well as required resources.

Despite the general effectiveness of PBB, there are some issues that need further investigation. While budget proposals are developed bottom up, business performance is managed top-down. A business unit is evaluated to be successful if it manages to meet or exceed the expected outcomes while staying within the assigned budget limits. This will give lower level managers and employees strong incentives to distort information, forecast the lowest possible outcome, and the highest amount of costs in order to retain their performance score and enhance it. On the other hand, higher level managers and stakeholders attempt to push the organization to achieve the highest possible outcome while keeping costs down. This potential conflict of interests in the process of budgeting is inevitable, and the subject of a decent amount of research. Several mathematical models have been developed to optimize the allocation of budget (Mutanov, 2015). On the contrary, little attention has been given to situations that actually control the implementation of the proposed methods, the effects of budgetary slacks and the role of people in the real context of organizations.

People are an indispensable part of the budgeting system and their decisions and actions have a substantial influence on organizations. One of these effects, which has been studied in the literature of budgeting is budgetary slack creation. Budgetary slack is created when employees try to exploit information by overstating the resources they need or understating the performance that they can achieve in order to get access to more resources and score better in performance evaluation or to make their targets more easily achievable, while the excess resources that they receive could be diverted to other activities which are expected to bring about more utility for the whole organization and stakeholders (Douglas and Wier, 2000).

Budgeting is an art as well as an economic science and best managers are those who understand and manage all soft factors that affect budget as well as facts, data, and hard optimization models. In this research, we try to understand the phenomenon of budgetary slack and the fluctuations that this phenomenon can create in the utility of the allocated budget for the organization. This will provide insight for decision-makers about the mechanisms of budgeting and the way they can deal with the effect of people in budgeting.

The rest of the paper is organized as follows: section 2 reviews relevant literature on budgetary slack and PBB approach. In Section 3, the problem is stated and the case study is explained. In section 4, a mathematical optimization model is proposed for selecting the strategic portfolio of activities and allocating budget in a centralized PBB approach, including the effects of budgetary slack. Section 5 presents a numerical example and discusses the consequences of budgetary slack from the optimization point of view. The conclusions are presented in the final section.

Literature review. The importance of budget and challenges of determining and managing it in different organizations has attracted the attention of many scholars. Budgetary slack as one of budget-related problems, has been shown in (Merchant, 1985) and it has been extensively discussed later on (Brown et al., 2009; Covaleski et al., 2006; Daniel et al., 2004; Dunk and Nouri, 1998; Jensen, 2008).

The main research stream in this field studies the factors which influence the creation of budgetary slack. These studies try to identify the causes of slack creation and discuss social, behavioural and ethical influences of slack in budgeting. This stream of research tries to illustrate the problem of slack creation by providing managerial insight into the organizational factors that affect it in a positive or negative way, and some of them provide guidelines for reducing the undesirable factors (Douglas and Wier, 2000; Onsi, 1973; Schoute and Wiersma, 2011; Van der Stede, 2000; Young, 1985).

Another, less extensive, stream of research, deals with the effects of organizational or budgetary slack, and the way it influences organizations. There are two stands on this issue: Some scholars perceive slack to be negative and believe that slack creation will result in less efficiency (Williamson, 1963) and deviation from organizational goals. They believe a slack in the budget or resources can interrupt entrepreneurial processes and it will result in sub-optimal allocation of resources and consequently, increase the waste (Mosakowski, 2002). On the other hand, Penrose's famous theory of the firm growth states that all slack resources contribute to this growth (Dai and Kittilaksanawong, 2014). This theory has been confirmed especially for R&D strategies in organizations (Mousa and Chowdhury, 2014). In Table 1 some of these contradicting findings are presented.

In this research, we investigate the effects of budgetary slack on the organizational goal from the mathematical modelling perspective. It fits in the second research stream as explained earlier in this section, but we do not observe the behaviour of employees. The contribution of this paper is to provide a theoretical framework for understanding what happens if a certain department succeeds in introducing different amounts of slack into the decision-making process and we study the consequences of this distortion, rather than the causes of this phenomenon.

Table 1. **The conflicting effects of budgetary slack on organizations in previous research,** *authors'*

Effect	Paper	Findings
Positive	Ju and Zhao (2009)	Slack has a positive relationship with firm performance and relationship to be stronger in private enterprises
	Mousa and Chowdhury (2014)	Slack resources influence commitment to innovation and are beneficial to R&D organizations
	Alessandri et al. (2014)	Financial slack fuels the diversifying cross-border acquisition and growth
	Dai and Kittilaksanawong (2014)	Human resource and financial slacks have direct and indirect positive effects on further growth of firm
Negative and positive	Nohria and Gulati (1996)	Slack has an inverse U-shaped utility function
	Bradley et al. (2011)	Resource slack has a positive effect on organizational growth and negative effect on entrepreneurial management
Negative	Williamson (1963)	Self-interest seeking behaviour of managers results in slack creation and has a negative effect in the utility of organization
	Mosakowski (2002)	Slack disturbs the entrepreneurial process
	Yee and Khin (2014)	Consider budgetary slack as a dysfunctional behaviour

Problem statement. The case study for this research is Statistical Centre of Iran (SCI), a public organization with a hierarchical organizational structure consisting of 3 departments and 18 offices. The current budgeting approach is very similar to performance-based budgeting, and the required resources for each project are forecasted and the impact of them on the outcomes of each department is reported by the bottom-up approach. Strategic decision at the beginning of each year is to determine which projects to undertake and how much budget to allocate to each office to meet the requirements and to contribute to the goals of this organization. The hierarchical structure of the problem and the relationship between the resources, activities, outputs and their contribution to the goal are illustrated in Figure 1.

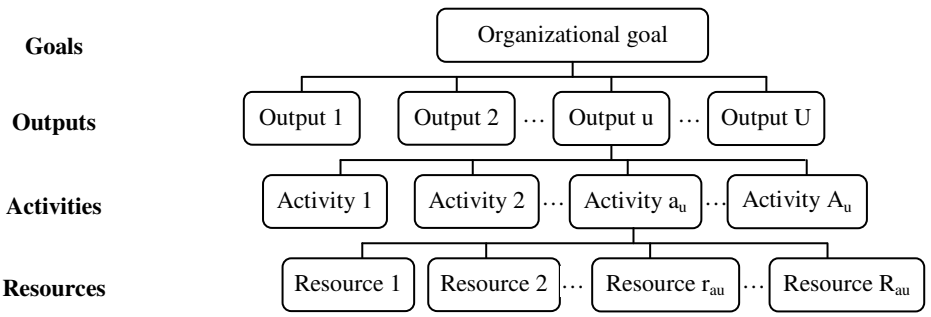

Figure 1. **The hierarchical structure of the problem,** *authors'*

Each office has a local goal to achieve a specific output u which contributes to the goals of the organization through a contribution coefficient $\delta_u \quad (0 \le \delta_u \le 1)$. The output of each office can be the result of a set of independent or interdependent projects, which can be achieved by conducting certain activities. It is also assumed that each activity depends on a number of resources with an estimated cost. These

activities and the related costs are forecasted using a specially defined method that considers data and also feedback from the performance of the unit in the previous period. Each activity is defined as the set of all interrelated cost initiatives necessary to complete a step in the project and provide results. For each activity a, based on their importance for the relevant output u, an importance coefficient $\beta_a^u \left(0 \le \beta_a^u \le 1\right)$, is calculated by experts. Based on historical data from previous periods, each senior manager is responsible for forecasting necessary amount of budget $\tilde{v}_r^{a_u}$ for their respective office, which includes the amount of each resource r, necessary for conducting activity u, and contributing to output u. The budgetary slack may actually occur in this step, where managers or their employees try to overestimate the resources they need, to make sure they will get abundant resources to succeed in achieving the expected outcomes. It is assumed that slack-creating managers are smart, and the slack they create is not easily recognizable to other decision-makers.

After the forecasted data is collected from all the offices, the finance department, working closely with the Chief Executive Officer, decide on budget allocation and produce a primary report, trying to optimize the allocation of resources to different offices. This allocation is then discussed, budget items are negotiated and the report is finalized during a board meeting with all senior managers. The strategy they follow is that depending on the available budget and the priority of the proposed projects in each office, they decide which project proposals and activities should be omitted from the plan. The strategic portfolio of projects includes the rest of the activities approved and the budget is divided among them in a fair and consistent way (i.e., if necessary, the same percentage of shortage in the proposed budget will be imposed to all the activities that have been approved). Based on these strategies, a mathematical model has been proposed to reflect the decision-making process for the purpose of this study, to provide insight into the existing gap of literature over the effects of budgetary slack in organizations.

Mathematical model. We would like to introduce a deterministic mathematical model to study the decision process and the behaviour of budgetary slack and its impact on the achievement of organizational goals.

1. Notations. First, we introduce and organize the required notations as follows:

Sets and subscripts: u – the index of outputs, $u = \{1, 2, \ldots, U\}$; a – the index of activities required for output u, $a = \{1, 2, \ldots, A_u\}$; r – the index of the required resources for activity a, of output u, $r = \{1, 2, \ldots, Ra_u\}$.

Parameters: $\tilde{v}_a^{a_u}$ – the amount of forecasted budget for resource r, for activity a and output u; $\tilde{v}_a^u$ – the total amount of forecasted budget for activity a of output u; δ_u – the contribution coefficient of output u to the organization goals, $\left(0 \le \delta_u \le 1\right)$; β_a^u – the importance coefficient of activity a in output u, $\left(0 \le \beta_a^u \le 1\right)$; $\Delta_r^{a_u}$ – the percentage of budgetary slack in $\tilde{v}_a^{a_u}$; Δ_a^u – the percentage of budgetary slack in $\tilde{v}_a^u$; B – the total available budget for the whole organization; T_a^u – Slack threshold of activity a in output u.

Golden decision variables: x_a^u – a binary variable to determine the strategic portfolio; B_a^u – the total amount of budget allocated to activity a in output u.

Auxiliary decision variables: η_a^u – the efficiency of activity a in output u, $0 \le \eta_a^u \le 1$; G_0 – the total organizational goal, $0 \le G_0 \le 1$.

The forecasted budget of each activity $\tilde{v}_a^u$ is defined as the summation of all the forecasted resources required for completing that activity. Thus, we can write:

$$\tilde{v}_a^u = \sum_{r=1}^{R_{a_u}} \tilde{v}_r^{a_u}, \begin{matrix} u = 1,2,\ldots,U \\ a = 1,2,\ldots,A_u \end{matrix}. \quad (1)$$

2. Mixed-integer nonlinear program. Now, based on the problem statement and the aforementioned notations, we introduce a *mixed-integer nonlinear program* (MINLP). In this model, the centralized utility function of the organizational goals is maximized based on the PBB approach, while slack creation is taken into account.

$$Maximize \;\; G_0 = \sum_{u=1}^{U} \delta_u \left(\sum_{a=1}^{A_u} \beta_a^u \eta_a^u \right). \quad (2)$$

Subject to:

$$\tilde{V} = \sum_{u=1}^{U} \sum_{a=1}^{A_u} \tilde{v}_a^u x_a^u; \quad (3)$$

$$B_a^u = \min\left\{ \left(\frac{\tilde{v}_a^u . x_a^u}{\tilde{V}} \right) B, \tilde{v}_a^u x_a^u \right\}, \begin{matrix} u = 1,2,\ldots,U \\ a = 1,2,\ldots,A_u \end{matrix}; \quad (4)$$

$$\eta_a^u \le \frac{\min\left\{ B_a^u, \left(1 - \Delta_a^u\right) \tilde{v}_a^u \right\}}{\left(1 - \Delta_a^u\right) \tilde{v}_a^u}, \begin{matrix} u = 1,2,\ldots,U \\ a = 1,2,\ldots,A_u \end{matrix}; \quad (5)$$

$$\tilde{V}, \eta_a^u, B_a^u \ge 0, \; x_a^u \in \{0,1\} \begin{matrix} u = 1,2,\ldots,U \\ a = 1,2,\ldots,A_u \end{matrix}, \quad (6)$$

where (2) presents the total utility of organizational goals which should be summed up over all outputs. The utility function is calculated by considering the importance and contribution factors and also the efficiency of each activity; (3) represents the total forecasted budget of all the activities selected in the strategic portfolio; (4) indicates the decision-making policy to allocate fair amounts of budget to all the activities of the selected strategic portfolio. The second term of the function, $\left(\tilde{v}_a^u x_a^u\right)$, ensures that the allocated budget does not exceed the forecasted budget in extreme cases when the organization has more budget than $\tilde{V}$. This is a nonlinear constraint. The effectiveness of the allocated budget to each activity is checked by (5), which compares the amount of allocated budget to the forecasted budget. Finally, (6) is the boundary conditions for all the decision variables. Since we have continuous and binary variables in our model, the type of the model is MINLP.

This model uses strategic measures together with financial data to select the portfolio of the best activities and also decides what percentage of the forecasted

budget should be available to them, such that the total utility of organizational goals is maximized. It is obvious that if all the forecasted resources $\left(1-\Delta_a^u\right)\tilde{v}_a^u$ are provided for all the activities, then the total utility is equal to the ideal value ($G_0 = 1$).

However, in reality, two circumstances may prevent the organization from reaching the ideal goal:

- when the available budget is less than the total amount of forecasted resources for all the activities. This situation forces decision makers eliminate some activities or approve less than 100% of the forecasted budget for all the activities;
- when the budgetary slack is not zero. This situation creates a distortion in the portfolio selection and budget allocation. While some activities have an excess budget, others may lack the essential resources they require.

In the following section, each of these situations are studied and the behaviour of the optimization model is analysed in several scenarios, including different levels of slacks.

Numerical experiments and discussion. In this section, the mathematical model is run and optimized by *OQNLP* solver in GAMS® software with the simplified data from our case study to illustrate the behaviour of the system under different scenarios. For this purpose, only 4 of the dominant offices within SCI are studied, and the activities are integrated into the main categories to provide a small size numerical example. Based on the notations previously introduced, the parameters of this model are summarized as follows:

$$\delta_u = (0.1, 0.4, 0.2, 0.3), \quad \beta_a^u = \begin{pmatrix} 0.6 & 0.5 & 0.8 & 0.4 \\ 0.3 & 0.3 & 0.2 & 0.4 \\ 0.1 & 0.2 & - & 0.2 \end{pmatrix},$$
$$\left(1-\Delta_a^u\right)\tilde{v}_a^u = \begin{pmatrix} 70 & 60 & 35 & 45 \\ 45 & 40 & 15 & 20 \\ 20 & 35 & - & 15 \end{pmatrix}, \tag{7}$$

where δ_u and β_a^u are derived from the experts' opinion using AHP method; $\tilde{v}_a^u$ includes the original values for forecasted budget which are assumed to be slack-free. The organization has a limited budget of 250 units available at the beginning of the planning horizon which has to be divided among all of the activities in the portfolio, based on the performance-based budgeting approach.

1. Strategic portfolio selection. To illustrate the model performance in selecting strategic portfolio and allocating budget, we consider 3 scenarios with 4 different total available budget levels of 400, 300, 250, 200 for the organization. Clearly, if there is enough budget available to cover the forecasted costs of all the proposed activities $(B \geq 400)$, then the strategic portfolio includes all the proposed activities, the total forecasted budget for all of them is allocated, and the organizational goals are completely achieved ($G_0 = 1$). In other scenarios, when the available budget is not enough for all the activities, the model decides which activities and to what extent to cover and the organizational goal is partially achieved ($G_0 < 1$). Table 2 shows the strategic

portfolio of the selected activities under each of the 4 scenarios. As depicted in Table 2, the strategic portfolio may change according to available budget.

Table 2. **Strategic portfolio selection under 4 scenarios of the available budget,** *authors'*

Scenarios	B	G_0, %	u_1			u_2			u_3		u_4		
			a_1^1	a_2^1	a_3^1	a_1^2	a_2^2	a_3^2	a_1^3	a_2^3	a_1^4	a_2^4	a_3^4
1	400	100.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	300	86.0	×	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
3	250	72.9	×	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
4	200	59.6	×	✓	✓	✓	✓	×	✓	×	×	✓	✓

Table 3 presents the allocated budget for the activities included in the strategic portfolio under each scenario. As the total available budget for the organization decreases, the model tends to omit some activities or reduce the allocated budget to them. Comparing Scenario 2 with Scenario 3 shows no change in strategic portfolio, however, a less percentage of budget is allocated to each activity to deal with reduced organizational budget. On the other hand, comparing Scenario 3 with Scenario 4 illustrates how the change in strategic portfolio can result in increased allocated budgets for the selected activities.

Table 3. **Budget allocation for 4 scenarios of the available budget,** *authors'*

Scenarios	B	G_0, %	u_1			u_2			u_3		u_4		
			a_1^1	a_2^1	a_3^1	a_1^2	a_2^2	a_3^2	a_1^3	a_2^3	a_1^4	a_2^4	a_3^4
1	400	100.0	70.0	45.0	20.0	60.0	40.0	35.0	35.0	15.0	45.0	20.0	15.0
2	300	86.0	0.0	45.0	20.0	60.0	40.0	0.0	35.0	15.0	45.0	20.0	15.0
3	250	72.9	0.0	38.1	16.9	50.8	33.9	0.0	29.7	12.7	38.1	16.9	12.7
4	200	59.6	0.0	38.3	17.0	51.1	34.0	0.0	29.8	0.0	0.0	17.0	12.8

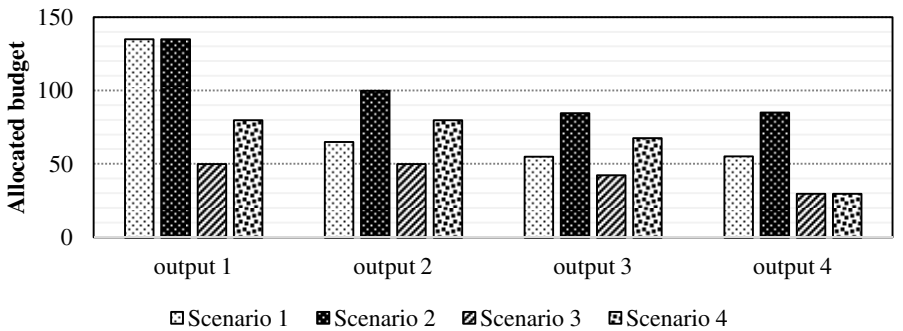

Figure 2. **The effect of different scenarios on the allocated budget for each output,** *authors'*

Figure 2 shows the effect of reduced organizational budgets on the allocation of resources to different outputs. Comparing Scenario 1 with Scenario 2, we observe that when the total organizational budget is reduced from 400 to 300, the allocated budget for output 1 and output 2 is considerably affected, while other outputs still receive

the same budget. This is mainly due to the strategic portfolio of activities that have been selected and the relative importance and contribution coefficients.

2. The effects of budgetary slack on the allocated budget. After verification and validation of the optimization model, we introduce the concept of slack for different activities to observe how budget allocations change. In this setting, we consider the effect of slack creation for only one activity each time and it is assumed that the rest of activities are slack-free.

It is generally believed that when a business unit creates slack and persuades management they need more resources for their activities, more budget will be allocated to them. This is the main incentive for business unites to create slack. As shown in Figure 3, as the slack level for activity a_2^3 increases, more budget is allocated to it, because, compared to other activities in the portfolio, this activity plays a more important role in achieving organizational goals. The same trend applies to a_1^2 except for slack levels is between 30 and 35%, when the strategic portfolio consists of a different set of projects.

However, not all activities have the potential to attain more budget than they actually require. Depending on the parameters and the structure of the problem, there is a threshold value for each activity, such that by creating less slack than the threshold, the activity is able to get more budget. But when creating more slack than the threshold, the activity will not remain in the strategic portfolio and the allocated budget will drop to zero. Table 4 shows the threshold values as % of the forecasted budget for all the activities.

Table 4. **Slack threshold as % of the forecasted budget for all the activities,** *authors'*

	u_1			u_2			u_3		u_4		
Threshold	a_1^1	a_2^1	a_3^1	a_1^2	a_2^2	a_3^2	a_1^3	a_2^3	a_1^4	a_2^4	a_3^4
	-100	10	20	175	35	-100	275	104	30	554	399

A positive threshold value of x ($x > 0$) indicates that the activity can get more budget if it creates the maximum of x percent of slack in its forecasted budget. Creation of any more amounts of slack removes the activity from the strategic portfolio and is not beneficial for the slack creating business unit. A zero threshold indicates that the activity does not have the potential to attain more budget by creating slack. A negative threshold theoretically applies to the activities that were not initially included in the strategic portfolio, even before creating slack. It means that they could be considered in the strategic portfolio, if they could reduce costs. However, according to the definition, slack only includes positive amounts that employees add to their forecasted resources to attain more budget, thus we do not discuss the negative slack. The values of threshold for each activity depend on the importance and contribution coefficients, as well as the forecasted budget for that activity and the available budget of the organization.

Figure 4 shows how activity a_3^1 reaches its threshold at 20%, when the allocated budget equals the forecasted budget, while a_2^1 has a lower threshold value and will be omitted by creation of more than 10% slack.

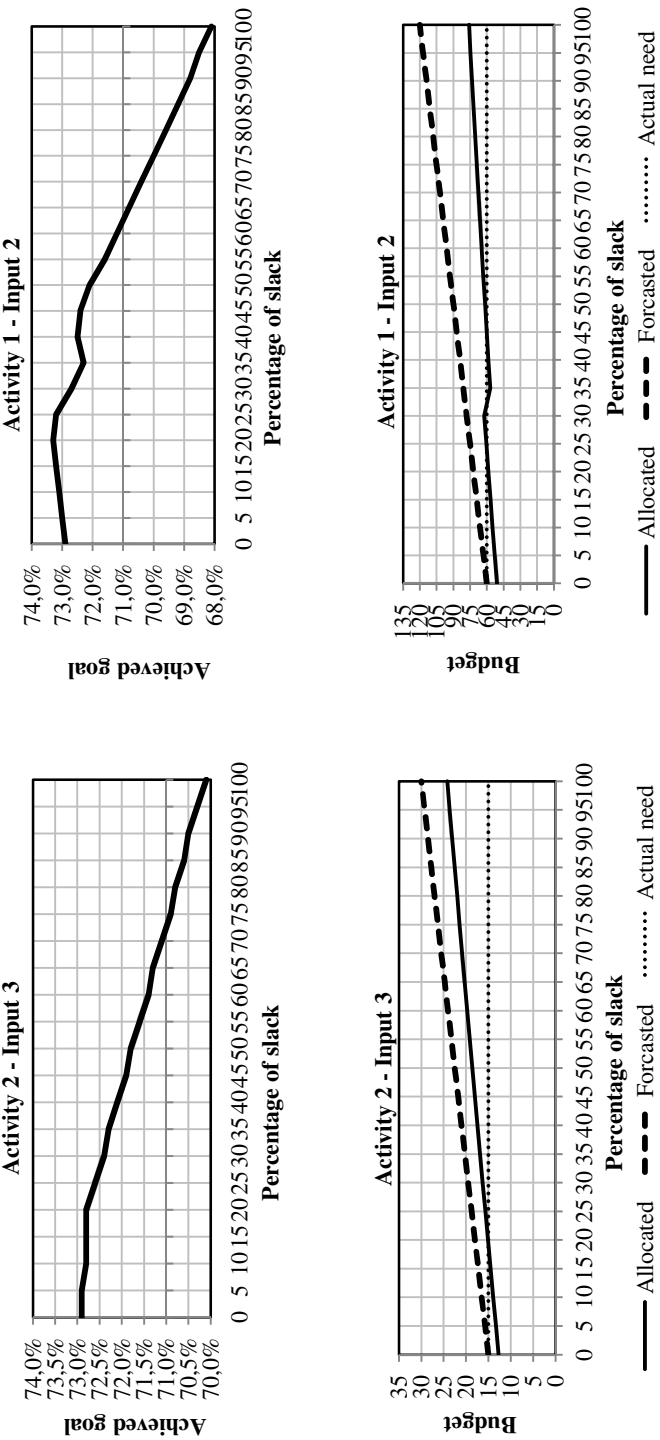

Figure 3. **The total utility and the positive effect of budgetary slack on the allocated budget,** *authors'*

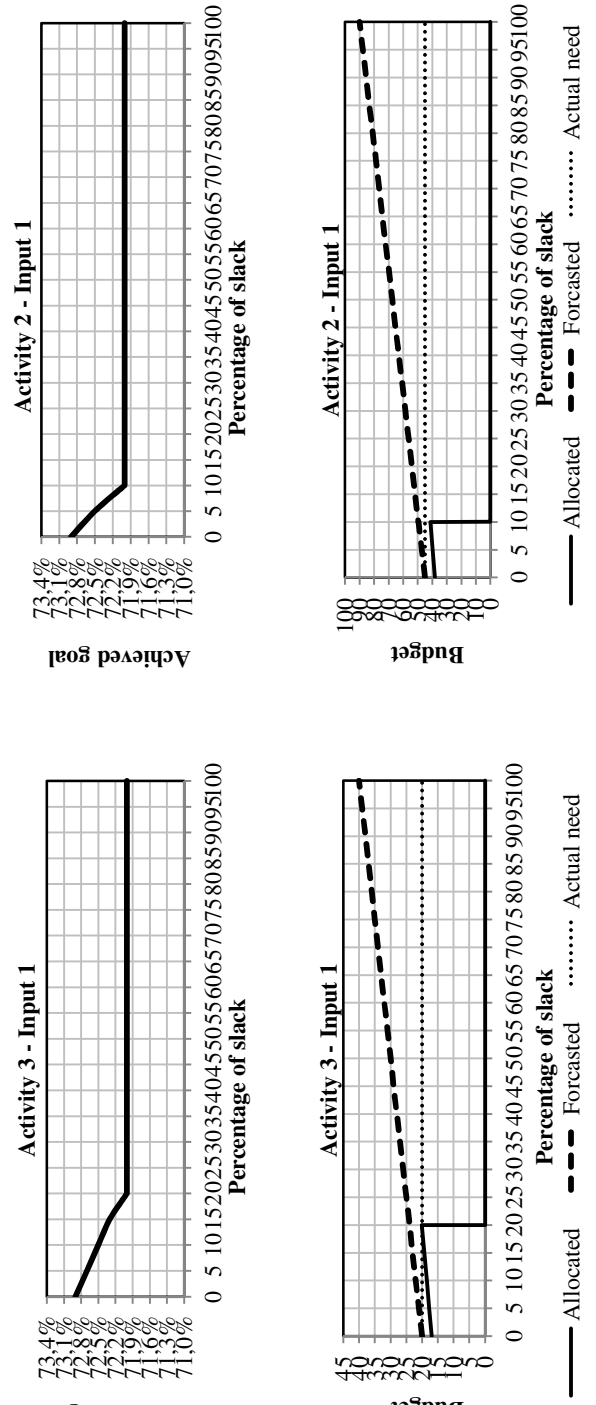

Figure 4. **The total utility and the negative effect of the budgetary slack on the allocated budget,** *authors'*

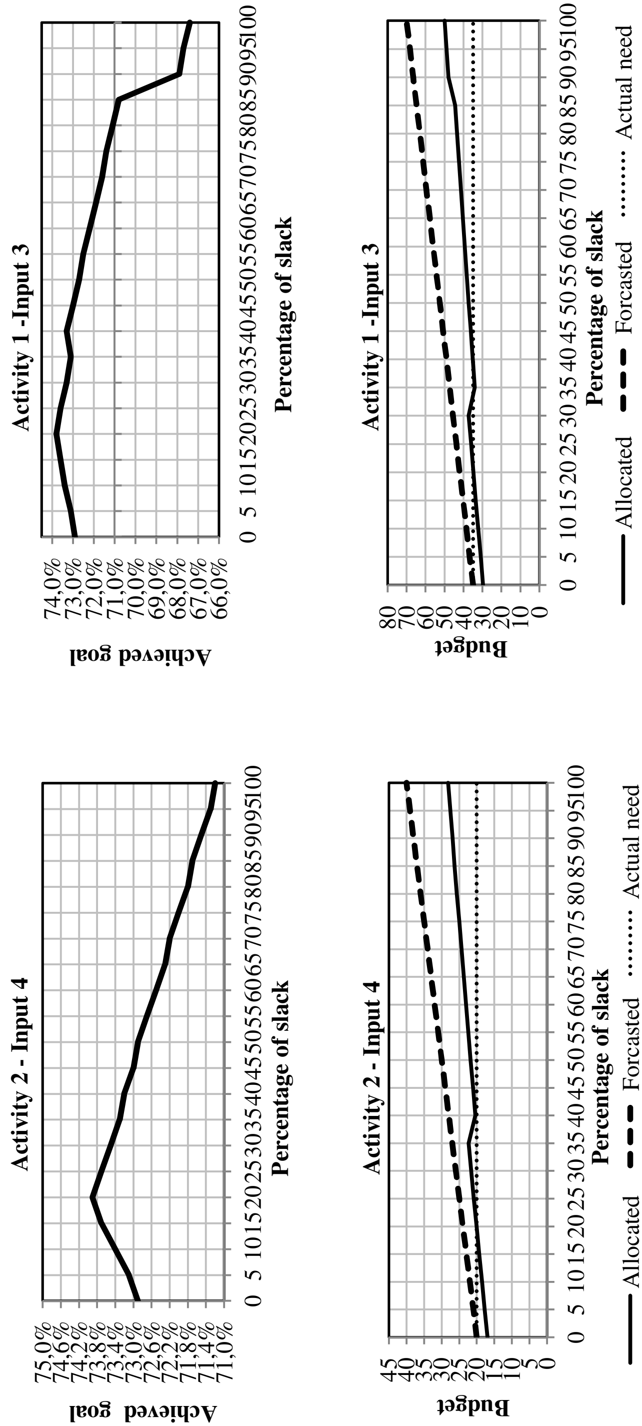

Figure 5. **The positive effect of the budgetary slack on the allocated budget and the total utility,** *authors'*

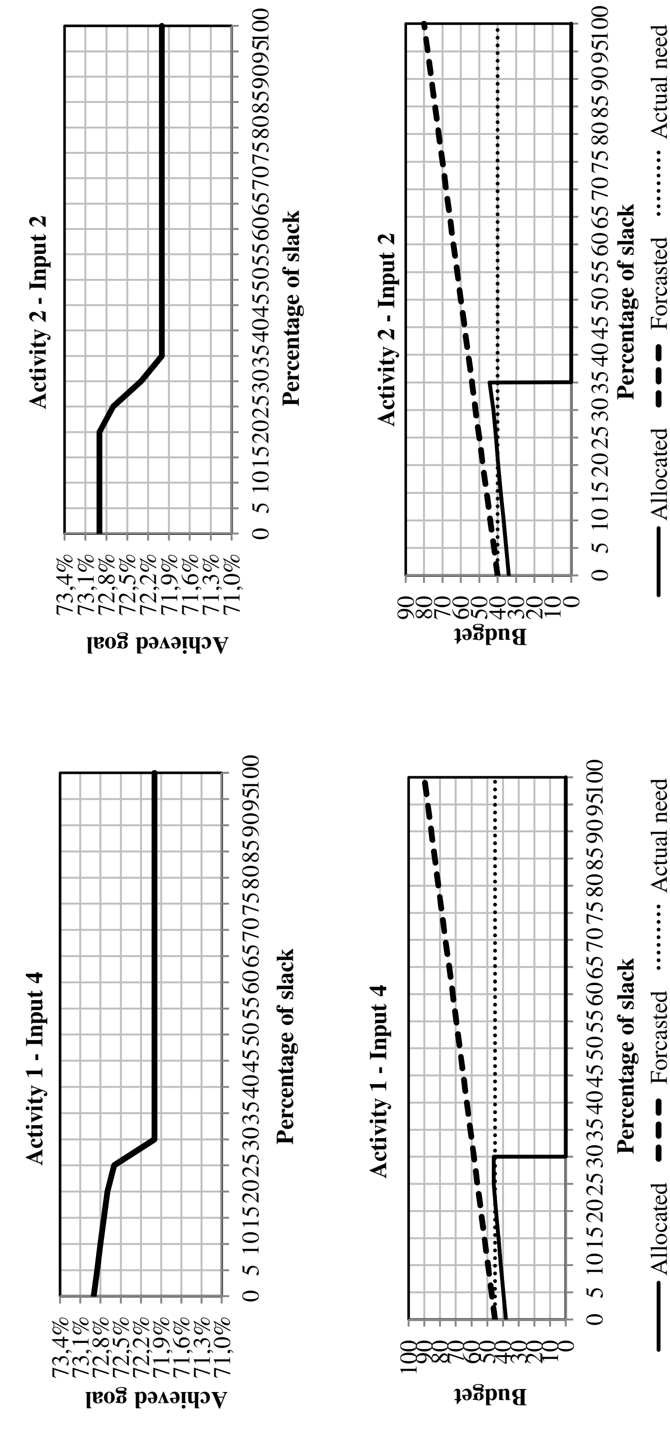

Figure 6. **The neutral effect of the budgetary slack on the allocated budget and the total utility, authors'**

3. The effects of budgetary slack on the utility of organizational goals. In this section, we intend to study the role of slack creation on the utility of the organizational goals. It is observed that slack creation can have a negative, neutral, or positive effect on the utility function. The results of the experiments are discussed in the following subsections:

3.1. Slack with a positive effect. In some cases, especially when the activity has a considerable contribution to the goals of the organization, creation of slack will lead to an increase in the utility function. As shown in Figure 5, moderate amounts of slack will help activity a_2^4 and a_1^3 to compensate for shortage of budget they face and increase their allocated budget to the amount they actually require. The utility function is ascending up to this point. The maximum utility occurs at the point where these activities can attain the total budget that they actually require. Any further slack will have a negative effect on the utility function.

The slack that each activity creates, has a direct effect on the other activities, since it increases the allocated budget for that specific activity while decreasing the available budget for all other activities in the portfolio. On the other hand, this slack can also have indirect effect on all other activities, due to substantial change it can create in the portfolio of activities. At some critical points, the selected portfolio may change and some activities may be omitted.

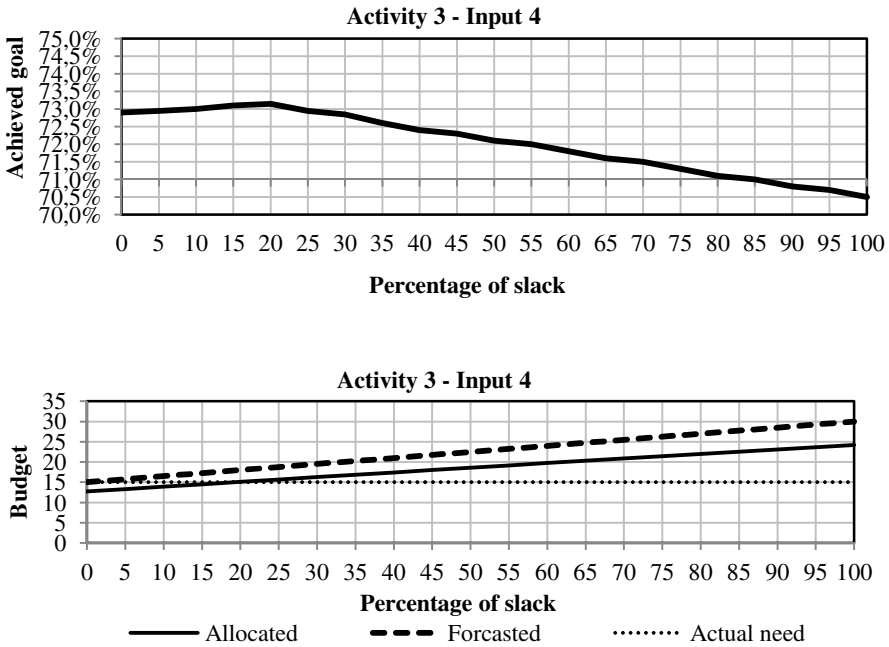

Figure 7. **The negative effect of the budgetary slack on the allocated budget and the total utility,** *authors'*

3.2. Slack with a neutral effect. For some activities, slack creation may not have any influence on the allocated budget or even the utility function of the organizational goals. One of the extreme cases is when an activity has a low contribution to

organizational goals and a relatively high cost. In such cases, the activity would be among the first to be omitted from the active portfolio and no amount of positive forecasted slack could possibly change the portfolio. In other cases, such as a_1^4 in Figure 6, after an activity passes its threshold, no budget will be allocated to it and creating more slack will neither change the budget, nor the utility of the organizational goals. There may also be special cases, as depicted for a_2^2 in Figure 6, where the creation of slack can lead to more budget for the related activity, but no fluctuations in the utility function, since the contribution and cost factors counteract and result in a steady utility function.

3.3. Slack with a negative effect. As the previous research suggests, in some situations, slack creation reduces the utility of the organizational goals. If the contribution of an activity is not very high, any excess amount of budget allocated to it, will deteriorate the utility function. In such cases, slack creation will reversely affect the achievement of organizational goals. Figure 7 shows such effect for slack levels of more than 20% for a_3^4.

Furthermore, slack creation of activity a_3^1 and a_3^1 in Figure 4 before the threshold and also a_2^4 and a_1^3 in Figure 5 after they get their forecasted budget are the other examples for the negative effect of budgetary slack on the utility.

Conclusion. This research aimed at providing insight into the mechanism of slack creation within the departments of an organization. The results illustrate that, despite the general belief, slack creation does not necessarily result in achieving more budget and resources. This information, as a complement to the ethical and organizational issues, could be a deterrent to slack-creating behaviour of local managers and employees. From the organizational point of view, the results demonstrate that budgetary slack is not always destructive. Budgetary slack can distort the allocation results in favour of the most contributing activities and speed up the achievement of goals and enhance the utility function of the organization. The findings will assist decision makers and chief managers in optimizing their resource allocation decisions by guiding the slack to the most strategic activities and avoiding them in unsuitable activities.

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