**Budgetary slack: The Effects of Truth-Inducing Schemes on Slack and Performance**

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**Introduction**

In large organizations, division managers are not necessarily solely motivated by profit maximization goals but rather by some self-interest motives. These self-interest motives may explicit itself in the organization budgeting process. A control problem arises usually when division managers use their private information to make decision consistent with self-interest rather than the interest of the organization. In the budgeting process this can happen in two ways. Division managers may either understate revenues or overstate costs. When the division managers understate the expected output, they will be able to create a lower performance target or benchmark relative to their true performance capabilities. When these targets are used as a basis for performance evaluation this will result in favorable evaluation. On the other hand, the division managers may overstate their resource requirements by setting cost and expense targets at higher levels compared to actual needs. Both kind of behavior result is less profit for the organization. When such bias occurs in the budgeting process, it is referred to as budgetary slack.

The objective of this study is to discuss the concept of budgetary slack and the theoretical and empirical evidence regarding the role of truth-inducing schemes in controlling budgetary slack. In addition, this paper will introduce a multiple period truth-inducing budget-based scheme. The suggested scheme has the potential of providing incentives for division managers to reveal their private information and thereby reducing division managers motives to slack.

**The Concept of Budgetary Slack**

Budgetary slack has been defined as the difference between a division's expected performance capability and a participatively set performance standard or target [Payes 1989]. Participative
budgeting is a necessary condition for slack to occur and it has been advocated as a means of incorporating division managers' private information in the budget (e.g. Becker and Green [1962]; Schiif and Lewin [1970]). Jawarski and Young [1989] argue that building slack into a budget means choosing a more easily attainable standard. Choosing an easily attainable standard enables a subordinate to achieve an output target against which his performance will be evaluated. Another incentive for building slack into a budget is protection from uncertainties in the environment [Cyert and March 1963]. The two authors suggest that in this case slack serves a positive function by absorbing fluctuations in an uncertain environment. Onsi [1973] interviewed managers, who stated that they create budget slack as a means to hedge against uncertainties affecting outcomes.

Budgetary slack may also be defined as the difference between the resources allocated or available to a division and those resources needed to achieve a budget-set or output target.

Lukka [1988] indicates that there are three motivations to create budgetary slack. The first motivation is resource intention. Where budget slack occurs when resources used exceed the optimal allocated resources. The second motivation is performance evaluation intention. Where low budget-based output targets have been set in order to increase the probability of a favorable evaluation. The third motivation is what Lukka called motivation intention. Where budget targets are set at optimistic levels in order to motivate the subordinate to improve their performance. The resource and performance intention slack is considered a dysfunctional behavior that negatively affects the organization's profit. On the other hand, the motivation intention slack is considered a mean by which the central management may positively influence the division's performance. This study will focus on the dysfunctional budgetary slack.

Factors Influencing Creation of Budgetary Slack

Budgetary slack usually happens when the organization uses participative budgetary control processes. Participation has been advocated by many researchers as a means of positively affecting individuals' satisfaction, motivation, performance, and job attitudes [e.g. Brownell and McInnes 1986; Chow et al., 1988; Leung and Dunk, 1992]. However, many studies' results indicate that participation may lead to the creation of budgetary slack. Young [1985] indicates that participation can lead to budgetary slack building behavior because of social pressure. Lukka [1988] argued that there is a positive relationship between the degree of participation and the opportunity to create slack.

Another factor that influences the budgetary slack building behavior is the degree of information asymmetry. Information asymmetry arises when the division managers (subordinates) possess private
information regarding division's productivity, effort level, and resource requirements that is not available to the central management. This private information can be used by the subordinates to maximise their self-interest especially when the central management can not observe the subordinate actions. It has been argued that participative budgeting process allows subordinates to reveal their private information enabling superiors to incorporate such information into the budget. However, subordinates have incentives to misrepresent their private information in order to set easy to achieve budget targets. Young [1985] indicates that the existence of information asymmetry may cause the subordinates to overstate their resource requirements or understate their capabilities. Christensen [1982] and Baiman and Sivaramakrishnan [1991] argue that the presence of private information in conjunction with an evaluative system that emphasize budget-based targets can lead to dysfunctional budgetary slack. Other authors have argued that when division managers possess private information, it will not be possible for central management to develop operating plans and efficiently allocate the organization's resources without communicating private information [Waller 1988]. Such communication of private information may be achieved through a participatively budgeting process with conjunction of proper incentives for truthful communication.

Budgetary slack behavior may be influenced also by the evaluation system. Inappropriate use of performance measures may cause dysfunctional behavior. Hopwood [1972] empirically tested the subordinate's performance under three different evaluation styles. The first style is a budget-constrained style that use the ability to meet explicit budget targets as the primary criterion for performance evaluation. The second style is a profit conscious style that is more concerned with the general effectiveness of the subordinate's area of responsibility. The third style a non-accounting style that does not rely on accounting measures as a basis for performance evaluation. This study found that budget-constrained evaluation system evoked a higher level of job-related tension and dysfunctional decision making including reporting invalid data. In another study, Onsi [1973] interviewed 132 manager from seven large multinational firms. His results indicate that managers create budget slack to meet budget-based performance requirements. Similar conclusion was reached by others, [e.g. Baiman and Evans [1983], Drury [1985], Baiman and Lewis [1989].

Uncertainties may also affect the extent to which subordinates motivated to create budgetary slack. Kren and Liao [1988] argue that the level of uncertainties in the organization impact manager's propensity to create slack as a protective device. Onsi [1973] also provide evidence consistent with the notion that managers create budgetary slack as a means to hedge against uncertainties affecting outcomes. Similarly, Young [1985] found that uncertainties in conjunction with worker-manager
information asymmetry about performance capability cause worker to create budgetary slack regardless whether a truth-inducing scheme has been used or not. Merchant [1985] argue that building slack in the budgeting process may serve as a cushion in response to uncertainty. Evidence also indicates that the level of environmental uncertainty influence the extent to which participation can affect the propensity to create slack [Govindargan (1986)].
Truth Inducing Schemes and Budgetary Slack

There has been a number of studies that investigated the truth inducing schemes and the role they can play in reducing budgetary slack. The agency theory views the firm as a set of contractual relationships, both explicit and implicit among suppliers of factors of production [Alchian and Demsetz 1972; Jensen and Meckling 1976]. Each individual in this team is motivated by self-interest. Realizing that self-interest behavior can lead to conflicting objectives, the team members have an incentive to engage in contractual arrangements that restrict such actions and specify each individual's specific rights. Alchian and Demsetz [1972] describe the firm as a contractual relationship with (a) joint input production, (b) several input owners, and one party (c) who is common to all contracts of the joint inputs, (d) who has rights to renegotiate any inputs contract independent of contracts with other input owners, (e) who hold the residual claim, and (f) who has the right to sell his central contractual residual status. According to Jensen and Meckling [1976] an agency relationship arises when one party (the principal) engage another party (the agent) to perform a task or a set of tasks that entails the agent some decision-making authority. Individuals are assumed to be motivated by their self-interest, therefore, agents will not always act in the best interest of the principal. The agents is also assumed to be work averse. Because the action which maximize the wealth of owners are not necessary consistent with those actions that maximize the manager's utility, the basic principal's problem becomes how to induce the agent (the manager) to take action that maximizes the principal's utility. If the agent actions and amount of effort exerted can be observed by the principal, then optimal contracts can be written using the agent effort as the pay basis. As Watts and Zimmerman [1986] argue that an optimal contract in this case would be to pay the agent a fixed salary if he takes the right action and impose a penalty if he shirks. However, the principal can not often observe the agent's actions. In that case, compensating the agent on a straight salary is likely to motivate him to shirk. Therefore, in order to induce the agent to take the action that is consistent with the principal's best interest, the agent should share in the outcome of his actions [Demski and Feltham, 1978; Holmstrom, 1979; Baiman, 1982]. An employment contract that links part of the agent's pay to the firm's performance can be used to provide him with an incentive and to mitigate agency costs inherent in agency relationship.

The imperfect observability of the agent's actions can lead to two implications for agent's behavior: moral hazard and adverse selection. Moral hazard arises when the agent's actions cannot be observed by the principal and, therefore, the agent's action can not be used as a basis for performance
evaluation. Since perfect observation of the agent's action is generally precluded, the optimal solution under moral hazard is not first best. In this case, a second-best solution is invoked which involves the use of performance measures, most likely accounting-based performance measures, in the employment contract to align the interest of principal with that of agents and thereby reduce the agency problem.

The adverse selection problem arises whenever the agent has some valuable private information that is not available to the principal. Such information can be used by the agent for self-interest purposes. Adverse selection problems may occur also at the recruitment level stage. One way to solve the adverse selection problem is to introduce long-term budget-based contracts which use standard costs and budgeted profits or costs in performance evaluation. Another way is to use incentive plan such that part of the subordinate's compensation is linked to one or more measures of firm performance.

Truth Inducing Scheme in Single Period

Most of the empirical studies that examined the role of compensation plans in reducing budgetary slack have used a single period truth inducing scheme. A widely used scheme is Weitzman truth-inducing budget-based scheme. The following is characters of Weitzman (1976) truth-inducing scheme.

\[
C = \begin{cases} 
F + X_1 B + X_3 (A-B) & \text{if } A > B \\
F + X_1 B + X_3 (A-B) & \text{if } A < B 
\end{cases}
\]

Where C is the total compensation; F is a certain wage (salary); A is the actual outcome (performance); B is the budgeted or projected outcome (performance); and X₁, X₂, X₃ are bonus coefficients. These coefficients are set such that 0 < X₂ < X₁, < X₃. Setting X₁ > X₂ will provide manager with an incentive to truthfully report his expected outcome because he is not motivated to understate the performance standard. Setting X₁ < X₃, on the other hand, will provide manager with an incentive not to overstate the performance standard in order to gain higher compensation.

Such single period truth-inducing models has been tested in many studies. For example, Young
[1985] investigates factors affecting budgetary slack building behavior under a budget-based compensation scheme. He used binary lottery to measure subjects risk attitudes. This study results indicate that subjects who participated in the budgeting process created more budget slack compared to those who were not allowed to participate. The study also found that risk-averse subjects create more slack than non-risk averse subjects even in the presence of a truth-inducing scheme. One limitation of the study is that it used a truth-inducing pay model that penalize subjects for outperforming the budget-set targets. Such model is different from that examined in the analytical research. Waller [1985] found that when using a truth-inducing budget-based compensation scheme, budgetary slack created by risk-neutral subjects was less. However, this was not the case with risk-averse subjects. Using a similar experimental method Chow et. al. [1986] found that in the presence of information asymmetry regarding performance capability, slack is lower under a truth-inducing scheme than under a budget-based scheme with an incentive to create slack. They used a Weitzman truth inducing scheme and they also used a slack-inducing scheme in order to test their hypothesis. Waller [1988] in an experimental study based on 51 upper-level accounting majors examined the propensity to misrepresent private information. Subjects were asked to make decision regarding resource allocation under both a unit-profit scheme and a Groves truth-inducing scheme. The study results indicate that a unit-profit with a penalty for unfavorable budget variance was as effective as a Groves scheme in inducing truthful reporting of profitability. However, the unit-profit scheme without a variance penalty led to gross overstatement of profitability.

In an other study Chow et. al. [1994] investigated the effect of three inducement schemes on misrepresentation of private information. There three schemes are; profit-sharing; a single-subordinate truth inducing scheme; and the Groves scheme. This study examined two types of misrepresentation. The first is direct misrepresentation which relate to resource allocation that maximize profit to the subordinate, but not necessarily to the organization. The second is indirect misrepresentation which relate to alternate levels of subordinate resource allocations. The study results indicate that less direct and indirect misrepresentations occurred under the Groves scheme compared to the profit-sharing scheme. Subordinates significantly misrepresent their private indirect information under the single-subordinate truth-inducing scheme than under the Groves scheme. However, there was no difference between the two schemes with respect to the incidence of direct misrepresentations. In a more recent study, Chow et. al. [1995] examined private information misrepresentation under three performance - contingent pay schemes. The three compensation schemes are; linear profit sharing; linear profit sharing plus a probabilistic audit and Groves performance - contingent control.
mechanisms. Chow et. al. [1985] found that the linear profit sharing plus a probabilistic management audit scheme reduced the frequency of subordinates misrepresentations more than a scheme with only a linear profit sharing. The study also found that using the linear profit sharing scheme with a probabilistic management audit was more effective at reducing subordinate misrepresentations than was the Groves scheme.
A Truth-Inducing Compensation Scheme in Multiple - Period Setting

The single period truth-inducing schemes ignore the impact of long-term contracts. Such contracts take into account subordinates performance history. Therefore, in multiple period setting subordinates private information regarding performance capabilities will be known to superiors. In order to motivate subordinates, superiors may incorporate such information in the compensation plan. Using managers performance over a multiple period as input in their compensation scheme reduce the incentive to create budgetary slack. Concern for reputation and future compensation will provide subordinates with an incentive to communicate truthfully. The following scheme is characteristic of the suggested multiple period truth-inducing compensation model:

Second period compensation scheme:

I. \( C_2 = F + X_1 (B_2 - A_1) + X_2 (A_2 - A_1) \)
   if \( B_2 \geq A_1 \) and \( A_2 \geq A_1 \)

II. \( C_2 = F + X_1 (B_2 - A_1) - X_3 (A_1 - A_2) \)
    if \( A_1 < A_2 \) and \( B_2 > A_1 \)

III. \( C_2 = F + X_2 (A_2 - A_1) - X_4 (A_1 - B_2) \)
    if \( A_1 < A_2 \) and \( B_2 < A_1 \)

IV. \( C_2 = F - X_3 (A_1 - A_2) - X_4 (A_1 - B_2) \)
    if \( A_2 < A_1 \) and \( B_2 < A_1 \)

Where \( C_2 \) is the total compensation in the second period; \( F \) is a certain wage (salary); \( A_1 \) and \( A_2 \) is the actual outcome (performance) in the first and second period respectively; \( B_2 \) is the budgeted or projected outcome in the second period; and \( X_1, X_2, X_3, X_4 \) are bonus coefficients. These coefficients are set such that \( 0 < X_1 < X_3 < X_2 < X_4 \).

Third period compensation scheme:

I. \( C_3 = F + X_1 (B_3 - \frac{A_1 + A_2}{2}) + X_2 (A_3 - \frac{A_1 + A_2}{2}) \)
    if \( B_3 \geq \frac{2}{2} \) and \( A_3 \geq \frac{2}{2} \)
II. \[ C_3 = F + X_1 (B_3 - \frac{A_1 + A_2}{2}) - X_3 (\frac{A_1 + A_2}{2} - A_3) \]
if \( A_3 < \frac{2}{A_1 + A_2} \) and \( B_3 > \frac{2}{A_1 + A_2} \)

III. \[ C_3 = F + X_2 (A_3 - \frac{A_1 + A_2}{2}) - X_4 (\frac{A_1 + A_2}{2} - B_3) \]
if \( B_3 < \frac{2}{A_1 + A_2} \) and \( A_3 > \frac{2}{A_1 + A_2} \)

IV. \[ C_3 = F - X_3 (\frac{A_1 + A_2}{2} - A_3) - X_4 (\frac{A_1 + A_2}{2} - B_3) \]
if \( A_3 < \frac{2}{A_1 + A_2} \) and \( B_3 < \frac{2}{A_1 + A_2} \)

Where \( C_3 \) is the total compensation in the third period; \( F \) is a certain wage (salary); \( A_1, A_2, \) and \( A_3 \) is the actual outcome (performance) in the first, second, and third period respectively; \( B_3 \) is the budgeted or projected outcome in the third period; and \( X_1, X_2, X_3, \) and \( X_4 \) are bonus coefficients.

These coefficients are set such that \( 0 < X_1 < X_3 < X_2 < X_4 \).

The fourth period compensation scheme can be designed similarly, taking into account first, second and third period actual outcome. This suggested scheme has the potential of motivating subordinate to truthfully report their expected outcome by incorporating their performance history into the compensation scheme. The scheme rewards a subordinate for the difference between his budgeted outcome for the period and the actual outcome of the previous periods and for the difference between his actual performance for the period and the actual performance of the previous periods.

However, setting \( 0 < X_1 < X_3 < X_2 < X_4 \) is intended to motivate the subordinate to communicate his expected performance truthfully and to exert his optimal effort. When \( 0 < X_1 < X_3 < X_2 < X_4 \), subordinate is not motivated to understate the standard because he will be penalized for understating his performance even though his performance in the period might be better than the previous periods. (Scheme III).

On the other hand, the subordinate is not motivated to overstate his expected performance in order to obtain higher reward because the penalty for underachievement will be greater (Scheme II). When the subordinate's current period budgeted standard and actual performance exceed the average actual performance in the previous periods, he will get two bonuses (Scheme I).
Conclusion

This study has attempted to discuss the concept of budgetary slack and the factors influencing budgetary slack building behavior. The study also discusses the theoretical foundation of truth-inducing schemes and their role in reducing budgetary slack. Most of the empirical studies have investigated single period truth-inducing schemes. A drawback of the single period schemes is that it ignore the Implications of long-term contracts. Long-term contracts may take into consideration the subordinate’s performance history. Therefore, in multiple period setting subordinate’s private information regarding performance capabilities will be known to superiors. Such information can be incorporated into the compensation plan. The study suggests a model of truth-inducing in multiple period setting. The suggested scheme use subordinate performance over multiple periods as input in his compensation plan. This is expected to provide subordinate with an incentive to communicate truthfully, thereby reduce budgetary slack. In addition the suggested model motivate subordinate to exert his optimal effort because the reward scheme links his compensation to the performance.


