AN EXPERIMENTAL INVESTIGATION OF STRATEGIC BUDGETING: A TECHNIQUE FOR INTEGRATING INFORMATION SYMMETRY

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ABSTRACT

Prior research indicates that incorporating information symmetry into budgeting processes can reduce slack. This study investigates a new budgeting format, Strategic Budgeting, which incorporates information symmetry via mutual monitoring through a "group budget buffer", or pool, that supports funding non-budgeted expenditures. Department managers must seek approval from other managers to use pooled funds. We compare this budget format to a traditional format, which does not incorporate information symmetry, and investigate differences in spending decisions among managers. The results overwhelmingly show that groups using Strategic Budgeting spent less of a budget excess than those using Traditional Budgeting. The effect of the availability of unspent funds for a subsequent year's budget was also compared, with results indicating that this factor may potentially mitigate benefits gained from information symmetry over time. This study is the first to experimentally examine the

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effects of this new type of budgeting technique, as compared to Traditional Budgeting, on managerial budgeting behavior.

The ideal budget increases funding only in those areas needing extra funding, while simultaneously decreases funding in those areas where excesses exist. To do this, the upper manager would either have to be all-knowing, or would have managers willing to yield the excess. Since omniscient managers are rare at best, the most we can hope for is a budgeting technique that encourages managers to yield unneeded funds whenever they exist. How could this happen? Past research has linked information symmetry between peers (Fisher, Maines, Peffer, & Sprinkle, 2002b) and between agents and principles (Fisher, Frederickson, & Peffer, 2002a) to a willingness to reduce slack. However, past research has not operationalized methods for producing that information symmetry as a continual factor in the budgeting process.

The purpose of this paper is to test an emerging budgeting format built on the principle of information symmetry and peer monitoring. We will quantify the impact of these two conditions on the expenditure of excess budget funds. The comparison format is a traditional budget with information asymmetry on the principal-agent level as well as on the peer level.

In an experiment using 40 managers in service departments of a major manufacturing firm, it was observed that the tested format, Strategic Budgeting, produced significantly less expenditures of excess funds than did the traditional budget format. The experiment also tested the willingness of managers to share departmental funds with other needy departments given the difference in budget format. The results indicate that a budgeting format characterized by information symmetry and peer monitoring can reduce the propensity to build slack. The use of a group budget pool, the feature of Strategic Budgeting used to create these characteristics, was successful in reducing spending as compared to the traditional format distinguished by information asymmetry.

We also investigated how budget format, typified by the absence of information asymmetry and with peer monitoring, affects spending when excess unspent funds are not returned. Specifically, we use two manipulations of a variable where excess funds are either returned or not returned to the budget for the subsequent year. We found that when managers were given the knowledge that unspent funds would not be available in a subsequent year's budget, the spending behavior of managers in the Strategic Budgeting group was indeed different from those using the traditional format. While

not significant at conventional levels, the descriptive results show that restrictive budget controls, which penalize managers for not spending excess budget funds could increase the propensity to create slack in the Strategic Budgeting group, while the opposite is true for the traditional format. Thus, the benefit of reduced spending associated with the elimination of information asymmetry via mutual monitoring may be negated when managers are fearful of future budget cuts associated with unspent funds.

Following suggestions by Kaplan (1993) on changes needed in managerial accounting research, this paper tests a practitioner "prototype" to see if it will work in a broader arena. The sample size is relatively small (40 managers) and tests what Kaplan labels, "What's New" research. We contribute to the literature evidence on the viability of a means for removing information asymmetry and utilizing peer monitoring in budgeting processes, which has a favorable effect on slack-building behavior. The remainder of this paper is organized in the following manner: the theoretical background and hypothesis development, description of the research method, discussion of results, and concluding remarks.

THEORETICAL DEVELOPMENT

Effects of Information Symmetry on Budgeting Behavior

The extant research has demonstrated evidence of the link between budget slack and information asymmetry. In general, studies have shown that budgets contained more slack under conditions of information asymmetry. For example, Merchant (1985) showed that when a superior can detect slack, managers are less likely to create slack. Similarly, the reduction or removal of information asymmetry between peers reduces slack-building (Fisher et al., 2002b). Finally, Chow, Cooper, and Waller (1988) and Chow, Cooper, and Haddad (1991) provide evidence that slack increases with the degree of information asymmetry that exists between agent and owner.

Recently, research has begun to focus on the fact that information asymmetry is less likely to exist between peers than between a superior and a subordinate. In recent studies, the effect of mutual monitoring of peers has been investigated. Mutual monitoring of peer behavior was shown to have a positive effect on reducing slack (Chow, Deng, & Ho, 2000; Fisher et al., 2002b; Stevens, 2002). In addition, Towry (2003) discovered that a system of mutual monitoring of peers improved the profit generating performance of managers when horizontal incentives were in place. This genre of research

provides additional evidence of the benefits of reducing information asymmetry in budgeting processes.

Development of Strategic Budgeting: Origins in Project Management

Strategic Budgeting is a prototype budgeting technique that finds its roots in a project management technique named Critical Chain, developed by Eliyahu Goldratt. This methodology focuses on reducing the time it takes to complete projects. The technique is based on several assumptions.

The first assumption is that all project estimates contain a great deal of slack. Goldratt assumed that each task of a project is overestimated by a minimum of 100%, primarily because managers are held responsible for meeting project deadlines, which are "set in stone" (Goldratt, 1997). Heavy penalties are assessed for missing due dates, but no rewards are provided for early delivery of either a segment or the entire project. In fact, time saved on a feeder task may provide little benefit overall if managers on subsequent tasks are not prepared to take advantage of the extra time. Thus, managers overestimate individual task times to ensure that the project is delivered on time.

The second assumption is that forecasts in the aggregate are much more accurate than forecasts for individual segments; it is easier to predict the entire time needed for a project than to correctly estimate each task step. This assumption is validated by Otley (1985) who found that the aggregation of estimates reduces the skewness of those estimates. This is aligned with the premises of the Central Limit Theorem, which states that for large samples, distributions tend to be normally distributed, and any inaccuracies of the lower level forecasts are muted when the forecasts are combined.

The final assumption is based on Parkinson's Law, which states that work will grow to fill the time allotted for it (Parkinson, 1957). Simply put, even when task time estimates contain a large amount of slack, all of the allocated time will be used. Parkinson observed that while ships in the British Navy decreased from 1914 to 1928 by almost 68%, the number of dockyard and Admiralty personnel increased by over 40 and 78%, respectively. Using a formula he developed, Parkinson hypothesized that administrative staffing will increase by over 5% annually, regardless of the level of the entity's workload.

Using Parkinson's Law as the base, Goldratt theorized that, regardless of the time allotted to any particular task in a project, all of the time would be used in most cases. In fact, due to a phenomenon known as the "Student Syndrome", time spent on tasks will exceed allotted amounts (Goldratt,

1997, 1999). This phenomenon is characterized by procrastination in starting tasks due to the excessive padding of time budgeted for each task step. Thus, delay in starting the task, combined with unforeseen events which cause further postponement, results in tasks completed past deadlines and over time budgets.

In order to counteract the unnecessary padding of time and the Student Syndrome, Dr. Goldratt recommended cutting time estimates for each project task in half and then grouping all of the time saved from individual tasks into one "project buffer" placed at the end of the project's estimated time sequence. The "project buffer" was then reduced by one half in order to reduce the overall project time allowed by one third of its original estimate. For any task that required more time than allotted, extra time could be pulled from the project buffer. In this way, the entire project could be completed within the aggregate allotted time. Using simulations to test the Critical Chain methodology, Goldratt showed a significant decrease in the total time needed to complete a task. Similar results were found in actual industry applications, where companies experienced dramatic reductions in the time necessary to complete projects, validating the assumptions for Critical Chain Project Management techniques.

From Critical Chain to Strategic Budgeting

In 1999, a manager of a service department in a major manufacturing company invented a new budgeting technique, called Strategic Budgeting, in order to deal with cost reduction mandates from upper management. The manager's goal was to reduce the budget without reducing headcount or decreasing the outputs of the service departments. The budgeting technique appropriated the model provided by Critical Chain for project management and applied it to budget estimates (documented in Taylor & Rafai, 2003). Following the assumption that large amounts of slack existed in departmental budgets and using the idea of a group project buffer from Critical Chain, the budgets of each department were cut in half and the halves were gathered into a Group Budget Buffer (GBB) for utilization by the entire group if needed. The structure of the Strategic Budgeting method as compared to a Traditional Budgeting format can be seen in Fig. 1.

Access to extra funds in the GBB could only be obtained by agreement among all of the department heads and the division manager. In this way, information symmetry was a condition of using the excess funds. Similar to the profit increasing results Towry (2003) reported in her experiment using

Strategic Budgeting Format Departmental Budget Allocations	
Service Budget = $5,000,000	
Applications Development Budget = $2,000,000	
	Group Budget Buffer = $10,000,000
Systems Hardware = $1,500,000	
Program Management Budget = $900,000	
Systems Integration Budget = $ 600,000	
Testing Division Total Budget = $20,000,000	

Traditional Budget Format Departmental Budget Allocations	
Service	$10,000,000
Applications Development	$4,000,000
Systems Hardware	$3,000,000
Program Management	$1,800,000
Systems Integration	$1,200,000
Total Testing Division Budget	$20,000,000

Fig. 1. Comparison of Strategic Budgeting to Traditional Budgeting.

peer monitoring, the managers in this implementation spent less than the funds available and found synergies among the departments to enable the division to increase and/or maintain the service levels by providing needed services to each other and by reducing redundancies. The end result was a reduction by 37.6% in expenditures (Taylor & Rafai, 2003). Thus, just as transparency of information was a boon to profitability in Towry's experiment (Towry, 2003), so it was to innovation and cost reduction in the Strategic Budgeting implementation.

The term Strategic Budgeting was coined despite the reduction across the board in each department's budget by 50%. The strategy in Strategic Budgeting comes into play as peers negotiate for the use of GBB funds. To justify using shared GBB funds, a department head would have to demonstrate the justifiable need for those funds in light of the divisional goals. It is the justification process that focuses all participants on the divisional and corporate goals, thus the title, Strategic Budgeting. For example, in the case study the department heads negotiating for group funds found synergies to supply the resources needed by the department requesting the extra funding,

without dipping into the funds. However, when one department required equipment to reduce warranty related issues the other department managers approved the fund transfer. Due to the fund transfer, the receiving department actually *doubled its original funding* prior to the original reductions. Thus, the Strategic Budgeting method fostered collaboration and strategic problem solving to achieve corporate goals for reduced spending.

The Strategic Budgeting method recognizes the slack reducing behaviors brought about by information symmetry, and incorporates a mechanism to address the assumption that aggregate forecasts are more accurate than at the task level. Since each department is allowed to draw from the GBB, any misallocation of funds is easily corrected at mid-year by reallocation of shared funds. Simultaneously, the information symmetry and peer monitoring involved in any withdrawal reduces the chances of any one manager withdrawing funds for frivolous expenditures.

Prior to this study, the empirical analysis on Strategic Budgeting as a viable means to reduce spending and slack-building through the benefits of information symmetry was limited to simulations and one case study. This paper contributes experimental investigation of the effects of Strategic Budgeting as compared to a traditional budget format, which does not incorporate information symmetry or peer monitoring.

HYPOTHESES

Hypothesis 1: Format of the Budget

In prior research, budget format has been shown to have a strong impact on budgeting behavior (Franklin, 2002; Grizzle, 1986; Hopwood, 1972). Format was also found to have an impact on the amount of money spent in governmental budgets. Aggregate budgets resulted in less money being appropriated than did those which followed the traditional line by line itemization format (Franklin, 2002).

In this paper we test two different forms of budgeting. The differences are primarily the size of the individual budgets for each department, the existence or non-existence of a group monetary pool and the resulting amount of information asymmetry that exists between departmental managers in the same division. The managers for both budgeting forms participate at the year end in deciding how much of their slack to return to the corporation.

In our study, the Strategic Budgeting method (SB) highlights the availability of funds unspent in the transparent GBB. Therefore, divisions using

SB have greater information symmetry. For divisions using SB, all department heads know what is in the buffer and any proposals to spend buffer funds. As a result, managers should be more reluctant to spend the buffer funds for unnecessary expenditures. In contrast, for divisions using Traditional Budgeting (TB), only the head of the department knows how much excess exists in his or her own department. Therefore, due to greater information asymmetry, managers should be more likely to spend excess funds than those using the SB format. This leads to our expectation that the SB format, representative of information symmetry, is linked to reduced spending, which in turn, leads to reduced slack, i.e., better performance. The following hypothesis investigates this expectation:

H1. Spending of excess funds available will be less for those using Strategic Budgeting as compared to Traditional Budgeting.

Hypothesis 2: The Availability of Unspent Slack

There have been contradictory results regarding the effect of a budget excess on managerial spending patterns. Some studies have demonstrated that the tighter the budget, i.e., restricted funding, the lower the levels of slack (Dunk, 1993; Van der Stede, 2000). In contrast, Merchant (1985) determined that slack increased as budgetary controls tightened. Similarly, Onsi (1973) interviewed managers to determine if they created slack in their budget estimates. Although none of the managers interviewed admitted to creating slack, they stated that they spend every dollar they are allocated. In fact, several managers emphatically stated that they made sure that every dollar was spent! So managers tend to spend the entire budgeted amount, even if excesses are available to refund to the company at year end (Otley, 1978; Onsi, 1973). Thus, fear of budget cuts in future years may be a larger motivator than tightness of budgets in reducing unnecessary expenditures. As a result, managers faced with losing future funds will be highly motivated to spend excess funds rather than lose them.

This study extends the literature by investigating the effect of the availability of excess funds on spending behavior, as moderated by the type of budget format used: one with information symmetry and one without. Following the literature, plentiful evidence supports the notion that information symmetry is associated with a lower propensity to spend funds unnecessarily. Where there is the ability for others to observe spending behavior, managers are cognizant of the need to appear frugal. For example, Stevens (2002) discovered that reputation concerns were more evident in an

environment with information symmetry. Specifically, managers who were worried about their reputations tended to build less slack. Thus, it is likely where information symmetry exists, the availability of excess funds will not have an impact on spending behavior, as unnecessary spending would be avoided.

Our experiment spans a hypothetical period of four years. All managers have sufficient funds to complete their required tasks. For half of the groups the budget amounts are constant for both years. For the remainder of the budget groups the budgets are cut from year 1 to year 2 and in each subsequent year, dependent upon how much of the previous year's appropriation was not spent. Due to this condition, half of the budgets had plenty of funding and the other half had fewer dollars to spend. The predominant theory would predict that those with fewer dollars to spend would have tighter budgets. Therefore, those with tighter budgets should spend less of their available excess than those with "looser" budgets.

Alternatively, if managers suspected that the unspent amounts would be available year after year, unlike the managers Onsi interviewed (1973), they should be more reluctant to spend amounts, which they know are not needed for the current year. Thus, managers receiving unspent funds back in their budgets each year would potentially spend less than those having their budgets cut each year by the amount not spent or by some minimum amount.

While there is evidence to support the notion that the availability of unspent funds does affect spending decisions, the conflicting results in the extant literature prevent a definitive statement of the expected direction of the difference in behavior between tight and loose budgets. The following hypothesis investigates this relationship:

H2. Spending *will differ* between those receiving all of their unspent funds back (loose budgets) and those with budgets that are reduced by the amount not spent (tight budgets).

RESEARCH METHOD

Task

To test our questions, we developed an experiment covering four hypothetical years, using a task that involved several budgetary decisions on spending and allocating funds. Over the hypothetical 4-year period, participants

were asked to make decisions about whether to spend excess budget funds. The task was administered using a computerized program where responses were captured from data input, and users were only allowed to go forward, i.e., prior decisions could not be changed. The experiment was given over a one-week period on site at the corporate headquarters in the United States of a large international manufacturing company. The managers came to a central location where computer stations were available.

Experimental Design

The experimental design and illustrative depiction of the treatment groups are shown in Fig. 2.

Participants were randomly assigned to one of four treatment groups, characterized by 2 independent variables, each with 2 manipulations. The first variable was budget format, consisting of the use of either Strategic Budgeting (SB) or Traditional Budgeting (TB). The manipulation of the second variable, availability of unspent funds, was introduced in the second year. This manipulation operationalized the tightness of budgetary control. Using the computer program, participants read instructions for completing the task, and were given a hypothetical role as a departmental manager in a non-production division of a large manufacturing firm. The structures of the initial budgets provided to the treatment groups are illustrated in Fig. 1. In each of the four years, participants were given information about how much of their budget had been spent by the last month of the year, and were asked to decide how much of their remaining excess budget they would spend before year end. At the beginning of each subsequent year, participants were

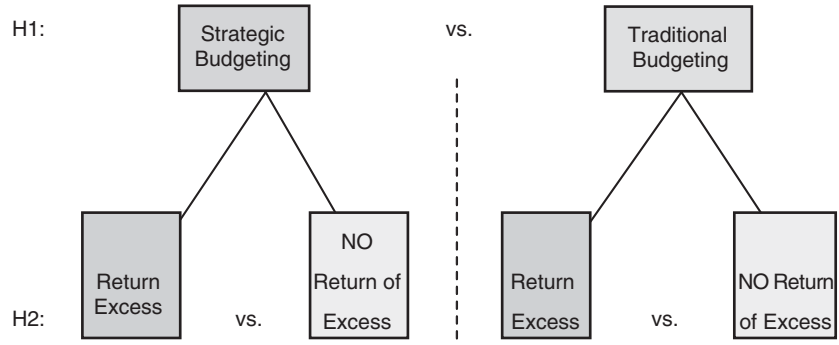

Fig. 2. Experimental Design and Treatment Groups.

given a new budget for the year, which for half of the groups with the tighter budget manipulation, was contingent on prior year spending decisions. The same spending decisions were made for each year.

Dependent Variables

The dependent variable of primary interest in this study was the level of spending, measured as a percentage of funds available. The primary means for measuring this variable was from responses on how much of an excess budget amount, available at the beginning of the last month of the year, would be spent before the end of the year. The excess available budget varied between the groups, depending on assignment of budget type and availability of unspent budgeted funds.

Another dependent variable was also measured in this study, but is not the focus of this paper. This variable was sharing of funds with other departments in need, a concept we refer to as collaboration. This variable was measured by providing participants with a scenario where another department had insufficient funds for an unforeseen expenditure. Participants were asked whether they would share some or the entire requested amount with the other department. For the TB group, this amount would come from department funds, while for the SB group it would be requested from the GBB. It is relevant to mention this variable as it was measured each year *before* the spending of excess decision was made. However, statistical analysis showed no significant effect of this variable in our analysis of the spending variable discussed above.

Independent Variables

To investigate the hypotheses previously discussed, the utilization of two independent variables was required. For each variable there were two manipulations, and other factors were held constant so that appropriate comparisons could be made between the two treatments. The first independent variable was format of budget, Strategic Budgeting (SB) vs. Traditional Budgeting (TB). All scenario information provided to the treatment groups was identical with the exception of the availability of a GBB in the SB group. Instead of an excess departmental budget amount, which was available in the TB group, the SB group had funds available in a group pool, which could only be accessed by approval from other departmental managers within the same division.

Table 1. Participant Demographics.

	n	Mean	Standard Deviation	Minimum	Maximum
Age[a]	36	46.1	6.98	32	62
Years educated	40	16.5	2.24	12	21
Budgeting experience (years)	37	8.2	8.52	0	30
Perceived difficulty of task[b]	40	2.5	1.12	1	6

[a]In addition, 20% of the participants were female.
[b]Perceived difficulty of task was measured on a 7-point Likert scale with 7 being the most difficult.

The second independent variable, introduced in year 2, was the availability of unspent funds from the prior year's budget. The manipulation of the variable was that a group either had their unspent funds returned to their department budget each year (loose budgets), or had their budgets reduced by the lesser of their unspent funds or by a minimum fixed amount (tight budgets). The manipulation of this variable resulted in the creation of 4 treatment groups (2 within each budgeting format).

Subjects

The subjects for this study were 41 managers in a non-production department at a large manufacturing company. A significant outlier was eliminated, leaving 40 useable responses. To promote conscientious effort in completing the task, participants were told that the results of the study would provide useful information about an alternative budgeting process, which could be helpful in their future budgeting decisions. To compensate participation, subjects were given a coupon for a free lunch in the company cafeteria.

The homogeneity of the groups was evaluated by testing for differences in demographic data collected from the participants. Demographic information included age, gender, title, managerial experience, and budgeting experience. Because there were no statistically significant differences between treatment groups, none of the demographic variables were included as control variables in subsequent analyses. A summary of the overall means of the demographic variables is provided in Table 1.

RESULTS AND DISCUSSION

The most notable result overall was the significantly lesser amount of spending by the SB groups than the TB groups. The mean responses for the

spending of excess funds by year and manipulation of the independent variables are provided in Table 2.

Format of Budget: Hypotheses H1

Hypotheses H1 states that format of the budget, Strategic vs. Traditional, will affect the comparison of spending between groups. Notably, in each of the four years, the Traditional Budgeting groups spent significantly more than the Strategic Budgeting groups. Overall, the TB groups spent approximately 26% more, on average, than the SB groups ($p < 0.001$). As anticipated, the availability of the GBB appears to reduce overall spending among the SB groups. Conversely, those using the Traditional budgeting format, lacking information symmetry, appear to create more slack in their budgets. The results for the first hypothesis are in Table 3.

These results are aligned with prior literature, which found that the existence of information symmetry is associated with reduced spending. Apparently, even in the face of department budget cuts, managers were motivated to avoid unnecessary spending under the umbrella of mutual monitoring associated with the division's GBB. Indeed, anecdotal evidence from explanations for decisions provided by participants revealed that

Table 2. Descriptive Statistics for Spending.

		Percentage Spent out of Total Available					
	n	Year 1 (%)	Year 2 (%)	Year 3 (%)	Year 4 (%)	Avg Spent[a] (%)	Total Spent[b]
Strategic budget	20	2.45	2.94	2.99	3.83	3.06	567,500
Traditional budget	20	36.56	31.72	26.41	25.18	29.97	3,958,500
SB – Unspent avail (UA)	9		2.44	1.20	1.20	1.51	555,556
SB – Unspent not avail (UNA)	11		3.36	4.45	5.98	4.32	577,273
TB – Unspent avail	10		41.03	31.25	32.92	36.97	6,000,000
TB – Unspent not avail	10		22.42	21.57	17.45	22.97	1,917,000

[a]Avg spent represents the average percentage of available funds spent (the Spend variable) over all 4 years.
[b]Total Spent is the total dollars of excess budget (or slack) spent over all 4 years.

Table 3. Results for Hypothesis 1: Effect of Budget Format.

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	*F*	Sig.
% Spent – Year 1	Contrast	11527.209	1	11527.209	18.399	0.000
	Error	22554.946	36	626.526		
% Spent – Year 2	Contrast	8319.834	1	8319.834	13.286	0.001
	Error	22543.110	36	626.197		
% Spent – Year 3	Contrast	5319.032	1	5319.032	7.751	0.008
	Error	24703.119	36	686.198		
% Spent – Year 4	Contrast	4148.876	1	4148.876	7.207	0.011
	Error	20724.467	36	575.680		
Average % Spent	Contrast	7075.124	1	7075.124	17.202	0.000
	Error	15217.864	37	411.294		
Total Spent	Contrast	1.08E +14	1	1.078E +14	13.314	0.001
	Error	3.00E +14	37	8.097E +12		

Pairwise Comparisons for SB vs. TB

Dependent Variable	Mean Difference (SB – TB) (%)	Std. Error	Sig.
% Spent – Year 1	−34.03	7.935	0.000
% Spent – Year 2	−28.92	7.933	0.001
% Spent – Year 3	−23.12	8.305	0.008
% Spent – Year 4	−20.42	7.606	0.011
Average % Spent	−26.63	6.421	0.000
Total Spent	−3,287,520	900,964	0.001

managers did not spend excess funds because they did not "need" the extra funding and, therefore, would not spend it. In fact, in the first year, over 75% of the SB managers stated, in some form, that the reason they did not spend any or much of the GBB excess was simply because they did not need it. In contrast, only 35% of the TB managers made similar statements. Instead the TB managers explained their end of the year spending by either stating that they were buffering for risk (20%) or that they were protecting their personal metrics in their own department (45%). The results validate the findings of previous studies on the impact of information symmetry between peers and are especially interesting in light of Steven's 2002 study documenting the desire of monitored managers to appear to be ethical. Thus, it appears that the Strategic Budgeting format may be a viable means for implementing the characteristic of information symmetry

via mutual monitoring for budget goals that include reducing unnecessary spending.

Availability of Unspent Budget Funds: Hypotheses H2

Hypothesis H2 states that the availability of unspent budget funds will affect the decision to spend excess budget funds. Our expectation was that groups who lost prior year unspent funds in a subsequent year's budget would be more inclined to spend future excess funds to insure against further budget cuts. Within the SB groups, the descriptive statistics suggest that this effect did occur. That is, as excess unspent funds were taken away from the GBB, managers appeared to increase unnecessary spending to retain future funds. While the differences were not statistically significant at conventional levels, given smaller sample cell sizes, it is noteworthy to examine the trends between groups suggested by the descriptive results. The results for the tests of Hypothesis H2 are in Table 4.

The lack of statistical significance in the comparison of the SB groups requires a rejection of Hypothesis 2 in favor of a conclusion that there is no effect from restrictive budget controls among those using the Strategic Budgeting. Such a result is quite interesting. The fact that the managers in the two SB groups spent similar amounts (from a statistical standpoint) regardless of the size of the GBB demonstrates the power of a budgeting format which includes information symmetry as an integral factor in the spending decisions for that excess.

On the other hand, within the TB groups, the evidence suggests that the availability of unspent funds increases spending. While this comparison was only statistically significant in year 2, this is important as it was in this year that the manipulation of this variable was introduced. In particular, the group not penalized for underspending (i.e., retained unspent funds) spent significantly more than did the group penalized for underspending. The managers had been informed that management was rewarding them with good performance reviews if they contained or reduced their costs. The results indicate that managers in the TB group having funding cut each year placed greater weight on management's directives to reduce cost than did those having their budgets returned each year even when the funds were not needed. This result gives weight to previous studies by Locke and Latham (1990), Merchant and Manzoni (1989) and Fisher et al. (2003) showing that tighter budgets are more motivational than are looser budgets when a traditional departmental budgeting format is used. However, when the SB

Table 4. Hypothesis 2 – Effect of Availability of Unspent Funds.

Analysis of Variance

		Sum of Squares	df	Mean Square	*F*	Sig.
% Spent – Year 1	Between groups	12407.881	3	4135.960	6.720	0.001
	Within groups	22157.856	36	615.496		
	Total	34565.737	39			
% Spent – Year 2	Between groups	10018.137	3	3339.379	5.242	0.004
	Within groups	22931.574	36	636.988		
	Total	32949.711	39			
% Spent – Year 3	Between groups	6005.376	3	2001.792	2.959	0.045
	Within groups	24358.067	36	676.613		
	Total	30363.443	39			
% Spent – Year 4	Between groups	5868.067	3	1956.022	3.286	0.032
	Within groups	21427.788	36	595.216		
	Total	27295.855	39			
Average % Spent (Years 2–4)	Between groups	7118.422	3	2372.807	5.817	0.002
	Within groups	14685.649	36	407.935		
	Total	21804.072	39			

Multiple Comparisons

	Groups[a]		Mean Difference (I–J) (%)	Std. Error (%)	Sig.	95% Confidence Interval	
	I	J				Lower Bound (%)	Upper Bound (%)
% Spent – Year 2	1	2	−0.92	11.344	0.936	−20.07	18.23
	3	4	18.61	11.287	0.108	−0.45	37.67
% Spent – Year 3	1	2	−3.25	11.691	0.783	−22.99	16.49
	3	4	9.68	11.633	0.411	−9.95	29.32
% Spent – Year 4	1	2	−4.78	10.966	0.665	−23.30	13.73
	3	4	15.47	10.911	0.165	−2.95	33.89
Average % Spent (Years 2–4)	1	2	−2.9859	9.07805	0.744	−21.3971	15.4252
	3	4	14.5872	9.03255	0.115	−3.7317	32.9060

[a]Group Numbers: 1 = SB with excess funds returned; 2 = SB without excess funds returned; 3 = TB with funds returned; 4 = TB without excess funds returned.

format is used, spending is slightly higher in the groups penalized for underspending. This difference is not significant, but interesting. The SB managers having all unspent funds returned behaved dramatically different than did those in the TB groups when their funds were returned. Managers with plenty to spend in the SB groups appeared to spend less than their counterpart TB managers.

Limitations

As with any controlled experiment, potential limitations of this study could affect the interpretation of the results. The use of participants at only one company limits the generalizability of results. In addition, the hypothetical division only had five departments, and it was a relatively simple structure. The scope of control of the GBB and the ability to mutually monitor it should be easier in a simple organizational structure as compared to a more complex one. Similarly, lack of an actual reward for performance on the task may not provide the same incentive to perform as that provided in an actual management setting, even though participants were well aware of the emphasis on good budget performance. However, the company surveyed in this experiment was in a cost cutting mode, having had news the week prior to our experiment that profit projections were overstated by 90%. Therefore, the attitude of all managers should have been to take cost cutting very seriously.

As with experimental research, our findings should be taken in light of uncontrollable weaknesses to both internal and external validity. On the other hand, according to Hogarth et al. (1993), as research is compiled across a number of different settings, the validity of specific results can take shape. We are hopeful that future research examining Strategic Budgeting in different budgetary environments with varying participants will provide additional insights on this new budget method.

CONCLUSIONS

Prior literature has provided sufficient evidence that information symmetry and peer monitoring have positive impacts on a budgeting process by reducing spending and the propensity to create slack. This study investigates a budgeting technique, which can be used to integrate these characteristics into budgeting environments. Specifically, the Strategic Budgeting format incorporates a mechanism for information symmetry via mutual monitoring

of the GBB. The results of this study provide support that this budget format can be successful in reducing unnecessary spending and slack building. Even though the actual external environment of the managers in the surveyed company was such that cost reduction was considered critical to the company's future, the difference in the amounts spent in the two primary groups was still significant. Evidently, the SB format can produce significantly higher cost reductions among managers already highly motivated to contain costs than can a Traditional Budgeting format.

However restrictive controls that penalize underspending of excess funds could, over time, produce behavior, which negates the benefits gained by the SB format. Indeed, even information symmetry may not mitigate the fear of future budget cuts when managers are penalized for strategic spending and reducing costs. Implementation of budget formats based on the Strategic Budgeting technique should consider potential consequences of controls that are too restrictive on the availability of unspent budgeted funds. It should be reiterated, however, that managers in both SB groups did not spend significantly different amounts regardless of the amount of the unspent funds returned from the GBB. Therefore, there should be no downside to returning unspent funds to managers using the SB format. In addition, future research should focus on other factors, such as individual vs. group performance incentives, or the nature of the surveyed company's external competitive market, that could interact with the mutual monitoring characteristic of Strategic Budgeting.

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REFERENCES

Chow, C. W., Cooper, J. C., & Haddad, K. (1991). The effects of pay schemes and ratchets on budgetary slack and performance: A multiperiod experiment. *Accounting, Organizations and Society*, *16*(1), 47–60.

Chow, C. W., Cooper, J. C., & Waller, W. S. (1988). Participative budgeting: Effects of a truth-inducing pay scheme and information asymmetry on slack and performance. *The Accounting Review*, *63*(1), 111–122.

Chow, C. W., Deng, F., & Ho, J. L. (2000). The openness of knowledge sharing within organizations: A comparative study of the United States and the people's Republic of China. *Journal of Management Accounting Research*, *12*, 65–95.

Dunk, A. S. (1993). The effect of budget emphasis and information asymmetry on the relation between budgetary participation and slack. *The Accounting Review*, *68*(2), 400–410.

Fisher, J., Frederickson, J. R., & Peffer, S. A. (2002a). The effect of information asymmetry on negotiated budgets: An empirical investigation. *Accounting Organizations and Society*, *27*, 27–43.

Fisher, J. G., Maines, L. A., Peffer, S. A., & Sprinkle, G. B. (2002b). Using budgets for performance evaluation: Effects of resource allocation and horizontal information asymmetry on budget proposals, budget slack, and performance. *The Accounting Review*, *77*(4), 847–865.

Fisher, J. G., Peffer, S. A., & Sprinkle, G. B. (2003). Budget-based contracts, budget levels, and group performance. *Journal of Management Accounting Research*, *15*, 51–74.

Franklin, A. (2002). An examination of the impact of budget reform on Arizona and Oklahoma appropriations. *Public Budgeting and Finance*, *22*(3), 26–35.

Goldratt, E. M. (1997). *Critical chain*. Great Barrington, MA: The North River Press.

Goldratt, E. M. (1999). *Goldratt satellite program viewer notebook*. Great Barrington, MA: North River Press.

Grizzle, G. A. (1986). Does budget format really govern the actions of budgetmakers? *Public Budgeting and Finance*, *6*(1), 60–70.

Hogarth, R. M., Gibbs, B. J., McKensie, C. R. M., & Marquis, M. A. (1993). Learning from feedback: Exactingness and incentives. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *17*, 734–752.

Hopwood, A. G. (1972). Empirical study of the role of accounting data in performance evaluation. *Empirical Research in Accounting: Selected Studies, Supplement to Journal of Accounting Research*, *10*, 156–193.

Kaplan, R. S. (1993). Research opportunities in management accounting. *Journal of Management Accounting Research*, Sarasota, *5*(Fall), 1–12.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Merchant, K. A. (1985). Budgeting and the propensity to create budgetary slack. *Accounting Organizations and Society*, *10*, 201–210.

Merchant, K. A., & Manzoni, J. (1989). The achievability of budget targets in profit centers: A field study. *The Accounting Review*, *LXIV*(3), 539–558.

Onsi, M. (1973). Factor analysis of behavioral variables affecting budgetary slack. *The Accounting Review*, *48*(3), 535–548.

Otley, D. T. (1978). Budget use and managerial performance. *Journal of Accounting Research*, *16*(1), 122–149.

Otley, D. T. (1985). The accuracy of budgetary estimates: Some statistical evidence. *The Journal of Business Finance & Accounting*, *12*(3), 415–428.

Parkinson, C. N. (1957). *Parkinson's law*. Cambridge: Riverside Press.

Stevens, D. E. (2002). The effects of reputation and ethics on budgetary slack. *Journal of Management Accounting Research*, *14*, 153–171.

Taylor, A., & Rafai, S. (2003). Strategic budgeting: A case study and proposed framework. *Management Accounting Quarterly*, *5*(1).

Towry, K. L. (2003). Control in a teamwork environment – The impact of social ties on the effectiveness of mutual monitoring contracts. *The Accounting Review*, *78*(4), 1069–1096.

Van der Stede, W. A. (2000). The relationship between two consequences of budgetary controls: Budgetary slack creation and managerial short-term orientation. *Accounting Organizations and Society*, *25*(6), 609–622.