The Impact of Budgetary Slack on Budget Use

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Abstract:

Budgets can be used for many different purposes, such as for planning, coordination, motivation and performance evaluation. In this paper we argue that the intensity of use for different purposes depends on the quality of the budget estimate, i.e., the level of slack in the budget. When slack is higher, intensity of budget use is lower.
Based on survey evidence from 44 Dutch listed firms, we find that firms' level of budget participation, ability to detect slack and budget emphasis all have a negative impact on their budgetary slack level, while perceived environmental uncertainty has a positive impact. Also, we find that budgetary slack indeed leads to less budget use for three purposes: planning/communication, coordination/allocation and evaluation/rewarding. These effects are much weaker when we use purposefully incorporated slack in our model, instead of overall slack. Finally, we also find that the impact of slack on satisfaction with the budgeting system runs indirectly via the purposes of budget use.

Keywords: budget use, budgetary slack, purposeful slack

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I. INTRODUCTION

The use of budgets still triggers an important debate in the management accounting literature (Covaleski et al., 2003). Where some argue that the budgeting process is time and cost consuming, leads to rigidity and short-termism, and provides little added value to increase company performance (e.g., Neely et al., 2001), others find budgeting an indistinguishable part of the planning process of firms when the budgets are used properly (e.g., Covaleski et al., 2003; Hansen et al., 2003; Merchant and Van der Stede, 2007).

Recently, Hansen and Van der Stede (2004) examined for which purposes budgets are used in practice, and found that antecedents and consequences of reasons to budget differ. In this paper, we argue that the purposes for which budgets are used depend on the quality of the budget information signal. The normative literature specifies that for motivation and performance evaluation purposes targets should be challenging and therefore budgetary slack needs to be low, whereas for planning and coordination purposes more slack is allowed.[1] Since most firms use the same budget for multiple purposes, they have to compromise on the slack level they allow (Merchant and Manzoni, 1989). One important decision in performance management, therefore, is "how to choose a target that either suits the primary purpose of budgeting or provides a reasonable compromise between the planning and motivational purposes" (Merchant and Van der Stede, 2007, p. 335). Hansen et al. (2003) also argue that little is known about how the different guidelines with respect to the optimal slack level for different purposes of budget use interact together. Further, Hansen and Van der Stede (2004) suggest that more research is needed to understand how firms choose their multiple reasons to budget when circumstances of each individual reason are incompatible.

The main contribution of our paper is that we examine the relationship between the outcome of the budgeting process, i.e., the budgetary slack level, and the functions for which the budget is used. Prior research mainly examines slack as an outcome variable, whereas we argue that the slack level impacts the purposes for which the budget will be used. Further, we examine budget use at the corporate level and not at the business unit level, as done by Hansen and Van der Stede (2004). This focus on a higher organizational level leads to additional purposes for which firms use budgets, such as for resource allocation and to authorize spending. Finally, we distinguish between overall and purposeful slack. Recently, studies have documented the beneficial impact of budgetary slack on managerial behavior (Van der Stede, 2000; Davila and Wouters, 2005). Therefore, we also examine whether the impact of slack on the purposes for which budgets are used, depends on whether slack is purposeful or not.

To test these assertions, we develop a structural model and use Partial Least Squares (PLS) to estimate this model. First, we assess which factors influence the level of slack. Next, we argue that the extent to which budgets are used for various purposes depends on the slack level, and test whether this is indeed the case. Finally, we analyze the relationship between the degree of budget use for different purposes and the level of satisfaction with the budgeting system.

From the empirical analysis we find that firms' level of budget participation, ability to detect slack and budget emphasis all have a negative impact on their budgetary slack level. Firms that face more environmental uncertainty have more slack in their budgets. We also find that in our sample the budget is used

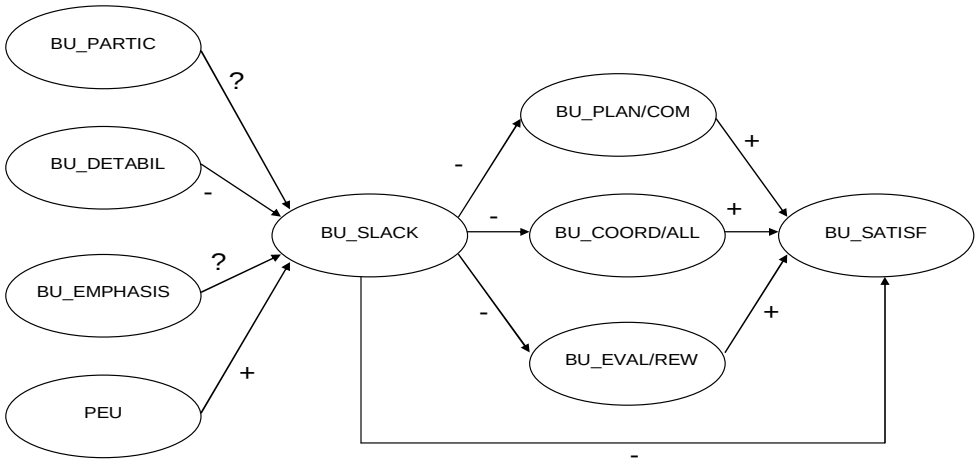
for three different purposes. These are 1) planning and communication, 2) coordination and allocation, and 3) evaluation and rewarding. Further, the results show that slack has a negative impact on the degree of budget use for all three purposes. This effect is less strong when the slack in the budgets is purposefully built in during the budgeting process. Finally, we find that slack has an indirect negative effect, via the purposes of budget use, on budgeting system satisfaction, but no direct effect.

The remainder of this paper is structured as follows. Section two reviews the literature and builds the structural model we test in this paper. Section three discusses the data collection, measurement instruments and statistical techniques used. Section four presents the results of the empirical analysis. Finally, section five discusses the most important results and summarizes the paper.

II. LITERATURE REVIEW

In this section we build our structural model (see Figure 1).

Figure 1: Structural model tested in the paper



First, we describe the different purposes for which budgets can be used. Then we discuss the relationship between several budgeting and environmental factors, and slack. Next, we explain why the level of slack influences the different purposes of budget use. Finally, we discuss how slack has both a direct and an indirect effect (via the purposes of budget use) on satisfaction with the budgeting system.

Use of budgets

Although many sources argue that budgets are used for multiple purposes (Covaleski et al., 2003; Horngren et al., 2003), only recently empirical evidence about these different purposes has become available.[2] In their review paper, Covaleski et al. (2003) identify as purposes for which budgets are used, planning and coordination of organizational activities, allocation of resources, motivating employees, and expressing conformity with social norms. Similarly, Merchant and Van der Stede (2007) argue that budgets are used for planning, coordination, motivation and top management oversight.

Hansen and Van der Stede (2004) are the first that have intensively examined, based on discussions with practitioners, for which reasons budgets are used in practice. From these discussions they conclude that purposes of budget use are a) operational planning, b) performance evaluation, c) communication of goals, and d) strategy formulation. Hansen and Van der Stede (2004) find in an exploratory factor analysis that these four purposes load on one factor, but argue that they are different enough to analyze them separately. Based on these purposes, they examine what the antecedents and consequences of these four different types of budget use are. As Hansen and Van der Stede (2004) argue, this approach leads to a "practice defined" variable (Luft and Shields, 2003), but they suggest that a better approach is non-existent, because the number of different types of use is potentially unlimited. More specific, purposes of use might depend on the hierarchical level at which budgets are used. Hansen and Van der Stede (2004), who discuss the use of budgets at the business unit level, specifically state that at a higher organizational level other purposes of budget use could be identified, such as using budgets for resource allocation and authorization of spending.

In this paper, our level of analysis is the top management level whereas Hansen and Van der Stede (2004) gathered data at the business unit level. This might lead to slightly different purposes of budgeting. Based on exploratory factor analysis on 10 items (see measures section), we identify three different purposes of budget use at the top management level. These purposes are 1) the extent to which budgets are used for planning and communication, 2) the extent to which budgets are used for coordination and allocation, and 3) the extent to which budgets are used for evaluation and rewarding. The *planning and communication* purpose is the ex ante use of budgets to translate the long-term strategic plan of the firm into a short-term plan (i.e., the budget) and to communicate their contents to the employees. This purpose also includes the strength of the link between the budget and the strategy. When the budget has a strong link with the strategy of the firm, this reinforces the impression by subordinates that the followed strategy is a plan that should be followed by all employees (Simons, 2000). With a closely linked budget, employees are able to assess decisions in the context of the firm's strategy. In addition, such budgets are able to communicate the strategy to employees.[3] The *coordination and allocation* purpose is the use of budgets to allocate resources needed between organizational units, to coordinate activities, and to authorize spending. This factor is distinctively different from the purposes of budget use identified by Hansen and Van der Stede (2004), and represents the fact that the level of analysis in our study is the corporate level. As Merchant and Van der Stede (2007) discuss, this factor leads to sharing of information both vertically, where top managers state priorities and subordinates identify opportunities and risks to top managers, and horizontally, between different organizational units. The *evaluation and rewarding* purpose is the ex post use of budgets to evaluate the extent to which the initial plans were met, and to reward employees for their achievements. This includes activities such as evaluation of both activities and employees, and motivating and rewarding employees.

Antecedents of budgetary slack

Before explaining why the slack level has an impact on the purposes for which budgets will be used, we will first discuss a number of antecedents of budgetary slack.[4] There is a considerable literature that discusses antecedents of slack (see Dunk and Nouri, 1998, for an overview). In this paper we focus on three important budgeting characteristics that influence slack, being the level of budget participation, ability to detect slack, and budget emphasis. In addition, we explore the impact of perceived environmental uncertainty. Participation in the budgeting process can have two differential types of impact on slack. First, letting managers participate in the budget negotiation process provides them with the opportunity to raise slack (Schiff and Lewin, 1970; Lukka, 1988). Empirical evidence for this effect is found in Lowe and Shaw (1968) and Schiff and Lewin (1970). In contrast, participation is also argued to have a negative impact on slack because it leads to information sharing between the superior and subordinate, and therefore to more reliable budget levels (Onsi, 1973; Cammann, 1976). Empirical evidence for this negative relationship is found, among others, in Merchant (1985) and Lal et al. (1996). Together these two contrasting effects lead Dunk and Nouri (1998) to the conclusion that participation is a necessary condition for slack, but not a sufficient one. Considering these arguments, we state our hypothesis in the null-form, i.e.,

H_1: Budget participation is not related to budgetary slack.

The ability of top management to detect slack has a negative impact on the level of slack (Onsi, 1973). Ability to detect slack is a function of the quality of information systems, the information asymmetry between subordinates and superiors, and the predictability of tasks (Merchant, 1985). Empirical evidence for this negative relationship is found in Merchant (1985). Therefore, we expect that;

H_2: Ability to detect slack is negatively related to budgetary slack.

Budget emphasis also has a contingent impact on slack (Van der Stede, 2001). First, increasing the emphasis on budgetary controls increases the risk for managers of negative consequences when they do not reach their budget targets. This will lead to increased incentives for managers to create slack (Van der Stede, 2001). Empirical evidence for this effect is found in Lal et al. (1996), and partly in Merchant (1985). Second, budget emphasis can reduce the propensity to build slack over time because of negative reputation effects when managers meet their budget each year, which indicates that they negotiate for slack (Van der Stede, 2001; Webb, 2002). Empirical evidence for this negative relationship between budget emphasis and slack is found in Dunk (1993) and Van der Stede (2000). Considering this differential impact, we state our hypothesis in the null-form, i.e.,

H_3: Budget emphasis is not related to budgetary slack.

Finally, Merchant (1985) argues that slack can be used to absorb uncertainty in the environment, suggesting a positive relationship between environmental uncertainty and the level of slack. He finds empirical evidence for this conjecture in a survey of 170 US managers from 19 firms. Indjejikian and

Matejka (2006) argue that perceived environmental uncertainty is a proxy for information asymmetry and also expect a positive association. They find, however, no significant relationship in their data. Together, we expect that,

H_4: Perceived environmental uncertainty is positively related to budgetary slack.

Impact of budgetary slack on budget use

Budgetary slack can be caused by many factors, such as imperfect forecast models and a difference between individual and organizational goals (Walker and Johnson, 1999). Both unreliable forecast models and goal incongruence lead to biased information that feeds the budgeting process (Otley, 1985; Lukka, 1988). The level of bias influences the usability of the budget for different control purposes. Shank and Govindarajan (1993), for example, argue that performance evaluation presupposes the establishment of accurate standards. When slack in budgets is high, they provide no accurate targets. The quality of a performance measure therefore influences its fit for using it in the control system. We argue that the outcome of the budgeting process, i.e., the level of slack in the budget, is an indication for the level of bias in the performance measure and therefore for the quality of the signal. This is associated with the usability of the budget for different purposes. If the performance measure is more biased, that is it incorporates more slack, in general this will make the measure less fit for using it for a number of purposes. Therefore, we test the following hypothesis[5];

H_5: Budgetary slack is negatively related to the use of the budget for a) planning and communication, b) coordination and allocation, and c) evaluation and rewarding.

The impact of the level of slack on the usefulness of budgets for different purposes might vary, however (Barrett and Fraser, 1977; Otley, 1982; Merchant and Manzoni, 1989; Merchant and Van der Stede, 2007). One solution is that firms use different budgets for different purposes. Hopwood (1974), for example, suggests that top managers provide difficult to achieve budget targets to managers, while they have a different budget plan for planning and coordination purposes in their drawers with targets that incorporate more slack. There is some evidence, however, that firms hardly use different budgets for different purposes (Umapathy, 1987; Merchant and Manzoni, 1989), and that firms therefore compromise on the slack level. For example, Merchant and Manzoni (1989) find in their sample of 12 firms, that all 54 profit centers studied use the same budget for motivation and planning purposes. In addition, Umapathy (1987) documents that in the US only 7% of firms use multiple budgets for different purposes. This raises the question how firms set the optimum slack level for their budgets, or how, given the level of slack, they use their budgets for different purposes.
First, psychological literature unambiguously finds that challenging targets with little slack are optimal in providing managers motivation (Locke and Latham, 2002). This suggests that a biased signal, i.e., a budget with much slack, makes it less valuable for motivational purposes. Although numbers differ somewhat, most research finds that, with respect to this guideline, it

would be optimal if budgets would be reached somewhere between 25% and 40% of time (Merchant and Van der Stede, 2007). Merchant and Manzoni (1989), however, find that for many reasons, such as to protect autonomy, to increase predictability of earnings, to reduce risk of losing goal commitment, and to reduce the need for intervention, firms often set more achievable targets. This opinion is corroborated by Fisher et al. (2003), who find that in the context of group budgets moderately difficult budgets lead to the highest motivation of workers.

Some argue that using budgets for planning and coordination purposes requires that budget levels should represent management's best guess, meaning that slack will be moderate and that budgets on average are reached 50% of time (Barrett and Fraser, 1977; Merchant and Manzoni, 1989). In contrast, Otley and Berry (1979) find that when budgets at lower organizational levels are aggregated to a higher level, the probability to achieve the aggregate higher level budget is much lower than that of the individual disaggregate lower level budgets. This suggests that at the corporate level a moderate level of slack is needed to be able to set achievable budget levels at lower levels. In addition, for reasons of facilitating discussions between managers of different organizational units that are highly interdependent, some slack is needed to let managers focus on optimal decisions for the firm and not on decisions that are optimal for their own organizational unit (Lillis, 2002). Finally, in an experiment Fisher et al. (2003) also find that moderately difficult targets lead to the best performing budgets for coordination purposes, because variability in performance is lowest.

In sum, based on psychological theory we could expect that the negative impact of slack on budget use is stronger for the evaluation/rewarding purpose than for the planning/communication and coordination/allocation purposes. The arguments from Merchant and Manzoni (1989) are, however, contrasting this expectation. Therefore, because theory to predict differences between the strength in association between slack and the different purposes of budget use is not strong enough, we do not state formal hypotheses, but examine this issue exploratory.[6]

Budgetary slack, use of budgets and budgeting system satisfaction

In the IT-literature many studies have examined the relationship between usage of information systems and user satisfaction (see DeLone and McLean, 1992, for an overview). In general, these studies have found this relationship to be positive. To our knowledge, Hansen and Van der Stede (2004) is the only budgeting study that has examined a similar relationship. They found that when the performance of each reason to budget increases, this has a positive influence on overall satisfaction with the budget. Therefore, we expect that;

H_6: The use of the budget for a) planning and communication, b) coordination and allocation, and c) evaluation and rewarding is positively related to budgeting system satisfaction.

To our knowledge no studies are available that document the relationship between the level of slack and budgeting system satisfaction. As more slack implies a lower quality of the budget information signal, to the extent that there is a direct relationship between budgetary slack and budgeting system satisfaction, we expect it to be negative. We argue, however, that when slack is high, firms will adjust the intensity of budget use and, for example, choose alternative control mechanisms for these purposes. We therefore expect that the impact of slack on budgeting system satisfaction is at least partially mediated by the purposes of budget use. Therefore, we expect that;

H_7: Budgetary slack is negatively related to budgeting system satisfaction.
H_8: The relation between budgetary slack and budgeting system satisfaction is mediated by the use of the budget for a) planning and communication, b) coordination and allocation, and c) evaluation and rewarding.

Impact of purposeful slack on budget use

Although slack has a negative connotation, there are many reasons why firms build slack in their budgets. Davila and Wouters (2005), for example, find that firms purposefully incorporate slack in their budgets to facilitate growth and to indicate to managers that other performance dimensions, such as service quality, are important. Similarly, Van der Stede (2000) finds that a higher slack level leads to a longer time orientation of managers. Together these arguments imply that when firms purposefully incorporate slack in their budgets, this does not need to have an adversary impact on budget use. We therefore also estimate our structural model (see Figure 1) with a measure for purposeful slack instead of the (overall) slack variable. We expect the association between slack and budget use to be less negative if slack is of the purposeful type. In addition, provided the discussion above, purposeful slack is incorporated into budgets, among others, to facilitate growth and to stress other important performance dimensions. Therefore, we expect that traditional antecedents, such as budget participation and budget emphasis, have less impact on purposeful slack. Finally, when slack is purposefully incorporated into the budget, we expect that it has no (direct or indirect) impact on satisfaction with the budgeting system.

III. METHOD

This section discusses the sample and data collection, measurement instruments and statistical techniques used.

Sample and data collection

In Fall 2006, a survey study was conducted on operational budgeting practices among Dutch manufacturing, trade and service (including financial services) firms that are listed on the Amsterdam Stock Exchange.[7] In total, the chief financial officers (CFOs) of 134 firms were sent a six-page questionnaire, a personalized cover letter, and a stamped return envelope. CFOs were chosen as informants as they are knowledgeable about firm's operational budgeting practices at the corporate level. Four weeks later, the non-respondents were sent a reminder with a new questionnaire. In total, 44 questionnaires were returned. Therefore, the total realized response rate was 32.8%. To investigate the possibility of non-response bias, we compared the respondents to the non-respondents in terms of firm size (net sales) and sector representation. The results show that the firms that responded are somewhat larger but from similar sectors than the firms that did not respond. [8] Given the rather small sample we use mean imputation for missing values. All analyses are based on this imputation. The maximum number of missing values for an item is 4. To test whether the missing values were missing completely at random (MCAR), we performed Little's MCAR test, which was not significant (χ^2=274.169, *df*=271, *p*>0.43). This implies that the imputation method has no impact on the results, and therefore any imputation method can be used (Hair et al., 1998).

Measures

In this section we test the reliability and validity of our constructs. We test the dimensionality of constructs through factor analysis. In appendix B the factor loadings of all items are reported. In appendix A the complete measurement instruments are reported.

Consistent with Hansen and Van der Stede (2004), *Budget participation (BU_PARTIC)* is measured through a one-item instrument. Respondents were asked, on a five-point scale ranging from 1 (not at all) to 5 (to a very great extent), to rate the extent to which the managers of the business units in their firm participate in setting their unit's targets. In this item, taken from Hansen and Van der Stede (2004), we replaced the term unit manager by "managers of the business units" to reflect our different level of analysis. To test the construct's criterion-related validity, we compared the averages of budget participation in two groups, based upon an additional question in which we asked respondents which of two statements best described the target setting process in their budgeting system. The statements were 1) top management develops the targets, presents them for noncommittal advise to the lower levels, and then sets them, or 2) managers develop the targets for their own areas of interest, which then (maybe revised) are set by top management. The

average budget participation scores were 3.6 in group 1 and 4.4 in group 2, and significantly different from each other (t=-3.014, p<0.01).

Ability to detect slack (BU_DETABIL) was measured using an instrument developed by Onsi (1973), and used by Merchant (1985) and Lal et al. (1996). Respondents were asked, on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), to indicate the extent to which they agree with three statements with regard to the ability of the top management of their firm to detect slack in the budgets of the business units. The three items load on one factor that explains 56% of the variance. Cronbach alpha of the construct is 0.59.

Budget emphasis (BU_EMPHASIS) was measured using an instrument developed by Hansen and Van der Stede (2004). Respondents were asked, on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), to indicate the extent to which they agree with four statements with regard to the importance of meeting targets by the managers of the business units in their firm. Factor analysis reveals that one dimension explains 53% of the variance in the four items, which has a Cronbach alpha of 0.70.

Perceived environmental uncertainty (PEU) was measured using an instrument developed by Govindarajan (1984) and Gordon and Narayanan (1984), and adapted by Hoque (2004). Respondents were asked, on a five-point scale ranging from 1 (very predictable) to 5 (very unpredictable), to indicate their perceptions of the predictability of eight elements of the firm's external environment during the last five years. Since the instrument is a typical example of a construct with formative indicators (Diamantopoulos and Winklhofer, 2001), we do not factor analyze the construct. Firms can face high uncertainty among any of the areas in the items, but do not necessarily have to score high on all items. Items therefore do not need to covary. This implies that reliability and validity tests are meaningless with formative indicators (e.g., Bisbe et al., forthcoming). Although PLS is able to incorporate formative indicators in the model (Chin, 1998a), we handle this variable as a one-dimensional construct measured by a summated scale in the reported results because of power considerations.[9]

Budgetary slack (BU_SLACK) was measured through a slightly adapted five-item scale developed by Van der Stede (2000). First, respondents were asked, on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), to indicate the extent to which they agree with four statements with regard to the role of targets in their firm's budgeting system. Next, the respondents were asked, on a fully-anchored, five-point (reverse coded) scale, how they in general would characterize the targets that are used in the preparation of the operational budgets in their firm, where 1 = very easily attainable; 2 = attainable under normal circumstances; 3 = attainable with some extra effort; 4 = attainable with much extra effort; and 5 = attainable only under ideal circumstances. Factor analysis indicates that this construct represents one dimension that explains 47% of the variance. The construct's Cronbach alpha is 0.68.[10]

As we are also interested in the impact of purposeful slack on budget use, we also included a one-item instrument measuring *purposeful slack (BU_PURPSLACK)* in the questionnaire. Respondents were asked, on a five-point scale ranging from 1 (never) to 5 (always), to rate the frequency with which top management in their firm consciously allows slack in the budgets of the business units.

Budget purposes of use were measured using a list of nine widely used purposes of using budgets, and a separate question about the strength of the

link between the budget and firms' strategy. These purposes include most of the purposes identified by Hansen and Van der Stede (2004), i.e., planning, communication and performance evaluation, but are extended with coordination, resource allocation and authorizing spending. Respondents were asked to rate, on a five-point scale ranging from 1 (not at all) to 5 (to a very great extent), the extent to which operational budgets in their firm play a role for each of the nine functions. Most firms use their budget for all studied purposes to at least some extent. The budgeting-strategy link was measured using a one-item instrument taken from Hansen and Van der Stede (2004). Respondents were asked, on a five-point scale ranging from 1 (not at all) to 5 (to a very great extent), to rate the extent to which their firm's current operational budget supports their firm's strategy. Factor analysis on these 10 items reveals three dimensions which we label *"planning and communication" (BU_PLAN/COM)*, *"coordination and allocation" (BU_COORD/ALL)* and *"evaluation and rewarding" (BU_EVAL/REW)*. The evaluation/rewarding dimension explains 44% of the variance and has a Cronbach alpha of 0.77. The coordination/allocation dimension explains 12% above the first factor, and has a Cronbach alpha of 0.87. The planning/communication dimension explains 11% above the first two factors, and has a Cronbach alpha of 0.57.
Budgeting system satisfaction (BU_SATISF) was also measured using a one-item instrument, asking respondents to rate, on a five-point scale ranging from 1 (very unsatisfied) to 5 (very satisfied), the extent to which the top management of their firm is satisfied with the current budgeting system.
To assess the extent of common method bias, we executed Harman's single-factor test. The first factor explained only 25% of all variance in the items, well below the guideline that common method bias is severe when the majority of variance in all items is explained by the first factor (Podsakoff and Organ, 1986).

Partial least squares

We use Partial Least Squares (PLS) to estimate our models. PLS is well suited for cases where sample size is small and is quite robust with respect to various potential deficiencies in the model specification, such as multicollinearity and skewed distributions (Cassel et al., 2000). Because the number of missing values was limited and equally divided over the variables, we report results with mean imputation. Re-analyzing the models without the observations with missing values leads to similar results, however. We used SmartPLS (version 2.0) for our analysis (Ringle et al., 2005), and t-values of coefficients are computed with bootstrapping (n=500).
Loadings of all items from the measurement model are reported in Appendix C. In addition, we report the average variance extracted (AVE) of each construct and compare this with squared correlations between all variables. AVE's ranged between 0.46 and 0.79, which is higher than all squared correlations between constructs, indicating that the constructs have sufficient discriminating validity (Fornell and Larcker, 1981).

IV. EMPIRICAL RESULTS

The descriptive statistics and Pearson correlation coefficients are reported in Table 1 and 2. We calculated the Pearson correlation coefficients using variable scores based on the average item scores for the multi-item instruments.

Table 1: Descriptive statistics (*N*=44)

	mean	median	SD	Min	Max
BU_PARTIC	4.09	4.00	0.88	1	5
BU_DETABIL	3.52	3.67	0.68	1	4.67
BU_EMPHASIS	3.48	3.50	0.57	1.50	4.75
PEU	2.70	2.75	0.36	2	3.57
BU_SLACK	2.30	2.20	0.53	1.4	4.4
BU_PURPSLACK	2.27	2.00	0.65	1	4
BU_PLAN/COM	3.85	3.83	0.62	1.67	5
BU_COORD/ALL	3.69	4.00	0.88	1	5
BU_EVAL/REW	4.00	4.00	0.61	2.25	5
BU_SATISF	3.66	4.00	0.67	2	5

Table 2: Pearson correlation coefficients (*N*=44)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.BU_PARTIC	1.000								
2.BU_DETABIL	0.411**	1.000							
3.BU_EMPHASIS	0.335**	0.497**	1.000						
4.PEU	-0.091	0.063	-0.118	1.000					
5.BU_SLACK	-0.542**	-0.530**	-0.513**	0.319**	1.000				
6.BU_PURPSLACK	-0.268*	-0.335**	-0.243	-0.043	0.320**	1.000			
7. BU_PLAN/COM	0.379**	0.421**	0.387**	-0.262*	-0.621**	-0.186	1.000		
8. BU_COORD/ALL	0.508**	0.342**	0.230	-0.140	-0.507**	-0.365**	0.482**	1.000	
9. BU_EVAL/REW	0.433**	0.313**	0.293*	-0.138	-0.434**	-0.288*	0.468**	0.542**	1.000
10. BU_SATISF	0.473**	0.443**	0.267*	-0.270*	-0.385**	-0.188	0.495**	0.445**	0.470**

*,** indicates significance at the 10% or 5% level (two-tailed).

The reported level of slack is, on average, not very high in the sample, 2.30 on a 1 to 5 scale. In general, firms also do not purposefully incorporate a high level of slack into the budgets (2.27). We also asked for which reasons purposeful slack is incorporated in the budget (multiple answers possible). Of the 42 responses, 31 answered "to be able to absorb environmental uncertainty", 22 answered "to make long-term growth possible, even if this harms short-term performance", 18 answered "to stimulate managers of business units to carry out innovations", 14 answered "to stimulate other goals next to financial performance (e.g., customer satisfaction, quality)", 9 answered "to realize a long-term orientation of managers", and 8 answered "to relax cooperation between diverse business units that have mutual relations".

The correlation between slack and purposeful slack is 0.320 ($p<0.05$), indicating that much slack from the budgeting process is non-purposeful. Consistent with Shields and Shields (1998) and Hansen and Van der Stede (2004), we find that the different purposes for using budgets are correlated. This is $r=0.482$ ($p<0.01$) between planning/communication and coordination/allocation, $r=0.468$ ($p<0.01$) between planning/communication and evaluation/rewarding, and $r=0.542$, ($p<0.01$) between coordination/allocation and evaluation/rewarding. Finally, satisfaction with the budgeting system is lower when slack is higher ($r=-0.385$, $p<0.01$), but this effect is less strong when slack is purposefully build into budgets ($r=-0.188$, *ns*).

Structural model

Results of the empirical analysis of the structural model are reported in Figure 2 and Table 3.[11]

Figure 2: Results of structural model with overall slack variable (standardized coefficients)

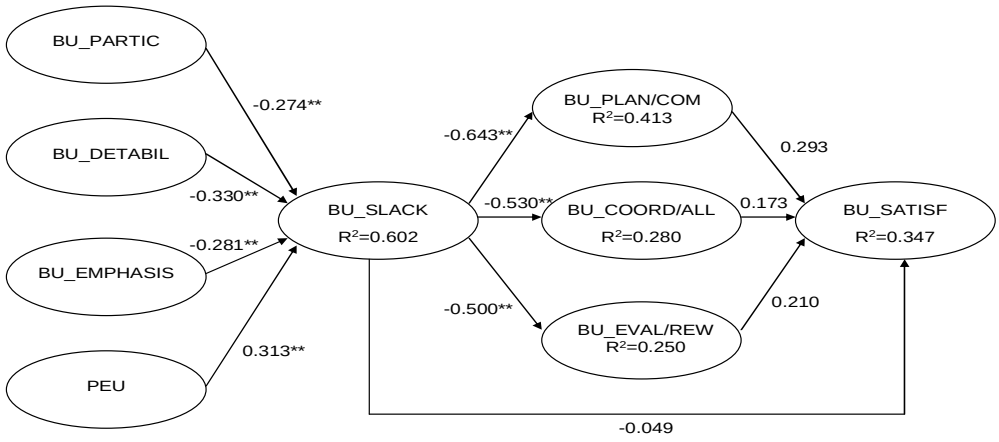


Table 3: Results of structural model (with overall and purposeful slack)

			Overall slack	Purposeful slack
Paths			(Stand.)coefficient (t-statistic)[1]	(Stand.)coefficient (t-statistic)[1]
BU_PARTIC	→	SLACK[2]	-0.274 (-2.118)**	-0.109 (-0.957)
BU_DETABIL	→	SLACK	-0.330 (-2.471)**	-0.234 (-1.792)*
BU_EMPHASIS	→	SLACK	-0.281 (-2.324)**	-0.174 (-1.128)
PEU	→	SLACK	0.313 (2.731)**	-0.032 (-0.476)
SLACK	→	BU_PLAN/COM	-0.643 (-4.532)**	-0.196 (-1.312)
SLACK	→	BU_COORD/ALL	-0.530 (-3.553)**	-0.402 (-2.990)**
SLACK	→	BU_EVAL/REW	-0.500 (-6.162)**	-0.309 (-1.776)*
SLACK	→	BU_SATISF	-0.049 (-0.316)	0.016 (0.224)
BU_PLAN/COM	→	BU_SATISF	0.293 (1.427)	0.312 (1.846)*
BU_COORD/ALL	→	BU_SATISF	0.173 (1.292)	0.193 (1.451)
BU_EVAL/REW	→	BU_SATISF	0.210 (1.505)	0.223 (1.654)*

1* and ** means significant at the 10% and 5% level (two-tailed).
2 In the second column, slack refers to overall slack (BU_SLACK), in the third column slack refers to purposeful slack (BU_PURPSLACK).

The four factors that influence the level of slack together explain 60% of its variance. The ability to detect slack (*b*=-0.330, t=-2.471), has the strongest impact[12] on slack, followed by perceived environmental uncertainty (*b*=0.313, *t*=2.731), budget emphasis (*b*=-0.281, *t*=-2.324) and budget participation (*b* =-0.274, *t*=-2.118). The impact of detection ability and environmental uncertainty are both as expected and therefore provide supporting evidence on hypothesis 2 and 4. For budget participation, i.e., hypothesis 1, the argument that participation leads to information sharing and therefore to less slack seems to be stronger in our sample than the argument that participation leads to more opportunities for managers to increase slack. This result corroborates the findings of Merchant (1985) and Lal et al. (1995). For budget emphasis, i.e., hypothesis 3, consistent with Van der Stede (2001) and Webb (2002), we find that the incentive to create slack when the budget is important for a manager's evaluation is less strong than the negative reputation effects when budgets are met each year.

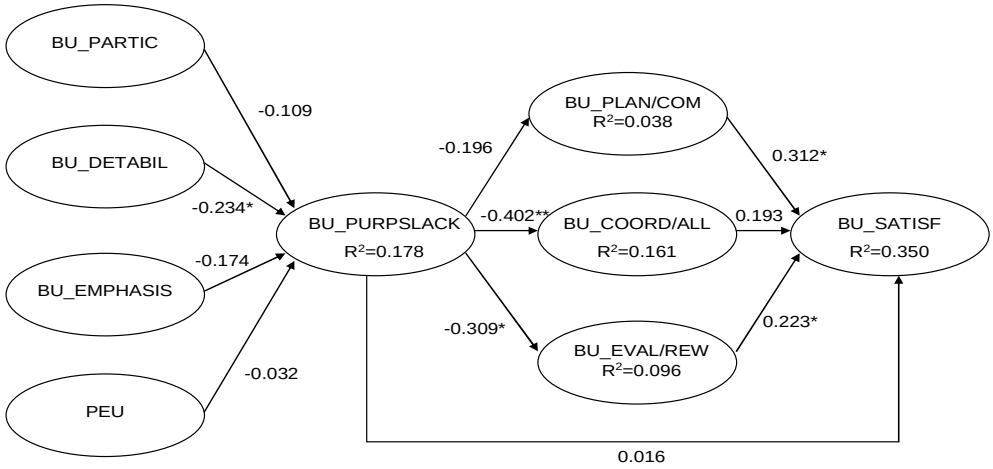
The paths from the level of slack to the three purposes for which budgets can be used are all negative, suggesting that budgets with more slack are less fit for usage for the different purposes. This result provides empirical support for our hypothesis 5. The slack level has the strongest negative impact on using the budget for the planning/communication purpose (b=-0.643, t=-4.532), although the difference with the impact on the coordination/allocation (*b*=-0.530, *t*=-3.553) and evaluation/rewarding (*b*=-0.500, *t*=-6.162) purposes, is small.

We find no evidence that use of the budget for the three purposes leads to higher budgeting system satisfaction. Therefore, hypothesis 6 is not supported. As shown earlier, the correlation matrix shows a strong negative relationship between the level of slack and budgeting system satisfaction. The PLS analysis, however, shows that the direct effect of budgetary slack on budgeting system satisfaction is, although again negative, only weak and not significant. This suggests that most of the effect of budgetary slack on satisfaction with the budgeting system is indirect and runs via the purposes of budget use, i.e., the impact of slack on satisfaction is mediated by the purposes of use. Decomposing the total effect of budgetary slack on budgeting system satisfaction (-0.433, *t*=-2.808) into the direct effect (-0.049) and the indirect effect via the purposes of budget use (-0.384), supports this conclusion. This despite the fact that none of the three relationships between the purposes of budget use and budgeting system satisfaction is significant. Together, these results provide no support for hypothesis 7, but do provide empirical support for our hypothesis 8.

Purposeful slack

When we re-analyze our model with the purposeful slack instead of the overall slack variable, results change drastically.[13] These results are reported in Figure 3 and Table 3.

Figure 3: Results of structural model with purposeful slack variable (standardized coefficients)



First, most of the antecedents of slack become insignificant. Only ability to detect slack still has a significant negative impact on purposefully incorporating slack in the model (*b*=-0.234, *t*=-1.792). This suggests that traditional variables that influence slack do not work in a similar way for purposeful slack. This insight is supported by the low R^2 of the purposeful slack variable, which is only 0.178. Similarly, the impact of slack on the purposes of budget use are less strong, and only the impact of slack on the coordination/allocation (*b*=-0.402, *t*=-2.990) and evaluation/rewarding (*b*=-0.309, *t*=-1.776) purposes, are still negatively significant.

V. DISCUSSION AND SUMMARY

In this paper we test a structural model about the impact of budgetary slack on the purposes for which budgets are used. First, we consider a number of factors that influence slack. Second, we argue that the level of slack negatively impacts the different purposes for which budgets are used. Finally, we examine the impact of the level of slack on budgeting system satisfaction, both directly and indirectly via the purposes of use. Our empirical analysis basically supports this model. We find that budget participation, ability to detect slack and budget emphasis are negatively and perceived environmental uncertainty positively related to overall slack. Slack is negatively related to the three purposes of budget use: planning/communication, coordination/allocation and evaluation/rewarding. Slack has no direct impact on budgeting system satisfaction, but does have an indirect impact via the purposes of use. Next to overall slack, we also estimated our model with purposeful slack. In this model, of the four antecedents only ability to detect slack is negatively related to purposeful slack. The impact of slack on the three purposes of budget use is weaker for this purposeful slack variable than for overall slack. Finally, there is still no direct impact of purposeful slack on budget system satisfaction, but only an indirect impact via the purposes of budget use.

Of the empirical results some merit further discussion. First, prior research has extensively analyzed factors that cause slack (see Dunk and Nouri, 1998, for an overview). Our results suggest that antecedents of slack might differ depending on whether slack is purposefully incorporated into budgets or not. Although beneficial effects of slack were recognized a long time ago, a distinction between these types of slack in theory building has not been made before. Therefore, a fruitful avenue for further research could be to analyze whether, and to what extent, such antecedents differ for different types of slack. We measure purposeful budgetary slack with a one-item instrument; therefore this literature stream would also benefit from developing measurement instruments that are better able to disentangle purposeful and overall slack.

Second, in our study we partly replicate the purposes of budget use of Hansen and Van der Stede (2004), and find an additional purpose. This reinforces Hansen and Van der Stede's argument that their list of purposes is not comprehensive, nor is ours. Many variables can influence not only the intensity of use for different purposes, but also the types of budget use themselves. The level of analysis in our study is the corporate level and at that level resource allocation and authorizing spending are more important than at lower organizational levels. Further research could identify additional purposes of budget use and factors that are related to these purposes.

Third, we find that the slack level has a negative impact on all purposes of budget use. Merchant and Manzoni (1989) argue, in light of the contradictory guidelines for the optimal slack level for different purposes of budget usage, that firms have to make compromises in the use of their budgets or find other solutions to deal with this problem. One solution could, for example, be that firms rely on other control elements next to budgets for some of the purposes. Further, when it is difficult to specify an accurate budget target, performance evaluation could be based on subjective evaluations (Merchant and Van der Stede, 2007). In our model we do not incorporate such alternative

mechanisms that firms might use. Further research could explore whether and how firms rely on such mechanisms for the purposes of use.

The results of this study should be interpreted in the light of its limitations. First, the sample of the study is rather small and although results of Partial Least Squares are quite robust to small samples, larger scale evidence to replicate these findings is needed. Second, all traditional survey-related issues, such as the possibility of respondents to provide socially desirable answers, may apply. Third, due to the cross-sectional nature of our data, we are unable to estimate causal relationships. Finally, we only examine the impact of slack on the different purposes of budget use, whereas Hansen and Van der Stede (2004) analyzed many factors that were related to budget use, such as the operating and external environment, and organization structure and strategy. We did not incorporate these variables in our models.

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VII. APPENDICES

APPENDIX A:

Measurement instruments used

Budget participation (BU_PARTIC)
To what extent do the managers of the business units in your firm participate in setting their unit's targets? *(1 = not at all, 5 = to a very great extent)*

Ability to detect slack (BU_DETABIL)
To what extent do you agree with the following statements with regard to the ability of the top management of your firm to detect slack in the budgets of the business units? *(1 = strongly disagree, 5 = strongly agree)*

- Top management has enough information to know if there is slack in the budgets of the business units
- Top management receives detailed information on the operational activities of the business units
- Top management has a way to know if there is slack in the budgets of the business units

Budget emphasis (BU_EMPHASIS)
To what extent do you agree with the following statements with regard to the importance of meeting targets by the managers of the business units in your firm? *(1 = strongly disagree, 5 = strongly agree)*

- Top management constantly reminds the managers of the business units of the need to meet targets
- Top management controls the business units chiefly by monitoring how well performance meets targets
- Promotion prospects of the managers of the business units depend heavily on their ability to meet targets
- In the eyes of top management, achieving targets is an accurate reflection of whether the managers of the business units are succeeding

Perceived environmental uncertainty (PEU)
To what extent were the following factors that concern the external environment of your firm predictable during the past five years? *(1 = very predictable, 5 = very unpredictable)*

- Suppliers' actions
- Customer demands, tastes and preferences
- Deregulation and globalization
- Market activities of competitors
- Production technologies
- Government regulations and policies
- Economic environment
- Industrial (workplace) relations

Budgetary slack (BU_SLACK)
To what extent do you agree with the following statements with regard to the role of targets in your budgeting system? *(1 = strongly disagree, 5 = strongly agree)*

- The managers of the business units succeed to submit budgets that are easily attainable
- The targets induce high productivity in the business units – Reverse coded
- The targets require costs to be managed carefully in the business units – Reverse coded
- The targets have not caused the business units to be particularly concerned with improving efficiency

How would you in general characterize the targets that are used in the preparation of the operational budgets in your firm? *(1 = very easily attainable, 2 = attainable under normal circumstances, 3 = attainable with some extra effort, 4 = attainable with much extra effort, 5 = attainable only under ideal circumstances)* – Reverse coded

Purposeful slack (BU_PURPSLACK)
Does top management in your firm sometimes consciously allow slack in the budgets of the business units? *(1 = Never, 2 = Sometimes, 3 = Regularly, 4 = Often, 5 = Always)*

Budget purposes of use (BU_PURP)
To what extent do operational budgets in your firm play a role for the following functions? *(1 = not at all, 5 = to a very great extent)*

- Planning
- Communication
- Coordination of activities
- Evaluation of activities
- Motivation of managers
- Evaluation of managers
- Rewarding of managers
- Allocating resources
- Authorizing spending

To what extent does the current operational budget support the strategy of your firm? *(1 = not at all, 5 = to a very great extent)*

Budgeting system satisfaction (BU_SATISF)
To what extent is the top management of your firm satisfied with the current budgeting system? *(1 = very unsatisfied, 5 = very satisfied)*

APPENDIX B:

Results of factor analysis on theoretical constructs [14]
(based on principal components analysis and varimax rotation).

BU_DETABIL

Items	Factor loading
Item1: Enough information to know if there is slack in the budgets	0.868
Item2: Detailed information on the operational activities	0.772
Item 3: A way to know if there is slack in the budgets	0.580
Variance explained	56.2%

BU_EMPHASIS

Items	Factor loading
Item 1: Reminds the managers of the need to meet targets	0.800
Item 2: Monitoring how well performance meets targets	0.729
Item 3: Promotions prospects depend heavily on ability to meet targets	0.676
Item 4: Achieving targets is an accurate reflection of succeeding	0.708
Variance explained	53.2%

BU_SLACK

Items	Factor loading
Item 1: Succeed to submit budgets that are easily attainable	0.755
Item 2: The targets induce high productivity	0.765
Item 3: The targets require costs to be managed carefully	0.681
Item 4: The targets have not caused concern with improving efficiency	0.623
Item 5: How would you characterize the targets that are used?	0.571
Variance explained	46.6%

BU_PURP

Items	Factor1	Factor2	Factor 3
Item 1: Planning			0.515
Item 2: Communication			0.596
Item 3: Coordination of activities		0.699	
Item 4: Evaluation of activities	0.715		
Item 5: Motivation of managers	0.725		
Item 6: Evaluation of managers	0.866		
Item 7: Rewarding of managers	0.595		
Item 8: Allocating resources		0.819	
Item 9: Authorizing spending		0.928	
Item 10: Budgeting-strategy link			0.813
Variance explained	44.4%	12.3%	11.2%

[14] BU_PARTIC, BU_PURPSLACK, and BU_SATISF are not reported because they are one-item factors. PEU is not reported because it is a formative indicator

APPENDIX C:

Loadings of the measurement model (multi-item instruments only)[15]

Items	loadings	Composite reliability	AVE
BU_DETABIL		0.78	0.56
Item 1	0.900		
Item 2	0.798		
Item 3	0.473		
BU_EMPHASIS		0.81	0.53
Item 1	0.796		
Item 2	0.808		
Item 3	0.639		
Item 4	0.640		
BU_SLACK		0.81	0.46
Item 1	0.745		
Item 2	0.800		
Item 3	0.703		
Item 4	0.631		
Item 5	0.471		
BU_EVAL/REW		0.86	0.62
Item 4	0.766		
Item 5	0.860		
Item 6	0.866		
Item 7	0.629		
BU_COORD/ALL		0.92	0.79
Item 3	0.868		
Item 8	0.940		
Item 9	0.849		
BU_PLAN/COM		0.78	0.54
Item 1	0.757		
Item 2	0.768		
Item 10	0.665		

[15] Labels of the items are reported in appendix B.

VIII NOTES

[1] According to Lukka (1988), slack can be divided in two parts. First, there is budgetary slack when the budget figure is intentionally made easier to achieve compared to management's best guess. Second, there is an upward-bias in the budget figure when the expected performance is intentionally stated higher than management's best guess. Otley (1985) refers, respectively, to positive slack and negative slack. In this paper we refer to a low slack level when the budget figure has negative slack or an upward-bias, and we refer to a high slack level when the budget figure has positive or, in Lukka's terms, budgetary slack. Consistent with the papers of Van der Stede (2000, 2001), in our study the term budgetary slack incorporates both positive and negative slack.

[2]Some argue that using the same budget for more than one purpose leads to conflicts (e.g., Epstein and Manzoni, 2002), whereas others argue that using budgets for multiple purposes leads to synergy (e.g., Fischer et al., 2002).

[3] The budget should be linked closely to the followed firm strategy irrespective of the nature of the strategy, e.g., whether firms aim to be a cost leader or a differentiator.

[4] As defined by Dunk and Nouri (1998), budgetary slack refers to the intentional underestimation of revenues and productive capabilities and/or overestimation of costs and resources required to complete a budgeted task. The exact nature of the budgeted target (i.e., whether it refers to revenues, costs, or profit) therefore depends on the kind of responsibility center used in the budgeted organizational units. As Merchant and Manzoni (1989) argue,

budgets in profit centers differ substantially from budgets in cost centers, because the environmental uncertainty has a much stronger impact on profit centers, profit centers can make more tradeoffs (increasing prices, cutting costs), and profit center managers are more likely to have a stronger link between budget targets and rewards. In a recent study using a very similar sample as ours, Schoute (2007) has found *all* firms to use either profit and/or investment centers. We therefore assume that the budgeted target in all (or almost all) our studied firms refers to profit.

[5] The arguments underlying this hypothesis suggest that causality runs from budgetary slack to purposes of use. Other studies, however, suggest that causality between slack and purposes of use might be vice versa. For example, Fischer et al. (2002) argue that slack is low when budgets are used for both resource allocation and performance evaluation purposes, suggesting that causality runs from purposes of budget use to the slack level. We have a number of reasons why we believe that in our study causality runs from the level of slack to budget use. First, in their experiment Fischer et al. (2002) manipulate whether the budget will be used for resource allocation purposes or not. In our study, as the descriptives show, all firms use the budget for all studied purposes to at least some extent. Second, in their arguments, Fischer et al. (2002) mainly focus on the impact of budget use for performance evaluation and resource allocation on the budget proposals subordinates provide to top managers. In contrast, our dependent variable is the final slack level in the budget, thus after the proposals are revised by top management. Third, Fischer et al. (2002) perceive slack as purely negative and therefore slack should be minimized. In our study slack can either be negative or

beneficial, which implies that the slack level in our study also incorporates slack that is purposefully incorporated by top management.

[6] Hansen and Van der Stede (2004) examine the impact of *budget target difficulty* on *performance of each reason to budget*, but do not estimate the impact of target difficulty on the reasons to budget. The construct *"performance of each reason to budget"* appears to imply that the factors examined, among others budget target difficulty, moderate the relationship between budget use and performance for that purpose. They find that budget target difficulty (the opposite of slack) negatively impacts the performance of the communication and strategy formation purposes, but has no influence on the performance of the operational planning and performance evaluation purposes.

[7] Of all firms listed on the Amsterdam Stock Exchange, only investment companies were left out of the study, as such firms have a different orientation with regard to operational budgeting.

[8] A Mann-Whitney test indicated that the firms that responded were, on average, somewhat larger than those that did not respond (z=-2.324, p<0.02). A chi-square test indicated that the distribution of firms over three different sector categories, 1) manufacturing firms, 2) financial services firms, and 3) trade or (other) service firms, was similar among the firms that responded and those that did not respond (χ^2=2.097, df=2, p>0.35).

[9] The rule of thumb in this kind of situation is that at least 10 observations per item should be available (Chin, 1998b). The PEU instrument has 8 items whereas we only have 44 observations. Analyzing the model with all 8 items modeled in a formative way in PLS, however, leads to qualitatively similar results as reported in this paper.

[10] The distribution of our slack variable is similar to that of Van der Stede (2000, 2001). Based on the equally weighted average of the standardized item scores associated with each of the five items, the average and standard deviation of the variable are 0.00 and 0.68. Minimum and maximum values are -1.20 and +2.65.

[11] As a robustness check, we also estimated an alternative model in which we added direct links between the four budgeting and environmental factors (BU_PARTIC, BU_DETABIL, BU_EMPHASIS and PEU) and the three purposes of budget use, to our structural model. All effects have the same direction, and all effects that are significant in our main analysis are also significant in this alternative analysis (although several at somewhat lower significance levels), showing our results to be highly robust to this alternative model specification. Two additional direct effects are found: budget participation is positively related to budget use for both coordination/allocation ($p<0.05$) and evaluation/rewarding ($p<0.10$) purposes. This suggests that participation does not only have an indirect effect on budget use for these two purposes (via budgetary slack), but also a direct effect.

[12] The reported *b*'s are standardized regression coefficients.

[13] For this model we performed the same robustness check as for our overall slack model (see footnote 11). All effects again have the same direction in this alternative analysis, but the effects of BU_DETABIL on BU_PURPSLACK and of BU_PURPSLACK on BU_EVAL/REW are no longer significant (although the first is very close to being significant), showing our results to be reasonably robust to this alternative model specification. Four additional direct effects are found: consistent with the alternative overall slack model, budget participation is positively related to budget use for both coordination/allocation ($p<0.05$) and evaluation/rewarding ($p<0.10$) purposes. Also, ability to detect slack is positively and perceived environmental uncertainty is negatively related to budget use for the planning/communication purpose ($p<0.05$ and $p<0.10$, respectively). This suggests that when *only* the level of *purposeful* slack is controlled for in the model, ability to detect slack and perceived environmental uncertainty have a direct effect on budget use for this purpose.