

# BUDGETING, PERFORMANCE EVALUATION, AND COMPENSATION: A PERFORMANCE MANAGEMENT MODEL

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## ABSTRACT

*Performance management involves budgeting, performance evaluation, and incentive compensation. This study describes a model that encompasses these three elements of performance management. To illustrate the model, survey data were examined using path analysis. The empirical evidence supports the model, and suggests several intervening variables that mediate the direct and indirect effects of budgeting, performance evaluation, and incentives on gaming behaviors and individual performance.*

## INTRODUCTION

Firms continue to deploy significant resources to improve their performance measurement systems (American Institute of Certified Public Accountants (AICPA) & Maisel, 2001; Lawson, Stratton, & Hatch, 2004). For example,

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in the past two decades, firms have struggled to either improve or replace their budgeting systems (Hansen, Otley, & Van der Stede, 2003), introduce strategy-driven non-financial performance metrics (Kaplan & Norton, 1996), and link various performance indicators to generous pay-for-performance plans for their key managers (Ittner & Larcker, 1998a). All these innovations rely on the assumption that such performance measurement systems will help firms not only measure performance, but also manage it. Yet, practitioners in charge of designing and implementing performance management systems have received only limited guidance from research on this topic. Despite streams of literature on different steps of the performance management cycle (set targets, monitor performance, and reward), conflicting empirical results have left practitioners with inconclusive explanations, especially in regard to how the different steps of the performance management cycle relate to each other.

Since the pioneering studies on budgeting by Argyris (1952) and the original framework on control systems by Anthony (1965), management accounting research on performance management has focused mainly on budgeting related variables. Researchers have typically selected two or three budgeting practices (e.g., budget participation, budget tightness, or reliance on accounting performance measures) and examined the impact of those practices on job satisfaction, stress, or performance at the individual or firm level. The empirical tests first investigated the simple, direct linear additive effects of budgeting practices on motivation, behaviors, or performance, addressing questions such as “does participation in budgeting influence budgetary performance of managers?” (Kennis, 1979). Those tests often produced conflicting results that led researchers to change focus to examine the interactive effects of budgeting and non-budgeting variables on specific dependent variables (see, for example, the literature review on participative budgeting by Shields & Shields, 1998; and the review of research on reliance on accounting performance measures by Hartmann, 2000). Researchers testing for interactive effects posed questions such as “does the effect of high-budget emphasis and high participation on performance depend on the level of task uncertainty?” (see Brownell & Hirst, 1986). Despite significant theoretical progress, these interactive studies also reached some inconsistent results, in part because of the methodological limitations of testing for numerous potential interactive effects among budgeting and non-budgeting variables, and in part because of the lack of robust theory to guide researchers in their predictions (Covaleski, Evans, Luft, & Shields, 2003).

Recently, several studies have attempted to reconcile inconsistent results from the additive and interactive model studies using an intervening model

approach. Instead of testing for the direct effect of budgeting practices on each dependent variable separately (such as job-related stress or gaming behaviors), these studies explicitly recognize the relationships among the intervening variables. For example, [Shields, Deng, and Kato \(2000\)](#) asked the question “do control systems (budget participation, tightness, and budget-based compensation) affect performance directly, or do they affect stress, which in turn affects performance?” Empirical evidence to support such intervening models has been building up, with the discovery of each new intervening variable to explain the effects of budgeting on performance (e.g., budget adequacy as reported in [Nouri & Parker, 1998](#); and budget goal commitment as reported in [Chong & Chong, 2002](#)).

[Covaleski et al. \(2003\)](#), describing this line of psychology-based budgeting research, emphasized the need for further research that does not simply focus on the direct linear effects of budgeting practices on performance, but argued in favor of a research strategy that examines the effects of budgeting on other intervening variables and then tests for the mediating effects of those variables on behavior (e.g., gaming) and performance. Following this strategy, our study proposes a comprehensive performance management model.

The next section describes the performance management model, and explains the variables included in each step of the model. The third section presents the research questions, and discusses 11 hypotheses derived from the performance management model. The fourth section shows results of an empirical illustration of the proposed model using path analysis, followed by the last section on conclusions and relevance of the findings.

## **THE PERFORMANCE MANAGEMENT MODEL**

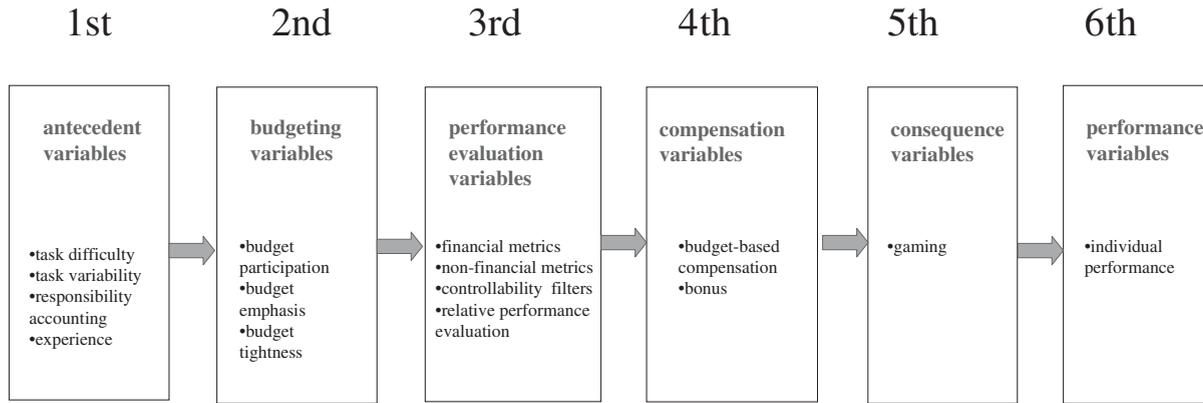
Our study proposes an integrative model that includes the various elements of performance management (budgeting, evaluating performance, and assigning rewards). Instead of selecting a few budgeting and non-budgeting variables to examine their impact on performance, this model attempts to illustrate the relationships among key variables along each step of the performance management cycle. We selected those variables based on a review of the literature, and organized them according to where they occur in the performance management cycle. This approach addresses the call from [Hansen et al. \(2003\)](#) for more research that does not simply study budgeting in isolation from other organizational practices, but considers budgeting “as part of an organizational package” ([Hansen et al., 2003, p. 110](#)).

In particular, the empirical tests we employed to illustrate this model include both actual and individual preferences for each performance management practice, to examine their impact on managerial performance (see section on the empirical illustration of this model). The inclusion of actual and preferred levels of each performance management practice is motivated by the growing literature on managerial preferences for control systems, and the effects of such preferences on the effectiveness of controls (Chow, Shields, & Wu, 1999; Clinton & Hunton, 2001; Shields & White, 2004).

Fig. 1 illustrates the proposed model. This model builds upon three streams of research: budgeting, performance evaluation, and compensation. We hypothesize that variables in each step have a direct influence on the variables in the following step, and an indirect effect on variables further along in the performance management cycle. While not intending to be exhaustive, the lists of variables included under each step are representative of key factors, documented in the literature, that help explain organizational choices related to the next step. The main purpose of this model is to demonstrate that each step does not exist in isolation; rather, each contribute direct and or indirect effects on managerial performance.

#### *Antecedent Variables*

Performance management depends on characteristics of the work itself, and of the manager. Four antecedents of budgetary behavior identified in the budgeting literature are included in the first step of the model. Task difficulty and task variability are used to describe task characteristics (Hirst, 1983; Brownell & Hirst, 1986; Brownell & Dunk, 1991). Task difficulty relates to the ability to specify the procedures to be followed to perform the task, that is, the input/output relations (Perrow, 1970; Van de Ven & Delbecq, 1974). Task variability represents the lack of routine or the number of situations that call for different methods or procedures for performing the task (Van de Ven & Delbecq, 1974; Brownell & Dunk, 1991). Responsibility accounting refers to the type of responsibility center (cost, revenue, profit, or investment center), and reflects the level of decentralization and independence of the responsibility center manager, a suitable setting for budget participation (Hopwood, 1972; Bruns & Waterhouse, 1975; Otley, 1978). Experience (years on the job) relates to the level of specific knowledge the manager has accumulated about his or her organizational unit, and contributes to information asymmetry between the responsibility center manager and his or her superior. Information asymmetry has been found to be a



*Fig. 1.* The Performance Management Model (with selected variables).

major reason for budget participation (Shields & Young, 1993; Shields & Shields, 1998).

### *Budgeting Variables*

Budgeting (step 2 in Fig. 1) is a key step in performance management, as it influences practically all other steps. The process of preparing and negotiating budgets, and establishing targets influences directly how individual performance is evaluated at the end of the budgeting period, and it influences motivation through compensation contracts that promise rewards based on budgetary performance; it also guides behaviors and ultimately impacts performance. Three of the most researched budgeting variables are included in our model. Budget participation, also known as participative budgeting, describes the extent to which an individual manager “is involved with, and has influence on, the determination of his or her budget” (Shields & Shields, 1998, p. 49). Budget emphasis reflects the extent to which a comparison of budgeted and actual results is emphasized as the basis of performance evaluation and allocation of organizational rewards (Hartmann, 2000). Budget tightness, the opposite of budgetary slack, refers to “predetermined budget targets that are perceived to be accurate, important to achieve, and which require serious effort and a high degree of efficiency in accomplishment” (Simons, 1988, p. 268).

### *Performance Evaluation Variables*

Next, in the performance management cycle is the performance evaluation step (see step 3 in Fig. 1). Once budget targets are in place, decisions are made about which financial and non-financial performance metrics are emphasized for evaluation and compensation purposes, and which methods to employ to adjust for uncertainty in the evaluation process. This step has a direct impact on how much incentive compensation will be paid out to the manager, and, if properly implemented, will indirectly reduce the likelihood of gaming behaviors and improve individual performance. Our review of the literature on performance evaluation yielded four variables that play a major role in managing individual performance: the use of financial and non-financial metrics, controllability filters, and relative performance evaluation. Financial metrics (e.g., costs, revenues, or profits) are measures of performance that are expressed in monetary terms, usually tied to reports routinely provided by the organization’s accounting and control systems. Non-financial metrics are not expressed in monetary terms, but may be

quantified in operating terms (e.g., market share, percent of on-time deliveries). Considerable attention has been devoted in the performance management literature about how best to combine use of both types of metrics (Ittner & Larcker, 1998a, 1998b); and empirical evidence supports the premise that both are necessary to capture relevant performance dimensions and predict future performance (Hemmer, 1996; Epstein, Kumar, & Westbrook, 2000; Said, HassabElnaby, & Wier, 2003).

Controllability filters are ex-post adjustments made by a superior when evaluating performance of a subordinate against a pre-set standard. These adjustments are based on the controllability principle that managers should be held accountable only for factors that they can control. Even though it is a long-standing principle advocated by early management accounting researchers (e.g., Solomons, 1965; Demski, 1976), it has been disregarded to some degree by practitioners (Merchant, 1987). Questions regarding which factors determine the use of controllability filters, and which consequences ensue when organizations disregard them, thus continue to attract research interest (e.g., Shields, Chow, & Whittington, 1989; Bento & White, 1998; Chow et al., 1999; El-Shishini, 2001).

Relative performance evaluation (RPE) is another commonly used mechanism for removing uncontrollable factors facing a peer group of managers (Antle & Smith, 1986; Gibbons & Murphy, 1990). Under conditions of uncertainty, information about the performance of a peer group (inside or outside the organization) improves the quality of the evaluation because it allows superiors to filter factors such as industry-related risk or economy-wide factors (e.g., regulatory changes, inflation), and helps superiors focus on the outcomes of the subordinate's efforts compared to the outcomes of others facing similar constraints (Maher, 1987). Empirical studies have found evidence that firms do use RPE (e.g., Bannister & Newman, 2003), especially to insulate managers from adverse performance-related events. For example, the performance of managers operating in the airline industry was significantly affected in the aftermath of September 11 terrorist attacks in the US, creating the need for RPE to assign fair rewards to those managers who responded most effectively when compared to their peer group.

### *Compensation Variables*

In the fourth step of the model, performance incentives are expected to be influenced by budgeting and performance evaluation variables (Jensen, 2003). Budget-based compensation refers to the extent to which monetary

rewards are contingent upon performance compared to budget (Waller & Chow, 1985; Merchant, 1989; Chow et al., 1999). Bonus, the other compensation variable in our model, reflects the extent to which performance-contingent rewards represent a significant portion of total pay. As compensation becomes more dependent on budgetary performance, and the proportion of compensation that is performance-based increases, managers have greater incentives to meet the performance goals (Merchant & Van der Stede, 2003).

#### *Consequence Variables*

Gaming is a dysfunctional response to the pressures to meet performance goals. In the fifth step of our model, gaming is expected to be influenced by compensation, evaluation, budgeting, and antecedent variables. Gaming, also known as earnings management or earnings manipulation, refers to “any action ... which affects reported income and which provides no true economic advantage to the organization and may in fact, in the long-term, be detrimental” (Merchant & Rockness, 1994, p. 79).

#### *Performance Variables*

In the sixth and last step of our model, performance of an individual manager is expected to be influenced by gaming, compensation, evaluation, budgeting, and antecedent variables. Given the arguments mentioned above for the previous steps in our model, we expect these variables to have both direct and indirect effects on performance.

## **RESEARCH QUESTIONS AND HYPOTHESES**

This study explores the following research questions:

- (1) Does the proposed performance management model depict the effects of budget participation and intervening variables on individual performance?
- (2) To what extent do budgeting, performance evaluation, and compensation variables affect individual performance?
- (3) Does the proposed performance management model capture the relationships among the variables in the performance management cycle?
- (4) Do antecedent variables influence the performance management model?  
To what extent do antecedent variables affect individual performance?

These research questions led to the formulation of 11 hypotheses described below.

**Hypothesis 1.** Budget participation is positively related to task difficulty and variability, responsibility accounting, and experience.

In situations where managers face highly challenging and varied tasks, participation in the budgeting process provides managers with access to additional resources that would otherwise be unavailable, had budget targets been simply imposed. As the type of responsibility center increases in complexity with greater decentralization, and the manager accumulates more job-related knowledge through longer experience on the job, budget participation may increase.

**Hypothesis 2.** Budget emphasis is positively related to budget participation and other antecedent variables.

When budget participation increases, we expect reliance on budgets to increase also. Budget emphasis has been found to interact positively with budget participation in determining motivational outcomes such as job-related tension (Hopwood, 1972; Otley, 1978; Brownell & Hirst, 1986), social withdrawal and subordinate tension (Hirst, 1983), and budgetary performance (Kennis, 1979). Compatible combinations of budget participation and budget emphasis are more effective in producing positive organizational outcomes when certain antecedent conditions (i.e., low-task difficulty) are also present (Brownell & Dunk, 1991).

**Hypothesis 3.** Budget tightness is positively related to budget emphasis, budget participation, and other antecedent variables.

Budget tightness refers to the manager's perception of the probability that he or she will achieve the budget targets. Budget emphasis is positively associated with budget tightness because as the importance of meeting budget targets increases, so does the effort required to meet such targets. Onsi (1973), Merchant (1985), and Lal, Dunk, and Smith (1996) have found some empirical support for a negative relationship between budget emphasis and tightness, suggesting that budget emphasis generates a need for subordinate managers to create slack. Results from other studies (e.g., Collins, 1978) contradicted this explanation. Dunk and Nouri (1998), after an extensive review of the literature on antecedents of budgetary slack, concluded that these conflicting empirical results about the effects of budget emphasis on tightness can be explained by information asymmetry. When information asymmetry is low, budget emphasis will lead to budget tightness because

managers will not be able to negotiate slack, even though they will have an incentive to do so. In our model, we hypothesize that budget emphasis (after controlling for budget participation) is positively related to budget tightness.

High budget participation may be associated with more realistic budget targets, that is, budget tightness. Participation increases perceived fairness and justice in the budgeting process (Wentzel, 2002), leading to increased motivation, goal commitment (Chong & Chong, 2002), and agreement on tougher budget targets (Fisher, Frederickson, & Pfeffer, 2000). Similarly to the previous argument regarding information asymmetry, budget emphasis and budget tightness, as participation reduces information asymmetry through information exchanges during the budget negotiation process, managers have less opportunity and less need to build in slack (Onsi, 1973; Cammann, 1976; Young, 1985).

**Hypothesis 4.** The use of financial performance metrics is positively related to budget tightness, budget emphasis, budget participation, and other antecedent variables.

An increase in the use of financial metrics is expected to follow an increase in the pressure to meet tighter budget targets. The extent to which financial metrics are used for evaluating and rewarding managers is also closely related to budget emphasis. In the supervisory style literature, concerns with costs, efficiency, and meeting budgets are commonly used to describe budget emphasis (as in the budget-constrained, budget-profit, and profit conscious styles reported by Hopwood, 1972; Otley, 1978; and other studies on the reliance on accounting performance measures reviewed by Hartmann, 2000). Participation in decision making has been found to increase satisfaction with the performance management system and the perceived usefulness of feedback about outcomes (Kleingeld, Tuijl, & Algera, 2004). In our model, budget participation may increase satisfaction with and perceived usefulness of financial and non-financial metrics, which in turn may influence their actual use for performance evaluation.

**Hypothesis 5.** The use of non-financial performance metrics is positively related to the use of financial performance metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables.

The use of non-financial performance metrics may follow the use of financial metrics because of the current concern with adjusting for the limitations of financial, historic-based performance metrics by giving greater importance to key non-financial metrics (Hemmer, 1996). Shields and White (2004) found, in fact, a strong correlation between the uses of those two types of

performance metrics for incentive compensation purposes. Similar to the arguments offered in support of Hypothesis 4, we expect budget tightness, budget emphasis, and budget participation to positively influence the use of non-financial metrics. Increases in both budget tightness and budget emphasis may create a stronger need for non-financial metrics that capture dimensions of performance not confined to monetary terms so as to help offset the dysfunctional effects of management myopia (Hemmer, 1996; see value drivers in Merchant & Van der Stede, 2003). Participation in budgeting may be followed by participation in other forms of decision making, including the choice of financial and non-financial metrics.

**Hypothesis 6.** The use of controllability filters is positively related to the use of non-financial and financial performance metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables.

When managers have less control over a performance metric, financial or non-financial, there is a greater need for controllability filters because the performance outcome is less informative about which desirable actions the manager has taken (Merchant, 1987). To the extent that participation in the budgeting process is high, budget emphasis and budget tightness may increase, and this may result in a greater need for controllability filters that will avoid the dysfunctional consequences of holding managers accountable for uncontrollable events. As Shields, Chow, and Whittington (1989) concluded, the use of controllability filters is positively associated with an increased individual effort to perform.

**Hypothesis 7.** The use of relative performance evaluation is positively related to the use of controllability filters, non-financial and financial metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables.

We applied the theoretical developments by Maher (1987) to examine the factors along the performance management cycle that influence the use of RPE. We expect that the same conditions of uncertainty and pressure to meet budget targets described above for controllability filters also hold true for RPE. Thus, controllability filters should be positively associated with RPE. Similarly, more emphasis placed on the use of outcome-based financial and non-financial metrics may result in a greater need for RPE to remove environmental factors that affect those metrics, and yet are outside the managers' control (because of situations where managers could not mitigate the impact of adverse factors on his or her performance by any degree of managerial effort). When participation in the budget process

increases with budget emphasis, we also expect superiors to employ more relative performance evaluations. Greater monitoring is a significant factor in explaining RPE usage. Budget tightness has been found to be positively correlated with greater use of monitoring and reporting controls (Simons, 1988), and here we extend this result to argue that tightness also requires more use of RPE to preserve fairness and procedural justice.

**Hypothesis 8.** Budget-based compensation is positively related to the use of relative performance evaluation and controllability filters, financial metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables; it is negatively related to the use of non-financial metrics.

A stronger link between budget targets and compensation is consistent with increased use of RPE and controllability filters to sort out relevant from irrelevant indicators of performance. The choice of performance metrics, both financial and non-financial, may also influence the way incentives are designed. The extant research on performance measurement suggests that the choice of financial and non-financial performance metrics has a significant impact on gaming behaviors and performance (see discussion in Shields & White, 2004). In this study we hypothesize that this direct effect of performance metrics on gaming and performance is supplemented by indirect effects through intervening motivational variables. Performance metrics influence motivation through the way in which they are used in performance-contingent compensation contracts. However, increased use of non-financial metrics may lead to fewer rewards being paid out on the basis of meeting budget targets (Hemmer, 1996), hence the negative relationship between non-financial metrics and budget-based compensation.

Budget-based compensation is expected to be a function of the three budgeting variables from step 2 of this model as well. Shields et al. (2000) have demonstrated that budget participation and budget-based incentives have a negative effect on job-related stress, and reduced stress improves individual performance. They also found that budget difficulty is positively associated with stress. Prior to that study, Shields and Young (1993) had found that budget participation had a strong correlation with budget-based incentives. Therefore budget-based compensation should have a positive relationship with both budget participation and budget emphasis. Organizations that emphasize budgets for performance evaluation and compensation purposes are also likely to adopt compensation contracts that explicitly link rewards to how performance compares with budgets. Drawing from the hypotheses in Simons (1988) and Shields et al. (2000), we expect

budget tightness to be positively related to budget-based compensation. Even though monetary incentives associated with budgets induce managers to negotiate slack into their budgets, their superiors will likely attempt to ensure that budget targets are reasonably tight and accurate before paying compensation based on achievement of those targets (Simons, 1988).

**Hypothesis 9.** Bonuses are positively related to budget-based compensation, the use of relative performance evaluation and controllability filters, financial and non-financial metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables.

Since organizations that make compensation contingent on budget achievement are also likely to designate a significant portion of total pay as bonuses, many of the same arguments offered above regarding factors that influence budget-based compensation will apply to bonuses too. An extensive use of bonuses as rewards (as compared to base salaries) is consistent with the use of RPE and controllability filters, as well as financial and non-financial performance metrics. To the extent that budget tightness increases performance-related risk, managers who bear those risks will require a proportionate compensation-related risk, with a high payout in the form of bonuses if they are successful in meeting those difficult targets (Chow, 1983; Merchant, 1989; Merchant & Manzoni, 1989). When budget participation is high, and there is a strong emphasis on meeting budgets, organizations may increase the amount of performance-contingent rewards compared to total pay to motivate managers to use resources in the best way possible to improve performance in accordance with organizational goals (Shields & Young, 1993).

**Hypothesis 10.** Gaming is positively related to bonuses, budget-based compensation, the use of relative performance evaluation and controllability filters, financial and non-financial metrics, budget emphasis, and other antecedent variables; it is negatively related to budget tightness and budget participation.

Firms use budget-based compensation and bonuses to create incentives for managers to improve performance (Chow, 1983; Waller & Chow, 1985; Shields & Young, 1993). However, these incentives may create additional pressure for managers to engage in dysfunctional behaviors such as gaming to meet budget targets (Jensen, 2003). If RPE and controllability filters effectively removed uncontrollable factors from the evaluation process, managers would likely have fewer reasons to engage in gaming behaviors. On the other hand, a high use of controllability filters and RPE may

introduce more subjectivity in performance evaluation and contribute to an “excuse culture” (Merchant & Van der Stede, 2003), thus offering more opportunities for gaming. Previous studies have found significant correlations between financial and non-financial metrics and gaming (e.g., Shields & White, 2004). In particular, that study found that the use of non-financial metrics has a positive influence on the likelihood that managers will engage in gaming behaviors. In our study, we argue that increased reliance on a summary financial metric (given all the limitations of historic, short-term financial metrics pointed out by Kaplan & Norton, 1996) may result in more gaming.

With regard to budgeting variables and gaming, budget participation and tightness are expected to have a negative association with gaming, while budget emphasis has a positive one. Increased participation in the budgeting process leads to more information exchange (Shields & Young, 1993), goal commitment, and perceptions of fairness and justice in the evaluation process (Little, Magner, & Welker, 2002). Therefore managers who have a greater influence in setting their own budget targets should have less incentive to resort to gaming to manipulate results (Fisher et al., 2000). Tight budget targets are often accompanied by increased monitoring and reporting controls (Simons, 1988), so that, even though managers under tight budgets may feel tempted to use gaming to manipulate results, they will not have much opportunity to get away with gaming and go undetected. Budget emphasis, on the other hand, is expected to influence gaming positively, as managers who realize that their bosses rely more on budgets for performance evaluation may decide to alter the timing of revenues, costs, or investments to meet the budget targets (Merchant, 1985; Jensen, 2003; Hansen et al., 2003).

**Hypothesis 11.** Performance is positively related to gaming, bonuses, budget-based compensation, the use of relative performance evaluation and controllability filters, financial and non-financial metrics, budget tightness, budget emphasis, budget participation, and other antecedent variables.

Gaming is associated with performance because the earnings manipulation practices involved in gaming are specifically intended to alter reported performance. Budget-based compensation and bonuses are also designed to have positive effects on performance (Merchant, 1989). To the extent that RPE and controllability filters reduce uncertainty by shielding managers from uncontrollable factors, they may also affect performance positively. The use of financial and non-financial performance metrics, as they clarify the objectives of an organizational unit, may influence performance positively (Shields & White, 2004). By setting targets at challenging levels,

budget tightness may lead to improved performance. After controlling for other factors, budget emphasis has been found to be associated with performance (see review in [Hartmann, 2000](#)). Finally, budget participation, as it improves goal commitment and motivation, and leads to attainable targets, enhances the chances of higher performance directly and indirectly, through the effects of budget participation on other controls (see review in [Covaleski et al., 2003](#)).

## **AN EMPIRICAL ILLUSTRATION OF THE MODEL**

### *The Survey*

A survey questionnaire was developed based primarily on instruments tested in previous studies, and distributed to 100 managers in the mid-Atlantic area who had direct budget responsibility. After preliminary interviews to describe the purposes of the project, and to guarantee strict confidentiality, participants were asked to complete the questionnaires and mail them to the researchers. The pre-stamped return envelopes enclosed with the questionnaires contained no means of identifying individual respondents, to encourage the managers to be most candid about their responses. This was necessary due to the sensitive nature of parts of the questionnaire that dealt with issues such as compensation variables and gaming behaviors. Sixty-four completed questionnaires were received. This 64% response rate is impressive, given that pilot tests of the questionnaire revealed that it would take approximately 25 min to complete. The managers were asked to rate, for each performance management practice, the extent to which it was actually used in their organizations, and to which they would prefer it to be used, in order to increase performance, job satisfaction, and morale.

The respondents reported average experience of five years in their positions and average budgeted revenues of \$40,000,000 for their responsibility centers. The fact that the respondents were responsibility center managers, and not students or financial specialists, was an intentional aspect of the research design, to increase the relevance of the empirical tests of the performance management model.

### *Measurement of Variables*

To promote comparability with previous studies, the questionnaire included measures from prior research whenever they were available.

*Antecedent Variables*

Task difficulty and variability measures were taken from the 14-item instrument originally developed by Van de Ven and Delbecq (1974), using a seven-point scale anchored by 1 = Strongly Disagree and 7 = Strongly Agree. Responsibility accounting was measured by one questionnaire item asking the respondent whether he or she was primarily responsible for costs (= 1), revenues (= 2), profits (= 3), or investments (= 4). Experience was measured by one questionnaire item asking how many years the respondent had held the current job in the company.

*Budgeting Variables*

The three budgeting variables were measured using a seven-point scale anchored by 1 = Very Little and 7 = Very Much, which respondents were asked to use for rating both their current and preferred levels. Budget participation was measured with the four-item instrument used by Chow et al. (1999), which was adapted from the one developed by Milani (1975), and later used in several studies (e.g., Kennis, 1979, Brownell, 1982, Shields & Young, 1993). The budget tightness measure consisted of a three-item instrument from Chow et al. (1999), based on Kennis (1979), Simons (1988), and Merchant and Manzoni (1989). Budget emphasis was measured with a six-item instrument adapted from Merchant (1981) and Chow, Shields, and Wu (1993), which was developed based on the original work from Hackman and Porter (1968) and later used in Dermer (1975).

*Performance Evaluation Variables*

Similarly to the instruments on budgeting practices described above, the four performance evaluation variables used a seven-point scale ranging from 1 = Very Little and 7 = Very Much, applied to ratings of both current and preferred levels.

Given that the purpose of our model is to relate budgeting, performance evaluation, and incentives to gaming behaviors and performance, we reviewed the literature on the choice of performance metrics to find out which metrics should be included in this test of the model because they most closely relate to the two dependent variables of interest (gaming and performance). Our search of the literature was guided by three main criteria: (1) we wanted to choose one financial metric, and one non-financial metric to recognize the

growing trend of organizations that weigh both types of metrics when evaluating and rewarding managers (American Institute of Certified Public Accountants (AICPA) & Maisel, 2001); (2) we needed performance metrics that would apply to a wide range of responsibility center managers (as opposed to stock-based metrics, for example, that apply at the enterprise level but not at the responsibility center or individual manager's level); and (3) we gave priority to metrics most popular in current practice. This search resulted in two performance metrics selected for this study: efficiency gains (financial) and market share (non-financial). These metrics are among the most frequently used in practice and have been found to relate significantly to both gaming behaviors and performance (Shields & White, 2004).

Efficiency gains capture the financial results of a manager's effort to control costs in order to achieve higher profit margins. Empirical evidence from Shields and White (2004) suggests that efficiency gains were the financial metric most preferred by the surveyed managers. Market share has been suggested as a key non-financial performance metric because it measures what percentage of a target market the business unit is able to control. It is one of the three most popular non-financial metrics in current practice (American Institute of Certified Public Accountants (AICPA) & Maisel, 2001). Kaplan and Norton (1996) have recommended market share as a core measure to assess strategic performance from the customer perspective for organizations interested in adopting a balanced scorecard of performance metrics. Therefore in the empirical tests presented in this section, we used efficiency gains and market share as surrogates for the use of financial and non-financial metrics, respectively.

The two questions on efficiency gains and market share were the same as in Shields and White (2004). Controllability filters related to five situations in which performance is adjusted for factors beyond control of the manager, using the instrument developed by Chow et al. (1999) based on the original framework by Merchant (1987). RPE was measured by one question based on the findings of Maher (1987) regarding the extent to which compensation is influenced by the performance of similar units inside or outside the organization.

### *Compensation Variables*

The question about budget-based compensation, which was based on Simons (1988), Shields and Young (1993), and Chow et al. (1999), asked for the extent to which the compensation contract clearly specified how compensation is related to budget performance. This question used a seven-point scale ranging

from 1 = Very Little and 7 = Very Much, and the participant had to rate both current and preferred levels. The question regarding bonus was used in the same studies cited for budget-based compensation, but it was slightly adapted for the purposes of this study. Instead of using the seven-point scale, this item in the questionnaire asked for the actual percentage of total pay that typically came from performance-based bonuses, as opposed to salary; the participant was asked to give the percentage as it “currently is” and the percentage it “should be.”

#### *Consequent Variables: Gaming Scenarios*

The four scenarios were selected from the gaming practices questionnaire originally developed by [Bruns and Merchant \(1989, 1990\)](#) and later used by [Merchant and Rockness \(1994\)](#) and other studies addressing earnings management (e.g., [Shields & White, 2004](#)). These scenarios were selected because they were closely related to the performance metrics used in this study: two games influenced the efficiency gain metric (outsourcing work to postpone reporting the costs; deferring discretionary items to another period); and the other two games influenced the market share metric (shipping earlier to avoid missing a budgeted sales target; offering liberal payment terms to boost sales in the short term). The managers were asked to rate the probability that they would take that action using a seven-point scale anchored by 1 = Highly Improbable and 7 = Highly Probable.

#### *Performance Variables: Individual Performance*

Nine questions were included in the questionnaire to measure individual performance, using the instrument originally developed by [Mahoney, Jerdee, and Carroll \(1963\)](#) and frequently used in accounting research (e.g., [Brownell & Hirst, 1986](#); [Kren, 1992](#); [Nouri, Blau, & Shahid, 1995](#); [Wentzel, 2002](#); [Chong & Chong, 2002](#)). Each question had a nine-item scale anchored by 1 = Below Average and 9 = Above Average ([Table 1](#)).

#### *Descriptive Statistics*

[Table 1](#) shows descriptive statistics for the 15 variables used in this study. Some questionnaires were returned with missing values, so the number of observations varies slightly. We performed reliability analysis to adjust the

**Table 1.** Descriptive Statistics.

Scale	N	$\bar{X}$	s	Cronbach's Alpha
<i>Panel A: Scales and reliability</i>				
Individual performance	63	38.75	5.91	0.80
Gaming	63	16.97	5.50	0.69
Controllability filters	63	17.33	5.12	0.89
Budget tightness	64	11.67	1.82	0.62
Budget emphasis	64	26.14	7.95	0.88
Budget participation	62	20.82	5.11	0.85
Task variability	61	36.64	5.57	0.71
Task difficulty	64	26.39	5.75	0.67
Variable	N	$\bar{X}$	s	
<i>Panel B: Other variables</i>				
Bonus	58	18.40	20.67	
Budget-based compensation	64	26.14	7.95	
Relative performance evaluation	64	3.80	1.85	
Non-financial metrics	64	2.45	1.70	
Financial metrics	64	3.56	1.80	
Experience	64	4.95	4.53	
Responsibility accounting	63	2.17	1.02	

scales from other studies for this particular sample and considered only the items that the reliability analysis indicated that they formed an internally consistent scale. All of the Cronbach alphas were at or above 62%, which suggests a relatively high reliability.

### *Path Analysis Results*

We performed path analysis to construct the relationships among the variables described in Fig. 1. We tested whether the variables in each step along the performance management cycle that were influenced by variables in the previous step and whether the relationships among variables within each step were significant. This technique helped us to determine which variables along the path had direct and indirect effects on performance (either positive or negative) and the relative magnitude of the relationships within each set of variables.

Regression analyses were performed to determine the path coefficients for the relationships among the variables proposed in the model for this study. The main quantitative regression results are reported in Table 2, and Fig. 2

**Table 2.** Regression Results.

Dependent Variable	Independent Variables	Beta	$\bar{R}^2$	Significance
Performance	Financial metrics	0.27	0.14	0.01
	Budget participation ( <i>p</i> )	0.27		
	Bonus	0.20		
Gaming			0.18	0.007
	Controllability filters	0.27		
	Budget participation	-0.26		
	Experience	0.26		
	Non-financial metrics	0.23		
Bonus			0.35	0.0001
	Budget-based compensation	0.48		
	Financial metrics ( <i>p</i> )	-0.30		
	Task difficulty	-0.24		
Budget-based compensation			0.35	0.001
	Budget emphasis	0.34		
	Responsibility accounting	0.33		
	Non-financial metrics ( <i>p</i> )	-0.32		
	Task variability	0.24		
Relative performance evaluation			0.14	0.01
	Financial metrics	0.25		
	Budget tightness ( <i>p</i> )	0.23		
Controllability filters	Financial metrics	0.25	0.07	0.05
	Budget participation ( <i>p</i> )	0.20		
Non-financial metrics			0.36	0.0001
	Financial metrics ( <i>p</i> )	0.53		
	Responsibility accounting	0.36		
	Experience	0.18		
Financial metrics	Budget emphasis	0.28	0.06	0.03
Budget tightness			0.25	0.0003
	Budget participation ( <i>p</i> )	0.42		
	Task variability	0.20		
Budget emphasis			0.13	0.007
	Budget participation	0.36		
	Task variability	0.18		

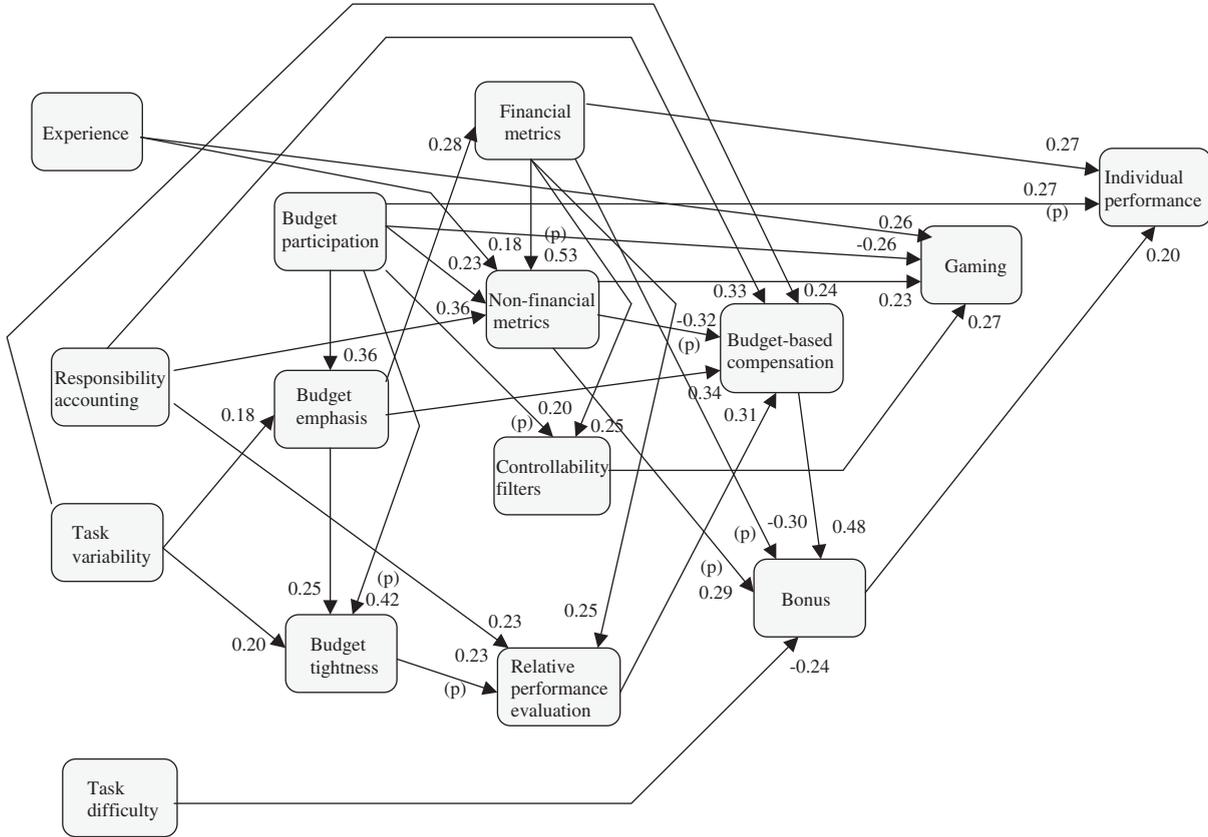


Fig. 2. Significant Path Relationships.

illustrates the main results from our path analysis graphically. Beta weights or path coefficients are reported instead of partial correlations (regression coefficients) because the beta weights indicate the extent to which change in the dependent variable is produced by a standardized change in one of the independent variables, after controlling for the other independent variables (Blalock, 1979). For the purposes of preparing Table 2 and Fig. 2, all relationships included are statistically significant and positive, with four exceptions in which the relationship is negative (see discussion below). To facilitate reading, variables marked with (*p*) reflect preferred levels (instead of actual levels).

The overall results provide preliminary empirical evidence in support of our performance management model. In step 1, we find only non-significant direct relationships between the antecedent variables in step 1 and budget participation in step 2, leading us to reject Hypothesis 1. However, we find direct and indirect effects of these antecedent variables on other variables in steps 2–6. Task variability is the only antecedent variable found to directly influence budgeting. In step 2, budget emphasis has significant and positive relationships with both task variability and budget participation, consistent with Hypothesis 2. Budget tightness has a strong association with budget participation (preferred), and significant relationships with budget emphasis and task variability, as predicted in Hypothesis 3. Considering the relationships among budgeting variables, managers who have a greater input in setting budgets report that their organizations place more emphasis on achieving budget targets, even when holding them accountable for harder targets. This result and the inclusion of preferred levels of budget participation in the analysis help explain the conflicting findings of Merchant (1985) and Lal, Dunk, and Smith (1996) in support of positive relationships among budget participation, emphasis, and tightness.

In step 3, the use of financial metrics is positively related to budget emphasis but not significantly related to any other budgeting or antecedent variable, providing weak support of Hypothesis 4. The use of non-financial metrics is positively related to the use of financial metrics (preferred levels), producing the strongest relationship among all tested for the 15 variables in this model. Non-financial metrics are also related to budget participation, responsibility accounting, and experience, consistent with Hypothesis 5. It is interesting to note that budget participation has a direct effect on the use of non-financial metrics, but contributes to the use of financial metrics indirectly through its influence on budget emphasis.

The use of controllability filters and RPE are both influenced by financial metrics. Furthermore, controllability filters are positively related to budget

participation (preferred), in support of Hypothesis 6. Increased use of RPE is associated with responsibility accounting (more complex responsibility centers such as profit and investment centers tend to employ RPE) and higher budget tightness (preferred), as expected from Hypothesis 7.

In step 4, budget-based compensation is positively affected by RPE and budget emphasis, and it is negatively affected by non-financial metrics (preferred). Managers who would prefer not to have non-financial metrics tend to have compensation contracts that clearly specify that compensation will be calculated based on budget-related performance. Budget-based compensation is also more prevalent in responsibility centers with greater complexity and decentralization levels, and under conditions of higher task variability. These results generally support Hypothesis 8; however, the lack of a significant relationship between budget participation and budget-based compensation seems to contradict Shields and Young (1993), who found a significant and positive association between these two variables. In our study, budget participation is found to influence budget emphasis and the use of non-financial metrics, and those two performance evaluation variables in turn significantly impact budget-based compensation. It seems that participation does not directly influence compensation, but once we controlled for the intervening effects of performance evaluation variables, we realized that budget participation does have an indirect effect on budget-based compensation.

Bonuses (percent of pay at risk) are positively related to budget-based compensation and the use of non-financial metrics (preferred), as expected from Hypothesis 9, but hold a negative relationship with financial metrics (preferred) and task difficulty in our sample. The strong relationship between budget-based compensation and bonuses is consistent with a situation in which managers who have compensation contracts that objectively link compensation to budget-related performance tend to have more of their total pay at risk. The unexpected negative relationships of task difficulty and financial metrics with bonus may be explained by the agency theory argument of risk aversion: when difficulty increases and reliance on financial results also increases, so does performance risk. Managers are shielded from that risk by reducing compensation risk via lower percentages of pay at risk.

In step 5, gaming is positively related to the use of controllability filters, non-financial metrics, and experience, and negatively related to budget participation, as indicated in Hypothesis 10. More experienced managers responded that they are more likely to engage in gaming behaviors, while managers who participate more in their budgeting processes report a lower likelihood that they will adopt gaming practices. Contrary to the incentive

literature, there were no significant, direct relationships between compensation variables and gaming for this sample once we controlled for the effects of performance evaluation, budgeting, and antecedent variables on gaming.

In step 6, individual performance is positively associated with bonuses, budget participation (preferred), and the use of financial metrics, consistent with Hypothesis 11. Managers who have more pay at risk, whose performance is measured by financial results, and who prefer higher levels of participation in budgeting tend to be evaluated as top performers. We found no significant association between gaming and performance, perhaps due to the performance scale used, which is not confined to items typically subject to gaming manipulations.

## **CONCLUSION AND RELEVANCE OF THE FINDINGS**

The objective of this study was to propose a comprehensive performance management model and illustrate the model with empirical results. The empirical illustration of the model was based on a non-random sample of 64 responsibility center managers, and this relatively small sample size may limit the interpretation of the model effects. Overall, the empirical results, albeit preliminary, corroborate the proposed model, and suggest that it can be useful in future research on intervening variables that mediate the relationship between budgeting and performance. Notwithstanding these results, the variables used to test our model only explain 14% of the variation in individual performance. Therefore other relevant variables are missing from the set of variables used to test the model, suggesting a possible omitted variable bias.

The results show that each variable along steps 2–6 of the proposed performance management model can be significantly explained by other variables included in the model, except for antecedents of budget participation. The results are particularly strong to explain compensation variables (budget-based compensation and bonus), non-financial metrics, and budget tightness. Budget participation has two beneficial effects: it reduces gaming (directly and through its association with the use of controllability filters) and it increases performance, directly and indirectly, through intervening variables such as budget emphasis, budget tightness, and the use of non-financial performance metrics. These intervening variables, in turn, influence other performance evaluation and compensation variables that have a direct impact on performance. Antecedent variables seem to play a significant role

in explaining budgeting, performance evaluation, and compensation practices, but they seem not to affect individual performance directly.

This study integrates the previous literature on performance management practices by offering a comprehensive model of how variables along each step of the performance management cycle have direct and indirect effects on performance. In particular, this study introduces the preference for budget participation as a relevant factor in explaining managerial performance.

The preferred levels of budget participation, tightness and financial and non-financial metrics showed significant relationships with other variables along the performance management cycle. This result suggests that actual performance management practices are not sufficient to explain differences in managerial performance, as managerial preferences for those practices also influence performance.

Future research could benefit from adding individual-level variables such as leadership style, cognitive style, and personality traits (including tolerance for ambiguity and locus of control) to help explain the remaining variations in individual performance. Variables at the business unit or firm level, such as strategic mission, or cultural values, should also increase the explanatory power of the model.

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