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THE INTERACTIVE EFFECTS OF DIFFERENT ACCOUNTING CONTROLS
ON SUBORDINATES' BEHAVIOUR AND PERFORMANCE

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*School of Accounting Working Paper Series
July 1998*

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**THE INTERACTIVE EFFECTS OF DIFFERENT ACCOUNTING CONTROLS
ON SUBORDINATES' BEHAVIOUR AND PERFORMANCE**

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THE INTERACTIVE EFFECTS OF DIFFERENT ACCOUNTING CONTROLS ON SUBORDINATES' BEHAVIOUR AND PERFORMANCE

Abstract Prior research suggests that goal setting and an emphasis on meeting tight budget targets may influence the extent of subordinates' performance and slack creation. This study hypothesizes that other accounting controls may moderate these relationships. Specifically, it hypothesizes that: (i) budgetary performance is increased and (ii) budgetary slack creation is decreased when an emphasis on setting and meeting tight budget targets is complemented with a high extent of cost control. The results support a significant two-way interaction between Emphasis on setting and meeting tight budget targets and Cost control affecting budgetary performance. A significant two-way interaction between Emphasis on setting and meeting tight budget targets and Cost control affecting the propensity to create slack was also found for production managers. Marketing managers' propensity to create slack was found to be associated only with Emphasis on setting and meeting tight budget targets.

Keywords: Tight budget targets, cost control, performance, slack.

THE INTERACTIVE EFFECTS OF DIFFERENT ACCOUNTING CONTROLS ON SUBORDINATES' BEHAVIOUR AND PERFORMANCE

Prior studies suggest that the setting and meeting of tight and attainable budget targets may be associated with subordinates' performance and budgetary slack creation (Becker & Green, 1962; Locke & Latham, 1984; Kren & Liao, 1988). The setting and meeting of tight but attainable goals may encourage subordinates to internalize budget goals, leading to a higher level of aspiration, motivating subordinates to exert a disproportional amount effort to attained the budgets, thereby improving their performance. High reliance on meeting budget targets as a criterion for evaluating subordinates' performance may provide the incentive for subordinates to create budgetary slack (Hopwood, 1972; Onsi, 1973; Cammann, 1976; Merchant, 1985a; Dunk, 1993).

Emphasis on meeting budget target however is only one of the many types of accounting controls existing in organizations (Simons, 1987). Whilst there is empirical evidence to support the expectation that an emphasis on tight budget targets interact with different business strategy to affect performance (Simons, 1987), the interaction between an emphasis on tight budget targets and other types of accounting controls affecting subordinates' performance and dysfunctional behavior have not been previously explored. In particular, the moderating effects of other compensatory accounting controls, such as cost control, that may be implemented jointly with an emphasis on setting and meeting tight budget targets have been omitted in prior studies.

Accounting controls constitute an important form of controls existing in many organization for motivating subordinates and influencing their behaviour (Lawler & Rhode, 1976; Flamholtz, 1979; Euske, 1984, Merchant, 1985b). Merchant (1985b) regards the accounting information system as useful for control purpose because they provide information that is useful for motivating, monitoring, and decision making. However different forms of accounting controls may affect subordinates' performance and behavior differently. Chow,

Kato & Merchant (1996, p.179) argue that "Controls can serve as complements or substitutes for one another, and they also may differ in both magnitude and area of impact." This suggests that organizations may need to implement different forms of accounting controls simultaneously to achieve the desired outcome and behaviour. Hence accounting controls, such as the extent of budget emphasis in performance evaluation should not be viewed in isolation, but as a total package of accounting controls along with other nonaccounting controls to achieve the organizational objectives (Otley & Berry, 1980; Otley, 1980; Flamholtz, 1983; Merchant, 1985b; Macintosh & Daft, 1987; Chow *et al.*, 1996). For instance, Macintosh & Daft (1987, p.50) argue that accounting controls "...may seem an ad-hoc collection of techniques and mechanisms, but in many cases they are the tangible elements of a strategy to create an integrated organization control package." This suggests the need to explore the impact of the moderating effects of other accounting control on the relationships between an emphasis on tight budget targets and subordinates' performance and dysfunctional behavior.

Different forms of accounting controls occur at various phases, namely, at the planning phase, during the implementation phase and after the implementation phase. Two forms of common accounting controls, namely, planning and cost control, are necessary for control systems to be effective. Horngren, Foster & Datar (1997, p.4) define *planning* as "choosing goals, predicting results under various ways of achieving those goals, and then deciding how to attain the desired goals"; and *control* as "action that implements the planning decision and the performance evaluation of the personnel and operations." The management accounting literature suggests that effective planning and effective control are both crucial for achieving organizational objective (Welsch, 1976; Horngren *et al.*, 1997). Effective planning ensures that goals are carefully chosen and effective control ensures that the chosen plan of action is implemented accordingly, thereby ensuring that the chosen goals are attained. Planning without the complementary control will be unsuccessful. Similarly, controls are not meaningful unless proper planning is in place. This suggests that whilst an emphasis on tight budget targets may be a necessary condition for improving

subordinates' performance and minimize subordinates' dysfunctional behaviour, it may not be the only condition. An effective cost control system must also be in place to complement the tight budget target set. To-date, these relationships have remained largely untested. Since planning and cost control constitute two of the most common forms of accounting controls, a better understanding of their effects on subordinates' performance and behaviour will have important theoretical and practical implications.

In the next section, the relevant studies are examined to develop a theoretical basis for the hypotheses to be tested. The following sections respectively describe the method, results and their implications for theory and practice.

HYPOTHESES DEVELOPMENT

Role of accounting systems in restricting slack creation

Birnberg, Turopolc & Young (1983) suggest that accounting controls can be used by superiors to influence subordinates' behaviour. The importance of management accounting as a control system is also emphasized in agency framework. Agency theories suggest that an agent (subordinate), acting in self-interest, is capable of engaging in dysfunctional behaviours known as adverse selections and moral hazards (Baiman, 1982). The principal (superior) relies on accounting control system to influence or control the agent's actions. Since the agent attaches disutility to effort, the agent will attempt to create slack (regarded as a form of shirking), to maximize utility, as slack permits less effort to be expended. As slack is regarded as an inefficiency or a loss that occurs because of asymmetric pre-decision information (Scapens, 1991), and as the principal is also a utility maximiser, the principal will attempt to solicit the optimal effort from the agent through the choice of the information systems, including the use of accounting controls.

The principal can use accounting control systems in several ways to counter slack and improve performance. First, the principal can bargain with agent to set standards and targets considered acceptable to the former. Second, the principal can install accounting controls to monitor and report on the agent's effort. Pope (1984) suggests that a major form of counter-bias, which can impose significant restrictions on subordinates' ability to create slack, is the use of controls over the quality of information. He argues that "audit verification procedures implemented by the owner, penalties for estimation errors and even zero-based budgeting can all be viewed as formal controls on the quality of the information communicated to the owner...To the extent that such controls are effective...biasing will be unattractive" (p.57). This suggests that the more sophisticated and intense are accounting controls, the less successful will be subordinates' attempts to create slack.

Both moral hazard and adverse selection are the consequences of information asymmetry because of the principal's inability to measure or infer whether the agent has expended the appropriate amount of effort or selected the optimal decisions. A number of researchers (e.g., Schiff & Lewin, 1970; Otley, 1978; Young, 1985; Dunk, 1993) suggest that information asymmetry is likely to lead to a higher incidence of budgetary slack creation. Otley (1978, p.145), for instance, argues that "the essence of the control problem...is that there is a degree of uncertainty in what constitutes an appropriate standard of performance for an organizational unit, but that uncertainty is often greater to the superior than the subordinate, who is more closely involved....The so-called game of budget control...is played in the area of uncertainty that lies between a superior's knowledge of a specific situation and that possessed by his subordinate". Hence, any measures, which reduce the amount of information asymmetry, are likely to reduce the agent's dysfunctional behavior, including slack creation. Since accounting control systems (such as the planning systems, the reporting systems and monitoring procedures), are based on information use¹, they are likely to increase the amount of knowledge available to the superior. The possession of more information is likely to increase the superior's ability to detect slack creation by the

subordinates. If subordinates are aware that the superior has the ability to detect slack, they are less likely to create slack. Hence their propensity to create slack will be reduced.

Role of accounting controls in improving performance

Apart from reducing propensity to create slack, accounting controls may also lead to better subordinates' budgetary performance. Budgetary performance is defined as the extent of success by the subordinates to meet budgeted targets. Budgetary performance is high if the subordinates' actual performance is close to or better than budgeted performance.

Since accounting controls are likely to reduce the extent of subordinates' propensity to create slack, budgets are also likely to be accurately and realistically set. Accurate budgets, in turn, are likely to lead to better budgetary performance as subordinates are likely to view accurate budgets as realistic and attainable and hence are likely to be motivated to meet the budgeted targets (Becker & Green, 1962; Otley, 1978). Becker & Green (1962) suggest that when subordinates view budgets as accurately and realistically set, they are also likely to internalised the budget targets, leading to higher level of aspiration, which, in turn, will motivate subordinates to put in more effort to try to achieve the budgeted targets. In his study of superior's evaluative styles and budgetary performance, Otley (1978) also found that subordinates' budgetary performance was positively associated with superior's evaluative styles that emphasized the importance of meeting the budgets (budget constrained style). *However, he also found that better budgetary performance was also associated with more accurate and realistically set budget targets.* He concluded that the better budgetary performance was not the consequence of the evaluative style, *but rather was caused by budget targets that were more accurately and realistic set*. He explained the relationship as follows: "It therefore appears that a major reason for performance being closer to budget when budgetary means of evaluation are stressed is not so much that performance improves, but that the budget is set at more realistic levels... such realism in budgets is also associated with performance that is acceptable.... " (pp 138-139). As an important purpose of accounting controls is to enhance the accuracy of accounting and budget

information, accounting controls are therefore likely to improve the accuracy of budget targets, and following Otley's argument, more accurate budgets are likely to be associated with improved subordinates' budgetary performance.

"Path-goal" theory also suggests the importance of financial controls as a motivation device for better performance particularly among higher level management (Georgopoulos, Mahoney & Jones, 1957; Ronen & Livingston, 1975; Macintosh, 1994). For instance, Macintosh (1994) suggests that "at upper levels, where role ambiguity runs high, managers will welcome financial controls because their jobs are rife with uncertainty, ambiguity and conflict. Here, financial controls, such as budgets, delineate managers' relationship with their superiors, provide a communication channel with subordinates and help define patterns of authority and responsibility. Financial controls help these managers to identify their goals as well as the proper path to reach them... Not surprisingly, surveys usually reported that upper level managers hold *positive attitudes* toward financial controls." (p.35) (emphasis added). Hence, accounting controls are therefore hypothesized to be positively associated with senior level managers' budgetary performance.

Operationalise of planning and control

Analyzing the results from his survey of 76 firms, Simons (1987) identifies 10 different accounting control attributes. The two control system attributes of interest to this study are "Emphasis on tight budget targets" and "Cost control" which are used to operationalise planning and control, respectively.

Simons' accounting attributes are used by this study to operationalise accounting controls for several reasons. First, Simons' framework allows more than a single form of accounting control to be evaluated. Second, Simons' instrument covers a broader range of documents and forms of controls than other available instruments, for instance, the Macintosh & Daft (1987) instrument. Simons' instrument also permit controls to be classified on a purpose-basis (e.g., cost control, results monitoring, external scanning) rather than just on the type of

documents as in the case of the Macintosh & Daft instrument (e.g. budget, statistical reports, standard operating procedures). Additionally, the identification of different forms of controls through an factor analysis by Simons, permits a more selective list of items only, rather than the entire 33-item questionnaire, to be use in the present study. The classification of items into different forms of controls also permits the validity and reliability of the instrument to be verified.

Emphasis on tight budget targets Emphasis on tight budget targets is related to the tightness and accuracy of departments' budget goals, the importance attached to the meeting budgeted targets and the achievement of operating efficiencies and the use of summary measures of departmental performance. Departments with a high Emphasis on tight budget goals would attempt to set accurate and tight budget goals, require subordinates to meet these tight budgeted targets and achieve operating efficiencies and use overall summary measures to measure departmental performance.

Cost control Cost control is defined by Simons (1987) as the extent to which cost analysis techniques and control are used. Departments with high Cost control would control departmental operations by setting up cost centers, perform variance analysis and monitor closely all operations and tasks in the department. The use of cost centers and variance analysis are essential aspects of responsibility accounting which not only highlight deviations of actual performance from budgets, but also enable the superior to pinpoint the department and the individual responsible for the deviations and potential problems areas. This, together with control systems which monitor all tasks and operations, is likely to make it difficult for subordinates to conceal any failure to meet budgeted targets.

Two-way interaction between Emphasis on tight budget targets and Cost control

High Emphasis on tight budget targets - high Cost control situations

By itself, a high Emphasis on tight budget targets may not lead to a decreased propensity to create slack or improved budgetary performance. A *high* Emphasis on tight budget targets is likely to be effective only when it is accompanied by a *high* extent of Cost control. Control refers to actions taken to achieve plans and involves the measurement of progress when plans are implemented and the triggering of actions to correct or prevent any deviations of actual performance from the budgets. However, control presupposes the existence of effective planning. Without effective planning, control is meaningless. Similarly, without effective control, planning is meaningless as budgets are unlikely to be achieved. Effective planning and control must both occur before budgets can be achieved.

Consequently, Emphasis on tight budget target is likely to interact with Cost control to affect subordinates' propensity to create slack and budgetary performance. When Emphasis on tight budget target and Cost control are *both high*, it is likely that the superior is highly committed to using the accounting control system to achieve organizational objectives. The setting of accurate and tight budget targets is likely to be of paramount importance to the superior. In such situations, the superior is likely to view slack creation unfavorably and is likely to intensify efforts to discourage slack creation. When both control system attributes are *high*, the intensity and the sophistication of the accounting controls in place are likely to make it difficult for subordinates to create slack. Subordinates are likely to be unable to create slack. Since slack creation is not easy, propensity to create slack is likely to be *low*. Moreover, because of the increased attention on meeting tight budget targets, subordinates' budgetary performance is also likely to be *high*.

High (low) Emphasis on tight budget targets - low (high) Cost control situations

In contrast, in situations when Emphasis on tight budget targets is high (low) and Cost control is low (high), the superior is likely to be less committed to using the accounting

controls to restrict slack creation or to improve budgetary performance. Since it is likely that *both* accounting controls must be present before slack creation can be restricted and budgetary performance improved, it is plausible that slack creation will be possible when only *one* of the accounting control is present. Additionally, the presence of any one of the accounting controls is likely to be enough to pressure subordinate to *increase* slack creation. For instance, when Emphasis on tight budget target is high, subordinates are under pressure to create slack because the importance attached to meeting the budget, coupled with the tight budget targets, are likely to require a high level of effort from the subordinates. Similarly, a high extent of Cost control directs the superior's attention to the subordinate responsible for any deviations from the budget. Subordinates are therefore likely to be under pressure to avoid having unfavorable variances. Hence, they are likely to create more slack under high Cost control situation than low Cost control situations to avoid the negative stigma associated with unfavorable variances.

Hence, whilst the presence of *both* Emphasis on tight budget targets and Cost control makes it difficult for subordinates to create slack because of the *high* intensity and sophistication of the accounting controls, the presence of only one of the controls is likely to make it possible for subordinates to create slack because of the *lower* intensity and sophistication of the accounting controls. This, coupled with the pressure to create slack, is likely to lead to a *high* propensity to create slack.

Low Emphasis on tight budget targets - low Cost control situations

Finally, when Emphasis on tight budget targets and Cost control are *both low*, the superior is likely to place little importance to accounting controls to achieve organizational objectives. Subordinates are therefore likely to be under no pressure or have any incentive to create slack. Consequently, propensity to create slack is likely to be *low*. Since there is a lack of attention on the budgetary system by the superior, subordinates are unlikely to be motivated to achieve high budgetary performance. Hence, budgetary performance is also likely to be *low*.

Based on the above discussion, the following null and related alternative hypotheses are tested:

H₀₁ There is no significant interaction between Emphasis on tight budget targets and Cost control affecting subordinates' Propensity to create budgetary slack.

H_{A1} Emphasis on tight budget targets interacts significantly with Cost control to affect subordinates' Propensity to create budgetary slack.

H₀₂ There is no significant interaction between Emphasis on tight budget targets and Cost control affecting subordinates' Budgetary performance.

H_{A2} Emphasis on tight budget targets interact significantly with Cost control to affect subordinates' Budgetary performance.

Functional differentiation of activities

Researchers (e.g., Galbraith, 1973; Govindarajan, 1986; Kren & Liao, 1988) suggest that budgetary slack is a function of uncertainty. Since the levels of environmental uncertainty (Thompson, 1967; Hayes, 1977; Brownell, 1982, 1985) as well as the level of task uncertainty (Thompson, 1967; Hirst, 1981, 1983; Brownell & Hirst, 1986; Mia & Chenhall, 1988) faced by the production function and the nonproduction functions (e.g., marketing) are likely to differ, it is plausible that the results pertaining to the above hypotheses may be influenced by functional differentiation. The appropriateness and hence the extent of reliance and use of budgetary controls may also vary between different functional areas (Lawrence & Lorsch, 1967; Hayes, 1977). Thompson (1967) suggests that since accounting control systems are generally "arbitrary" and "socially invented", they are appropriate only "...when technologies are instrumentally perfected, and task environments stable or well buffered"

(p.93). Since the production function faces a more homogeneous and stable environment than nonproduction functions such as marketing, accounting controls may be relied upon more in the production departments than in marketing departments to measure subordinates' performance. Similarly, Brownell (1982) suggests that "within the organization, the locus of influence in decision making varied depending on the subenvironment faced by major functional divisions. Boundary-spanning divisions, such as marketing, were characterized by a much broader base of decision-making influence and control than those divisions relatively buffered from the external environment, such as production" (p.129).

Empirically, Otley (1978) attributes his conflicting results with those of Hopwood (1972) partly to the different type of operating units examined in the two studies. He examined profit centers whilst Hopwood (1972) examined mainly cost centers. Similarly, Brownell and Hirst (1986) emphasize the importance of the difference in their sample compared with that of Brownell (1982). Whilst Brownell (1982) examined mainly production personnel, Brownell & Hirst's (1986) sample was more heterogeneous and their results are stronger for the production subsample than for the nonproduction subsample. Hayes (1977) results indicate strong support for his proposition that internal variables are the major explanators of production department performance; whereas environmental variables are most important in the explanation of the marketing department performance. Based on these results, he concludes that accounting based performance evaluation measures are appropriate for production managers, but not for marketing and research and development managers. Brownell's (1985) results indicate that participation is more effective in enhancing the performance of R & D departments than marketing departments.

Macintosh & Daft (1987) similarly found that departmental interdependence is related to the emphasis placed on different forms of controls, with standard operating procedures being more intensely used when interdependence was low; budget and statistical reports being important when interdependence was moderate; and all forms of controls (standard operating procedures, budget and statistical reports) being less important when interdependence among departments was high. Finally, Mia & Chenhall (1994) found that

functional differentiation of activities interacts significantly with broad scope MAS information to affect performance. The impact of broad scope information on performance is stronger for the marketing function than for the production function, a result they attribute to the task uncertainty differences between production and marketing.

Hence there is strong theoretical justification as well as empirical evidence to suggest that functional differentiation may influence the impact of accounting and budgetary controls. Since Emphasis on meeting tight budget targets and Cost control are both related to budgeting and accounting based control systems, it is probable that the models developed in this study may be more applicable to the production function than to nonproduction functions such as marketing. Hence, apart from the combined sample (production and marketing combined), the results of this study are also analyzed separately for the production and the marketing subsamples.

RESEARCH METHOD

A survey methodology involving a mailed questionnaire was used to test the hypotheses. A total of 237 manufacturing companies located in the Australian States of Victoria (117 companies) and New South Wales (120 companies) each employing more than 100 employees were selected randomly from *Kompass Australia 1993/94*.²

As this study was designed to also examine the production departments and the marketing departments separately, only companies with more than 100 employees were selected since companies with less than 100 employees may not be organized on a functional basis (Brownell & Dunk, 1991). Only the heads of both the production and marketing functions are selected to provide some degree of control for the level of seniority of the participants within the organizational hierarchy. The selection of a single manager from each functional area also ensures independence of observations.

The selected companies were contacted by telephone to obtain the names of the two functional heads so that the questionnaire could be mailed directly to, and answered by, the intended participants. Twenty one companies could not be contacted³ and thirty nine companies reported that they were not actively involved in manufacturing in Victoria or New South Wales. Of the remaining 177 companies, 143 companies agreed to assist in the survey. This resulted in the identification of 143 production managers and 141 marketing managers. The questionnaire was administered to a sample of only 237 managers selected randomly from the 284 names obtained. Questionnaires were not mailed to all the names provided as an approximate number of 240 questionnaires were considered adequate for the survey. Moreover, managers who responded were provided with gift vouchers. Hence, only 237 questionnaires were mailed to keep the cost of gift vouchers to an affordable level.

The administration of the questionnaire involved the following steps. First, a letter explaining the objectives of the study was mailed to each of the intended participants.

This was followed a week later by the questionnaire with a covering letter (assuring participants confidentiality of information) and a reply-paid self-addressed envelope. Since prior research has indicated that small monetary incentives enhance survey response rates (Kanuk & Berenson, 1975; Heberlin & Baumgartner, 1978; Jaworski & Young, 1992), each respondent was promised a gift voucher if the questionnaire was returned in a useable form. Reminder letters were mailed to those who had not responded after three weeks of mailing of the questionnaire.

One hundred and eight responses and three "return to sender" were received. Seven organizations contacted by telephone indicated that the managers have already left their organizations. This resulted in a response rate of 48%. Four responses were not usable as one respondent indicated that budgets were not used in the respondent's organization and the other three responses were not answered by either the production or marketing managers. This resulted in 104 usable responses.⁴

The respondents comprise 52 production managers and 52 marketing managers. The managers have a mean age of 43; have an average of 11 years of experience in their area of responsibility; and have been in their current positions for an average of 4 years. Fifty seven percent of them have university qualifications and the average number of employees in their areas of responsibility is 103. These demographic data indicate that the respondents in general are highly qualified and experienced managers in highly responsible positions.

MEASUREMENT INSTRUMENTS

Propensity to create slack Propensity to create slack was measured by Onsi's (1973) instrument. The four-item Likert-scaled instrument measures the extent of the respondents' agreement to the statements that a manager (i) submits a safely attainable budget to protect himself/herself; (ii) sets different levels of standards with different levels of management to be safe; (iii) accepts a reasonable level of slack during good business times; and (iv) approves of slack as slack permits acts that cannot be officially approved to be carried out. Onsi's instrument was selected for this study as it is a much more established scale than Dunk's (1993) scale and has been tested and used by almost all the studies on budgetary slack involving questionnaire surveys with satisfactory reliability and validity (e.g., Merchant, 1985a; Govindarajan, 1986; Nouri, 1994; Nouri & Parker, 1996; Lal, Dunk and Smith, 1996). The Cronbach alphas obtained in this study is 0.67. Whilst this alpha is not high, it is above the 0.5 - 0.6 acceptable minimum (Nunnally, 1978; Merchant, 1985; Shields & Young, 1993), and as high as that obtained by Dunk (1993) with his instrument. A factor analysis also supported the unidimensional nature of the four items as they all loaded satisfactorily on a single factor.

Budgetary performance This was measured by a modified version of the instrument developed by Kenis (1979). The instrument comprises a 2-item 7-point scale ranging from "Very rarely" to "Nearly all the time". Respondents were asked how often they meet their budget goals; and how often they have favorable budget variances. This instrument was chosen because the independent variables of Emphasis on tight budget targets and Cost control are budget-related controls and are more likely to affect budgetary performance rather than overall job performance (Brier & Hirst, 1990; Hirst & Lowy, 1990). The Cronbach alpha for this variable in this study is 0.68.

Emphasis on tight budget targets This variable was measured with a 5-item, 7-point scale developed by Simons (1987). The instrument comprises questions relating to the

tightness and accuracy of budget goals, the use of summary measures of departmental performance, the importance of meeting budgeted targets and achieving operating efficiencies. The choice of this instrument is regarded as appropriate because this instrument emphasizes the importance of meeting *tight* budget targets and not just meeting *budget* targets. This distinction is important as it has been argued in this study that it is the meeting of *tight* budget targets (and not just the meeting of budget targets) that will affect the two dependent variables (propensity to create slack and budgetary performance). The Cronbach alpha of 0.65 obtained for this study is considered adequate (Nunnally, 1978). The factor analysis indicates that the items of the instrument are unidimensional as they all loaded satisfactorily on a single factor.

Cost control Cost control was measured using a 3-item, 7-point scale also developed by Simons (1987). The instrument includes questions relating to the use of cost centers, budgetary variance analysis and monitoring of all tasks by control systems. The Cronbach alpha for this subscales for this study is 0.64. A factor analysis also indicates that all the items loaded satisfactorily on a single factor.

Summary statistics for these variables and their intercorrelations are shown in Tables 1 and 2, respectively. As this research involves interaction regression models and non-ratio scales, the problem of multicollinearity is a non-issue (Govindarajan & Fisher, 1990; Gul & Tsui, 1995). Gul & Tsui suggest that as the origins of non-ratio scales are arbitrary, the correlations between the independent variables can be reduced to zero by shifting the origin points of the scales. The signs and significance level of the interaction coefficients are not affected by any shift of the origin point.

Insert Tables 1 and 2 here

RESULTS

Regression models are used to analyze the data. The following models are used:

$$Y_i = b_0 + b_1T_i + b_3C_i + e_i \quad (\text{Equation 1})$$

$$Y_i = b_0 + b_1T_i + b_2C_i + b_3T_iC_i + e_i \quad (\text{Equation 2})$$

where Y_i = Propensity to create slack (H_{01}) or
Budgetary performance (H_{02})
 T_i = Emphasis on tight budget targets
 C_i = Cost control
 P_i = Propensity to create slack
 e_i = Error term⁵

Hypothesis H_{01} : Propensity to create slack

Table 3 shows the results of the regressions of Propensity to create slack on Emphasis on tight budget target and Cost control. The results indicate that for the *combined* production and marketing manager sample, the main effect (Equation 1) of both Emphasis on tight budget targets and Cost control are significant ($p \leq 0.001$ and $p \leq 0.015$, respectively). The results also indicate that for Equation 2, the coefficient of the interaction term (b_3) is significant at $p < 0.039$. The R^2 of the two-way interaction model increases by 2.8% from the main effect model to 12.3%.

Insert Table 3 here

For the production subsample, Table 3 indicates that only Emphasis on tight budget targets has a significant and negative main effect on propensity to create slack ($p \leq 0.022$ in Equation 1). Cost control has no significant main effect. The results also indicate that the

coefficient (b_3) of the two-way interaction between Emphasis on tight budget targets and Cost control is, as expected, significant ($p \leq 0.005$, Equation 2) and negative. The incremental R^2 explained by the two-way interaction is 12% with the R^2 of the main effect model (Equation 1) increasing from 8.1% to 20.1%.

For the marketing subsample, Table 3 indicates that only Emphasis on tight budget target has a significant ($p \leq 0.026$, Equation 1) and negative main effect. Both Cost control and the interaction between Cost control and Emphasis on tight budget targets are not significant. Hence, hypothesis H_{01} , which states that there is no significant interaction between Emphasis on tight budget targets and Cost control affecting Propensity to create slack, is rejected only for the production managers..

The failure to reject Hypothesis H_{01} for the marketing function could be due to the lesser importance attached to Cost control in the marketing departments where revenues, rather than costs, are likely to be the paramount object of control. Marketing departments are likely to place greater emphasis on economic and environmental conditions and use less formalized accounting control procedures, because market innovation and administrative controls may be incompatible (Simons, 1987). In contrast, production departments are likely to use formal accounting controls (such as Cost control) to control their operations (Thompson, 1967; Hayes, 1977; Hirst, 1981, 1983, Simons, 1987), because cost incurrence is likely to constitute a more significant aspect of the production departments' operations than those of the marketing departments. This may explain why a significant interaction between Emphasis on tight budget targets and Cost control affecting Propensity to create slack was found for the production function but not for the marketing function.

Further analyses on the significant interaction for the production subsample

To ascertain if Cost control exerts a positive influence on Propensity to create slack over the entire range of Emphasis on tight budget targets for the *production* subsample, the procedure suggested by Schoonhoven (1981) is used to determine the point of inflexion of the partial relation $\partial Y/\partial T_i$, that is, the level of Cost control at which a change in the Emphasis on tight budget targets has no effect on propensity to create slack. Mathematically, the relation between Emphasis on tight budget targets (T_i) and propensity to create slack (Y_i) as influenced by Cost control (C_i) can be shown as: $\partial Y/\partial T_i = b_1 + b_3 C_i$.

The point of inflexion for the production subsample is 14.3, calculated as: $-b_1/b_3$. As the observed range of Cost control scores for the production subsample is between 7 and 21 and the mean is 16.74, the point of inflexion lies within the observed range and is close to the mean. Emphasis on tight budget targets therefore has a *nonmonotonic* effect on Propensity to create slack over the observed range of Cost control. This means that even though Emphasis on tight budget targets has a significant *main* effect on propensity to create slack ($p \leq 0.022$, Equation 1, Table 3), this *main* effect is not meaningful (Kerlinger & Pedhazur, 1973, p. 246) as the effect of Emphasis on tight budget target is positive in the Cost control range below 14.3 and negative in the range above 14.3. These relationships are shown in Figure 1.

Insert Figure 1, Table 4 and Figure 2 here

To further assist in the interpretation of the significant results pertaining to the two-way interaction between Emphasis on tight budget targets and Cost control affecting Propensity to create slack for the production subsample, both Emphasis on tight budget targets and Cost control are dichotomized at their respective means and the results presented in Table 4 and Figure 2. Table 4 and Figure 2 indicate that a compatible combination of *high* Emphasis on tight budget targets and *high* Cost control has the *lowest* mean score (11.8) of propensity to create slack. This is consistent with the hypothesis that for accounting controls to be

effective in reducing Propensity to create slack, there should be a *high* extent of planning and setting accurate and tight budget *and* a *high* extent of control and follow-up to ensure that planned targets are achieved.

Table 4 and Figure 2 indicate that Propensity to create slack is also *low* with a compatible combination of *low* Emphasis on tight budget targets and *low* Cost control (mean score = 12.5). Since both the accounting controls are *low*, it is plausible that top management is relying on other forms of control to achieve operating efficiency. There is therefore no incentive for subordinates to build slack. Hence, the Propensity to create slack is *low*.

Table 4 and Figure 2 indicates that Propensity to create slack is *high* when Emphasis on tight targets is *high* and Cost control is *low* (16.2); and when Emphasis on tight targets is *low* and Cost control is *high* (14.5). These results indicate that Propensity to create slack is *highest* when there is inconsistency in the implementation of the two accounting control system attributes and hence are consistent with the theory that the effectiveness of the two accounting control system attributes is dependent upon the *joint* application of the two attributes. Whilst the presence of only one of the two control system attributes is *not likely* to create fear among subordinates that slack creation will be detected (because of the low sophistication of accounting controls), it is nevertheless still *likely* to induce the stress and the pressure for the subordinates to create slack. Hence, Propensity to create slack is *high* when only *one* of the two control system attributes is present.

The results indicate that a *high* Emphasis on tight budget targets is associated with the *highest* level of propensity to create slack (16.2) when it is *not* implemented with a *high* Cost control; but is associated with the *lowest* level of Propensity to create slack (11.8) when it is implemented jointly with a *high* Cost control. These results highlight the importance of Cost control and suggest that the failure to control for the extent of Cost control may account for the conflicting results of prior studies which examined the impact of the importance of Meeting the budget on Propensity to create slack.

Table 4 also indicates that the *high* Emphasis on tight budget targets and *high* Cost control combination (which is the most effective combination for reducing Propensity to create slack) is also the cell with the *highest* number of respondent (18). The *high* Emphasis on tight targets and *low* Cost control combination, which is the *least* effective combination in reducing Propensity to create slack, has the *lowest* number of respondents (5). This combination is unusual as a high Emphasis on tight budget targets is normally expected to be accompanied by a *high* extent of Cost control. The ineffectiveness of this combination to reduce Propensity to create slack may account for its unpopularity among the production departments.

Hypothesis H₀₂ : Budgetary performance

Table 5 presents the results of the regressions of Budgetary performance on Emphasis on tight budget targets and Cost control. The results indicate that for the combined production and marketing sample, both Emphasis on tight budget targets and Cost control have no significant *main* effects on Budgetary performance (Equation 1). However, the results indicate that the coefficient (b_3) of the interaction between Emphasis on tight budget targets and Cost control is, as expected, highly significant ($p \leq 0.008$, Equation 2) and positive. The two-way interaction increases the R^2 of the main effect model by 5.5% to 10.4%. Similar results are obtained for both the production subsample and the marketing subsample. Hypothesis H₀₂, which states that there is no significant interaction between Emphasis on tight budget targets and Cost control affecting Budgetary performance, is rejected for both the production and marketing functions. This suggests that a combination of *high* Emphasis on tight budget targets and a *high* Cost control is effective in *increasing* subordinates' Budgetary performance in both the production and marketing departments. Hence null hypothesis H₀₂, which states that there is no significant interaction between Emphasis on tight budget targets and Cost control affecting subordinates' Budgetary performance, is rejected.

Insert Table 5 here

To ascertain if Cost control exerts a positive influence on Budgetary performance over the entire range of Emphasis on tight budget targets, the procedure suggested by Schoonhoven (1981) is used to determine the point of inflexion of the partial relation $\partial Y/\partial T_i$, that is, the level of Cost control at which a change in the Emphasis on tight budget targets has no effect on Budgetary performance. The point of inflexion is 13 for the pooled (combined production and marketing) sample. As the observed range of Cost control scores for the pooled sample is between 7 and 21 and the mean is 16.47, the point of inflexion lies *within* the observed range of Cost control and is close to the mean. Emphasis on tight budget targets therefore has a *nonmonotonic* effect on Budgetary performance over the observed range of Cost control. Figure 3 shows that the effect of Emphasis on tight budget target is positive over the range of Cost control above 13, and negative for the range of Cost control below 13.

Insert Figure 3, Table 6 and Figure 4 here

- To further assist in the interpretation of the significant two-way interaction results, both Emphasis on tight budget targets and Cost control are dichotomized at their respective means and the results presented in Table 6 and graphically presented in Figure 4. Table 6 and Figure 4 indicate that Budgetary performance is *highest* when Emphasis on tight budget targets and Cost control are both *high* (10.65). These results are consistent with the expectation that the *highest* level of Budgetary performance is associated with the cell where both control system attributes are *high*.

Budgetary performance is *lowest* in the cell where both control system attributes are *low* (mean = 9.36). The low emphasis on financial controls suggests that the budgetary system

is probably not important and that other forms of control are in place to achieve efficiency. Since the budgetary system is not important, achieving a high level of Budgetary performance is probably also unimportant. Hence, there are few incentives for the subordinates to expend the effort to achieve high Budgetary performance.

As only organizations with budgetary systems are included in this study, and since a compatible combination of *high* Emphasis on tight budget targets and *high* Cost control is associated with *high* Budgetary performance, it is not surprising that this combination has the highest number of respondents (40 out of 104, Table 6). The cell with the next highest number of respondents (33) is the *low* Emphasis on tight budget targets and *low* Cost control combination. This result is also not surprising as a *low* Emphasis on tight budget target is expected to be associated with a *low* emphasis on Cost control. Finally, as expected, the other two cells, involving incompatible combinations of *high* (*low*) Emphasis on tight budget target and *low* (*high*) Cost control, have the *lowest* number of respondents (12 and 19, respectively).

CONCLUSION

This study provides empirical evidence on the interactive effect of Emphasis on tight budget targets and Cost control. These two accounting control system attributes are probably among the most commonly used accounting controls in many organizations. Yet, it is surprising that there is a dearth of research evidence on how these two control system attributes interact to affect the achievement of organizational objectives.

The results of this study provide a plausible explanation for the prior studies' conflicting results on the association between the importance of Meeting the budget and the Propensity to create slack. The evidence suggests that the extent of Cost control may be the important omitted variable in prior studies. Cost control interacts significantly with Emphasis on tight budget targets to affect: (i) the production managers' Propensity to create slack; and (ii) both the production and the marketing managers' Budgetary performance.

A number of limitations exist in this study. First, the measurement instruments for the two accounting control system attributes are recently developed instruments and have not been widely used. The moderate levels of Cronbach alpha for Emphasis on tight budget targets and Cost control indicate a need for further refinement of these instruments or the use of other alternative instruments to retest the hypotheses of this study. Second, the inclusion of the word "slack" in the instrument for Propensity to create slack may have biased the respondents' scores since the word "slack" generally has a negative social stigma (Dunk, 1993). Third, as the sample was derived from senior production and marketing managers of private sector manufacturing organizations, the results of this study can only be generalized to the senior management of the production and marketing functions of private sector manufacturing organizations. Opportunities exist to extend this study to lower and middle level management, to other functional areas (e.g., human resource management, accounting, administration), to non manufacturing organizations and to public sector organizations.

Opportunities also exist to examine the interaction effects of other accounting control system attributes, such as External scanning and Results monitoring (Simons, 1987), on other dependent variables, such as job-related tension, role conflict and role ambiguity. Finally, this study have only emphasized formalized accounting procedures and systems involving information use. It has not considered informal control mechanisms such as social and cultural control (Jaeger, 1983; Harrison, 1992) which could also influence subordinates' propensity to create slack and performance. Testing the effects of these informal controls will be beneficial.

Nevertheless, despite the limitations above, this study provides additional evidence regarding the complex issue of budgetary slack and budgetary performance. The focus on the role of accounting system control attributes to counter slack also represents the accountants' and superiors' (rather than the subordinates') role in slack creation (reduction), an interesting and relatively unexplored area in management accounting research.

Footnotes

1. Accounting control systems is defined as "formalized procedures and systems that use information to maintain or alter patterns in organizational activity" (Simons, 1987, p.358).
2. Manufacturing companies were selected because the use of budgets in these organizations is common. Non-manufacturing companies were excluded from the sample to provide some control over factors arising from differences in activities undertaken by manufacturing and non-manufacturing organizations. Victoria and New South Wales were selected as these two states have the highest concentration of manufacturing operations in Australia.
3. These companies could have moved, ceased operations or changed their telephone numbers.
4. The non-response bias tests suggested by Oppenheim (1992) indicate that there were no significant differences between the early and late respondents.
5. Tests on the adequacy of the multiple linear regression models indicate that the inherent assumptions of the models were satisfied by the data.

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TABLE 1 : Descriptive statistics for independent and dependent variables

Variables	Mean	Std dev	Theoretical range		Actual range	
			Min	Max	Min	Max
Emphasis on tight targets	27.44	3.89	5	35	15	35
Cost Control	16.47	3.21	3	21	7	21
Propensity for slack	12.04	4.62	4	28	4	22
Budgetary performance	9.92	2.07	2	14	3	14

TABLE 2: Correlation matrix
among independent and dependent variables

Variables	Emphasis on tight targets	Cost control	Propensity for slack
Cost control	0.54**		
Propensity for slack	-0.23*	0.05	
Budget performance	0.21*	0.17	-0.20*

** P ≤ 0.01

* p ≤ 0.05

TABLE 3: Results of regression of Propensity to create slack on Emphasis on tight budget targets and Cost control for the production managers, marketing managers and the combined group.

Variable	Coeff	Production function				Marketing function				Combined production & marketing			
		Equation 1 (Main)		Equation 2 (Interaction)		Equation 1 (Main)		Equation 2 (Interaction)		Equation 1 (Main)		Equation 2 (Interaction)	
		Est	p	Est	p	Est	p	Est	p	Est	p	Est	p
Constant	b ₀	19.36	0.001	-34.52	0.050	16.18	0.001	14.18	0.248	17.95	0.001	-6.71	0.318
Emphasis on tight targets (T)	b ₁	-0.38	0.022	1.86	0.017	-0.395	0.026	-0.32	0.342	-0.43	0.001	0.55	0.167
Cost control (C)	b ₂	0.25	0.142	3.33	0.003	0.349	0.072	0.48	0.362	0.35	0.015	1.85	0.017
T x C	b ₃			-0.13	0.005			-0.01	0.461			-0.06	0.039
R ²			0.081		0.201		0.077		0.077		0.095		0.123
F value			2.17		4.04		2.05		1.34		5.33		4.69
p ≤			0.063		0.006		0.070		0.136		0.003		0.002
R ² explained by 2-way interaction terms =					12.0%				0.0%				2.8%

Figure 1
Relationship of Emphasis on tight budget targets, Cost control
and Propensity to create slack: Production subsample

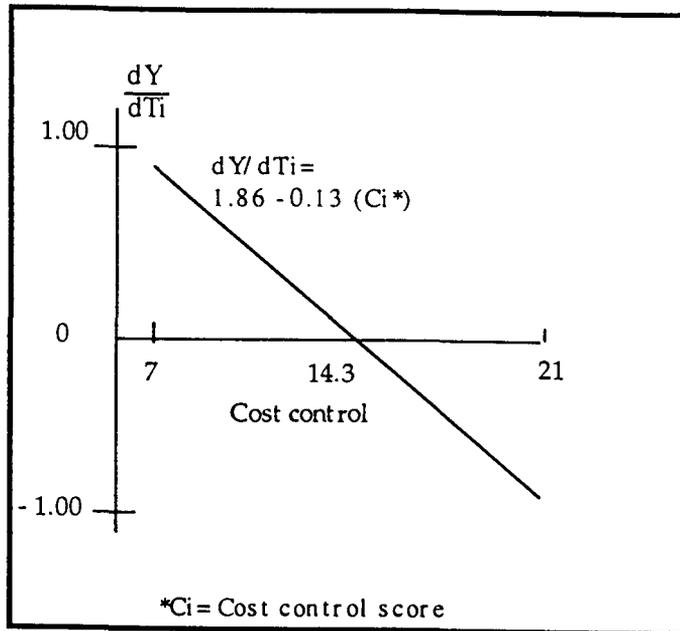
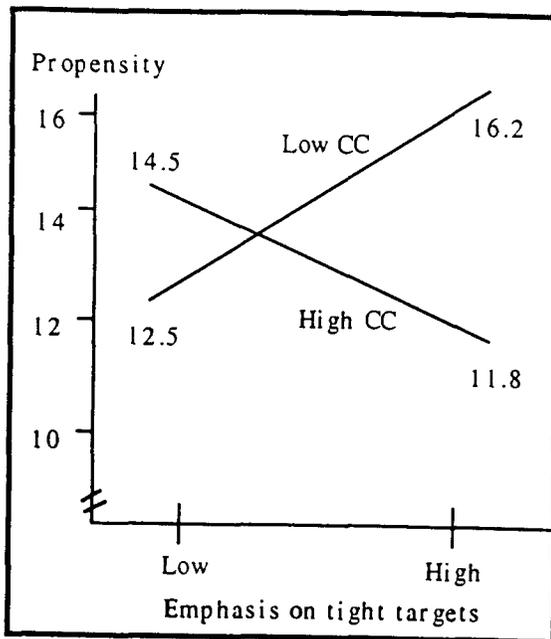


TABLE 4: Cell mean, standard deviation and frequencies for Propensity to create slack across high and low Emphasis on tight budget targets and Cost control (Production managers only)

Emphasis on tight targets	Cost control					
	Low			High		
Low	\bar{y}	=	12.5	\bar{y}	=	14.5
	s_y	=	4.3	s_y	=	3.9
	n	=	13	n	=	16
High	\bar{y}	=	16.2	\bar{y}	=	11.8
	s_y	=	3.9	s_y	=	4.8
	n	=	5	n	=	18

Figure 2: Two-way interaction between Emphasis on tight budget targets and Cost control affecting Propensity to create slack (Production managers only)



CC = Cost control

TABLE 5: Results of regression of Budgetary performance on Emphasis on tight budget targets and Cost control for the production managers, marketing managers and the combined group.

Variable	Coeff	Production function				Marketing function				Combined production & marketing			
		Equation 1 (Main)		Equation 2 (Interaction)		Equation 1 (Main)		Equation 2 (Interaction)		Equation 1 (Main)		Equation 2 (Interaction)	
		Est	p	Est	p	Est	p	Est	p	Est	p	Est	p
Constant	b ₀	4.37	0.033	22.79	0.018	8.75	0.001	23.47	0.004	6.63	0.001	22.15	0.001
Emphasis on tight targets (T)	b ₁	0.12	0.091	-0.64	0.074	0.03	0.359	-0.52	0.054	0.09	0.067	-0.52	0.022
Cost control (C)	b ₂	0.11	0.166	-0.94	0.061	0.05	0.325	-0.92	0.049	0.05	0.267	-0.90	0.011
T x C	b ₃			0.04	0.040			0.04	0.039			0.04	0.008
R ²			0.094		0.151		0.018		0.080		0.049		0.104
F value			2.55		2.85		0.44		1.39		2.59		3.87
p ≤			0.044		0.024		0.322		0.129		0.040		0.006
R ² explained by 2-way interaction terms =					5.7%				6.2%				5.5%

Figure 3
Relationship of Emphasis on tight budget targets, Cost control and Budgetary performance:
Combined production and marketing managers sample

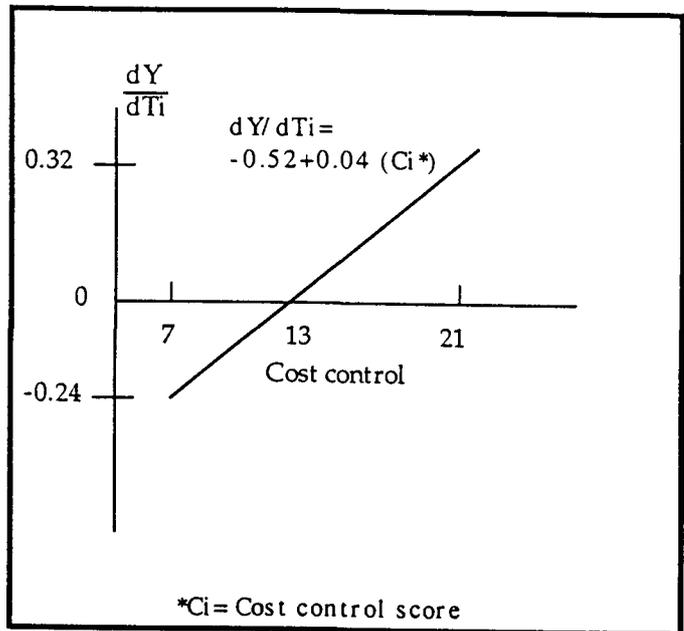
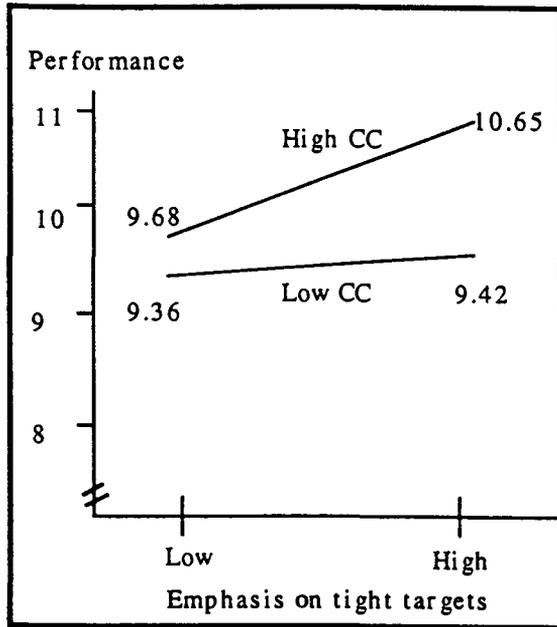


TABLE 6: Cell mean, standard deviation and frequencies for Budgetary performance across high and low Emphasis on tight budget targets and Cost control (Combined production and marketing managers)

Emphasis on tight targets	Cost control					
	Low			High		
Low	\bar{y}	=	9.36	\bar{y}	=	9.68
	s_y	=	2.51	s_y	=	1.80
	n	=	33	n	=	19
High	\bar{y}	=	9.42	\bar{y}	=	10.65
	s_y	=	2.23	s_y	=	1.51
	n	=	12	n	=	40

Figure 4: Two-way interaction between Emphasis on tight budget targets and Cost control affecting Budgetary performance (Combined production and marketing managers)



CC = Cost control

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