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**Decentralization and Reliance on the
Controllability Principle in the Public Sector:
An Exploratory Study**

by

**Sven Modell
Alina Lee**

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Sven Modell
Department of Industrial Economics and Management
Royal Institute of Technology
100 44 Stockholm
Sweden

and

Alina Lee
School of Accounting
Curtin University of Technology
GPO Box U1987
Perth, WA 6845
Australia

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Abstract

Despite the growing devolution of budgetary responsibility in public sector organizations, little attention has been paid to the key notion of the controllability principle in this context. This paper explores the relationship between decentralization of decision-making authority and reliance on the controllability principle (RCP) in the devolution of budgetary responsibility to the middle management level of a large Norwegian hospital. The results of a questionnaire survey lend modest support to the hypothesized positive relationship between decentralization and RCP. Qualitative data are then used to probe further into these results. This highlights the importance of various institutional factors impinging on the relationship between decentralization and various means of RCP, which have not been widely discussed in previous research. Based on these findings recommendations for future research, combining the functionalist approaches underpinning much prior theorizing on the controllability issue with insights from institutional theory, are advanced. Specifically, we suggest that future research should examine the institutional constraints on decentralization as well as the institutional pressures for various allocation practices in greater detail.

Keywords: Budgetary responsibility, controllability, decentralization, institutional theory, Norway, public sector.

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Introduction

The wave of “new public management” reforms in the 1980s and 90s in many cases implied increasing emphasis on devolved budgetary responsibility in an attempt to roll back detailed political control of operations (Hood, 1995) and raised the importance of the notion of responsibility accounting in public sector organizations (Lapsley, 1994). However, few empirical studies have explicitly examined the cornerstone of systems for responsibility accounting, namely the controllability principle, in a public sector context (Modell, 1997, 1998). The controllability principle states that managers should only be held responsible for events and accounting items that are reasonably under their control and becomes particularly relevant when decision-making is decentralized in organizations. Even though decentralization of decision-making would *ceteris paribus* seem to expand the area of managerial influence and the range of activities for which managers might be held responsible without violating the controllability principle, it may still be important to protect them from the influence of certain uncontrollable (exogenous) factors to avoid various dysfunctional effects. There is thus a close link between the degree of decision-making authority conferred on managers, the structuring of organizations into financial responsibility centres and the controllability of budgetary results (Vancil, 1979).

Even though compliance with the controllability principle was long considered imperative in the design of systems for responsibility accounting (see e.g., Ferrara, 1964; Solomons, 1965), a growing number of empirical studies in for-profit organizations show that it is often violated in practice (Dent, 1987; Merchant, 1989; Moon and Fitzgerald, 1996; Otley, 1990; Ugras, 1994). While there is some evidence of similar problems of applying the controllability logic in the attribution of budgetary responsibility in complex public sector organizations (Llewellyn, 1998), our knowledge of the processes involved in aligning reliance on the controllability principle (RCP) with decentralized decision-making in such settings is limited. The purpose of this paper is

twofold. First, we provide an empirical examination of the conventional view of decentralized decision-making as an antecedent to RCP in the devolution of budgetary responsibility in a public sector context. Second, we extend the empirical analysis to include an assessment of some broader contextual factors impinging on this relationship, but which are rarely discussed in the literature on the controllability issue.

The paper starts with a brief review of the literature pertaining to the relationship between decentralization and RCP and the development of a theoretical argument for why the conventional prescriptions for breaching the controllability principle are unlikely to hold in certain public sector contexts. The hypothesis emanating from this discussion is then tested on cross-sectional data drawn from a large Norwegian hospital. This part is followed by an analysis of qualitative data to validate the statistical analysis and develop a richer contextual explanation for our observations. This methodological approach follows the advice of Birnberg et al. (1990) to combine quantitative and qualitative methods to enrich our understanding of the complex processes involved in aligning budgetary control with the context in which it operates. Such an approach would seem particularly valuable in exploratory inquiries into a little researched area such as ours. A discussion of our findings and implications for future research concludes the paper.

Literature Review and Hypothesis Development

The inclusion of less controllable items¹ in budgets and other forms of contracts used to monitor the performance of managers and organizational sub-units has typically been considered to induce a risk of various dysfunctional effects such as reduced motivation, staff turnover and various forms of gaming (Merchant, 1989). Despite these risks a number of empirical studies in for-profit organizations suggest that there may be certain advantages of combining decentralized decision-making with inclusion of less controllable items in the attribution of budgetary responsibility. Dent (1987), for example, argues that strict application of the controllability principle is incompatible with decentralized responsibility for ongoing coordination as this might foster a culture of functional isolation hampering informal resolution of cross-functional coordination problems. Further empirical support for the position that reduced RCP may be compatible with decentralized coordination of complex interdependencies can be summoned from studies by Ugras (1994), Bushman et al. (1995) and Moon and Fitzgerald (1996). Similarly, in a broadly based empirical study, Merchant (1989) found that profit-centre managers with considerable decision-making discretion in dealing with environmental uncertainties were in many cases held responsible for environmental factors over which they had incomplete control but to which their superiors wished to direct their attention.

Parallel to the largely empirical literature reviewed above, a number of advances grounded in agency theory have described various strategies for dealing with the controllability problem mathematically (e.g., Antle and Demski, 1988; Baiman and Noel, 1985; Suh, 1988). In this vein of research, Zimmerman (1979) argued that where the agent is granted great decision-making discretion regarding the consumption of shared resources, overhead allocations might discipline the utilization of such resources (i.e., reduce overconsumption). Zimmerman (p. 519) concluded that “cost allocations appear to proxy for certain hard-to-observe costs that arise when decision-making responsibilities are assigned to and vested in various individuals (i.e., decentralized) within the firm.” In other words, since decentralization tends to increase information asymmetries to the disadvantage of the principal, the allocation of (generally non-controllable) overheads might reduce the need for additional monitoring mechanisms (cf. Suh, 1988) while forcing the

agent to be more concerned with such costs. For making the type of attention-directing function alluded to so far effective, however, appropriate reward systems partly linked to less controllable financial items may need to be implemented (Merchant, 1989; Zimmerman, 1979). Theoretical arguments for not only linking managerial rewards to controllable performance standards have also been motivated by the need to distribute some of the risk typically borne by the principal to the agent (see e.g., Choudhury, 1986; Demski, 1976). However, the benefits of holding managers responsible for less controllable factors must exceed the costs of rewards (Merchant, 1989).

The advances reviewed above seem to suggest that we may, under certain circumstances, expect a negative relationship between decentralized decision-making and RCP. However, there are at least two reasons for expecting that circumstances conducive to such a match may not always prevail in public sector organizations. First, the alleged effectiveness of the attention-directing as well as the risk-sharing functions of allocating less controllable items largely hinges on the existence of some type of performance-contingent reward systems. Even though there are indications that such systems are spreading in the public sector in certain countries (see Heery, 1998), they are often difficult to implement due to the ambiguous nature of the objectives against which to assess performance (see Bourn and Ezzamel, 1986; Hofstede, 1981; Lindkvist, 1996; Modell, 2000). Public sector organizations frequently lack unequivocal objectives and financial performance indicators reflecting the outcomes of service provision, such as profits, which are often used for rewarding private sector managers. Under norms of rationality, this should realistically limit the diffusion of performance-contingent reward schemes as ambiguous objectives and outcomes increase the relative costs of operating such mechanisms (Eisenhardt, 1989). In keeping with the recent debate on the controllability issue, there is little point of combining decentralization with allocation of less controllable items unless managers receive some (performance-contingent) compensation for dealing with the resulting problems. Hence, the conventional wisdom that considerable caution should be observed in allocation practices where decision-making is decentralized may still have some bearing in many public sector organizations.

Second, cautious allocation practices may be required as a means of reinforcing operating-level managers' acceptance of the budgetary responsibility devolved to them, which has often proved

problematic in its own right in the public sector (e.g., Jones and Dewing, 1997; Pettersen, 1995; Pollitt et al., 1988). For example, in a study of a public dental practice, Modell (1998) found increasing decentralization of decision-making authority to be accompanied by incremental devolution of budgetary responsibility and extensive managerial training over a long period of time. In this process senior management was cautious not to allocate less controllable costs, such as overheads and rent, as this was considered detrimental to subordinates' acceptance of budgetary responsibility. Senior management also made systematic adjustments for less controllable factors in conjunction with performance evaluation. This strategy for devolving budgetary responsibility appeared to have reinforced the commitment of clinician-managers to change and using budgets more actively for improving financial control. By contrast, Llewellyn (1998) found that failure to match budgetary responsibility and decision-making authority led social service managers to abdicate individualized responsibilities.

The discussion in this section provides some basis for questioning the validity of some of the recently advanced arguments for combining decentralized decision-making authority with reduced RCP in a public sector context. Instead, we find some theoretical support for adhering more strictly to the controllability principle at the operating level of public sector organizations. Stated formally, the following hypothesis sums up our line of argument:

In a public sector context, the greater the decentralization of decision-making authority to operating-level managers, the greater the RCP in the devolution of budgetary responsibility to them.

This hypothesis accounts for the improved controllability of various financial items as a direct result of increasing managerial decision-making authority, but also encapsulates the argument that where decision-making is decentralized, caution should be observed so that items which may still be regarded as less controllable (e.g., overheads) are not allocated or included in performance evaluation.

Research Method

Decentralization in the public sector may take on several different meanings and forms (Bloomfield and Coombs, 1992; Jacobs, 1997). While the focus in this paper is on decentralization in terms of the extent of decision-making authority delegated to middle managers, we approach this issue relatively broadly. The analysis is divided into two main parts: the quantitative, survey-based part assesses the statistical relationship between decentralization and RCP while the qualitative, mainly interview-based part focuses on the broader developments in the Norwegian health care sector impinging on this relationship.

The Survey

Sample

Data collection took place in the spring of 1999. A survey was conducted among heads of departments with budgetary responsibility within one of the largest hospitals in Norway. Although this does not represent a random sample, it was judged appropriate to concentrate the research to the organization in question for three main reasons. First, sampling procedures allowing researchers to maintain some control over variations in independent variables may be preferable to random sampling in exploratory research examining whether the independent variable (decentralization) has the predicted effect on the dependent variable (Blalock, 1961). The choice of organization was partly guided by the fact that it contains a broad spectrum of operations, which could be expected to vary in their amenability to decentralization. It was also important to ensure that performance-contingent reward systems were not widely used, as the hypothesis to be tested is partly based on this assumption. Second, it might have been difficult or costly to combine the survey with more in-depth qualitative analyses if sampling randomly across a larger number of organizations. Third, the hospital has been at the forefront in implementing new accounting-based control systems and devolving budgetary responsibility in recent years. Hence, the issues focused upon could be expected to be of great relevance.

The questionnaire² was distributed to 76 respondents, whereof 65 replied. Eight questionnaires were excluded from the analysis due to incomplete data, yielding a useable sample of 57, i.e. a

response rate of 75%. The mean age of the respondents was 51. On average, they had been employed by the hospital for 16 years and had been in their current positions for six years. The average number of employees in the departments examined was 104. The respondents in the final sample were distributed across three professional categories: doctor-managers (49%), nurse-managers (28%) and heads of technical support departments generally lacking medical training (23%). Given the structure of the hospital, with doctor- and nurse-managers sharing budgetary responsibility in some departments, we distributed identical questionnaires to both relevant respondents where applicable. Hence, ten of the 45 departments included in the final sample are represented by more than one respondent. A comparison of means on the paired observations revealed no significant differences between doctor- and nurse-managers. A comparison of means on early and late responses was also carried out to test for late response bias but none was found.³

Measurement of variables

Decentralization was measured using a five item, seven-point Likert-type scale adapted from Miah and Mia (1996).⁴ Although the measure was originally designed for a private sector study (Gordon and Narayanan, 1984), Miah and Mia (1996) substantially modified it to fit a public sector setting. We adapted the measure further so that it only reflects the extent of decision-making authority delegated to departments in a number of key areas⁵. The questions are listed in Appendix A. A factor analysis of the five items revealed that they loaded on a single factor. This suggests that the measure is unidimensional and the items were summed for analysis. Our Cronbach (1951) alpha of 0.83 compares favourably with that of Miah and Mia (0.79).

The extent of RCP

Based on prior research, the extent of RCP was defined as a multidimensional construct reflecting various means of adjusting for less controllable factors. Three dimensions were identified from Merchant's (1989, 1998) relatively exhaustive account of how the controllability principle is generally applied in budgetary control of operating units. The controllability principle can either be employed *ex-ante* (i.e., exclusion of non-controllables in pre-set budgets) or *ex-post* (i.e., adjustments for the effects of non-controllables in performance evaluation). The *ex-post* dimension can in turn be divided into two sub-dimensions: one relying on *objective* criteria or heuristics and another based on more *subjective* assessment. According to Merchant (1998), the

objective dimension encompasses various types of quantitative techniques (e.g., flexible budgeting, variance analysis) and methods of relative performance evaluation (e.g., comparisons across departments). The latter implies that the effects of exogenous factors common to the evaluated units are largely filtered out and differences in managerial efforts are approximated even if more inclusive performance measures are used (see Frederickson, 1992). Subjective adjustments, finally, generally involve a greater amount of dialogue based on verbal and/or written communication between superiors and subordinates to trace less controllable variances.

Based on these distinctions, a five item measure was designed (see Appendix A). The first four questions, measured on a seven-point Likert-type scale, captures the three dimensions of RCP. The fifth question, an open-ended question, asked respondents to identify costs and/or revenues that are included in their budget but are particularly difficult for them to influence. Prior to the distribution of questionnaires, the face validity of the RCP measure was assessed in discussions with representatives from the hospital's finance department and some minor changes in the formulation of the questions were made. The pilot study conducted prior to the main mail-out did not prompt any changes in the formulation of the questions.⁶ As the construction of the measure is theory- rather than data-driven, we conducted a confirmatory factor analysis to assess the validity of a three factor solution (Kwok and Sharp, 1998). The results of this analysis are presented in table 1.

Table 1
Rotated factor loadings for RCP measure

Item	Factor 1	Factor 2	Factor 3	Communality
Pre-set budget has items which are difficult to influence.	-0.149	-0.029	0.988	0.999
Inter or intra-hospital comparison of departmental performance.	0.851	-0.232	-0.152	0.800
Use of quantitative information in evaluation process.	0.802	0.353	-0.087	0.775
Use of verbal and/or written explanations in evaluation process.	-0.018	0.958	-0.025	0.920
Eigenvalues	1.621	1.072	0.802	
Explained variance	34.74	27.44	25.17	87.36

The factor analysis results conform with the expected loading pattern. The first factor contains the two items reflecting objective, ex-post RCP (i.e., use of quantitative techniques and comparisons across departments). The inter-item correlation between the two was positive and significant ($r = 0.40$, $p < 0.01$) and they are summed in the analysis. In contrast, the second factor captures the more subjective aspects of ex-post RCP (i.e., verbal and/or written explanations of deviations). The third factor, finally, includes the item reflecting the ex-ante dimension (i.e., exclusion of non-controllables from pre-set budgets). Interestingly, the correlation between the ex-ante item and the composite measure of objective, ex-post RCP was negative and significant ($r = -0.29$, $p < 0.05$). This indicates that some trade-off is made between the two and lends additional support to treating them as separate dimensions.

The open ended question aims at capturing the *perceived controllability* (cf. Choudhury, 1986; Hirst, 1983; McNally, 1980) of specific costs and revenues and does not indicate whether adjustments for less controllable factors impinging on these are actually made in conjunction with budget-setting and performance evaluation. The purpose of this was to elicit some data from survey respondents which could be used as initial indicators of areas where controllability problems are particularly prevalent. Perceived controllability problems are indicative of whether decentralized decision-making authority has been matched with actual RCP, while the interview data provided a more in-depth understanding of why this might be the case. The open ended question was coded using content analysis. Specific categories of costs and/or revenues were taken into account if they were explicitly mentioned by respondents and were subsequently classified into broader categories to facilitate non-parametric tests of differences in frequencies across relevant groups of respondents. Several respondents mentioned more than one type of costs and/or revenues. Some respondents also provided lengthier explanations of why certain costs or revenues were difficult to influence.

Descriptive statistics for all continuous variables examined are given in table 2.

Table 2
Descriptive statistics.

Variable	Theoretical range	Min.	Max.	Mean	S.D.
1. Ex-ante RCP	1-7	1	7	2.81	1.53
2. Objective, ex-post RCP	2-14	2	14	8.79	2.82
3. Subjective, ex-post RCP	1-7	3	7	5.12	1.18
4. Decentralization	5-35	8	35	25.42	5.79

The Interview Study

The qualitative part of the study is primarily based on a number of semi-structured interviews. Most interviewees were either staff specialists at different organizational levels or divisional managers. The survey respondents are in a subordinate position to divisional managers as the departments have been grouped into seven divisions responsible for overriding budgetary control and coordination since 1995. Hence, the interview data, in combination with relevant documents (e.g., budgetary manuals, final budgets and performance reports), provided a valuable opportunity for methodological triangulation through the examination of multi-perspective data (Jick, 1979). In total, 21 interviews generally lasting between one and two hours were conducted. The distribution of interviewees across various categories of staff is given in table 3.

Table 3
Distribution of interviewees.

	Number of interviewees
Central staff specialists:	
- finance department	3
- other departments	4
Divisional level:	
- divisional managers	7
- staff specialists	4
Other	3
Total	21

The interview questions were mainly open-ended to allow interviewees to elaborate relatively freely on the hospital's control system. The questions targeting the controllability issue pivoted around allocation practices, the extent to which allocated costs and revenues are difficult to influence and how less controllable deviations are treated in conjunction with performance evaluation. Interviewees were also asked to comment on the reasons for and consequences of these practices. The responses to the open ended survey question provided an overriding structure to parts of the analysis of interview data. Explanations of why certain types of costs and revenues might be perceived as more or less controllable were traced in the interview drafts. This yielded important insights into the role of decentralization within the organization as well as various contextual factors which are relevant for our understanding of the possibilities of decentralization. In addition, the interview data offered an opportunity to critically assess the extent to which some costs and revenues might be regarded as controllable in a more objective sense, since contrasting examples of attempts to manage these were provided. The lengthier survey responses were also used for cross-validation through comparisons with interview data where applicable.

As a final means of validation, we presented preliminary findings from the survey and interview study at a meeting with a number of key informants from the hospital's finance department. Our discussions at this occasion largely confirmed our observations regarding decentralization, RCP and the changes under way in this respect.

The Relationship between Decentralization and RCP

As antecedent relationships are examined, the appropriate statistical test is to assess the direction and significance of the correlation coefficients between decentralization and each of the three means of RCP (Hartmann and Moers, 1999; Shields and Shields, 1998). There were great variations in the size (number of employees) of the departments in our sample. Since our interview data indicated that increasing size might contribute to monitoring difficulties, it was judged appropriate to control for possible effects of this (cf. Jennergren, 1981). Therefore, partial correlations (controlling for the number of employees in each department) were computed. When compared to Pearson correlations, the overall effects of this on the magnitude and significance of the correlation coefficients were marginal and do not change the inferences drawn from the analysis. The results of the analysis are presented in table 4.

Table 4
Partial correlations, controlling for number of employees

Variables	Decentralization
Ex-ante RCP	0.25*
Objective, ex-post RCP	0.23*
Subjective, ex-post RCP	0.30**

* Significant at 10% level (two-tailed)

** Significant at 5% level (two-tailed)

The results of the correlation analysis provide modest support for the hypothesized positive relationship between the decentralization of decision-making authority and RCP. The strongest of these relationships is that between decentralization and subjective, ex-post RCP ($r = 0.30$, $p < 0.05$). Although the relationships between decentralization and ex-ante ($r = 0.25$, $p < 0.10$) and objective, ex-post RCP ($r = 0.23$, $p < 0.10$) are weaker they are also in the expected direction. The statistical significance of the relationships should be viewed in light of the relatively small sample size and the exploratory nature of the research. This may allow us to accept hypotheses at the 0.10 (two-tailed) level of significance. We may thus conclude that there is some basis for accepting the hypothesis advanced. However, given the low levels of significance, further qualitative analysis is required to probe into the underlying reasons for the patterns observed.

Qualitative Findings

Traditional budgetary control and allocation practices

Departmental budgets were introduced in the 1970s. However, these have traditionally taken the form of cash limits, with departments forming cost centres mainly responsible for staff- and materials-related expenses. A portion of revenues primarily stemming from state grants, patient fees and charges to external parties has been allocated to departments since the early 1990s. However, the hospital does not operate any sophisticated transfer pricing systems and there is virtually no use of performance-contingent rewards.

As a result of the growing demands for cost containment, the hospital budget set at the beginning of the year takes the form of a “zero-growth budget”, essentially based on the previous year’s budget adjusted for planned activity levels and salary and price increases. The budget is also complemented with a number of more specific “decision packages” with adjoining cost estimates. Due to the considerable difficulties in linking financial data to activity levels, however, the allocation of revenues has typically taken the form of fixed global grants while budget-setting at year-ends follows a relatively elaborate and iterative process of disaggregating global estimates to the divisional and departmental level. This lack of activity focus appears to contribute to a number of problems, as illustrated by the following quotes:

“The budget is not activity-based but only takes the form of a financial frame for the whole division. This makes it difficult to instill any budgetary discipline within the departments. We get messages right away that the budget is unrealistic.” (divisional manager)

“The control problem is that we haven’t considered the relationship between activities, positions, salaries, reward systems and the way work is organized. This can’t continue in the long run. The work of the personnel department should be guided more by operating activities. Positions and the development of salaries have to be linked closer to activities.” (personnel manager)

Despite the growing devolution of budgetary responsibility, the hospital has traditionally taken a cautious approach to the allocation of overheads as well as certain operating costs (e.g., fuel, lighting) due to the difficulties in identifying appropriate allocation bases. Around 25% of the

hospital's total costs remain unallocated. Neither are divisional overheads allocated to the departments. The chief financial officer explained these allocation practices by saying that "our point of departure has been that departments should be responsible for costs which are possible for them to influence". Certain labour-related costs (e.g., pensions, social benefits), which might even be considered controllable to departments, are not allocated. The reason for this, the budgetary manager said, is that these "vary considerably over the years so it's not relevant to allocate them".

Budgetary performance evaluation within most of the divisions can be characterized as a relatively crude form of by-exception analysis. Traditionally, little information explaining budgetary variances has been available due to the lack of integration between activity-based and financial data. Consequently, in some divisions a considerable element of subjective assessment and dialogue seems to be relied upon, as explained by a divisional controller:

"Even if we get reports with various performance measures, these are not good enough for exercising control. ... For example, activities are reported at the departmental level, but when you have large departments with perhaps 800 patients, this becomes too aggregated. ... We have to go further down in the organization to make analyses meaningful. We have an open dialogue with the departments to get the necessary information. That's the only way of solving the problems today. There's a lot of detective work to trace costs to departments."

However, there were indications of subjective adjustments contributing to some undesired effects, such as the emergence of an "excuse culture" (cf. Merchant, 1989). For example, one divisional manager argued that:

"A major problem is that the performance reports are account- rather than activity-based. ... Instead, we have monthly budget meetings where corrections are discussed. We mainly focus on the three largest departments here. Deviations from budgets are often blamed on over-utilization, but I think there is limited willingness to control this in several cases even if adjustments are made. There are no personal consequences if the budget is not met. It's difficult to remove managers because it's hard to get someone else to do the job."

Subjective, ex-post adjustments also appear to be required as a result of external pressures. Despite the difficulties in allocating certain costs to departments, there were suggestions that this was occasionally requested in reporting to political levels. This problem has often been resolved

by allocating a sizeable share of untraceable costs to one of the divisions in conjunction with performance evaluation where, as one interviewee put it, “politicians know that there is always a problem” while another suggested that “these problems have never been properly analyzed”. This has adverse implications for controllability, or as one interviewee put it:

“There’s great variation in the realism of budgetary targets due to the tactics involved in accounting. ... The County Council wants to know where the deficit for the hospital has been incurred and what can be done about it. It’s a delicate balance between what to account for internally and externally. We have to reach an agreement with the County Council regarding which deficits to show internally.” (staff specialist in finance department)

Similarly, politically initiated revisions of budgets are sometimes prompted by the actions of other interest groups. It is not uncommon for various professional groups (e.g., physicians) to utilize the media to draw attention to various internal issues which occasionally results in re-allocations of financial resources in the hospital after the initial budget has been set. The role of the media as a catalyst for internal financial decisions is also reflected by the following quote:

“Even though the financial control of the hospital has improved, attention from the media has great importance for financial decisions within the organization. It doesn’t matter then how rational you try to be in the hospital. ... The effect is that politicians react. Even if additional funding is granted when politicians intervene in control, we know that there will be less money left for other things. In the longer term politicians take money from some operating areas to cover extra funding.” (divisional manager)

At the same time, however, there were indications of some political understanding of the arbitrariness of cost allocations reducing the risk of conflicts and suggestions that “the County Council exercises no real cost control”. Neither are departmental managers held strictly responsible for politically initiated, ex-post allocations, such as those described above, in conjunction with performance evaluation.

In summary, the allocation practices traditionally relied upon seem to be characterized by a combination of relatively extensive use of ex-ante and more arbitrary (i.e., subjective), ex-post adjustments for less controllable factors. As discussed next, however, a development towards increasing emphasis on more objective, activity-based allocations as a result of recent changes in the funding of Norwegian health care is obvious.

The introduction of formula-based prospective payment

Following the nation-wide introduction of prospective payment based on per-case funding of health care in 1997, the hospital started to use this system for allocation of revenues in the 1999 budget. The new system of funding is based on the classification of patients into Diagnosis Related Groups (DRGs). Each hospital stay (excluding psychiatric care) is assigned a DRG score reflecting differences in the estimated needs and patterns of resource consumption between patient groups. These scores are subsequently aggregated and transformed into cost indexes forming the basis for allocation of government grants to hospitals, partly replacing fixed grants and global budgets, in an attempt to strengthen the incentives to increase production in the health care sector (Bjørnenak and Pettersen, 1999).

The tool devised for internal allocation of DRG-based reimbursements in the hospital under study is largely based on national standards for DRG weights, although some adjustments of these have been undertaken by the hospital's finance department. The purpose of this tool is to distribute a portion of DRG-based revenues to the ancillary divisions in addition to the division where patients are treated to better reflect the contributions of the former. Revenues are then further disaggregated to the departmental level. Various DRG-based indicators (e.g., aggregate DRG indexes, number and length of DRG-indexed hospital stays) are also increasingly emphasized in the evaluation of the performance of clinical departments and there were suggestions that the new system for resource allocation was a step in the process of transforming departments into "profit centres". However, the county council has been reluctant to allocate the total DRG-based reimbursement to the hospital due to the risk of over-emphasis on the generation of such revenues at the expense of care not covered by this system of funding (e.g., out-patients). Consequently, a significant part of the divisions' and departments' costs are still covered by fixed global grants and other revenue sources.

An important driving force behind the implementation of DRG-based allocations within the hospital appears to have been the need to overcome the problems of linking financial data to activity levels. Some interviewees argued that DRG-based indicators would give a "better overview" and a "better picture of the link between activities and finance". There was also a

widespread belief that DRG-based allocations would reinforce the incentives to improve efficiency inherent in the new system of funding. The following quotes provide examples of this:

“The reason why we are now using DRGs for allocations is that we want to introduce the incentives built into the system [of funding] internally”. (staff specialist in finance department)

“DRGs are now used for monthly feedback to the departments, which is a major advantage. Before the new system of funding [was implemented], there was no reporting [of DRGs] to departments. I strongly believe this will curb spending. Even if the system is technically complex, we have no other system and costs must be controlled.” (divisional controller)

The view that the DRG system was becoming “overly complex” and “administratively unwieldy” also emerged in other interviews. Furthermore, a divisional manager argued that:

“One problem is that [DRG-based] prices are not always realistic. ... Actual costs don’t always correspond to the DRG-based reimbursements.”

Similarly, central staff specialists in charge of the design of the new tool for internal allocations acknowledged that a reasonable match between DRG-based reimbursements and actual costs at the departmental level had not yet been accomplished for all DRGs and that there were considerable problems in this respect. While the national standards for DRG weights provide reasonably good proxies for actual costs over a larger population, it appears to be difficult to make meaningful comparisons even at relatively high levels of aggregation due to local variations. For example, a staff specialist at the county council level argued that:

“It’s not always easy to compare [costs] between different hospitals. There can be large differences in the clientele within the same DRG.”

Judging from the interviews with divisional managers and the open ended survey responses, the problem of inadequate matching between DRG-based allocations and costs is particularly prevalent for some ancillary departments (due to overly crude proxies used for allocating revenues based on how clinical departments influence their operations) and clinical departments facing significant variations in the flow of patients. Despite such problems, the hospital seemed

to be under increasing pressure to improve, or at least appear to improve, budgetary control by making the link between financial resources and activities more transparent to outsiders. For example, one divisional controller stated that:

“In the future, inhabitants won’t accept the lack of information about how resources are being used and what the effects of health care are. The way it’s been so far, deficits have been used for justifying additional funding. ... Greater emphasis should be placed on the link between activities, weighted patient needs and financial results.”

Similarly, there were repeated references to the importance of DRG-based allocations to “make activities visible” to politicians. While the new system of funding was formally implemented at the county council level, the hospital under study is one of the first in the country to extend the new funding logic to the departmental level. Staff specialists within the hospital as well as at higher levels of the county council ascribed the decision to do so to the hospital’s General Manager. The General Manager has also positioned himself as a strong public advocate of using the DRG-based system for internal control, using his own hospital as an example. It is worth noting that the hospital under study has repeatedly performed very well in the annual comparisons of DRG-based cost indexes between hospitals commissioned by the Ministry of Health and Social Affairs. This appears to have reinforced the hospital’s reputation as one of the most efficient in the country. However, staff specialists from the hospital’s finance department claimed to have preferred postponing the implementation of the DRG-based system for internal resource allocation due to the considerable changes under way in DRG weights and coding procedures. Similarly, a staff specialist at the county council level argued that:

“At the county council level, we have not seen any significant advantages of implementing the new system of funding at the departmental level. The initiative has come from the hospital.”

While the introduction of DRG-based prospective payment appears to have reinforced the pressures for more objective, activity-based allocations of financial resources in the hospital, the devolution of budgetary responsibility has not been matched by a corresponding increase in local decision-making authority. As discussed below, this appears to limit the possibilities of improving controllability.

Implications for controllability

We now turn to assess how the allocation practices described in the foregoing and the degree of decentralized decision-making authority might influence the controllability of specific types of costs and revenues included in departmental budgets and what additional constraints there may be in this context.

Open-ended survey responses

The frequency of the coded responses regarding which categories of costs and/or revenues the respondents perceived as particularly difficult to control is summarised in table 5. It should be recalled that these responses are interpreted in terms of the *perceived controllability* of various items and do not necessarily indicate whether adjustments are made for these in conjunction with budgeting and performance evaluation. In the ensuing discussion, we then go deeper to assess what underlying factors might explain these perceptions.

Table 5

Classification of responses to open-ended question regarding limited controllability.

	Doctors	Nurses	Heads of technical support departments	Total
Salaries	9 (31%)	3 (14%)	3 (50%)	15
Overtime	7 (24%)	11 (52%)		18
Cost of disposables/medication	3 (10%)	4 (19%)	1 (16.7%)	8
Equipment expenses	4 (14%)	2 (10%)	1 (16.7%)	7
Revenue	6 (21%)	1 (5%)	1 (16.6%)	8
Total	29 (100%)	21 (100%)	6 (100%)	56
Number of respondents	26	11	5	42

A chi-square test was used to determine if there was a significant difference between doctor-managers' and nurse-managers' concerns with salaries and overtime.⁷ The result indicates that the differences between doctor-managers and nurse-managers are significant ($\chi^2 = 4.12$, $\chi^2_{\text{crit}, 0.05} = 3.84$). Doctor-managers seem relatively more concerned with the limited control over salaries, while nurse-managers experience more frequent problems in influencing costs linked to overtime. Although we were unable to carry out formal statistical tests of the other differences between various groups of respondents, it is worth noting the considerably more frequent concerns with control over various types of revenues among doctor-managers compared to nurse-managers. It is difficult to draw conclusive inferences regarding the heads of technical support departments due to the limited number of responses. However, control of salaries also appears to present a relatively major problem to this category of respondents.

The controllability of salaries and overtime

Labour-related costs account for around 70% of the hospital's total costs. Hence, controlling these is a critical task for managers at all levels. As indicated by the open ended survey question, however, departments appear to experience considerable problems in controlling salaries and costs related to overtime. To a great extent, this can be traced to institutional factors reducing decision-making authority at the departmental level.

At first sight, the widespread concerns with the limited controllability of salary expenses are somewhat surprising as ex-ante adjustments for salary increases are generally made in departmental budgets. Moreover, even if basic salary levels for both doctors and nurses are negotiated at the national level between trade unions and the National Association of Local and Regional Authorities, departmental heads have some opportunities to influence the salaries of individual employees in conjunction with recruitment and have a say in staffing decisions.

On closer examination, however, there appear to be considerable constraints on managers' influence on total salary expenditures. Referring to the decision-making authority of divisional managers, the personnel manager argued that:

“The setting of salaries is what creates most of the mess in the organization. They're responsible for staffing, which implies considerable investments, but they have little authority over the lesser sums attributable to wage drift and salary increases [during the year]. Neither do divisional managers have authority to decide on re-allocations of staff between the divisions, although they can do that within their own divisions.”

Furthermore, the national salary agreements and other forms of regulation initiated at the county council level effectively leave managers at lower levels with little flexibility in the setting of salaries. It is only recently that some authority to set salaries more freely for certain key categories of staff has been conferred on the hospital's General Manager and discussions regarding how to delegate this further down the hierarchy have been initiated. At the departmental level, there would thus seem to be relatively limited opportunities to adjust salaries after the recruitment stage. In addition, the possibilities of influencing staffing are far from complete. Negotiations for additional positions during the year tend to be very drawn out processes requiring decisions at the county council level. Similarly, decisions regarding promotions and re-allocations of existing staff cannot be made at the departmental level without consultations with higher levels. An example of possible consequences of this was provided by a staff specialist who argued that “it may take six months before such matters are decided upon and then the person in question might already have left the hospital”. The limited flexibility in determining salaries was also said to contribute to recruitment problems, particularly for various types of specialists. Another example of institutional constraints on staffing concerns the number

of nurses per sets of beds which are fixed by national staffing norms. Hence, negotiating for an additional set of beds implies a risk of creating over-capacity, with adverse implications for cost efficiency, if there are not enough patients to maintain a continuously high occupancy ratio.

Rigidities such as those described above are frequently mirrored by the utilization of overtime. Several interviewees argued that overtime was generally the only short-term solution to the shortage of staff and other types of bottle-necks. However, similar to basic salaries the overtime remuneration per hour is fixed by national agreements and increases progressively. Overtime is very costly as the hourly remuneration is considerably higher than employees' basic salaries (if converted to an hourly ratio). Yet, there would appear to be some scope for controlling overtime, even though the open-ended survey question revealed frequent concerns in this respect. For example, one divisional manager argued that:

‘I’m strict when it comes to utilization of overtime and follow it up carefully. Nobody is allowed to work too much overtime if it’s not a very special category of staff like departmental managers and various specialists.’

Judging from the interviews and open-ended survey responses, the departments experiencing greatest problems in controlling overtime are those exposed to great fluctuations in the flow of patients and a large proportion of acute cases, while it appears to be of lesser concern in ancillary departments. There is also an important incentive for individual employees to work overtime due to the significant increase in marginal remuneration, which was suggested to exacerbate the problems of controlling overtime.

The budgetary responsibility of nurse-managers mainly encompasses labour-related costs attributable to nursing activities, while doctor-managers have more complete responsibility for departmental budgets. The differences between doctor- and nurse-managers regarding the perceived controllability of overtime may be attributable to the continuous monitoring of in-patients, which is primarily the responsibility of nurses. Several of the open ended responses from nurse-managers linked complaints about the controllability of overtime to monitoring activities while this was not the case for doctor-managers. However, the dual budgetary responsibility may also play an important role in this respect, as indicated by the following quote from a divisional manager:

“One problem for nurse-managers is that they have budgetary responsibilities which are influenced by decisions made by doctors. This can make it difficult for them to control the costs which they are responsible for.”

The possibilities of resolving such problems appear to be circumscribed by the deeply ingrained tradition of dual management in Norwegian hospitals. There were also suggestions that nurses have a powerful incentive to maintain this situation as pursuing an administrative career is particularly attractive to them due to the lack of alternative promotion opportunities. Taken together, this might reduce the opportunities for improving budgetary control, as indicated by some interviewees:

“There’s an established view that nurses cannot be managed by doctors. This creates a lot of conflicts and power struggles. Financial control has a fairly weak position in these circumstances.” (divisional manager)

“Nurse-managers and doctor-managers frequently blame each other when it comes to explaining budgetary deviations. It would have been simpler with unitary management and clearer responsibility for the budget.” (divisional manager)

It is more difficult to explain the differences in the perceived controllability of salaries. While both doctors and nurses experienced considerable salary increases in 1997 and 1998 as a result of national agreements, these were partly compensated for in subsequent budgets.

The controllability of other costs

The concerns with the limited controllability of medical and disposables expenses in the survey could partly be traced to the limited influence on prices. Although attempts are made to account for price changes in the budget, some open-ended survey responses suggest that departmental heads experience greater problems in dealing with unexpected price increases during the year. Some survey respondents also referred to the limitations stemming from the hospital’s centralized purchasing procedures in this respect.

Regarding the controllability of equipment-related expenses, the influence of centralized decision-making is even more obvious. The capital budget for investments in equipment is separated from the operating budget and set at higher level of the county council. The hospital

needs to negotiate separately for such investments in conjunction with budget setting at year-ends, while the possibilities of departments receiving additional funding or shifting funds from capital budgets to other types of accounts during the year are relatively limited. Nevertheless, there were indications of some ex-post adjustments of capital budgets being accepted by the county council, sometimes as a consequence of external pressures. For example, a divisional manager explained the recent revision of the capital budget of one department by saying that “we built a new temporary laboratory building as a result of media reports about poor work conditions. This was an investment of 15.5 million kroner.”

The controllability of revenues

The considerably more frequent concerns with the controllability of revenues among doctor-managers compared to nurse-managers is probably due to the more complete budgetary responsibility of the former. Nursing budgets generally exclude revenues. Similar to several cost items, the controllability of revenues (including DRG-based reimbursements) appears to be circumscribed by the lack of local decision-making authority. As far as clinical departments are concerned, reimbursement rates for various types of revenues are generally established at the national level. The exception in this respect appears to be laboratory departments, which sell a larger share of their services to external customers and have greater discretion in pricing decisions. Although these units are exposed to competition from private laboratories, the head of the laboratory division argued that “my subordinate departmental managers are able to control operations fairly well within budgetary constraints, which is partly due to the existence of free revenues”.

Concluding Discussion

The issue of controllability is increasingly relevant in public sector organizations as these devolve budgetary responsibility to operating-level managers. However, our findings suggest that caution is required when extending results pertaining to the relationship between decentralized decision-making authority and RCP from the private sector to public sector organizations. The arguments for less strict adherence to the controllability principle elaborated in private sector studies pivot around the issues of attention-directing and risk-sharing and generally pre-suppose the existence of performance-contingent rewards. In contrast, we advanced the argument that where such rewards are not in place and a cautious approach to allocations is preferable to reinforce managers' acceptance of budgetary responsibility, public sector organizations are likely to combine decentralized decision-making authority with relatively strict adherence to the controllability principle. Our survey results lend some support to this position, particularly as far as subjective, ex-post RCP is concerned. The importance of subjective adjustments in conjunction with performance evaluation is also underscored by the interview findings indicating that these partly compensate for the lack of activity-based data explaining budgetary variances and are occasionally used for protecting departments from politically initiated, ex-post allocations. Hospital management has also taken a cautious approach to ex-ante inclusion of less controllable items in departmental budgets, partly due to the difficulties in identifying appropriate allocation bases.

Despite this cautious approach, only weak support for the hypothesized positive relationships between decentralization and ex-ante and objective, ex-post RCP was found. The qualitative data also indicate that some problems in controlling important financial items persist, in many cases due to barriers to change emanating from the organization's institutional environment (Powell, 1991; Zucker, 1988). Managerial decision-making authority is in many important respects (e.g., the setting of salaries, staffing, compensation for overtime, re-allocations between capital and operating budgets) constrained by actions and regulations initiated by external actors, such as the national and regional government, trade unions and the National Association of Regional and Local Authorities. In other cases, such as the division of budgetary responsibility between doctor- and nurse-managers, decision-making discretion and controllability are limited by structural

features which have become more or less institutionalized as a result of inter-professional power struggles (cf. Abbott, 1988). On the other hand, controllability appears to be somewhat higher where institutional constraints are less prevalent, as in the case of external laboratory revenues.

Differences in the institutional environment such as those outlined above have not been extensively discussed in the literature on the controllability issue, which generally separates structural from broader environmental influences on controllability (see e.g., Merchant, 1989). Only Otley (1990) identifies effects similar to those observed here (e.g., regarding the influence of national wage agreements) but combines these with other factors stemming from the external environment (e.g., fluctuating price levels and interest rates). Our analysis suggests that in highly institutionalized settings, such as the public sector, institutional constraints on managerial decision-making deserve more focused attention since they are directly related to structural variables (e.g., decentralization, division of budgetary responsibilities). The more general relevance of exploring such relationships is underscored by indications that the possibilities of decentralization have been severely circumscribed by institutional factors even in countries reputed for a strong commitment to deregulating the public sector, such as the UK (Ballantine et al., 1998; Bromwich and Lapsley, 1997) and New Zealand (Jacobs, 1997).

Institutional factors also seem to have a more direct effect on financial resource allocation and thus RCP. While budgetary control in the hospital has traditionally been hampered by the lack of useful activity data, a problem with allocations largely detached from such data is that they appear to represent decreasingly legitimate control practices. In response to this, management has introduced a seemingly more “objective” and “rational” tool for allocations, based on DRGs, to render visible the efforts to comply with the striving for cost containment (cf. Broadbent, 1995; Brunsson, 1990). While management nurtures a strong belief in the DRG-based system as a means of improving budgetary control, the introduction of the system for internal resource allocation was also underpinned by an obvious legitimacy-seeking rationale, similar to that described in institutional theory (see e.g., DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Scott, 1987). The striving to visualize and objectify in the face of pressures for less equivocal attribution of responsibilities can be seen as an attempt to convey an image of rationality to influential external constituencies: in our case politicians and the general public (see Brunsson,

1990; Perez and Robson, 1999 for similar observations). In future studies it would thus seem reasonable to examine the main effect of institutional pressures for cost containment and less equivocal attribution of responsibility on the different means of RCP as well as their moderating influence on the decentralization-RCP relationships. Such pressures might reinforce the positive relationship between decentralization and objective means of RCP based on a closer link between financial data and activities.

In the current research setting, however, it is not self-evident that the controllability of the departments' financial results will improve dramatically in the short term even though the shift towards DRG-based allocations may seem to present a more objective means of RCP, increasing the amount of complementary, activity-based data (cf. Antle and Demski, 1988). First, the underlying DRG weights are largely based on national standards and do not always present a perfect match between reimbursement rates and actual costs due to local variations (see also Bjørnenak and Pettersen, 1999). Hence, the accuracy of allocations may be more apparent than real. Second, as already noted, the controllability of important decision areas determining departments' ability to match the actual costs of treatment with revenues, is circumscribed by institutional conditions in the Norwegian health care sector which are unlikely to change in pace with the new allocation practices. This would seem to have particularly far-reaching implications for the overall controllability of financial results if departments are managed as "profit centres" as some of our interviewees foreshadowed.

Given the important institutional influences on decentralization as well as allocation practices, we may also speculate on the corollary of such influences often observed in institutional theory. Where the need for external legitimization conflicts with the logic underpinning internal operations, organizations tend to de-couple the structural attributes (including budgetary controls) used for managing this duality (Ansari and Euske, 1987; Covaleski and Dirsmith, 1983; Meyer and Rowan, 1977; Pettersen, 1995). At first sight, the introduction of DRG-based allocations would seem to be a step towards reduced de-coupling as it was justified by the need to increase the transparency of resource allocations to external constituencies as well as improving the internal system for responsibility accounting. By contrast, the traditional, more arbitrary, ex-post allocation practices appear to have facilitated the de-coupling of internal operations from the

strategies for external legitimization, as departmental managers have not been held responsible for such institutionally induced allocations. These findings are consistent with Brunsson's (1990) contention that legitimating actions are frequently de-coupled from the attribution of responsibility, as this allows decision-makers to avoid responsibility and blame. This may become more difficult with DRG-based allocations, since this might give the impression of a significantly improved system for tracing financial resources to operating units and holding managers responsible. An alternative outcome, however, may be that there will still be some scope for de-coupling due to the difficulties in achieving a reasonable match between DRG-based reimbursements and actual costs at the local level. Unless this issue is resolved, the belief that a more rationalistic foundation for attributing budgetary responsibility, consistent with the controllability logic, has been implemented may turn out to be a fallacy. Llewellyn (1998) found that such discrepancies effectively contributed to de-coupling as it led operating-level managers to abdicate responsibility and thus maintained the boundaries between operating tasks and budgetary responsibilities.

At a general level, the discussion in this section subscribes to the idea of combining functionalist approaches, such as those underpinning most research on the controllability issue, and institutional perspectives to provide a richer and more multifaceted view of management accounting practices (e.g., Boland and Pondy, 1983; Covaleski et al., 1985, 1996; Dirsmith, 1998). The main contributions of this largely exploratory study are that it contains the first survey operationalizing the RCP construct and examining its relationship with decentralization in a public sector context and that it raises the complementary role of institutional factors in this respect. It might thus provide a useful basis for replication and extension. However, a number of limitations should be remedied in future research. Most notably, we did not control for differences in reliance on performance-contingent reward systems through the choice of research setting. Since much of the literature on the controllability issue is concerned with the design of such systems, future research might benefit from introducing some variation in this respect in the sampling procedure. Furthermore, we concentrated our research efforts to the examination of antecedent relationships and did not examine the consequences of RCP in terms of attitudinal and behavioural outcomes (e.g., cost consciousness, motivation, gaming). We are therefore unable to

comment on the effectiveness of various means of RCP given a specific level of decentralization and institutional pressures for cost containment and less equivocal attribution of responsibility.

Appendix A

Measurement of variables

Decentralization.

The following five items are about the extent of authority delegated to your department. Please answer the next five questions by circling a number from 1 to 7 on the scale for each question (where 1 is “Not at all” and 7 is “To a very great extent”).

1. To what extent has your department got authority for making decisions on financial matters (for example, replacement of equipment)?
2. To what extent has your department got authority for making decisions on matters relating to day to day operations (for example, purchase of materials)?
3. To what extent has your department got authority for making decisions on matters relating to training and development of your staff and arranging required funding for it?
4. To what extent has your department got authority for making decisions on matters relating to allocation of financial resources to different headings such as payment of salary, overtime, repairs and maintenance of equipment, staff training, etc.?
5. To what extent has your department got authority for making decisions on matters relating to personnel matters in your department such as appointment, promotion and dismissal?

Reliance on the controllability principle.

Please respond to each of the following questions by circling a number from 1 to 7 (where 1 is “strongly disagree” and 7 is “strongly agree”).

1. The budget set for my department includes costs and/or revenues that are difficult for me and my subordinates to influence. (Reverse coded)
2. My department’s budgetary performance is generally compared with that of other departments within the hospital or in other hospitals.
3. When my department’s budgetary performance is evaluated, adjustments are made for factors which are difficult for me and my subordinates to influence through:
 - a. attention to quantitative information explaining deviations from budgetary targets.
 - b. attention to my verbal and/or written explanations of deviations from budgetary targets.

Open ended question:

Which types of costs and/or revenues included in your department’s budget are particularly difficult for you and your subordinates to influence?

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Notes

¹ Throughout this paper, the notion of controllability is treated as one of degree (McNally, 1980) rather than a dichotomous parameter.

² The questionnaire was administered in Norwegian. The measures were compiled in English and then translated into Norwegian and back-translated into English by two independent translators to ensure that the content of the questions remained unchanged.

³ Comparisons of means were based on t-tests.

⁴ This operationalization of decentralization has been criticized by Jacobs (1997) on grounds that it was derived from a private sector study and does not adequately capture the nature of decentralization in the particular empirical context where Miah and Mia's (1996) study was conducted (the New Zealand public sector). However, we believe this critique overlooks the substantial adaptations of the instrument undertaken by Miah and Mia (1996) to reflect relevant decision areas in a public sector context. Judging from our interview data and pilot testing of the questionnaire, the instrument appears to capture areas where departmental managers in the hospital under study are able to exercise a varying degree of decision-making discretion and provides a reasonably complete account of relevant decision areas. This would seem to reduce the construct validity threat.

⁵ This differs from Miah and Mia (1996), who referred to both the authority *and responsibility* being delegated. In this study, such a formulation would have implied a conceptual overlap with the questionnaire items reflecting RCP.

⁶ Pilot questionnaires were administered to seven doctor-managers and five nurse-managers in one division of the hospital. The pilot study was undertaken to identify any potential problems respondents might have in completing the questionnaires. A comparison of the means (based on t-tests) of the variables found no significant differences between the responses from the pilot and the main study. The responses from the pilot were then included in the final sample.

⁷ Further tests on the other categories of costs and revenues could not be conducted as they failed to meet data requirements of the test.