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## **Why do Autonomous Public Agencies use Performance Management Techniques? Revisiting the Role of Basic Organizational Characteristics**

**Abstract:** This study investigates to what extent the use of different performance management techniques within (semi-) autonomous public sector organizations, also called public agencies, can be explained by the defining organizational features of such organizations. Using multi-country survey data of over 400 public agencies, the effect of these features – internal performance target setting and monitoring, multi-year planning, as well as the internal performance-based allocation of resources, upon three performance management techniques, has been studied. This set-up recognizes differences among management techniques, as well as recurring factors, allowing us to make more general statements. Analyses illustrate that external result control by the minister and parent ministry affects the use of all performance management techniques examined in public agencies positively. However, each performance management technique is affected differently by specific organizational variables.

**Keywords:** autonomy, performance management, public agencies, performance information use

## INTRODUCTION

(Semi-) autonomous public sector organizations, often referred to as “public agencies,” use different performance management techniques to plan, monitor, and allocate resources within their organization to a varying extent. What is the relevance of defining the basic organizational characteristics of such public agencies, related to their structure and task, in explaining this variance across different politico-administrative cultures? By using data from over 400 public agencies in eight countries and juxtaposing a structural-instrumental and a task-related institutional perspective, this paper seeks to answer this question and to contribute, both empirically and theoretically, to two important bodies of literature.

First, the paper contributes to the literature on (semi-) autonomous public sector organizations, as it studies to what extent autonomy and other basic organizational features affect the behavior of these organizations in terms of their internal management (Maggetti and Verhoest 2014). These public agencies can be defined by their basic organizational features (Pollitt et al. 2004): 1) structurally disaggregated at different legal distances from government, having their own legal status or not; 2) having capacity for autonomous decision-making regarding management and policy (cfr. ‘letting managers manage’); 3) being under formal control of ministers and parent ministries regarding objectives and results (cfr. ‘making managers manage’ Nielsen 2014, Askim 2015); 4) having a public task; 5) having resources like staff and budget, with varying degrees of financial dependence from government; and 6) some expectation of continuity over time. Variation of these agencies across and within countries is enormous in terms of their basic organizational features: legal status, financial independence from government, staff size, budget size, as well as managerial autonomy and the way government controls them *by results* (Verhoest, van Thiel, Bouckaert and Laegreid 2012). This article adds to the literature by examining how the variety in these basic

organizational features affects the extent to which these organizations internally use performance management techniques.

Second, and even more important, this paper seeks to contribute to the expanding literature on performance management, and performance information use in particular (Moynihan and Pandey 2010; Kroll 2014). A recent systematic review by Kroll (2014; see also Saltirer and Korac 2014) showed that existing literature sought to understand performance information use by testing explanatory variables at three levels: environmental (see e.g. Moynihan and Hawes 2012), organizational (Van Dooren 2005; Moynihan and Pandey 2010; Taylor 2011) and individual factors (Kroll 2014, 2015; Moynihan et al. 2011). The review indicated that factors from all three groups have explanatory relevance, but also that results are quite inconsistent across studies.

It can be argued that this inconsistency is caused by several limitations within the literature on performance information use. A first limitation concerns the generalization of the findings as most studies focus either on one specific type of organization, such as primary schools (e.g. Moynihan and Hawes 2012; Nielsen 2014), or on general competence authorities, like municipal administrations (Moynihan et al. 2012; Saliterer and Korac 2014; Kroll 2014, 2015). In both instances, it is challenging to study the impact of differences in basic organizational features, related to structure and task, as there is limited variety in these aspects. Moreover, and partly due to their focus on one type of organization, in most recent studies, the attention is predominantly on environmental and individual aspects as well as performance management-related aspects, with limited organizational features, often merely as control factors, and with suboptimal operationalizations. This study brings these *basic organizational characteristics back to the fore*, by studying the impact of structural and task-related differences of autonomous public agencies on the internal use of performance management techniques.

A second limitation concerning the generalization of the findings is constrained as existing studies are single-country studies on the phenomenon in one politico-administrative context (Kroll 2014,176). This paper aims to find *general cross-country patterns* explaining the use of performance management techniques in public organizations from 8 countries with different politico-administrative contexts (including Napoleonic, Germanic, Anglo-colonial, and Central-Eastern European countries), by controlling country characteristics.

A third limitation is that most studies either focus on one kind of performance information use or combine different uses in one overall index of performance information use. In this way, studies cannot really exclude that different uses of performance information might be partially contingent upon different factors. In this paper, we seek to explain the internal use of three performance management techniques by public agencies, both *for these techniques individually as well as for their combined use*. First, *multi-year planning* is studied, which is defined as the process and planning documents (such as a business plan) by which the senior management of organizations define and set the strategic performance objectives and results the organization needs to achieve in the next years. Second, *internal performance-based target-setting and monitoring* refers to the degree to which the senior management of the public agency directs the organizational subunits and lower hierarchical levels by setting targets and monitoring them with respect to performance objectives and expected results. Third, the *internal performance-based allocation of resources* denotes the extent to which the internal allocation of resources to organizational units and lower management levels is on the basis of results. The effect of these individual performance management techniques on the organization differs (Van Dooren et al. 2010) and when performed in combination, they form a logical integrated system which might strengthen the effect of performance management on the organization.

A fourth limitation is that most studies in their theoretical elaboration rely upon empirically observed results from previous studies and middle-range theorizing, rather than deduction from more ‘grand theories’ to build up their theoretical framework (Yang and Hsieh 2007; Kroll 2014). In this article, we use two partially competing institutional theoretical perspectives (Christensen et al. 2007), allowing us to compare their relevance for explaining performance information use.

In the following section, the theoretical framework with two perspectives is presented, and hypotheses are formulated on the relationship between, on the one hand, structural-instrumental and task-related features, and on the other hand, the internal use of performance management techniques within public agencies. Second, we will present our empirical approach and data. Third, we will discuss the econometric analyses and our findings. Finally, we will draw the main conclusions.

## THEORETICAL APPROACHES AND HYPOTHESES

Given the scope of this article, we are interested in the relative importance of different organizational features of public agencies for explaining their internal use of performance management techniques. Drawing on ideas and concepts from rational and sociological institutional schools, two theoretical perspectives are elaborated: (1) a structural-instrumental perspective (emphasizing formal organization structure and instrumental action) and (2) a task-environmental perspective (emphasizing the characteristics of organizational tasks and the technical environment) (Christensen, Lægreid, Roness and Røvik 2007).

### The Structural- Instrumental Perspective

According to this perspective, organizations are regarded as tools or instruments for achieving certain goals viewed as important in society. This can be expressed partly as public sector organizations and their members acting with instrumental rationality according to a logic of consequences (March and Olsen 1989; Hall and Taylor 1996) in fulfilling tasks and achieving the desired results. Instrumentality can be expressed in the structural design of an organization in accordance with means-ends assessments, which, in turn, determines how its members behave while conducting tasks. A dominant school in this perspective is rational neo-institutionalism in general and principal agent theory in particular (Pratt and Zeckhauser 1991; Jensen and Meckling 1976), which concentrates on control arrangements within a specific framework of contractual relations between a principal and an autonomous agent, with goal incongruence and information asymmetry as central problems.

Drawing upon the structural-instrumental perspective, several factors can be hypothesized as important. Our starting point is that within each public agency an internal principal-agent problem exists, since senior management cannot directly observe all actions of lower management and front-line workers directly. In order to control the internal principal-agent relation between senior and lower levels of management, senior management may introduce and use performance management techniques inside their own organizations. The intensity of use will depend upon several structural contingencies: the legal status, managerial autonomy, result control, and organization size.

As discussed before, one defining organizational feature of public agencies is their legal status, in terms of whether they have a legal identity separate from their parent ministry residing in public or private law. The literature indicates that the *legal distance from government* has consequences for using performance management techniques. Governments place agencies at a legal distance in order to make them more susceptible to demands of their users and stakeholders, and more visible for media and society (see Egeberg and Trondal 2009). This

increases the pressure to deliver high-quality services, as these organizations need to secure support from these external actors. As modern management techniques, such as performance management, help to deliver services of a high quality in an efficient way and ensure compliance to this objective, senior management of a public agency will place significant emphasis on adopting performance management techniques, allowing them to systematically plan and control the performance of lower management levels. In contrast, units directly under ministerial responsibility are more politicized and less in direct contact with citizens and other actors in the private sector, which is typically seen as hampering managerial instruments (Bouckaert and Van Dooren 2003; Bach and Jann 2010). As the structural position of public agencies within the wider public sector triggers these mechanisms, even independent from their task, the effect of legal distance from government fits the structural-instrumental perspective in line with other literature (see Laegreid et al. 2006; Verhoest et al. 2010). ‘Legal distance towards government’ remains largely unstudied as a factor (Kroll 2014). However, some studies have shown that performance-oriented management seems to be more efficient the further away the organization is from the political executive (Christensen and Lægreid, 2002). As such, we construct the following hypothesis:

***H1: Public agencies at a further legal distance from government, i.e. which have their own legal identity, will make more internal use of performance management techniques than those closer to government, i.e. without their own legal identity.***

Second, the internal principal-agent relationship between the senior management of public agencies and lower management levels including front-line workers, is strongly affected by the external principal-agent relation between the senior management as agent and their portfolio minister / parent ministry as principals. One crucial element in this external principal-

agent relation is that the agent receives sufficient *autonomy* in order to implement the principals' demands in an efficient, flexible, and tailored way. The principal delegates tasks to the agent, in order to yield benefit from the efficiency and specialized knowledge of the agent (Pratt and Zeckhauser 1991). Also, the New Public Management (NPM) doctrine and related theories like managerialism and property rights theory assume that public sector organizations should be given more managerial flexibility in order to allow and motivate them to adopt modern management techniques (including performance management techniques). We define organizational autonomy as the level of decision-making competencies an organization experiences (Christensen 2001). We focus here on managerial autonomy, which refers to making decisions about the choice and use of financial, personnel, and other resources (Verhoest et al. 2004). As greater managerial autonomy for agencies entails greater responsibilities for senior management, they are inclined to use more performance management techniques. Empirical research supports this point (Moynihan and Pandey 2005; Lægreid et al. 2006; Moynihan and Pandey 2010; Kroll 2014). In line with this research, we expect managerial autonomy to lead to a higher use of performance management techniques. We expect that,

***H2:*** *Public agencies with higher levels of managerial autonomy make more internal use of performance management techniques than agencies with lower levels of managerial autonomy.*

However, in principal-agent theory it is also emphasized that the agent may use his autonomy to behave opportunistically (Jensen and Meckling 1976). Hence, the NPM doctrine, which in a European context propagates delegation to autonomous agencies, stresses the need for a *strong external result control* by the ministers and parent ministries of such agencies:

Agencies should be given clear objectives by ministers on what results they need to achieve, and the progress of the agencies towards these objectives should be monitored, evaluated, and sanctioned by ministers and parent ministries in case of poor results (Schick 1996; Bevan and Hood 2004). In many countries, this external result control system manifests itself in the form of a result-oriented contract-like agreement between the minister and the public agency. The price a public agency has to pay for its increased managerial autonomy is to accept such a result control system, in order to ensure the minister and parent ministries that the agency uses its discretion to pursue the achievement of the objectives of its principal (Christensen and Lægreid 2004). As the senior management is held accountable by the minister and parent ministry for the extent to which the public agency achieves the objectives defined by them, the senior management will be inclined to use performance management techniques inside their own organization to direct and monitor lower management levels in order to achieve these external objectives (see for empirical support Verhoest et al. 2010):

***H3:*** *Public agencies with higher levels of external result control exercised by their minister and parent ministry internally use more performance management techniques than agencies with lower levels of external result control.*

Figure 1 illustrates how both managerial autonomy and external result control defined by minister and parent ministry set the boundaries for organizational action by public agencies, and how these factors trigger an increased use of performance management techniques within the public agency.

<<< Insert Figure 1 about here >>>

A fourth factor that will influence the use of performance management techniques is organization's size in terms of staff. The internal principal-agent problem outlined above will intensify in case the organization is relatively larger, as this creates greater hierarchical levels and a wider span and depth of control for senior management. Hence senior management of larger organizations will be inclined to use more performance techniques to control their organizations and lower management levels (Van Dooren 2005; Moyniham and Pandey 2010). In contrast to other studies (Bourdeaux and Chikoto 2008; Lægreid, Roness and Rubecksen 2006; Moyniham and Ingraham 2004; Poister and Streib 1999), Kroll (2014) notes little support for positive effects of organizational size in his review (see also Askim 2009, Verhoest, Roness, Verschuere, Rubecksen and MacCarthaigh 2010). However, organizational size is often measured indirectly (see Kroll 2014). Based on the structural-instrumental perspective, we construct the following hypothesis:

**H4:** *Larger public agencies will make more internal use of performance management techniques than smaller public agencies.*

#### The Task- Related Perspective

This perspective emphasizes the technical environments of public sector organizations, which defines institutional norms enabling or constraining organizational behavior (Selznick 1957; Scott 2003). The technical environments of an organization are to a large extent determined by the type of tasks it performs. The task does not only influence organizational functioning and control as a basis for rational decision-making, it also refers to a wider set of institutional norms and standards of how organizations performing such tasks should behave in order to gain and retain legitimacy through logic or appropriateness (Christensen et al. 2007).

Organizations performing similar tasks may act as an ‘organizational field’ from which an individual organization emulates characteristics and identities through processes of isomorphism (DiMaggio and Powell 1983).

Hence the basic idea in this perspective is that task characteristics and the related technical environment affect organizational practice, and thus the adoption and use of performance management techniques. These tasks may vary according to their measurability (Wilson 1989; Van Dooren 2005), their market and policy environment (Bourdeaux and Chikoto 2008; Dull 2009), and their political salience (Pollitt et al. 2004). In general, performance management systems can be expected to be more mature in organizations with more tangible tasks, and tasks that face pressures stemming from market forces or political salience.

Some public organizations have more tangible and easily measurable primary tasks. That is the case for public agencies delivering specific services to citizens and other users and agencies with commercial activities, compared to agencies with regulatory or policy development tasks. Logically, when tasks are more measurable and tangible, defining performance indicators, setting norms, and measuring progress of performance becomes comparatively easier. When tasks are relatively less tangible and measurable, the senior management of the public agency will be less inclined to use performance management techniques to control lower levels within the organization, as in that case performance indicators are less reliable and do not reflect real-life performance (Van Dooren et al. 2010). Consequently we include the following hypothesis;

**H5:** *Public agencies with a relatively tangible primary task will make more internal use of performance management techniques than agencies with less tangible primary tasks.*

The kind of task and related technical environment is also related to income sources an organization can draw from. Public sector organizations can receive financial resources predominantly from the government budget, or from self-generated income, through the sale of services or by receiving fees for the delivery of these services. In case of the latter, public sector organizations will want to maximize this self-generated income. For such an organization it is extremely important to monitor very well the efficiency and quality of services produced and delivered, as these elements will immediately impact their financial viability and help to convince users to pay for their services. Moreover, such agencies will gain more legitimacy when they mirror self-financing private sector companies in their use of modern performance management techniques. External pressure from markets and citizens are indeed seen as a driver for performance management instruments (Moynihan and Ingraham 2004). Therefore, we formulate the following hypothesis:

**H6:** *Public agencies that predominantly depend upon self-generated income will make more internal use of performance management techniques compared to those organizations which are fully or predominantly dependent on funding from the government.*

A final hypothesis concerns the impact of financial resources or organizational budget size on the internal use of performance management techniques by senior management. First, budget size can be seen as a proxy of the political salience of the organization and its task (Pollitt et al. 2004). Organizations with highly salient tasks will be under stricter scrutiny from stakeholders, and their legitimacy will be more contested, leading to substantial requests for information on the agencies' activities and results. Agencies with tasks which are perceived to be salient by their political principal will be under stricter control (Pollitt et al. 2004; 2006). Large budgets for organizations can be considered as good indicators of high political salience (Pollitt et al.

2004). Therefore, in organizations with large budgets and hence high salience, performance management techniques will be used more by senior management to control lower management levels. The use of performance management systems may increase the organization's legitimacy in a context of high political salience.

Second, a large budget might produce an enhanced capacity of the organization to implement performance management techniques. Previous research often pointed to insufficient resources as an explanation for implementation failure, i.e. having performance information without using it (Van Dooren 2005). Although, several studies find positive effects referring to the provision of adequate resources (Grizzle and Pettijohn 2002; Askim et al. 2008; Moynihan and Landuyt 2009), Krol (2014) found in his review six studies which included financial distress as an explanatory factor, with none of them showing positive effects (see also Van Dooren 2005; Verhoest et al. 2010).

*H7: Public agencies with larger budgets will make more use of performance management techniques.*

## DATA AND ANALYTICAL FRAMEWORK

Data used for the analysis have been provided by the COBRA-network (Comparative Public Organization Data Base for Research and Analysis)<sup>1</sup>. It developed a common questionnaire in order to survey senior managers of public sector organizations, in particular, (semi)-autonomous agencies located directly beneath ministries and ministers.

In each country the top level management (Chief Executive Officers, CEOs) of the agencies were asked to fill in a web-based questionnaire with questions regarding perceptions of autonomy and control, management and organizational culture. The CEO of each agency was

asked to answer on behalf of the entire organization. The purpose behind using the perception of CEOs is to heavily influence their actions and the manner in which they manage their agency (Verhoest et al. 2007).

The joint data set comprises unique agency-level survey data across 15 different countries over a period of 7 years. Since not all countries had information on all necessary variables, the database on which the analyses in this paper are based entails agencies from eight countries, including, Belgium (Flanders), Italy, the Netherlands, Austria, Germany, Hong Kong, Portugal and Romania.

The remaining selection of countries reflects a large variation in administrative traditions, including Napoleonic, Germanic, Anglo-colonial, and Central-Eastern European, (Painter and Peters 2010) as well as different politico-administrative regimes (Pollitt and Bouckaert 2011). Yet, the goal of this article is not to conduct a cross state comparison of the effect of autonomy and result control on the use of performance management techniques, but to examine this relation independently from country characteristics. Including data from organizations with widely varying country contexts help to examine whether patterns manifest themselves independently of country context. Consequently, the selection of these countries is not based on theory, but on maximizing the amount of data while maintaining a representative sample (see descriptive statistics in Table 1).

### Measuring the Use of Performance Management Techniques

The ordered variables "MULTI-YEAR PLANNING" "INTERNAL PERFORMANCE TARGET-SETTING AND MONITORING" and "INTERNAL PERFORMANCE-BASED ALLOCATION OF RESOURCES TO ORGANIZATIONAL UNITS" represent the main

dependent variables in our different models to be estimated (see definitions in the introduction to this article).

Respondents were asked to indicate to which extent management techniques were used in their organization. Subsequently, a list of 24 techniques was given including management techniques on financial management, performance management, human resource management, and quality management. With respect to performance management techniques, agencies were asked the following questions at different places in the list:

- "to what extent is there in your organization planning over years in the form of a multi-year plan?"
- "to what extent is there in your organization internal performance-based target-setting and monitoring of the organizational subunits and lower management levels on objectives and results?"
- "to what extent is there in your organization internal performance-based allocation of resources to organizational units on the basis of results"?

For each question, respondents (i.e. CEOs of public agencies) were given the following three options: no, to a small extent, or to a large extent. These dependent variables will be analyzed separately. However an index will also be created by aggregating these three variables and dividing them by three in order to study the combined use of these internal performance management techniques (this is the variable "INDEX").<sup>2</sup> A factor analysis on all 24 management techniques has also been conducted in order to ensure that all three management techniques load on the same factor, *different* from the other techniques. Since they do, we consider them closely related. As with most previous research on performance information use (see Moynihan and Pandey 2012; Kroll 2014), we rely on self-reported indicators.

For our model specifications, we derive a set of independent variables that are potential indicators of the degree to which an agency will make use of these performance management

techniques. Following our theoretical approaches, our explanatory variables can be categorized in two subfields: structural-instrumental factors and task-related factors.

### Structural- Instrumental Characteristics

First, a dummy, “LEGAL DISTANCE FROM GOVERNMENT”, was included. Legal distance from government is coded 1 if the agency has its own legal identity, separate from the state, vested in public law or private law, and is set to zero otherwise.

Second, data on the level of managerial autonomy of the agency is included. Two types of managerial autonomy are taken into account: personnel management autonomy (PA) and financial management autonomy (FA). The variable “PERSONNEL MANAGEMENT AUTONOMY” relates to the autonomy of a public agency to take decisions concerning salary level, promotion, and evaluation of staff, in general (so beyond individual decisions) without interference from ministries (see Appendix, Table 4, for the precise wording of these questions). For each of the three items, organizations can either have no autonomy (score 0) or full autonomy (score 1). These items are aggregated and recoded into 3 categories, whereby category 1 equals no autonomy for all three indicators, category 2 equals some autonomy if the index has a 1 or 2, and category 3 equals high autonomy if the index equals 3, which means that the agency has autonomy for the three indicators.

The variable “FINANCIAL MANAGEMENT AUTONOMY” of a public agency is measured in a similar way. An index is constructed, based on the aggregation of the scores on three items: the extent to which the organization is able to shift personnel and running cost budgets, to set prices for services and products, and to shift personnel- running cost and investment budgets (cf. Table 4 in the Appendix).” Each variable is recoded into a dummy (dummies are set to 0 if the score equals 0 or 1, and set to 1 otherwise) and then aggregated. After which, this sum is transformed to a variable with 3 categories in a similar way as for personnel management autonomy.

Third, we add information about external result control exercised by the minister and parent ministry on the public agency. The variable “EXTERNAL RESULT CONTROL BY MINISTER” is based on three questions to CEOs of the agencies in the middle of the survey. The survey section framed the questions explicitly as how the organization is controlled *by its minister or parent ministry* with respect to *non-financial performance objectives and results*. The following questions were used: (1) To what extent is the organization’s management accountable to its minister or parent ministry based on results and goal achievement? (2) Are there rewards in case of good results or the achievement of the goals or targets for the organization? (3) Are there sanctions in case of bad results or the failure to achieve the goals or targets for the organization?<sup>3</sup> Therefore, the variable is based on whether the political and administrative principals (i.e. minister and parent ministry) hold the agencies’ CEOs accountable for results, and whether rewards or sanctions imposed by the political and administrative principals follow mal-performance. When the political and administrative principals do not hold the CEO accountable or only to a small extent, the variable ‘external result control by minister’ is set to 0. In case the political and administrative principals do hold the CEO accountable for results to a large extent, but no sanctions or rewards are imposed, the variable ‘external result control by minister’ is set to 1. The variable ‘external result control by minister’ is set to 2 if political and administrative principals hold the CEO accountable for results *and* impose sanctions or rewards (see Wynen and Verhoest 2015).

Finally, we add information on the size of the agency in terms of number of staff, measured in full-time equivalents. “ORGANIZATIONAL SIZE” is included as a variable with 3 categories, where the lowest category is used as a benchmark.

#### Task-Related Factors

Task-related factors are also taken into account. A dummy (PRIMARY TASK) is included in order to examine the effects of primary task. This dummy is set to 1 when the primary task is tangible in kind (general public services as well as business and industrial services) and to 0 otherwise (in case of policy development, regulation, and exercising public authority as a primary task).<sup>4</sup> Furthermore, a dummy (INCOME SOURCE) concerning income source is added. This variable reflects the main source of income of the public agency. It indicates whether or not the organization is predominantly self-financing or financially dependent on the government. This dummy equals 1 if the income source is predominantly or fully nongovernmental, and 0 otherwise. Finally, the variable agency budget (BUDGET) is included as a variable with 3 categories. The lowest category is used as a benchmark.

### Control Variables

Apart from the variables discussed above, we also include ORGANIZATIONAL AGE as a control variable. The literature indicates that age can affect the use of performance management techniques (positive effect, Askim 2009, versus a negative one, Lægreid et al., 2006).

### Descriptive Statistics

In Table 1, a summary of statistics for the main variables is presented. As to legal status, there are as many agencies with their own legal identity separate from the state as agencies without legal identity. Most agencies report to have some personnel management autonomy. This is also the case for result control. When it comes to financial management autonomy, most report to have little autonomy. On average agencies in our sample employ 1153 employees and exist for on average 24 years. From the statistics, with regard to the organizational task, it becomes clear that a small majority of agencies is involved in tangible tasks. Not surprisingly,

most agencies are financially dependent from the government. When examining the dependent variables, we notice that for the three forms of management techniques, most agencies report making use of these to a small extent.

<<< Insert Table 1 about here >>>

Moreover, the values reported in Table 1 in the (representative) Original sample and Used sample columns are very similar. This suggests that missing values were randomly distributed, and that observations used to estimate regressions therefore constitute a representative subsample of the initial representative sample of agencies

Because all data are self-reported and collected through the same questionnaire during the same period of time with a cross-sectional research design, common method variance, variance that is attributed to the measurement method rather than the constructs of interest, may cause systematic measurement error and further bias estimates of the true relationship among theoretical constructs. In our research, information on the formal legal status of the organization, staff size, task income source, budget, size, and age of the organization has been verified by the involved country teams by examining official sources. For variables that could not be verified using external sources, extra steps were taken to reduce the likelihood of common method bias.

First, in order to avoid issues of common method bias due to item characteristics, one should avoid complex, ambiguous, or abstract items (Podsakoff, MacKenzie, and Podsakoff 2012; Meier and O'Toole 2013; Jakobsen and Jensen 2015). The items measuring the related variables (see above and Table 4 in the Appendix) refer to focused items and concrete practices which measure current states (see Jakobsen and Jensen 2015, 17). We asked respondents if they were, in their perception, subject to specific result control or had specific autonomy (e.g., can you set tariffs for services or products without approval from the parent minister –Yes/No? See

Table 4 in the Appendix for a precise wording of these questions). Hence, we ask respondents about their perception regarding the factual presence or the absence of a certain current phenomenon. Moreover, in case of difficult concepts, like multi-year planning, the precise definition of concrete practices was given through a link in the online survey. In each country before launching the survey, its content was discussed with a few potential respondents (senior civil servants) to check understandability of survey items. Also, different answer categories were used to measure managerial autonomy and external result control by the minister as independent variables (simple Yes/No answer categories) on the one hand, and items for the dependent variables on the other hand (ordinal scale with clearly labeled anchors) in order to avoid common scale properties (Jakobsen and Jensen 2015, 17). The use of simple yes/no answer categories and concrete items for the independent variables diminishes the capacity for personal interpretation, and in turn reduces the likelihood that responses were subject to halo effect/social desirability/response set effects, and other underlying causes of common method bias.

Second, the items measuring the independent variable “external result control by minister” on the one hand, and items measuring the dependent variables regarding ‘internal performance management techniques’ on the other both refer to performance, results, or goal achievement. One could potentially argue that respondents were in a similar mindset when responding to survey questions regarding these two variables. However, as visible in the specific wording of the items mentioned above, we are measuring two different issues which are consequently based on different questions. “External result control by minister” was framed in the survey as referring to actions from *external* parties (the minister and parent ministry) towards the agency, whereas the use of performance management techniques refers to *internal* processes within the agency by which the organization’s top management to control the organizational subunits and the lower managerial levels within the organization (see also Figure 1 in the manuscript). These

respective set of questions were placed in different locations of the survey and showed as separate webpages in the online survey, not in consecutive order. A separation in the survey between measures of the independent and dependent variables has been suggested as a way to reduce common method bias (CMB) (Podsakov, MacKenzie and Podsakoff 2012; Jakobsen and Jensen 2015: 17).

Third, the three items measuring the dependent variables were part of a longer list of 24 management techniques. The factor analysis on this wider list resulted in different factor loadings, whereby the items regarding internal performance management techniques load on the same factor. This reveals a joint variation of the discussed management techniques. However, the results from the regression still differ by management technique, as will be highlighted further in this paper. The fact that the effect of the independents is not the same for each performance management techniques (which have been confirmed to be in the same factor loading in the factor analyses) implies that the occurrence of CMB is rather unlikely. Hence, because of the abovementioned reasons, we consider the risk of CMB to be limited. As we cannot completely rule this possibility out, results should consequently be interpreted with care. In order to check for the robustness of our results, we ran analyses on alternative models as an additional verification. These can be found in Appendix (robustness check on CMB and Tables 5 and 6); our initial results prove to be robust.

### Estimation Strategy

In order to account for the ordinal nature of dependent variables, ordered logit models have been estimated, whereby we calculate odds ratios.<sup>5</sup>

Since agencies are nested in different countries, we include country dummies. This way we are able to investigate relations while controlling the influence of country characteristics. All

models have been examined for heteroskedasticity and nonlinear relationships where suspected, revealing no significant methodological issues.

## RESULTS

In Table 2 results are presented for the index as well as for the separate analyses of multi-year planning, internal performance target-setting and monitoring, and internal performance-based allocation of resources to organizational units based on results (see Appendix for robustness checks).

<<< Insert Table 2 about here >>>

Table 3 illustrates to what extent the hypotheses are supported by these results. In this section we discuss the results and how they relate to existing literature on performance information use, as well as autonomous agencies.

<<< Insert Table 3 about here >>>

### ***The effect of structural-instrumental variables: legal distance from government, management autonomy, result control and organizational size***

The variable “legal distance from government” is not significant for any of the examined performance management techniques. Seemingly, agencies further away from government (agencies which have their own legal identity separate from the state, vested in public or private law), do not have strong motivation to use multi-year planning or performance-based target-

setting and monitoring internally than organizations closer to government (see also Lægreid et al. 2006).

Contrary to both findings in the literature regarding performance information use (e.g. Moyniham and Pandey 2010; Moyniham 2005) and agency research (Lægreid et al. 2006, Pollitt et al. 2006; Verhoest et al. 2010), having more managerial autonomy will not make agencies use performance management techniques to a relatively greater extent. In other words, even if the agency and its senior management have relatively extended discretion concerning the choice and use of financial, personnel, and other resources enabling them to use performance management techniques more easily, they will not necessarily do so. This finding substantially modulates the sporadic evidence in literature that agencies with extended managerial autonomy would use modern management techniques more intensively, or that the NPM-credo ‘letting managers manage’ in itself has a positive effect (Wynen et al. 2014). Accordingly, H2 is not supported.

However, in Table 2 we observe strong significant positive effects for external result control by the portfolio minister for both the index and the performance management techniques examined: more external result control by the minister towards an agency leads to an increased use of performance management techniques within the agency. H3 is thus supported. This finding supports principal agent theory, which argues for the need for strong external result control by the ministers and parent ministries vis-à-vis public agencies. When ministers and parent ministries use external result control systems to hold the CEO of public agencies accountable for results and impose sanctions in case of mal-performance, these CEOs will be inclined to install and use internal performance management techniques to control the lower management levels within his organization. In this way he can assure the achievement of objectives stipulated by the minister and parent ministry. This finding seems to give support to the basic idea of NPM that ‘making managers manage’ is a necessary complement of ‘letting

managers manage' in order to stimulate changes within public organizations. The size of the agencies does not seem to have any effect.

*The effect of task-related institutional variables: tangible tasks, income source, and budget size*

The first column of Table 2 (index) shows that agencies with tangible tasks (general public services and business and industrial services) are more likely to use performance management techniques. However, when examining other columns, we notice that agencies with tangible tasks are more likely to use mainly multi-year planning as performance management technique. No effects of primary tasks can be found on the other performance management techniques. This finding suggests that organizations with tangible tasks have less contested and more easily available performance information (Ammons and Rivenbark 2008; Moynihan and Landuyt 2009), making it easier to use it in multi-year planning. Moreover, these tasks, referring to general public services and commercial services, have a large exposure to users and citizens, leading to more impetus for reform (Moynihan and Ingraham 2004). H5 is thus only clearly supported for multi-year planning by our findings. This finding adds insights to the performance information use literature in which "task" is often mainly operationalized in distinguishing between external and internal tasks (Kroll 2014).

H6 was not supported, since no significant results were found in any of the models. It does not really matter whether the organization is predominantly financed by self-generated income or governmental budget.

Organizational budget appears to have a significant effect on the index of performance management techniques. Consequently, these findings offer support for H7 with respect to the combined use of performance management techniques and one specific technique. This finding differs from several studies regarding performance information use in general (see Kroll 2014),

or in agencies (Verhoest et al. 2010), which do not find any effect of budget size. Agencies with larger budgets in the eight countries we study will invest more in performance management techniques, either due to their political salience (Pollitt 2006) or their capacity to provide adequate resources for building such systems (Askim et al. 2008; Moynihan and Landuyt 2009).

Finally, the age of the agency, which we included as a control variable, has in both models a significant negative effect on the use of internal performance-based allocation of resources (see  $\chi^2(2)=14.20***$ ). The younger the agency the more likely it will be to use this management technique. However, this result cannot be generalized since it cannot be observed for the other management techniques nor for the index.

## CONCLUSION AND DISCUSSION

The central research question of this article is to what extent the defining basic organizational characteristics of public agencies help to explain the varying extent to which such agencies use different performance management techniques internally. By performing ordered logit models, making use of a sample of agencies across a wide range of countries, and distinguishing between three kinds of performance management techniques, this article sought to contribute to two major streams of literature.

The findings contribute to the literature on public agencies and the effects of their basic organizational features on internal management. Our results show that the internal use of performance management techniques by these public agencies is not affected by their degree of managerial autonomy, but primarily by the extent to which these agencies are controlled by their minister. Moreover, public agencies are more likely to use internal performance management techniques when their tasks are more tangible and when they have larger budgets.

These findings also point to one of the contributions to another stream of literature, particularly on performance information use. The findings stress the importance of bringing organizational factors related to structure and tasks back in when seeking to explain performance information use, besides environmental, individual and information related variables. The tendency to downgrade the relevance of basic organizational features (see Kroll 2014) in terms of explanatory power is most likely due to the focus of most empirical studies on one set of organizations (like schools or municipal authorities). Our study demonstrates that basic organizational factors become more important when studying public agencies as a group, which differ substantially in terms of basic organizational characteristics like task and budget.<sup>6</sup> Also, in contrast to most existing studies that are single-country, we study organizations from countries with different politico-administrative cultures. By controlling country effects, this study is able to unravel some important factors that hold explanatory value, independently from country context. It is however important to note that the analyses only rely on evidence from eight countries. This makes generalizing the research findings impossible.

Additionally, most studies examining the internal use of performance management techniques in public sector organizations focus on one specific form of management technique, resulting in mixed empirical evidence as to why performance management techniques are used by senior management to control lower management levels. By distinguishing three internal performance management techniques, we make the important observation that organizational variables can have a different effect on forms of performance management techniques. This observation can be a possible explanation for various mixed results found in the literature.

This does not mean however that no factor might be found that has a positive effect on use of all performance management techniques. In line with the literature (Verhoest et al. 2010), increasing external result control by the minister seems to increase the likelihood of the internal use of these management techniques by senior management. This is in line with the principal-

agent theory, as agencies should be monitored, evaluated, and sanctioned by their principal in case of mal-performance, senior management tend to minimize the risk of such mal-performance by using internal performance management techniques (Schick 1996, Bevan and Hood 2004).

While most studies in performance information use middle-range theories and previous empirical findings to construct hypotheses, our research attempts to link explanatory factors of different institutional schools (Hall and Taylor 1996; Scott 2001; Peters 2005), based on a logic of consequences versus a logic of appropriateness. What do the findings of this study imply for the explanatory power of these theories and logic for the use of performance management techniques? Theoretically, this paper shows that the two theoretical perspectives each have value in explaining the use of performance management techniques. Future papers should address factors from these perspectives. This emphasizes the need for a better understanding of the extent to which and under which conditions actors behave according to this logic, or when they alternate between such logic (March and Olsen 1998, 952-3; Pollitt et al. 2004, 250; Moynihan 2005). Future multiple-case study-based research could provide refined testing of hypotheses, but with a stronger potential to grasp the underlying mechanisms and logic in the minds of key actors involved.

A weakness of our study is that it makes use of cross-sectional data drawn from one single survey. This could make our results sensitive to common method bias. Hence, results should be interpreted with care. Nevertheless, and as discussed in the methodological part of this article (and in the Appendix), different steps have been taken to reduce this risk. As such, we believe the likelihood of having CMB is minimal.

Another weakness of the article exists in the fact that only country dummies could be included to deal with the unobserved heterogeneity between countries. A better approach to examine country-level variables in detail would be to use a multilevel model. However, since

only a limited amount of countries was available for this study, this makes it impossible. Studies covering a larger, random sample of countries would allow running multilevel analysis, which in turn permits to study contextual variables on the country level. Moreover, since prior studies have offered limited support for socio-demographic explanations (e.g., Kroll 2014) future research should also take socio-demographic variables of CEOs into account.

Our findings help to frame policy-relevant implications. If external result control by the minister and parent of the public agency is the driving force behind the use of performance management techniques, governmental actions to increase performance and efficiency should center on increasing result-based ministerial control of these public agencies. The main policy relevance of this study's findings is that policy-makers should be aware that granting autonomy to agencies will not lead to an increased use of performance management techniques. Making agencies increasingly accountable for their results and sanctioning or rewarding them for these achieved results (e.g., by granting contracts) by imposing external result control on the other hand appears to be the most stimulating way to make agencies use performance management techniques. Equally important is that the three performance management techniques used within the organizations, multi-year planning, internal performance based target-setting, and monitoring and internal performance-based allocation of resources, are not necessarily explained by the same factors: in our model, only result control by the principal seems to enhance all three performance management techniques in agencies. However, other factors like size, task and budget size (measuring political salience), only have positive effects on respectively one performance management techniques out of three. This means that politicians and public managers should be differentiating their approach to foster specific performance management techniques, besides relying solely on result control.

## NOTES

1. For more information see <http://soc.kuleuven.be/io/cost/index.html>.
2. Cronbachs alpha equals 0.64.
3. These rewards and sanctions for the organization were defined as wage increase/decrease for manager, increased or decreased resources and financial means for the organization, an increase/decrease of autonomy for the organization in relation to its minister or parent department, and other sanctions and rewards.
4. Admittedly, our operationalization of tangibility of tasks is not bullet proof, as some public services (of a relational kind) like job mediation are indeed less measurable than other public services with a more material nature-like public transport (Bouckaert 1995). However, in our operationalization of the variable of task tangibility we use a dummy, comparing general public service delivery tasks with other tasks: policy formulation and regulatory task. Both are hard to measure in terms of quantity and quality, and even less observable than relational public service delivery tasks. Hence, in our approach, agencies with general public service delivery as primary tasks are compared to policy formulation and regulation as primary tasks which are relatively less measurable.
5. Ordered probit models were also estimated and produced very comparable results. Furthermore, the Akaike Information Criterium (AIC) and Bayesian Information Criterium (BIC) were almost identical, however because of the slightly less attractive values for the AIC of the probit model we decided to use a logit model.
6. The models used to check the robustness of our results (omitting the variable result control by the parent ministry) show that size and type are of importance when explaining the use of performance management techniques. See Table 6 in the Appendix.

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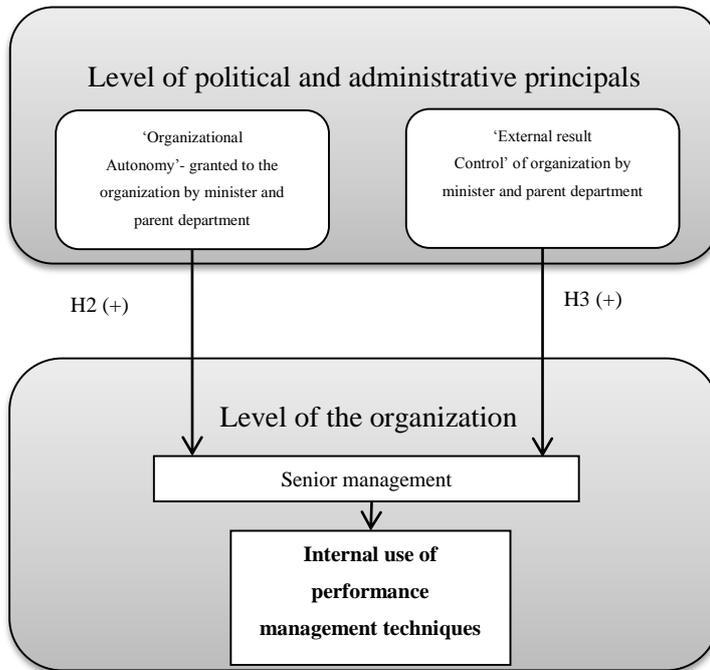
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## FIGURES & TABLE

**Figure 1 Visualization of the effect of organizational autonomy and external result control on the use of internal performance management techniques**



**Table 1 Summary statistics**

Variables	Description	Original sample			Used sample		
		mean	sd	N	mean	sd	N
<b><i>Dependent variables:</i></b>							
Multi-year planning	[0/1/2] (0=no)	1.36	0.663	653	1.332	0.657	431
Internal performance-based target setting and monitoring	[0/1/2] (0=no)	1.236	0.661	650	1.260	0.634	431
Internal performance-based allocation of resources	[0/1/2] (0=no)	0.879	0.661	577	0.891	0.682	431
<b><i>Structural instrumental factors:</i></b>							
Legal distance from government	[0/1]	0.722	0.448	773	0.615	0.487	431
Personnel management autonomy	[0/1/2] (0=no & ref.cat.)	1.056	0.852	678	0.984	0.850	431
Financial management autonomy	[0/1/2] (0=no & ref.cat.)	0.678	0.747	662	0.631	0.722	431
External result control by minister	[0/1/2] (0=no & ref.cat.)	1.023	0.818	555	1.070	0.832	431
Organizational size (staff)	[0/1/2] (0=small & ref.cat.)	1.166	0.837	769	1.06	0.827	431
<b><i>Task-related factors:</i></b>							
Primary task (tangibility)	[0/1]	0.607	0.488	646	0.580	0.494	431
Income source (self-financing)	[0/1]	0.263	0.441	680	0.234	0.424	431
Budget	[0/1/2] (0=small & ref.cat.)	1.257	0.868	773	1.158	0.864	431
<b><i>Control variable</i></b>							
Age	[0/1/2] (0=young & ref. cat.)	0.934	0.814	769	0.849	0.812	431

Overall the values reported in the Original sample and Used sample columns are very similar. Furthermore differences appear to be distributed evenly over the entire population, indicating that there was no country bias in the distribution of missing values

**Table 2 Ordered logit estimations for the use of performance management techniques**

Variable	Index	Multi- year planning	Internal performance- based target- setting and monitoring	Internal performance- based allocation of resources
	odds ratio	odds ratio	odds ratio	odds ratio
<b>Structural instrumental factors</b>				
Legal distance from government	1.456 (0.410)	1.448 (0.467)	0.937 (0.295)	1.616 (0.500)
Some personnel management autonomy	1.213 (0.306)	1.801** (0.533)	0.911 (0.265)	1.031 (0.288)
High personnel management autonomy	0.873 (0.249)	1.711 (0.563)	0.582* (0.188)	0.919 (0.287)
Some financial management autonomy	1.167 (0.279)	1.061 (0.290)	1.524 (0.416)	0.881 (0.232)
High personnel management autonomy	1.629 (0.559)	1.829 (0.730)	1.715 (0.663)	1.140 (0.426)
Some external result control by minister	1.628** (0.384)	1.720** (0.458)	2.078*** (0.549)	0.960 (0.249)
High external result control by minister	3.044*** (0.733)	2.793*** (0.772)	3.013*** (0.822)	1.799** (0.470)
Medium organizational size	1.471 (0.368)	1.256 (0.355)	1.708* (0.481)	1.310 (0.355)
Large organizational size	1.480 (0.391)	1.113 (0.329)	1.628* (0.472)	1.397 (0.398)
<b>Task-related factors</b>				
Primary task (tangibility)	1.446* (0.282)	1.940*** (0.432)	1.075 (0.236)	1.222 (0.261)
Income source (self-financing)	1.233 (0.267)	1.103 (0.278)	0.984 (0.241)	1.159 (0.277)
Medium budget	1.166 (0.319)	1.140 (0.353)	1.233 (0.381)	0.979 (0.289)
Large budget	1.957** (0.546)	1.886** (0.599)	1.591 (0.491)	1.559 (0.473)
<b>Control variable (age)</b>				
Medium age	0.709 (0.160)	0.946 (0.243)	1.021 (0.255)	0.457*** (0.113)
High age	1.076 (0.248)	1.095 (0.297)	0.799 (0.211)	1.226 (0.314)
Country dummies	Included	Included	Included	Included
N	431	431	431	431
Constant	0.192*** (0.113)	1.015 (0.610)	0.438 (0.263)	1.428 (0.811)
Constant	0.862 (0.462)	20.38*** (12.60)	10.72*** (6.517)	21.73*** (12.86)
McKelvey & Zavoina's R <sup>2</sup>	0.264	0.294	0.219	0.181
Log-Likelihood	-702.608	-348.482	-360.810	-397.932
Joint significance of country dummies	$\chi^2(7)=66.52***$	$\chi^2(7)=42.68***$	$\chi^2(7)=42.68***$	$\chi^2(7)=42.69***$
Joint significance of pers. man.aut.	$\chi^2(2)=1.75$	$\chi^2(2)=4.43$	$\chi^2(2)=3.33$	$\chi^2(2)=0.17$
Joint significance of fin. man. aut.	$\chi^2(2)=1.31$	$\chi^2(2)=2.71$	$\chi^2(2)=2.83$	$\chi^2(2)=0.74$
Joint significance of external res.contr.	$\chi^2(2)=15.65***$	$\chi^2(2)=13.08***$	$\chi^2(2)=17.06***$	$\chi^2(2)=7.09**$
Joint significance of organizational size	$\chi^2(2)=2.93$	$\chi^2(2)=4.19$	$\chi^2(2)=4.19$	$\chi^2(2)=1.56$
Joint significance of age	$\chi^2(2)=3.19$	$\chi^2(2)=0.91$	$\chi^2(2)=0.91$	$\chi^2(2)=14.20***$
Joint significance of budget	$\chi^2(2)=6.50**$	$\chi^2(2)=2.28$	$\chi^2(2)=2.28$	$\chi^2(2)=3.07$

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3 Summary of results**

Hypotheses	Confirmed by model
Structural-instrumental perspective:	
<b>H1:</b> Agencies at a larger legal distance from government, i.e. which have their own legal identity, will make more internal use of performance management techniques than agencies closer to government, i.e. without their own legal identity.	No
<b>H2:</b> Agencies with higher levels of managerial autonomy make more internal use of performance management techniques than agencies with lower levels of managerial autonomy.	No
<b>H3:</b> Agencies with higher levels of external result control exercised by their minister and parent ministry use internally more performance management techniques than agencies with lower levels of result control.	Yes (for index and all three techniques)
<b>H4:</b> Larger agencies will make more internal use of performance management techniques than smaller agencies.	No
Task-related institutional perspective:	
<b>H5:</b> Agencies with a relatively tangible primary task will make more internal use of performance management techniques than agencies with less tangible primary tasks.	Yes for index and for multi-year planning
<b>H6:</b> Agencies that predominantly depend upon self-generated income will make more internal use of performance management techniques compared to those agencies that are fully or predominantly dependent from funding from government.	No
<b>H7:</b> Agencies with larger budgets will make more use of performance management techniques.	Yes for index

## Appendix

**Table 4** survey questions used for construction of indexes on autonomy

Strategic personnel management autonomy	<p>Provided that the organization has own staff, can the organization without interference from above (without ministerial or departmental influence) set the general policy for the organization conditions for promotions?</p> <p>Provided that the organization has own staff, can the organization without interference from above (without ministerial or departmental influence) set general policy for the level of salaries?</p> <p>Provided that the organization has own staff, can the organization without interference from above (without ministerial or departmental influence) set general policy for the way of evaluating personnel?</p>
Strategic financial management autonomy	<p>Can your organization itself shift between the budgets for personnel- running costs without approval from above (ministerial or departmental approval)?</p> <p>Can your organization itself set tariffs for services or products without approval from above (ministerial or departmental approval)?</p> <p>Can your organization itself shift between the budgets for personnel or running costs on the one hand and investments on the other hand without approval from above (ministerial or departmental approval)?</p>

### Robustness checks on Common Method Bias (CMB)

In order to check the risks of CMB for the relation between ‘external result control by minister’ and the dependent variables – internal use of different performance management techniques, we ran two different analyses, which are shown in the table 5 and 6. A first alternative model uses a simplified measurement of external result control by the minister, focusing only on the first item (whether or not the political and administrative principals (i.e. minister and parent ministry) hold the agencies’ CEO accountable), as well as a simplified measurement of the dependent variable, only focusing on multi-year planning as a technique. As discussed under Descriptive Statistics, one could make the assumption that the relation between the variable external result control by the minister and the use of performance management techniques is likely to be subject to endogeneity and in particular CMB. By making use of a simplified measure for external result control by the minister, this likelihood is being reduced since it decreases the subjectivity of this variable. Moreover, by using this simplified measure in a regression on the variable multi-year planning the likelihood of CMB should be low since both variables more clearly capture strongly different concepts (see also Descriptive Statistics where this argument is more elaborately discussed). This in turn reduces the likelihood of respondents being in a similar mindset when responding on the related survey questions and thus decreases the probability of having CMB. Table 5 in the Appendix illustrates the results, which are in line with results reported in the original model (see Table 2). Therefore, the results of this alternative model which uses items which are considered less prone to CMB problems indicates that such a bias is rather unlikely. A second model, however, allows us to examine what happens when we leave out the independent variable “external result control by minister,” as this is the variable that runs the highest risk for CMB problems in relation to the dependent variables. It thus goes a bit further than the first robustness checks since the variable which is most believed to introduce CMB is dropped from the model. This alternative model is reported in Table 6. For this model, size and type are significant. This is however to be expected as size and type are related to external result control by the parent minister of ministry. Apart from these (to be expected) observations, we do not observe any significant differences between these robustness checks and Table 2.

**Table 5 Robustness check with a reduced form of the variable result control**

VARIABLES	Multi-year planning odds ratio
<b>Structural instrumental factors</b>	
Medium size	1.302 (0.366)
Large size	1.169 (0.343)
Some pers. Aut.	1.756* (0.517)
high pers. Aut.	1.722* (0.566)
Some fin. Aut.	1.032 (0.281)
High fin. Aut.	1.762 (0.701)
Result control (Is the organizations management accountable to its minister or parent department based on results and goal achievement?)	2.165*** (0.506)
Distance from government	1.473 (0.475)
<b>Task-related factors</b>	
Primary task	1.956*** (0.435)
Income source	1.087 (0.273)
Medium budget	1.135 (0.351)
Large budget	1.950** (0.618)
<b>Control variable (age)</b>	
Medium age	0.980 (0.251)
Large age	1.085 (0.293)
Country dummies	Included
N	431

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6 Robustness check with a model excluding external result control by minister (Ordered logit estimations for the use of performance management techniques)**

Variable	Index	Multi-year planning	Internal performance- based target- setting and monitoring	Internal performance based allocation of resources
	odds ratio			
<b>Structural instrumental factors</b>				
Legal distance from government	1.256 (0.353)	1.383 (0.442)	0.889 (0.276)	1.660* (0.510)
Some personnel management autonomy	0.906 (0.233)	1.810** (0.529)	0.906 (0.260)	0.996 (0.277)
High personnel management autonomy	0.659 (0.191)	1.609 (0.525)	0.552* (0.177)	0.886 (0.276)
Some financial management autonomy	1.277 (0.305)	1.174 (0.314)	1.705** (0.455)	0.899 (0.232)
High personnel management autonomy	1.383 (0.487)	1.767 (0.697)	1.593 (0.607)	1.102 (0.409)
Medium organizational size	1.815** (0.462)	1.412 (0.393)	1.911** (0.529)	1.392 (0.374)
Large organizational size	1.712** (0.456)	1.202 (0.351)	1.744* (0.498)	1.498 (0.424)
<b>Task-related factors</b>				
Primary task (tangibility)	1.208 (0.240)	1.929*** (0.427)	1.078 (0.234)	1.233 (0.263)
Income source (self-financing)	1.119 (0.250)	1.067 (0.266)	0.958 (0.232)	1.127 (0.267)
Medium budget	1.156 (0.324)	1.194 (0.368)	1.271 (0.387)	1.002 (0.294)
Large budget	1.923** (0.540)	2.104** (0.665)	1.731* (0.526)	1.681* (0.508)
<b>Control variable (age)</b>				
Medium age	0.731 (0.166)	1.023 (0.259)	1.109 (0.273)	0.492*** (0.120)
High age	0.975 (0.228)	1.060 (0.285)	0.763 (0.200)	1.169 (0.298)
Country dummies	Included	Included	Included	Included
N	431	431	431	431
Constant	0.191*** (0.0990)	0.496 (0.280)	0.195*** (0.110)	1.053 (0.560)
Constant	0.914 (0.456)	9.228*** (5.275)	4.287*** (2.402)	15.46*** (8.548)
McKelvey & Zavoina's R <sup>2</sup>	0.167	0.294	0.177	0.163
Log-Likelihood	-594.67	-355.58	-369.61	-401.51
Joint significance of country dummies	$\chi^2(7)=49.02***$	$\chi^2(7)=42.22***$	$\chi^2(7)=41.61***$	$\chi^2(7)=34.31***$
Joint significance of pers. aut.	$\chi^2(2)=2.27$	$\chi^2(2)=4.31$	$\chi^2(2)=4.12$	$\chi^2(2)=0.21$
Joint significance of fin. aut.	$\chi^2(2)=1.25$	$\chi^2(2)=2.11$	$\chi^2(2)=4.03$	$\chi^2(2)=0.50$
Joint significance of size	$\chi^2(2)=6.22**$	$\chi^2(2)=1.54$	$\chi^2(2)=6.11**$	$\chi^2(2)=2.32$
Joint significance of age	$\chi^2(2)=2.10$	$\chi^2(2)=0.05$	$\chi^2(2)=1.85$	$\chi^2(2)=11.63***$
Joint significance of budget	$\chi^2(2)=6.11**$	$\chi^2(2)=6.15**$	$\chi^2(2)=3.29$	$\chi^2(2)=4.02$

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

