

# **CENTRALIZATION, ORGANIZATIONAL STRATEGY AND PUBLIC SERVICE PERFORMANCE**

We test the separate and joint effects of centralization and organizational strategy on the performance of 53 UK public service organizations. Centralization is measured as both the hierarchy of authority and the degree of participation in decision-making, while strategy is measured as the extent to which service providers are prospectors, defenders and reactors. We find that centralization has no independent effect on service performance, even when controlling for prior performance, service expenditure and external constraints. However, the impact of centralization is contingent on the strategic orientation of organizations. Centralized decision-making works best in conjunction with defending, and decentralized decision-making works best in organizations that emphasize prospecting.

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## **INTRODUCTION**

Service improvement is at the heart of contemporary debates in public management. Governments across the globe have introduced a swathe of reforms to enhance the effectiveness and responsiveness of public services (Batley and Larbi 2004; Pollitt and Bouckaert 2004). Many of these policies have focused attention on the internal characteristics of public organizations. In particular, the degree to which decision-making is centralized and the quality of strategic management have been identified by policy-makers and scholars as determinants of public service performance that are readily susceptible to political and managerial control. The mantras of New Public Management (particularly its general preference for decentralized organizational structures, see Osborne and Gaebler 1992), have greatly influenced these developments. Decentralization is hypothesized to improve public services by empowering service managers to make service delivery decisions, while effective strategizing is thought to make organizations flexible and “fit for purpose”. These ideas were reflected in the Reinventing Government movement in the US, and more recently have formed an integral part of the modernization agenda pursued by the Labour government in the UK (Walker and Boyne 2006).

Governments have sought to encourage the adoption of more decentralized structures as a means for improving decision-making and enhancing the customer orientation of public organizations. In addition to a focus on developing new organizational structures, they are also increasingly urging public managers to adopt more enterprising and innovative strategies for delivering services (e.g. OPSR 2002; Performance and Innovation Unit 2001). Such prescriptions for internal change present an ideal opportunity for public management scholars seeking to understand the relationship between organizational characteristics and performance. What

organizational structures are conducive to better performance? Are these mediated by other important internal organizational features? In particular, Miles and Snow's classic (1978) account of strategic management argues that organizations will perform better if their structure follows their strategy. Does performance improve when decision-making within public organizations is tightly aligned with strategy?

In the first part of the article we develop hypotheses on the impact of centralization and strategy on public service performance. The second part of the article describes our research design, data and measures. The results of our statistical analysis of the performance of Welsh local service departments are then presented and discussed. Finally, conclusions are drawn on the relationship between centralization, strategy and performance in the public sector.

## **CENTRALIZATION AND PERFORMANCE**

One of the core functions for public managers is the creation of appropriate structures that can provide system stability and institutional support for a host of other internal organizational elements, such as values and routines (O'Toole and Meier 1999). The degree to which decision-making is centralized or decentralized is a key indicator of the manner in which an organization allocates resources and determines policies and objectives. It is, moreover, an issue that has long been recognized as a critical area of research on organizational structure (see Pugh, Hickson, Hinings and Turner 1968). For organizational theorists, the relative degree of centralization within an organization is signified by the "hierarchy of authority" and the "degree of participation in decision-making", as these aspects of structure reflect the distribution of power across the entire organization (Carter and Cullen 1984; Glisson and Martin 1980; Hage and Aiken 1967, 1969). Indeed, a large number of studies of

organizational structure in the public, private and nonprofit sectors measure the extent of centralization by assessing both of these dimensions of centralization (Allen and LaFollette 1977; Carter and Cullen 1984; Dewar, Whetten and Boje 1980; Hage and Aiken 1967, 1969; Glisson and Martin 1980; Jarley, Fiorito and Delaney 1997; Negandhi and Reimann 1973). Hierarchy of authority refers to the extent to which the power to make decisions is exercised at the upper levels of the organizational hierarchy, while participation in decision-making pertains to the degree of staff involvement in the determination of organizational policy.

A centralized organization will typically have a high degree of hierarchical authority and low levels of participation in decisions about policies and resources; while a decentralized organization will be characterized by low hierarchical authority and highly participative decision-making. Thus, where only one or a few individuals make decisions, an organizational structure may be described as highly centralized. By contrast, the least centralized organizational structure possible is one in which all organization members are responsible for and involved in decision-making.

The relationship between structure and performance is a timeless concern for students of public administration. Woodrow Wilson (1887) suggested that “philosophically viewed” the discipline was chiefly concerned with “the study of the proper distribution of constitutional authority” (213). Classical theorists of bureaucracy regard the relative degree of centralization as integral to understanding how an organization’s decision-making processes are conducive to greater organizational efficiency (Gulick and Urwick 1937; Weber 1947). Although these early theorists primarily focused on the degree of hierarchical authority within organizations, the extent of decision participation has increasingly become recognized as a critically important aspect of centralization (see Carter and Cullen 1984). Herbert

Simon (1976) stressed that an organization's anatomy was constituted both by the allocation and the distribution of decision-making functions.

By providing an indication of "how power is distributed among social positions" throughout an organization (Hage and Aiken 1967, 77), the "hierarchy of authority" and "participation in decision-making" can illustrate how the "structuring" of an organization has implications for organizational effectiveness (Dalton, Todor, Spendolini, Fielding and Porter 1980). There is a wealth of material on organizational centralization and performance in the private sector (e.g. Adler and Borys 1996; Jung and Avolio 1999; Kirkman and Rosen 1999) and a growing literature on street-level bureaucracy in the public sector, pertaining to those individuals responsible for directly providing public services, such as teachers, police officers and social workers (e.g. Lipsky 1980; Maynard-Moody and Musheno 2003; Ricucci 2005). However, there is still comparatively little research investigating the effects of the degree of centralization within public organizations on public service performance.

Organizational structures are assumed to provide a pervasive foundation for achieving coordination and control within an organization. They simultaneously constrain and prescribe the behaviour of organization members (Hall 1982), and perform a symbolic function indicating that someone is "in charge" (Pfeffer and Salancik 1978). As a result, it may reasonably be expected that the degree of centralization will have a significant effect on organizational outcomes. Some researchers contend that even modest improvements in the structuring of organizations can generate large gains for customers, employees and managers (see Starbuck and Nystrom 1981). However, despite their pervasiveness, the impact of 'structuring' dimensions of an organization is contingent on many other organizational characteristics, such as strategy processes (Pettigrew 1973; Pfeffer

1981), and on the serendipitous nature of organizational life in general. It is therefore likely that the degree of participation in decision-making may have mixed effects on performance.

On the one hand, it has been suggested that centralized decision-making is integral to the effective and efficient functioning of any large bureaucracy (e.g. Goodsell 1985; Ouchi 1980). For example, Taylor (1911) famously argued that the ‘scientific’ management of organizations was only possible where decision-making was restricted to a small cadre of planners. On the other hand, centralization is associated with many of the dysfunctions of bureaucracy, especially rigidity, red tape and abuses of monopoly power (e.g. Downs 1967; Niskanen 1971; Tullock 1965). For instance, Lipsky (1980) highlighted that bureaucratic controls may lead front-line staff to devote disproportionate time to finding ways to by-pass established decision-making procedures, thereby damaging internal and external accountability. Broadly speaking, then, the substance of this divergence about the structuring of internal decision-making is summarized in two rival positions. Proponents of centralized decision-making suggest that it leads to better performance by facilitating greater decision speed, providing firm direction and goals, and establishing clear lines of hierarchical authority thereby circumventing the potential for damaging internal conflict. By contrast, supporters of more participative decision-making suggest that centralization harms performance by preventing middle managers and street-level bureaucrats from making independent decisions, enshrining inflexible rules and procedures, and undermining responsiveness to changing environmental circumstances. The plausibility of both views thus implies that centralization may have inconsistent, contradictory or even no meaningful effects on performance.

## **Prior Research**

Empirical studies in the private sector have failed to find a consistent or substantial relationship between centralization and performance (see Bozeman 1982; Dalton, Todor, Spendolini, Fielding and Porter 1980; Wagner 1994). Likewise, studies in the public sector have so far uncovered contrasting effects on performance (see table 1). Centralization has been shown by Glisson and Martin (1980) to have a large statistically significant positive effect on the productivity of human service organizations in the US, even when controlling for other aspects of organizational “structuring” such as formalization. They also found a small positive effect on efficiency. However, although this study implies that centralization may play an important role in determining the quantity of organizational output, its effect may be related in a different manner to alternative measures of service performance. For instance, Whetten (1978) found that centralization had a positive effect on the output of US manpower agencies, but a negative one on staff perceptions of effectiveness. Maynard-Moody, Musheno and Palumbo’s (1990) analysis of street-level bureaucracy highlights that program implementation in two contrasting US community correctional organizations was best where there was “greater street-level influence in policy processes” (845). Indeed, other researchers have furnished evidence to suggest that excluding professional staff from decision-making is likely to result in poor quality public services (Ashmos, Duchon, McDaniel, Jr 1998; Holland 1974; Martin and Segal 1977).

[Position of TABLE 1]

Research which has drawn exclusively on subjective ratings of organizational effectiveness has found little or no relationship between centralization and performance. While Moynihan and Pandey (2005) uncover a negative relationship between centralization and perceptions of effectiveness in 83 US human and health services, Wolf's exhaustive (1993) case survey of bureaucratic effectiveness found no significant relationship between centralization and performance in a range of US federal agencies. Similarly, in an earlier investigation, Fiedler and Gillo (1974) show that decentralizing decision-making has little effect on the comparative performance of different faculties within community colleges. Researchers have stated that the lack of appropriate hard performance criteria is the major weakness of studies of centralization in both the public and private sector (Dalton, Todor, Spendolini, Fielding and Porter 1980). To remedy this we use a hard measure of publicly audited service achievements in our analysis.

Overall, theoretical arguments and the small number of existing empirical studies of organizational structure and public service delivery suggest that centralization is likely to have contradictory effects (if any) on performance. This leads to the following null hypothesis:

$H_0$  centralization is unrelated to performance.

## **CENTRALIZATION AND PUBLIC SERVICE PERFORMANCE: THE MODERATING EFFECT OF STRATEGY**

Although the existing evidence on centralization and public service performance is mixed, it is likely that the effect of structure on performance is mediated by other organizational characteristics. Contingency theorists argue that one important way in



which effectiveness can be maximized is by developing appropriate linkages between different internal management characteristics (Doty, Glick and Huber 1993). In particular, Chandler (1962) famously argued that strategic choice was the critical variable in explaining how organizations could successfully achieve the optimum fit between the articulation and achievement of their goals. To fully understand how the degree of centralization may influence performance, it is therefore important to explore the combined effect of centralization and strategy, particularly as there is currently no prior research on this critical issue in the public sector.

Organizational strategy can be broadly defined as the overall way in which an organization seeks to maintain or improve its performance. This is relatively stable and unlikely to alter dramatically in the short term (Zajac and Shortell 1989). We base the conceptualization of strategy used in our analysis on Miles and Snow's (1978) four "ideal types" of organizational stance. *Prospectors* are organizations that "almost continually search for market opportunities, and ... regularly experiment with potential responses to emerging environmental trends" (Miles and Snow 1978, 29). These organizations often pioneer the development of new products and services. *Defenders* are organizations that take a conservative view of new product development. They typically "devote primary attention to improving the efficiency of their existing operations" (Miles and Snow 1978, 29), competing on price and quality rather than on new services or markets. *Analyzers* represent an intermediate category, sharing elements of both prospector and defender. Rarely "first movers", they "watch their competitors closely for new ideas, and ... rapidly adopt those which appear to be most promising" (Miles and Snow 1978, 29). *Reactors* are organizations in which top managers lack a consistent and stable strategy for responding to perceived change and uncertainty in their organizational environments. A reactor "seldom makes adjustment

of any sort until forced to do so by environmental pressures” (Miles and Snow 1978, 29).

Boyne and Walker (2004) assess the application of the Miles and Snow (1978) framework to public organizations. They argue that a mix of strategies is likely to be pursued at the same time, so it is inappropriate to categorize organizations as belonging solely to a single type (e.g. reactor or prospector). This logic also implies that Miles and Snow’s “analyzer” category is redundant because all organizations are prospectors and defenders to some extent. Hence, we view the range of organizational strategies found in public organizations as comprising prospecting, defending and reacting.

Miles and Snow (1978) argued that the successful pursuit of whatever strategy was selected by an organization would depend on adopting the appropriate internal structure and processes. In other words, it was necessary to establish a *fit* between the strategy being pursued and the internal characteristics of an organization. A misalignment between strategy and structure would hinder performance. Organizations face not only an “entrepreneurial” problem (which strategy to adopt), but also an “administrative” problem (the selection of structures that are consistent with the strategy). Administrative systems have both a “lagging” and a “leading” relationship with strategy:

“As a lagging variable, the administrative system must rationalize, through the development of appropriate structures and processes, the strategic decisions made at previous points in the adjustment process. As a leading variable ... the administrative system will facilitate or

restrict the organization's future capacity to adapt" (Miles and Snow 1978, 23).

Thus, over time, strategy and structure reinforce each other. As a result, prospectors and defenders have distinctive structures, whereas reactors, lacking a coherent and stable strategy, have no consistent internal arrangements.

Miles and Snow (1978) argue that, for defenders, "the solution to the administrative problem must provide management with the ability to control all organizational operations centrally" (41). This is because a defender is attempting to maximize the efficiency of internal procedures. A defender resembles a classic bureaucracy in which "only top-level executives have the necessary information and the proper vantage point to control operations that span several organizational subunits" (Miles and Snow 1978, 44). By contrast, the prospector's administrative system "must be able to deploy and coordinate resources among many decentralized units and projects rather than to plan and control the operations of the entire organization centrally" (Miles and Snow 1978, 59). Decisions are therefore devolved to middle managers and front-line staff so that they can apply their "expertise in many areas without being unduly constrained by management control" (Miles and Snow 1978, 62). Finally, reactors, unlike defenders or prospectors, have no predictable organizational structure: some may be centralized while others are decentralized. Therefore, they "do not possess a set of mechanisms which allows them to respond consistently to their environments" (Miles and Snow 1978, 93).

This set of arguments led Miles and Snow to suppose that prospectors would be decentralized, while defenders would be centralized. Where these relationships between strategy and structure obtained, they argued, organizations would improve

their performance. Likewise, Chandler's (1962) analysis of industrial enterprises suggests that those organizations that adapt their structure to meet new strategic goals operate more efficiently and are more likely to achieve their goals. Nonetheless, Miles and Snow posit that this relationship will not hold for organizations adopting a reactor strategy, as they will be unable to develop structures consistent with their changeable strategic choices. The application of this model to the public sector therefore leads to the following hypotheses:

- H<sub>1</sub> Centralization is likely to be positively related to performance in an organization with a defender stance
- H<sub>2</sub> Decentralization is likely to be positively related to performance in an organization with a prospector stance
- H<sub>3</sub> Neither centralization nor decentralization is related to performance in an organization with a reactor stance

## **RESEARCH CONTEXT, DATA AND MEASURES**

The organizational context of our analysis is UK local government, specifically local authorities in Wales. These organizations are governed by elected bodies with a Westminster-style cabinet system of political management.<sup>1</sup> They are multipurpose authorities providing education, social care, regulatory services (such as land use planning and waste management), housing, welfare benefits, leisure and cultural services. This range of services represents a suitable context for testing the relationship between centralization, strategy and performance across different public organizations. By restricting our analysis to Welsh service departments, other

potential influences on performance, such as the policies of higher tiers of government and legal constraints, are held constant.

Some cases could not be matched when we mapped the independent variables on to the dependent variable, due to missing data within the datasets. As a result, our statistical analysis of the relationship between centralization, strategy and performance was conducted on 53 cases, comprising eight education departments, nine social services departments, seven housing departments, seven highways departments, ten public protection departments and twelve benefits and revenues departments. These departments are representative of the diverse operating environments faced by Welsh local authorities, including urban, rural, socio-economically deprived, and predominantly Welsh or English speaking areas. When estimating the separate and joint effects of centralization and strategy we also control for other potential influences on service standards.

### **Dependent Variable**

The performance of all major Welsh local authority services is measured and evaluated every year through statutory performance indicators set by their most powerful stakeholder: the National Assembly for Wales, which provides over 80% of local government's funding. The National Assembly for Wales Performance Indicators (NAWPIs) are based on common definitions and data which are obtained by councils for the same time period with uniform collection procedures (National Assembly for Wales 2001). Local authorities in Wales are expected to collect and collate these data in accordance with the Chartered Institute of Public Finance and Accountancy "Best Value Accounting – Code of Practice". The figures are independently verified, and the Audit Commission assesses whether "the management

systems in place are adequate for producing accurate information” (National Assembly for Wales 2001, 14). Because Welsh local authorities are judged on the same set of indicators by their primary stakeholder, we are able to compare the performance of organizations with varying strategies and structures. Prospecting, defending and reacting service departments are all expected to achieve the same objectives, but they are free to do so in distinctively different ways.

For our analysis we used 29 of the 100 service delivery NAWPIs available for 2002 that focus most closely on service performance, examples of which include: the average General Certificate in Secondary Education (GCSE) score, the number of pedestrians killed or seriously injured in road accidents and the percentage of welfare benefit renewal claims processed on time (see table 1A in the Appendix for the full list). To standardize the NAWPIs for comparative analysis across different service areas we took z-scores of each performance indicator<sup>2</sup> for all Welsh authorities and created composite measures of performance by combining different indicators within a service to produce an average score which was then combined with other service scores.<sup>3</sup> Table 2 lists the descriptive data and sources for our dependent variable.

[Position of TABLE 2]

## **Independent Variables**

### ***Organizational Centralization and Strategy***

Data on centralization and strategy were derived from an electronic survey of senior and middle managers in Welsh local authority service departments conducted in autumn 2002. Survey respondents were asked a series of questions on strategic management in their service. For each question, informants placed their service on a

seven-point Likert scale ranging from 1 (disagree with the statement) to 7 (agree with the statement).<sup>4</sup>

We collected data from different tiers of management to ensure that our analysis took account of different perceptions within the service departments. This surmounts sample bias problems associated with surveying informants from only one organizational level. Heads of service and middle managers were selected for the survey because research has shown that attitudes differ between hierarchical levels within organizations (Aiken and Hage 1968; Payne and Mansfield 1973; Walker and Enticott 2004).<sup>5</sup> These informants are also the organizational members who are likely to know most about structure and strategy. The sampling frame consisted of 198 services and 830 informants. Responses were received from 46 per cent of services (90) and 29 per cent of individual informants (237) – a similar response rate to studies of strategic management and performance in the private sector (e.g. Gomez-Mejia 1992; Zahra and Covin 1994). Time-trend extrapolation tests for nonrespondent bias (Armstrong and Overton 1977) revealed no significant differences between the views of early and late respondents to the survey. Nonetheless, it is still conceivable that our findings are limited by the possibility that the 70% of survey non-respondents may have provided different responses to those that were received.

Our measures of organizational centralization are based on variables which evaluate both the power to make decisions and the degree of involvement in decision-making at different levels within the sample organizations (Hart and Banbury 1994). Four items from the survey were used to measure hierarchy of authority and participation in decision-making (see table 2). Hierarchy of authority was measured by combining two items focusing on whether strategy-making was carried out by the Chief Executive Officer alone or collectively within the senior management team.

Participation in decision-making was assessed by combining two items gauging the degree of staff involvement in decision-making. The resulting measures of *hierarchy of authority* and *participation in decision-making* exhibit strong Cronbach's Alpha internal reliability scores of .74 and .89 respectively (Nunnally 1978).

Our measures of organizational strategy are listed in table 3. To explore the extent to which Welsh local authorities displayed defender characteristics, informants were asked three questions assessing whether their approach to service delivery was focused on core activities and achieving efficiency (Miller 1986; Snow and Hrebiniak 1980; Stevens and McGowan 1983). A prospector strategy was operationalized through four measures of innovation and market exploration, as these are central to Miles and Snow's (1978) definition of this orientation. The specific measures are derived from Snow and Hrebiniak (1980) and Stevens and McGowan (1983). To evaluate the presence of reacting characteristics our informants were asked five questions about the existence of definite priorities in their service and the extent to which their behaviour was determined by external pressures. These measures were primarily based on prior work (Snow and Hrebiniak 1980).

[Position of TABLE 3]

Underlying strategic stances amongst Welsh local services were revealed through exploratory factor analysis of the twelve survey items for all the service departments involved in the survey. This produced three statistically significant and clear factors that explained 67.1 per cent of the variance in the data. The results indicated that measures of defending, prospecting, and reacting load on one common factor each. The eigenvalues for all three factors are high, suggesting that the services sampled in



this study display distinctive strategies. The factor loadings are all 0.4 or more, and are therefore important determinants of the variance explained by the factors (Hair, Anderson, Tatham, and Black 1998). The prospecting and reacting factors have excellent Cronbach's Alpha internal reliability scores of .82 and .84 respectively (Nunnally 1978). Although the defending factor has a comparatively low Cronbach's Alpha score of .60, it is nevertheless suitable for exploratory analysis of new scales (Loewenthal 1996).

### ***Past Performance***

Public organizations are best understood as autoregressive systems which change incrementally over time (Meier and O'Toole 1999; O'Toole and Meier 2004). This indicates that performance in one period is strongly influenced by performance in the past. It is important to include prior achievements in statistical models of performance, to ensure that the coefficients for other variables such as centralization and strategy are not biased. We therefore entered performance in the previous year in our analysis of service standards in 2002/03. By including the autoregressive term, the coefficients for structure and strategy also show what these variables have added to (or subtracted from) the performance baseline.

### ***Service Expenditure***

Performance may vary not only because of internal decision-making characteristics and organizational strategies, but also because of the financial resources expended on services. Spending variations across services may arise for a number of reasons (the level of central government support, the size of the local tax base, and departmental shares of an authority's total budget). A comparatively prosperous service in one

authority may be able to buy better performance while a comparatively poor one in another area can afford to subsidize only mediocrity. Prior research suggests that public expenditure levels do have a significant positive impact on performance (Boyne 2003). We controlled for potential expenditure effects by using figures drawn from the 2000/01 NAWPIs.<sup>6</sup>

### ***External Constraints***

The Average Ward Score on the Index of Multiple Deprivation (Department of Environment, Transport and Regions 2000) was used as a measure of the quantity of service needs. This deprivation score is the standard population-weighted measure of deprivation used by UK central government. It provides an overview of the different domains of deprivation (e.g. income, employment and health). To measure diversity of service need we squared the proportion of each ethnic group (taken from the 2001 census, Office for National Statistics 2003) within a local authority and then subtracted the sum of the squares of these proportions from 10,000. The measure gives a proxy for “fractionalization” within a local authority area, with a high level of ethnic diversity reflected in a high score on the index.<sup>7</sup>

### ***Interviews with Service Managers***

As well as conducting the survey, we interviewed 32 managers in a sample of Welsh local authority services during 2003. These interviewees were survey respondents who indicated a willingness to discuss strategic management in their service in more depth. Semi-structured interview schedules were used, subject to strict principles of confidentiality. The interviews explored issues arising from the survey return for each respondent’s service. In particular, the nature of decision-making and strategy-making

within services identified by our survey data as primarily prospecting, defending and reacting. The information obtained from these interviews provided further data on the links between centralization, strategy and performance across a range of services and authorities. This, in turn, aided interpretation of the results of our statistical model.

## STATISTICAL RESULTS

The results for the statistical tests of the impact of centralization and strategy on public service performance are shown in tables 4 and 5. We present four models in the following sequence: model 1 contains the control variables and our *hierarchy of authority* measure. By including all three interaction terms in model 2, we then show, when controlling for other strategy-structure configurations, which strategic stance most moderates the effect of *hierarchy of authority*.<sup>8</sup> Model 3 contains the control variables and our *participation in decision-making* measure. The inclusion of all three interaction terms in model 4 shows which strategy has the most important moderating effect on the relationship between *participation in decision-making* and performance, when controlling for other strategy-structure configurations. The average Variance Inflation Factor (VIF) score is less than 2 for all the independent variables in each model (including those with multiple interactions included). The results are therefore not distorted by multicollinearity (Bowerman and O'Connell 1990). In all of the models, robust estimation of the regression standard errors was used to correct for the potential effects of non-constant error variance (Long and Ervin 1980).

The average  $R^2$  of the models is above 70% and is significant at 0.01 or better. Furthermore, all the control variables have the expected signs and most (3 out of 4) are statistically significant in each model. Performance is indeed autoregressive – the relative success of service departments tends to be stable from one year to the next.

Nevertheless, service standards are influenced by other variables. In particular, deprivation and ethnic diversity, as expected, consistently have a significant negative association with performance. The effects of the performance baseline and external constraints suggest that the models provide a sound foundation for assessing the effects of centralization and strategy.<sup>9</sup>

### **Centralization and Performance**

The results for model 1 shown in table 4 and model 3 in table 5 support our null hypothesis for centralization and performance. The coefficients for *hierarchy of authority* and *participation in decision-making* are statistically insignificant.

[Position of TABLE 4]

The results suggest that neither centralized nor decentralized decision-making has an independent effect on public service performance. However, it is conceivable that the supposed costs and benefits of centralization for service performance cancel each other out: fast decision-making may be counterbalanced by a need for building support for decisions in public organizations which are held accountable by many different stakeholders, including politicians, service users, the media and employees. Alternatively, it may simply be the case that the degree of both hierarchy of authority and participation in decision-making are unrelated to how well services perform. The actual process of service delivery and its outcomes are not affected if an organization concentrates the opportunity and power to make decisions in only a few hands or if decision-making is distributed more evenly throughout an organization. A further possibility is that the effects of centralization are mediated by other critical

determinants of performance, especially organizational strategy. The introduction of our strategy interactions within the model provides strong support for this explanation.

### **Centralization, Strategy and Performance**

The statistical results presented in models 2 and 4 are consistent with H<sub>1</sub>: the coefficients for “*hierarchy of authority times defending*” and “*participation in decision-making (inverted) times defending*” are positive and statistically significant. However, the evidence is only partially consistent with H<sub>2</sub>: the coefficient for “*participation in decision-making times prospecting*” is statistically significant with a positive sign in model 4, while the coefficient for “*hierarchy of authority (inverted) times prospecting*” in model 2 is not statistically significant. The results furnish support for H<sub>3</sub>: the coefficients for each “basic structure term times reacting” are all statistically insignificant. The findings thus provide a clear indication that centralized defenders are likely to have high performance: the coefficients for both “*hierarchy of authority times defending*” and “*participation in decision-making (inverted) times defending*” are positive and statistically significant, even when controlling for alternative strategy-structure configurations. The models also suggest that prospecting will improve performance if carried out in combination with a high level of decision participation, but that we cannot be certain about its influence on service achievements when combined with a low degree of hierarchical authority.<sup>10</sup> F-tests revealed that the R<sup>2</sup> change when interaction terms are introduced was statistically significant at the 0.01 per cent level. This highlights that the degree of “fit” between strategy and structure is an important determinant of public service performance.

[Position of TABLE 5]

Organizations that adopt a defending strategy enhance their performance if they centralize authority and reduce decision participation. Although research has shown that centralized decision-making can increase goal ambiguity (Pandey and Wright 2006), it may be especially conducive to maintaining stable service priorities where top management teams have adopted a strategy of making operations more efficient. Whetten's (1978) study of manpower agencies suggests that centralization facilitates such production-orientated goals because it reduces environmental uncertainty and provides a clear indication of the service mission to middle managers and front-line staff. Indeed, one of our interviewees in a defending service suggested that management and decision-making in the service had become more centralized as the Corporate Management Board sought to respond to an increasingly hostile operating environment. This had increased efficiency by reducing the "inconsistencies" sometimes associated with decentralized decision-making, especially intra-organizational communication and office administration costs.

Centralization may have had a positive influence on the recent introduction of performance management and planning in Welsh local government (Boyne, Gould-Williams, Law and Walker 2002). Miles and Snow (1978) argue that such organizational processes are key characteristics of successful defenders. In another defending service, an interviewee highlighted that the implementation of a new performance management framework had hinged on "a lot of pulling together with the director and the [authority's] Chief Executive Officer". It is conceivable that defending is especially conducive to the achievement of objectives which are comparatively stable over time. Although many NAPWIs are of recent origin, some

formally gauge service departments' achievements against well-established measures of performance, such as school examination results. By focusing on core activities and maintaining stable priorities, defending may improve performance on such indicators at a more consistent rate than an innovative and risk-taking prospecting strategy.

Organizations which encourage staff involvement in decision-making provide better services if they are prospectors, but appear to be unlikely to reap improvements by delegating the authority to make decisions. Involving staff in decision-making may enable senior managers to more effectively identify opportunities for improving service delivery. Decision participation can maximize the points of contact between service managers and users, leading to more responsive service development. Evidence from the mental health care sector suggests decentralizing decision-making enables managers to provide clients with more individual attention leading to better clinical outcomes (Holland 1973). Similarly, Maynard-Moody, Musheno and Palumbo (1990) stress that: street-level bureaucrats "savvy about what works as a result of daily interactions with clients, should have a stake in the decision-making process" (845). Decision participation can permit greater leeway for independent thinking to influence strategic management. An interviewee from a successful prospecting education service indicated that their high performance had been partly attributable to increased involvement of school head-teachers in strategic decision-making.

By contrast, the coefficient for the interaction with hierarchy of authority suggests that prospecting organizations may be unlikely to achieve gains in performance by devolving control over strategic decisions. It seems to make no difference whether prospecting organizations have a low or high degree of hierarchical authority. Our findings therefore suggest that participation in decision-

making may be the most influential aspect of centralization in determining organizational outcomes. Indeed, the coefficients for our significant decision participation interactions are larger than those for our significant hierarchy interaction. This buttresses Hage and Aiken's (1967) conclusion that "participation in decision-making seems to be the more important dimension of the distribution of power than hierarchy of authority" (p.88).

McMahon (1976), Richter and Tjosvold (1980) and Tannenbaum (1962) all find that extending participation in decision-making can increase organizational effectiveness by enhancing mutual influence, motivation and satisfaction. Our qualitative data furnishes some evidence corroborating these results for prospecting organizations. In one prospecting service, an interviewee stated that more decentralization meant that "staff morale has improved, because there is more feedback on how they are performing." Such affective consequences may be less evident in organizations with a low degree of hierarchy, because middle managers and front-line staff may simply be held individually rather than collectively responsible for decisions. In other words, the potentially positive influence of professionalization on organizational performance is likely to be contingent on decision participation rather than the chain of command (see Hage and Aiken 1967). The combined effect of different aspects of decentralization and employee norms and motivation within public organizations is an issue which merits extended empirical investigation.

The degree of hierarchy of authority and participation in decision-making made no difference to the performance of organizations that adopted a reactor strategy. For reactors, strategy is typically set by external circumstances. It is therefore conceivable that the relative degree of centralization does not influence service outcomes in reacting organizations because it has no substantive impact on the



content of their decisions. For example, a manager in one reacting service indicated in an interview that their decisions were essentially determined by a national strategic framework and local political issues. In such circumstances, both senior and middle managers have far less scope to positively influence service delivery decisions. An alternative explanation is that reacting organizations simply do not have the capacity to make authoritative decisions or encourage meaningful participation in decision-making even if they are presented with an opportunity to do so. In another reacting service, a manager noted in interview that he was concerned they would be unable to benefit from a less stringent performance management regime because there was “limited ability to recognize issues and deal with them.” This is consistent with evidence that the development of structures for coping with uncertainty is critical for managers seeking to increase their ability to make and implement decisions (Hinings, Hickson, Pennings and Schneck 1974).

## **CONCLUSIONS**

This article has explored the separate and joint effects of centralization and organizational strategy on public service performance. The statistical results show that variations in public service performance are unrelated to hierarchy of authority and the degree of participation in decision-making when these variables are examined in isolation; but the effect of structure on performance is mediated by organizational strategy, even when controlling for past performance, service expenditure and external constraints. As a result, Miles and Snow’s (1978) hypothesis on structure and strategy was given broad confirmation: high performance appears to be more likely for public organizations that match their decision-making structure with their strategic stance. Defending organizations with a high degree of hierarchical authority and low

staff involvement in decision-making, in particular, perform better, but prospecting organizations with high decision participation are also likely to do well. This finding was borne out in organizations with the same task. For example, further analysis of our quantitative data revealed that two high-performing education services had directly contrasting strategy-structure alignments. By contrast, hierarchy of authority and participation in decision-making make no difference to the performance of reacting organizations. These results have important implications for public management theory and practice.

Our analysis expands on work on centralization and public service performance in several ways. First, it establishes a connection between centralization, strategy and public service improvement. Previous public sector studies have so far focused on the independent impact of centralization on performance (e.g. Whetten 1978). Second, the analysis uses a “hard” measure of effectiveness that is a more robust indicator of performance than perceptual measures of output or efficiency (e.g. Glisson and Martin 1980). Because these measures are statutorily enforced by central government they are applicable to services with different strategies. Third, the unit of analysis is different service departments in multipurpose local authorities rather than functional units within single purpose organizations (e.g. Fiedler and Gillo 1974) or a single type of public service (e.g. Ashmos, Duchon, McDaniel, Jr 1998). Thus our results may be more generalizable than those obtained in previous studies, because they apply to a variety of public services. The results also complement the growing evidence base generated by public management researchers on the link between other important dimensions of organization structure and performance (e.g. Meier and Bohte 2000; Meier and O’Toole 2001).

Public service reforms often emphasize the importance of decentralized organizational structures as a means for delivering responsive and effective services (e.g. Office of Public Service Reform 2002). A modified view, given support here, is that the relative degree of hierarchy of authority and the level of participation in decision-making are significant determinants of performance only when they are matched with the “right” organizational strategy. Governments should therefore pay closer attention to the interaction of structure and strategy.

To fully explore how public organizations can benefit from matching structure and strategy it would be essential for researchers and policy-makers to trace the antecedents of strategic choice in the public sector and consider the extent to which these are susceptible to central and local discretion. In particular, contingency theorists suggest that organizations need to adapt their strategy to the environmental circumstances that they face. One study (Richardson, Vandenberg, Blum and Roman 2002) shows that such boundary conditions mediate the relationship between participation in decision-making and financial performance in healthcare treatment centres. Further investigation of the relationship between organizational “fit” and performance would provide important information on the policy levers that should be pulled to enhance the impact of public sector reform. Interactions between structure, strategy and environment could therefore be an integral part of future models of public service performance.

There are, of course, some limitations of the article. Our analysis has examined a particular group of public organizations during a specific time period. The results may simply be a product of where and when we chose to conduct the survey. It would therefore be important to identify whether the relative importance of matching structure and strategy differs over other time periods and in other organizational

settings both in the UK and elsewhere. Our use of cross-sectional data also raises the issue of causality. It is possible that causation leads in the reverse direction to that hypothesized: levels of performance in certain contexts determine the adoption of particular strategies and organizational structures (Khandwalla 1977). Nevertheless, the control for prior performance in our analysis serves to mitigate this causality problem. Future evaluations could pool data over a longer time period to study the lagged effect of strategic choice in greater depth. A further important problem with the data used here is the possibility that the dependent variable is not capturing all of the relevant dimensions of service performance.

Prior research suggests that centralization has important implications for staff and client perceptions of performance (e.g. Holland 1973; Whetten 1978). Subsequent studies could explore whether the relationships between centralization and service performance presented here are replicated for the performance assessments made by other stakeholders, such as managers, front-line staff and service users. Moreover, the remaining variation in the dependent variable may be attributable to other dimensions of organizational structure, such as formalization or specialization, which we were unable to examine with this data set. Further research on centralization, strategy and service performance would thus gain from developing and testing comprehensive models that include the separate and combined effects of additional measures of internal organizational characteristics. Exploration of the independent and combined effects of strategy and structure across organizations with very different tasks could also speak to Gulick and Urwick's (1937) classic concern with the relationship between organizational function and structure. Detailed investigation of their argument that structural form should follow function would be possible with a larger sample of organizations from each major local government service area. This could

throw further light on the relative influence of strategy and service mission on the structure-performance hypothesis.

For now, we can conclude that contingency theories offer great hope for public management scholars seeking to explain the impact of organizational structure on service performance. Our findings provided strong statistical support for the argument that appropriate combinations or configurations of structure and strategy make a difference to organizational success. As a result, this study contributes to a growing body of evidence which provides public managers with a basis for diagnosis and prescription of organizational choices.

## APPENDIX

**Table 1A Service performance and expenditure measures 2001-2003**

Service area	Effectiveness NAWPI	Expenditure NAWPI
Education	Average General Certificate in Secondary Education (GCSE) or General National Vocational Qualification (GNVQ) points score of 15/16 year olds % 15/16 year olds achieving 5 or more GCSEs at grades A*-C or the vocational equivalent % 15/16 year olds achieving one or more GCSEs at grade G or above or the vocational equivalent % 11 year olds achieving Level 4 in Key Stage 2 Maths % 11 year olds achieving Level 4 in Key Stage 2 English % 11 year olds achieving Level 4 in Key Stage 2 Science % 14 year olds achieving Level 5 in Key Stage 3 Maths % 14 year olds achieving Level 5 in Key Stage 3 English % 14 year olds achieving Level 5 in Key Stage 3 Science % 15/16 year olds achieving at least grade C in GCSE English or Welsh, Mathematics and Science in combination % 15/16 year olds leaving full-time education without a recognized qualification (inverted)	Net expenditure per nursery and primary pupil under five Net expenditure per primary pupil aged five and over Net expenditure per secondary pupil under 16 Net expenditure per pupil secondary pupil aged 16 & over
Social services	Percentage of young people leaving care aged 16 or over with at least 1 GCSE at grades A*-G, or GNVQ	Cost of children's services per child looked after
Housing	Proportion of rent collected <sup>1</sup> Rent arrears of current tenants (inverted) Rent written off as not collectable (inverted)	Average weekly management costs Average weekly repair costs
Highways	Pedestrians killed or seriously injured in road accidents per 100,000 population (inverted) Cyclists killed or seriously injured in road accidents per 100,000 population (inverted) Motorcyclists killed or seriously injured in road accidents per 100,000 population (inverted) Car users killed or seriously injured in road accidents per 100,000 population (inverted) Other vehicle users killed or seriously injured in road accidents per 100,000 population (inverted) Pedestrians slightly injured in road accidents per 100,000 population (inverted) Cyclists slightly injured in road accidents per 100,000 population (inverted) Motorcyclists slightly injured in road accidents per 100,000 population (inverted) Car users slightly injured in road accidents per 100,000 population (inverted) Other vehicle users slightly injured in road accidents per 100,000 population (inverted)	Cost of highway maintenance per 100 km travelled by a vehicle on principal roads Cost per passenger journey of subsidized bus services Average cost of maintaining street lights
Public protection	Domestic burglaries per 1,000 households (inverted)	Total net spending per capita <sup>2</sup>
Benefits & revenues	Vehicle crimes per 1,000 of the population (inverted) Percentage of renewal claims processed on time Percentage of cases processed correctly	Cost per benefit claim

1. This performance indicator was not collected in 2002/03. Thus the organizational effectiveness measure for that year is made up of only two housing PIs.
2. Spending per capita for the local government as a whole is used as expenditure data for this service area are not available.

## Footnotes

<sup>1</sup> In a Westminster political system such as the UK, the cabinet represents the *de facto* executive branch of government, and is usually made up of senior members of the ruling political party, all of whom collectively decide public policy and government strategy.

<sup>2</sup> We inverted some performance indicators (e.g. the percentage of rent written off as not collectable) so scores above the mean always indicated higher performance.

<sup>3</sup> The use of z-scores also allows the data for different services to be pooled, because the measurement process removes service effects from the scores on the indicators (Andrews, Boyne and Walker 2006). Each indicator was weighted equally for our aggregation method, ensuring that our analysis was not unduly influenced by particular indicators. Factor analysis was not used to create proxies for each performance dimension because the number of cases per service area is too small to create reliable factors (see Kline 1994). We obtained similar statistical results when we repeated our analysis using a performance measure which gave one ‘key’ indicator for each service area a weight equal to the total number of indicators in that area. For example, the percentage of benefits cases processed correctly was multiplied by two before being added together with the percentage of renewal cases processed on time and a mean benefits service score taken.

<sup>4</sup> We piloted the survey instrument with four senior managers drawn from four major services in one local authority. The instrument was improved in line with the respondents’ recommendations by adding a glossary of terms, including further questions about the nature of services, and stressing the need for respondents to provide an “honest appraisal”. Following the pilot process, e-mail addresses were collected from participating authorities and questionnaires were distributed via email.

The electronic questionnaires were self-coding and converted to SPSS format for analysis. To generate service level data suitable for our analysis, informants' responses within each service were aggregated. The average score of these was taken as representative of that service. So, for instance, if there were two informants from a highways department, one from road repair services and another from traffic planning services, then the mean of their responses was used.

<sup>5</sup> This was confirmed for our data by t-tests for differences between the views of these two echelons which revealed statistically significant different mean responses for nine out of the sixteen survey items used in our analysis. The relative distribution of respondents from the two echelons varies across organizations due to differences in structures and nonresponse rates. To ensure comparability we therefore used an unweighted mean response for each organization. Examination of the potential biases associated with this method is an important topic for further research.

<sup>6</sup> Coverage of service expenditure data is less comprehensive in the NAWPIs following this year. Furthermore, research has shown that relative levels of spending in local authority departments vary little year on year (Danziger, 1978; Sharpe and Newton, 1984). To make them suitable for analysis, the z-scores for the service expenditure indicators were taken for all Welsh authorities. Aggregated measures of expenditure for each service were then created by adding groups of relevant indicators together and taking the mean. So, for instance, we added together the z-scores for two indicators of housing expenditure (the average weekly costs per local authority dwelling of management and the average weekly costs per local authority dwelling of repairs) and divided the aggregate score in each local authority service by two. We then repeated this method for expenditure indicators in education, social services, highways, public protection and benefits and revenues, thereby deriving a single



measure of expenditure that is comparable across the six service areas. The indicators used for our expenditure measure are shown in Table 2A in the Appendix.

<sup>7</sup> Skewness tests revealed that ethnic diversity and our item measuring the extent to which strategy was made by the chief executive were not normally distributed (test results of 5.211 and 3.385). Log transformation is the standard technique for reducing the effect of positive skew, so logged versions of both variables were used in the analysis.

<sup>8</sup> Skewness tests revealed that “*hierarchy of authority times defending*” was not normally distributed (test result of -2.03). Square transformation is the usual technique for reducing the effect of negative skew, so we added thirty to this interacted term before squaring it. To aid interpretation of our results we then transformed all of our interacted terms by dividing them by 100.

<sup>9</sup> Similar results to those presented were obtained by adding each interaction singly to the base models and by using the separate items measuring hierarchy of authority and participation in decision-making. Analogous findings are also obtained when using Huber-White robust standard errors to control for the possibility of intra-class correlation (results available on request).

<sup>10</sup> The marginal effect of strategy in combination with centralization on performance is positive for each of the statistically significant interaction terms.

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**TABLE 1    Impact of centralization on public service performance**

<b>Study</b>	<b>Organizations and sample size</b>	<b>Dimension of centralization</b>	<b>Dimension of performance</b>	<b>Net effect on performance</b>
Ashmos, Duchon and McDaniel 1998	52 Texan hospitals	Participation in decision-making	Staff perceptions of output Staff perceptions of efficiency	- -
Fiedler and Gillo 1974	55 community college faculties in Washington state	Participation in decision-making	Perceptions of teaching performance	NS
Glisson and Martin 1980	30 organizations in one US city	Hierarchy of authority Participation in decision-making	Productivity Efficiency	+ +
Holland 1974	1 Massachusetts mental health institution	Hierarchy of authority Participation in decision-making	Outcomes	-
Martin and Segal 1977	23 halfway houses for alcoholics in Florida	Hierarchy of authority	Outcomes	-
Maynard-Moody, Musheno and Palumbo 1990	2 community correctional facilities in Oregon and Colorado	Participation in decision-making	Perceptions of implementation success	-
Moynihan and Pandey 2005	83 US state level health and human service agencies	Hierarchy of authority	Staff perceptions of effectiveness	-
Whetten 1978	67 New York manpower agencies	Participation in decision-making	Output Staff perceptions of effectiveness	+ -
Wolf 1993	44 US cabinet agencies	Hierarchy of authority	Bureaucratic effectiveness	NS

**TABLE 2 Descriptive statistics, including survey items for measures of centralization**

	Mean	Min	Max	s.d.
Service performance 02/03	.08	-1.56	1.92	.64
Service performance 01/02	.07	-1.51	1.92	.72
Service expenditure 00/01	.05	-1.43	2.40	.89
Deprivation	24.10	12.31	40.02	7.20
Ethnic diversity	564.35	353.27	1326.01	194.37
<i>Hierarchy of authority</i>				
Strategy for our service is usually made by the Chief Executive	2.23	1.00	6.00	1.19
Strategy for our service is usually made by the Corporate Management Team	3.30	1.00	7.00	1.65
<i>Participation in decision-making</i>				
All staff are involved in the strategy process to some degree	4.70	1.00	7.00	1.53
Most staff have input into decisions that directly affect them	4.79	1.67	7.00	1.34

Data Sources:

Service performance 2001-2003	National Assembly for Wales. 2003. <i>National Assembly for Wales Performance Indicators 2001-2002</i> . www.lgdu-wales.gov.uk; and National Assembly for Wales. 2004. <i>National Assembly for Wales Performance Indicators 2002-2003</i> . www.lgdu-wales.gov.uk
Service expenditure 2000/01	Audit Commission (2001) <i>2000/2001 Local authority performance indicators in England and Wales</i> , London: HMSO.
Deprivation	Department of Environment, Transport and Regions (2000) <i>Indices of Multiple Deprivation</i> , London: DETR.
Ethnic Diversity	Office for National Statistics. (2003). <i>Census 2001: Key Statistics for Local Authorities</i> . London: TSO. The measure comprised 16 ethnic groups: White British, Irish, Other White, White and Black Caribbean, White and Black African, White and Asian, Other Mixed, Indian, Pakistani, Bangladeshi, Other Asian, Caribbean, African, Other Black, Chinese, Other Ethnic Group.

**TABLE 3** Survey items and factor analysis for strategy archetypes

<b>Measures</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
<i>Prospector</i>			
We continually redefine our service priorities	-.31	<b>.71</b>	.07
We seek to be first to identify new modes of delivery	-.20	<b>.86</b>	.01
Searching for new opportunities is a major part of our overall strategy	-.38	<b>.74</b>	.20
We often change our focus to new areas of service provision	.11	<b>.82</b>	-.16
<i>Defender</i>			
We seek to maintain stable service priorities	-.09	.07	<b>.79</b>
The service emphasizes efficiency of provision	-.34	.31	<b>.62</b>
We focus on our core activities	.00	-.19	<b>.79</b>
<i>Reactor</i>			
We have no definite service priorities	<b>.77</b>	-.21	-.07
We change provision only when under pressure from external agencies	<b>.89</b>	-.04	-.12
We give little attention to new opportunities for service delivery	<b>.70</b>	-.41	-.10
The service explores new opportunities only when under pressure from external agencies	<b>.90</b>	-.05	-.07
We have no consistent response to external pressure	<b>.47</b>	-.35	-.23
Eigenvalues	3.31	2.95	1.79
Cumulative variance	27.60	52.21	67.10
N=90			

**TABLE 4 Hierarchy of authority, strategy and public service performance**

Independent variable	Model 1	s.e.	Model 2	s.e.
Constant	4.354**	1.482	3.948**	1.278
Past performance	.629**	.075	.611**	.066
Service expenditure	.026	.062	.072	.054
Deprivation	-.016	.009	-.018*	.007
Ethnic diversity (log)	-1.407**	.491	-1.351**	.422
Hierarchy of authority	-.020	.020	-.034*	.017
Hierarchy of authority x defending			.044**	.0015
Hierarchy of authority (inverted) x prospecting			.421	.436
Hierarchy of authority x reacting			.862	.751
R <sup>2</sup>	.625**		.730**	
Adjusted R <sup>2</sup>	.586**		.681**	
N=53				

Note: significance levels: \* $p \leq 0.05$ ; \*\* $p \leq 0.01$  (Two-tailed tests)

**TABLE 5 Participation in decision-making, strategy and public service performance**

Independent variable	Model 3	s.e.	Model 4	s.e.
Constant	4.495**	1.318	4.528**	1.139
Past performance	.659**	.070	.700**	.062
Service expenditure	.040	.057	.034	.050
Deprivation	-.019*	.008	-.023**	.007
Ethnic diversity (log)	-1.402**	.434	-1.394**	.385
Participation in decision-making	-.019	.017	-.016	.018
Participation in decision-making (inverted) x defending			1.721*	.801
Participation in decision-making x prospecting			1.020*	.456
Participation in decision-making x reacting			.603	.396
R <sup>2</sup>	.679**		.782**	
Adjusted R <sup>2</sup>	.645**		.743**	
N=53				

Note: significance levels: \* $p \leq 0.05$ ; \*\* $p \leq 0.01$  (Two-tailed tests)