

## **Organizational Capability in the Public Sector:**

### **A Configurational Approach**

Professor Rhys Andrews  
Cardiff Business School,  
Cardiff University,  
Cardiff,  
CF10 3EU,  
Wales, UK,  
Tel: +44(0)29 2087 4198,  
Email: AndrewsR4@cardiff.ac.uk

Professor Malcolm J. Beynon  
Cardiff Business School,  
Cardiff University,  
Cardiff,  
CF10 3EU,  
Wales, UK,  
Tel: +44(0)29 2087 5747,  
Email: BeynonMJ@cardiff.ac.uk

and

Dr Aoife M. McDermott  
Cardiff Business School,  
Cardiff University,  
Cardiff,  
CF10 3EU,  
Wales, UK,  
Tel: +44(0)29 2087 5065,  
Email: McDermottA@cardiff.ac.uk

**This is the authors' final draft post refereeing. This paper was published in the Journal of Public Administration Research and Theory, DOI: [10.1093/jopart/muv005](https://doi.org/10.1093/jopart/muv005)**

**Organizational Capability in the Public Sector:  
A Configurational Approach**

**ABSTRACT**

This paper brings together resource-based theory and contingency theory to analyse organizational capability in the public sector. Fuzzy-set Qualitative Comparative Analysis is used to identify configurations of organizational attributes (department size, structural complexity, agencification, personnel instability, use of temporary employees), associated with high and low organizational capability in UK central government departments. Findings identify a single core configuration of organizational attributes associated with high capability departments - low structural complexity and personnel stability. Two core configurations are associated with low capability departments – personnel instability, and the combination of structural complexity and departmental agencification. Based on the configurations evident in successful and struggling organizations, discussion illuminates potential organizational design strategies to improve public sector organizational capability.

## INTRODUCTION

For the last twenty years, the political salience of public sector performance has made the capability of public organizations to deliver increasingly cost-effective and responsive services one of the key issues vexing policy-makers and analysts alike (Walker, Boyne, and Brewer 2010; Pollitt and Bouckaert 2011; Organization for Economic Co-operation and Development 2008). Yet despite the explosion of interest in public service improvement (Ashworth, Entwistle, and Boyne 2010), evidence on the management and performance of public organizations still lags behind that for private firms and is largely restricted to a comparatively small number of organizational settings (O'Toole and Meier 2015). One symptom of this evidence gap is an apparent reluctance in the field of public administration to draw upon the full range of contemporary theories of organizing. In particular, we note that resource-based theory - one of the “most prominent and powerful theories for understanding organizations” (Barney, Ketchen, and Wright 2011, 1299) - offers much potential for understanding the management and performance of public services (Matthews and Schulman 2005). Despite this, its influence has only recently been felt in public administration research (see Bryson, Ackermann, and Eden 2007; Harvey et al. 2010; Piening 2013).

Organizational capability is a concept that has been used to encapsulate the insights of the resource-based theory of the firm about the organizational sources of high performance (Collis, 1994). The effective management of any organization requires the coordination of an array of internal organizational processes, routines and activities. The organizational capability concept is increasingly deployed in the strategic management literature as a means of capturing how this coordination may be theorised, studied and understood (see *Strategic Management Journal*, 24(10), 2003; also Schreyögg and Kliesch-Eberl 2007). Organizational capability is essentially constituted by the high-level organizational practices used to

coordinate the productive activities of the firm (Winter 2003). These practices represent a distinctive set of ‘problem-solving patterns’ or competencies that organizations can rely upon when pursuing key goals (Feldman and Pentland 2003). As such, the patterns of problem-solving enacted by organizational leaders and members evolve from their accumulated experiences, and are inevitably shaped by the internal organizational structures, processes and conditions that create opportunities for distinctive competencies to develop (Ulrich and Lake 1991). Where internal organizational attributes are conducive to the strengthening of distinctive competencies, then the capability of the organization is likely to be enhanced, at least in the short-term (March 1991). All of which suggests that organizational design could play a key role in determining the emergence of high or low capability.

Contingency theories of organization design, in particular, indicate that structural attributes such as organizational size, structural complexity and personnel stability can all influence the behaviour and decision-making ability of employees (Donaldson 2001), and may, in turn, influence the degree of capability present within an organization. At the same time, each of these represent organizational attributes within the purview of senior management, which can be adjusted or adapted according to identified needs and goals. This relationship between capability and organizational attributes is likely to be especially important in the professional bureaucracies typically found in the public sector, which may be less open to market forces and have less room for strategic maneuver than their private sector counterparts (Harvey et al. 2010). Politicians and policy-makers’ responses to perceived weaknesses in the capability of public organizations invariably involve attempts to restructure those organizations. So, for instance, central government departments and agencies may be merged or disaggregated depending on whether their size is perceived to be a help or a hindrance to the work that they do (see Talbot and Johnson 2007).

For large public organizations, capability might be anticipated to expand or shrink in line with an increase in staffing (Jung 2013). Structural complexity increases the diversity of activities that must be coordinated (Mintzberg 1993), as does the trend towards the structural devolution of key activities to semi-autonomous sub-units (agencification) that has been observed in the public sector in many countries (James and van Thiel, 2010). Both of these may cultivate or challenge capability development. Similarly, employee turnover may weaken existing competencies and lead to goal displacement as organizations lose firm-specific skills (Lepak and Snell 1999), though it is also possible that a certain amount of turnover brings with it new ideas and innovations. Are large public organizations more capable than small? Do structural complexity, agencification and personnel instability weaken or strengthen public organizational capability? What combinations of these attributes result in high and low public organizational capability?

This paper seeks to answer these questions by bringing together resource-based theory and contingency theory to explore ‘What configurations of organizational attributes are associated with high and low organizational capability in UK central government departments?’ To answer this research question, we adopt a set-theoretic analytic approach, namely fuzzy-set Qualitative Comparative Analysis (fsQCA - Ragin 2000). One of the major strengths of fsQCA is that it can derive configurational combinations of organizational attributes associated with an outcome, from a relatively limited number of units of analysis. The comparatively small number of UK central government departments, combining a range of organizational attributes, is therefore an apposite setting for its application. In addition, in fsQCA ‘*causal asymmetry is assumed, meaning that the presence and the absence of the outcome, respectively, may require different explanations*’ (Berg-Schlosser et al. 2009, 9). This means that we are potentially able to identify more than one configuration of organizational attributes associated with high capability, and more than one configuration

associated with low capability. By capturing the potential for different combinations of attributes to result in the same outcome, researchers using fsQCA are able to produce findings that can aid decision-makers responsible for organizational design.

In the following parts of the paper, we introduce the theory of organizational capability and consider extant research regarding its determinants, focusing in particular on contingency theory as a source for our theoretical expectations about the likely structural influences on capability. Thereafter, the organizational attributes used in our model of organizational capability are described and the data coding and processing for the fsQCA explained. Finally, we discuss the results of our analysis and conclude by reflecting on their practical implications, as well as the relevance of both resource-based and contingency theories for public administration research.

## **THEORY AND RESEARCH ON ORGANIZATIONAL CAPABILITY**

The resource-based theory of the firm suggests that human resources constitute precious and unique assets that are central to the success of an organization (Barney 1991). In particular, an organization's knowledge, skills-base and inter-personal networks are both rare and very difficult to imitate, and so offer a critical source for sustainable competitive advantage (Barney 1991; Nahapiet and Ghoshal 1998; Schreyögg and Kliesch-Eberl 2007). The practices through which an organization brings its human resources into play in pursuit of its goals thus constitute distinctive competencies, and as such, represent the capacity or capability of an organization to succeed in its endeavours (Helfat and Peteraf 2003). Taken in combination, the quality of leadership and management within an organization, the effectiveness of its strategic and operational management practices and the links between each of these attributes and the productive activities of the firm, all constitute the capability of an organization to achieve desired outcomes.

Although resource-based theory was developed with firms competing in the free market in mind, the core ideas also have great relevance to public sector organizations (Bryson, Ackermann, and Eden 2007; Piening 2013). In particular, resource-based theory speaks to the idea that public organizations are largely dependent on the human resources that they are able to marshal in pursuit of better performance. Public organizations are, by and large, non-market institutions, and so not suited to other influential theories of organizing for performance, such as Michael Porter's (1980) competitive strategy typology which speaks to market orientation and cost-differentiation. The idea that human resources are key to capability is especially important in central government departments, which are responsible for formulating public policy and overseeing its implementation.

To the extent that public organizations are able to skilfully deploy their human resources, they are likely to evince the kind of capability required to achieve their often complex array of goals (Rainey 2009). Moreover, in the current era of performance-based reforms of the public sector (Radin 2006), the pursuit of capability is often not only a matter of individual managerial responsibility or political necessity. Performance classification schemes, such as school league tables and hospital star ratings, have been implemented to drive improvements by encouraging 'yardstick competition' between different organizations (c.f. Revelli and Tovmo 2007) and/or processes of knowledge transfer and diffusion throughout organizational populations more generally (Ashworth, Boyne, and Delbridge 2009).

Whatever the origins of the pursuit of organizational capability in the public sector, very little is actually known about what organizational attributes, or combinations of attributes, enable or restrict the emergence of high or low capability. While several studies utilising a resource-based theory approach have now explored the effects of capability on organizational outcomes in the public sector (see Piening 2013 for a review of these), to date,

public management research has not focused on the ways in which capability is shaped by internal organizational contingencies. In fact, this lacuna in the literature on capability is also apparent within the prior work in private organizations (see Pablo et al. 2007), despite the determinants and enablers of organizational capability being regarded as a key topic within the literature on resource-based theory (Eisenhardt and Martin 2000). Of studies that have considered relevant organizational attributes, strategic management research has emphasized the centrality of knowledge management and integration to the concept of capability (e.g. Grant 1996; Nahapiet and Ghoshal 1998). Some further studies point towards the salience of market rather than organizational attributes (e.g. Helfat and Lieberman 2002). Others are concerned with the relationship between managerial behaviours and market-based competences (Daneels 2008).

As capability is embedded in context (Piening 2013), sectoral differences mean that the findings evident in extant market-oriented empirical analyses are not easily transferable to the public sector, particularly within central government departments that are typically more insulated from market forces than most public service organizations. Nevertheless, it is possible to draw on other sources of inspiration within the organizational studies literature to develop theoretical expectations relevant to the context of this study. Contingency theory, in particular, offers a cogent perspective on the structural organizational attributes that might be expected to influence organizational capability in the public sector.

### **Organizational determinants of capability in public organizations**

Although contingency theory is generally associated with organizational studies, it has a long and venerable history of application in public administration research (see for example Greenwood, Hinings and Ranson 1975; Greenwood and Hinings 1977). Contingency theory suggests that organizational outcomes are largely shaped by organizations' external and

internal contexts. Organizational capability is concerned with internal context, and how this is marshalled. Alternative perspectives on the role of internal context within contingency theory “may be integrated by stating that there are two main contingencies, task and size” Donaldson (2001, 16). These two key internal structural contingencies are likely to be critical enablers of (or barriers to) the development of capability, since they underpin an organization’s ability and opportunity to adapt to its external environment (Pablo et al. 2007). To investigate the potential structural determinants of organizational capability in the public sector, we therefore focus on the kinds of variables that have been used in prior public administration research that applies contingency theory (see, for example, Andrews and Boyne 2014; Jung and Kim 2014). Specifically, we investigate the role of organizational size, as well as other key task-related structural attributes (structural complexity, agencification, personnel instability, and the use of temporary employees). In doing so, we are interested in the configurations of those attributes that are associated with high or low organizational capability.

Configurational approaches to the application of contingency theory suggest that the direction of influence of any given organizational attribute on an organizational outcome depends on the presence or absence of other attributes. This is not only something with relevance for private firms (see Doty, Glick and Huber 1996), but has been shown to matter in empirical public administration research (see, for example, Walker 2008). For these reasons we theorise bi-directional relationships between each structural attribute and organizational capability. Clearly, there may be other influences on the development of organizational capability than those we focus on here, not least managerial ones, such as the personality of departmental leaders, as well as policy-related ones, such as policy saliency and mission. However, in focusing on structural attributes we have sought to develop a parsimonious model of capability that is guided by contingency theory, focused on contextual

attributes under the purview of senior management, and that can be replicated in other settings with some degree of ease. Next we consider the potential influence of each of the five organizational attributes considered (size, structural complexity, agencification, personnel instability and the use of temporary employees).

Organizational size has long been one of the most salient attributes in the study of organizational behaviour, especially in terms of its relationship with organizational structures and processes (see Hall, Johnson, and Haas 1967; Kimberly 1976). Within the organization studies literature, arguments about size have typically taken one of two forms. First, the “complexity-administrative growth hypothesis” (Rushing 1967) suggests that increased size brings with it inflated complexity in the coordination of an organization’s activities, as well as the proliferation of communication problems. Second, the ‘internal economies of scale perspective’ (Blau 1972), indicates that being bigger can enable an organization to spread its administrative costs across a larger number of individuals, and, therefore, to reinvest the savings in improvements to organizational functioning. Thus, in theory, size may have either a positive or a negative relationship with capability in public organizations – or no relationship as the costs and benefits of increasing scale cancel each other out.

The number of occupational specialties and production sub-units within an organization are widely thought to be an indicator of the complexity of the task coordination it faces (Hall, Johnson, and Haas 1967). The relative degree of “structural complexity” found within an organization may result in a demand for greater administrative control over the activities of employees. In turn, this could disrupt the smooth functioning of organizations that often depend upon tacit knowledge and relationships of trust (Murnane and Nelson 1984). However, it is conceivable that a variegated management structure holds the key to more comprehensive implementation of strategic and operational decisions (Thomas and Dunkerley 1999), especially in central government departments, which are charged with the

administration of a diverse array of public policies. Hence, while structural complexity may potentially pose problems for effective functioning, it is also possible that a more differentiated management structure can enable public organizations to carry out a range of specialized tasks more efficiently (Andrews 2010). Thus, structural complexity may be positively or negatively related to organizational capability in the public sector.

Related to the issue of structural complexity in public organizations, is the extent to which those organizations' functions have been disaggregated into semi-autonomous sub-units. Structural disaggregation (or agencification) is associated with New Public Management and attempts to cut costs by breaking-up large bureaucracies and thereby free managers from political control (James and van Thiel 2010). The establishment of "executive agencies" as sub-units within large government ministries was pioneered in the UK government, and the management and performance of those agencies continues to be an issue of great academic and political interest (see, for example, Pina, Arcas, and Caridad 2012; and <http://www.theguardian.com/uk/2013/mar/26/uk-border-agency-broken-up>). In theory, agencification is supposed to improve organizational capability by giving managers more freedom to manage. However, in practice, it may have resulted in the "hollowing out" of management capacity within government departments (Talbot 2004), which indicates that there could be a positive or a negative relationship between the relative agencification of a public organization and overall capability.

Within the general management literature, personnel instability is thought to impede the growth, or lead to the loss of, firm-specific employee knowledge (Lepak and Snell 1999). A stable core workforce can enhance development of the unique and valuable resources of an organization, whereas the selection, induction and training of new recruits requires a substantial investment of time and money (Griffith and Horn 2001; Ashforth, Sluss, and Saks 2007). Such investment may, in turn, weaken the overall capability of an organization to

respond effectively to key delivery challenges. Employees need to be retained at sufficient rates to ensure that the benefits of their skills and development are captured (McDermott et al. 2013). These issues may be especially important in the public sector, as effective organizational functioning is largely dependent upon the talent, training, motivation, and effort of myriad professional groups (Nigro, Nigro, and Kellough 2006). This is particularly so for central government departments, which are primarily concerned with the provision of high-level policy advice and guidance on a multitude of different issues. Even so, a series of benefits may still be realized from employee turnover, such as payroll reductions (Dalton and Todor 1982), removal of poor performers, and the injection of new ideas (Abelson and Baysinger 1984). As a result, the relationship between personnel instability and organizational capability may be positive or negative depending on the particular requirements of a given organization.

Finally, the proportion of temporary workers within an organization may affect the development of capability. Employees on temporary contracts are often thought to experience lower commitment to their employers than their permanent counterparts, because they have a transactional psychological contract, which binds them to an organization for primarily economic reasons (Milward and Hopkins 1998). Organizational commitment is correlated with extra- and in-role performance (Riketta 2002) and is widely regarded as a source of better organizational performance in the public sector (Kim 2005). Nevertheless, it is also possible that due to ‘anticipatory socialisation’ temporary employees sometimes exhibit higher organizational commitment than their permanent counterparts (McDonald and Makin 2000). Thus, it is conceivable that high levels of temporary employment could make it either harder or easier for government departments to manage employees effectively, and thereby influence overall capability for better or worse.

Following Mintzberg (1993), we note that organizational attributes do not occur in isolation. Rather, they tend to coalesce around configurations, which shape organizational outcomes, and which can be as numerous and diverse as there are cases. However, given the competing theoretical expectations for each considered condition – and QCA’s focus on the interplay between conditions – we do not specify in advance which configurations of attributes will be most strongly associated with high or low capability. As Schneider and Wageman (2010, 410) note, ‘QCA is rarely ever applied with the main purpose of testing ready-made hypotheses distilled from the literature’. They identify six possible aims of QCA, including creating empirical typologies and developing new theoretical arguments. Given the nascent nature of work on organizational capability in the public sector it is these we pursue: adopting an inductive approach to identify empirical typologies and using these to develop new theoretical arguments. Thus, like Greckhamer (2011), we use fsQCA to identify configurational relationships between our selected organizational attributes (size, complexity, agencification, personnel instability and use of temporary employees) and high and low capability, to answer our core research question: *What configurations of organizational attributes are associated with high and low organizational capability in UK central government departments?*

## **METHOD AND DATA**

Qualitative Comparative Analysis (QCA) is an analytic approach to social science grounded in set theory (Ragin 1987). Considerations of set relations in social research involve the identification and explication of causal connections linking a set of social phenomena, in ways that are asymmetric (c.f. Ragin 2008b). Initially developed for small-sample research (Ragin 2000), QCA is now applied across a range of population sizes, and enables cross-case analysis of a larger number of cases than would otherwise be manageable (Young and Park

2013). It is an especially powerful approach to social science research because, unlike conventional statistical analyses, QCA does not identify the independent effect of a variable on the likelihood of an outcome. Instead, it is premised on identifying causal combinations - configurations of key attributes associated with an outcome of interest (Fiss, Cambre, and Marx 2013). Public policy researchers have long been interested in the use of QCA, especially for comparisons of outcomes in different countries (see Rihoux et al. 2013 for a review). Consistent with recent calls for public administration to draw upon this method more (Rizova, 2011), researchers are now applying QCA to the study of public organizations (see, for example, Kitchener, Beynon, and Harrington 2002; Maggetti 2007; Vis 2009; 2011; Young and Park 2013).

QCA takes a number of forms: Crisp-set QCA is premised on the analysis of variables with only two potential values (e.g. the presence/absence of a condition). Multi-value QCA is premised on multi-value conditions (e.g. poor, average or good performance). By contrast, fsQCA can be used to determine, in a nuanced way, the degree to which attributes are present or absent (Ragin 2008a). This is achieved by coding data points on an interval scale (from 0 to 1) to identify their degree of membership to sets of independent and dependent attributes (see Ragin 2000).

In this study, fsQCA is used to identify configurations of organizational attributes that contribute towards high and low capability in UK central government departments. To achieve this, fsQCA treats each possible configuration of organizational attributes as a single case. Through comparison, it identifies the causal conditions (e.g. our organizational attributes - size etc.) associated with each outcome (e.g. high or low capability)<sup>1</sup>, including the minimal causal conditions necessary or sufficient for the outcome to occur. Causal conditions are necessary when the outcome cannot occur without them. Causal conditions

---

<sup>1</sup> 'Causal' is used within the QCA literature as a technical term denoting the presence of an association between a condition and an outcome.

are sufficient when the outcome always occurs when the condition is present, although the outcome could also result from other conditions (Rihoux and Ragin 2009). The analysis presented here further considers whether the conditions responsible for high organizational capability are the same as, or different from, those causing low organizational capability - known as “causal asymmetry”. Thus, fsQCA facilitates the consideration of divergent outcomes as well as alternative paths to those outcomes.

In methodological terms, the UK central government is an excellent context for the application of fsQCA, due to the comparatively small number of large departments. In 2007, UK central government had twenty-one major spending departments (see HM Treasury 2007). These departments are responsible for macro level policy formulation and implementation. Departments vary greatly in size and budget, depending on their functions and responsibilities. Those responsible for large policy fields, such as the Home Office, which deals with immigration, security and law and order, are often composed of multiple smaller functional units and executive agencies. In theoretical and empirical terms, the UK central government is a novel context in which to use fsQCA, and one that has been understudied in recent times. In utilising fsQCA in this context we are therefore able to address an important gap in the current scholarly literature on the management of public organizations, whilst also illustrating the value of this nascent approach. Next we detail the outcome and condition attributes considered in our analyses.

### **Organizational capability**

The management and performance of public sector organizations is complex, multidimensional and inherently political (Rainey 1993). Their achievements are judged by a diverse array of constituencies, such as taxpayers, employees, policy-makers and politicians, each of whom may have very different views on what constitutes a desirable outcome. The

criteria, weighting, and interpretation of all measures of organizational outcomes are thus subject to ongoing debate and contestation amongst key stakeholder groups (Boyne 2003). The analysis presented here focuses on information published as part of the UK civil service capability review programme, which began in 2007. This programme was established by the Head of the Civil Service at the time (Sir Gus O'Donnell), to assess the capability of central government departments and to identify areas requiring additional support and development to function as effectively as possible (Sunningdale Institute 2007).

The development of a scheme for grading the capability of central government departments was a piece of the wider public service reform agenda of the Labour government of the time, which sought to use an array of performance management techniques to “modernise” the UK public sector (Lapsley, 2009). An important feature of this agenda was a commitment to ‘better regulation’ (Radaelli and De Francesco 2007) focused on generating reflexive institutions, premised on meta-regulation, transparent processes, replicability of analysis, peer review and accountability (*ibid*) and informed by data and indicators in line with the rise of evidence-based policy-making (c.f. Sanderson 2006). Critics have argued that these developments reflected a wider trend towards an ‘audit society’ through which governments sought to exert greater managerial control over the work of public sector professionals (Power 1997). Nevertheless, although the data from the capability reviews can be seen as part of an on-going government project to gain control over the bureaucracy, the evolution of the programme also reflects an acknowledgement that the civil service should be more accountable for the critical role it plays in the wider production of public governance (Bovaird and Russell 2007). The reviews provide potential for reflexive monitoring and learning, premised on a shift from purely technical towards practical rationality, with experiential knowledge informing peer assessments (c.f. Sanderson, 2006). From this

perspective, the capability reviews offer a valuable insight into the management of a set of public service organizations that are often only viewed through a glass darkly.

The departments responsible for devolved government in Northern Ireland, Scotland and Wales did not undertake full capability reviews, and so are excluded from our analysis. The remaining eighteen departments that are included in the analysis are shown in Table 1 below. The 2007 capability reviews were peer-based assessments of each department. Each review team was led by the principal secretary of another department with the support of external advisors from other parts of the public sector, industry and academia. Although these assessments were not ‘blinded’, they were reached through an agreed process and evaluation framework that was applied by ‘experts’ and that resulted in the production of publicly available reports detailing the process and outcomes of the peer review. They are, therefore, in many ways preferable to the kinds of self-reported measures of internal organizational practices that are often used in empirical research and that may suffer from several different kinds of respondent bias (see Tourangeau, Rips and Rasinski 2000). Of course, notwithstanding the strengths of peer review, internal reputation and other forms of subjective bias may still have influenced the senior civil servants responsible for conducting capability reviews. Even so, an external evaluation of the capability review programme suggested that the conclusions of the peer review teams generally aligned with those of departments themselves (National Audit Office 2009). Thus, while we are, like other organizational researchers, constrained to rely on some form of subjective assessment of the quality of the leadership and management in organizations (see Bloom and van Reenen 2006), we do have some confidence that the capability review data captures something important about the management of the civil service.

For the purposes of the capability reviews, each department was rated on a scale of 1 (serious concerns about current capability) to 5 (strong capability for future delivery) on ten dimensions of capability under three main headings:

- **Leadership** (*set direction* – a compelling vision for the organization, follow-through on tough decisions, common ownership of the vision amongst key stakeholders and constant updates; *ignite passion, pace and drive* – inspires stakeholder confidence, encourages and acts on feedback, challenges the organization to improve, creates a culture of organizational pride; *take responsibility for leading delivery and change* – senior leaders model an appropriate corporate team-working culture, demonstrate personal commitment, boundary-spanning and effective change management; *build capability* – talent management, workforce development, employee performance management, staff are representative of the population)
- **Strategy** (*focus on outcomes* – challenging targets and clear indicators of success, with emphasis on improving citizens’ quality of life, effective management of trade-offs between priorities and ministerial relationships; *base choices on evidence* – customer responsiveness, future planning and options appraisal, evidence-based decisions, support for innovation; *build common purpose* – engages partners in the delivery chain, removes obstacles to joint-working, effective collaboration with partners);
- **Delivery** (*plan, resource and prioritise* – sequencing of priorities, delivery plans aligned with overall strategy, control of resources, planning reviews; *develop clear roles, responsibilities and delivery models* – clear purpose for functions, strong accountability, transparent delivery models, capability development throughout the delivery chain; *manage performance* – leaders responsible for driving excellence, high-quality performance information, risk management, financial data used for efficiency gains) (Sunningdale Institute 2007).

The capability reviews capture aspects of organizational capability that are distinctive to public organizations, such as citizen focus, quality of life, accountability, transparency and ministerial relationships, as well as other generic management aspects, such as effective change management, customer responsiveness and control of resources. In this respect, our use of the capability reviews offers a valuable example of how resource-based theory can be applied and extended within a distinctive public sector setting to illustrate the multi-faceted nature of public management.

To capture the multidimensionality of the goals and outcomes of central government departments in a single measure, we construct an index of the overall capability of each department by adding the scores from 1 to 5 for each of the ten separate dimensions of capability. We divide the sum of the scores for each capability dimension by the maximum possible score (i.e. 50). This aggregate measure of capability is equivalent to other indices of organizational outcomes used in public administration research, such as the Program Assessment Rating Tool (PART) for US federal government, the Government Performance Project (GPP) grades for US state governments, and the Comprehensive Performance Assessments (CPAs) for English local governments. Due to the continuous nature of the scores for the measure of capability, they are especially suitable for use in fsQCA. As previously detailed, fsQCA is premised on continuous measures. We are also fortunate in being able to draw upon a comprehensive set of secondary quantitative data on the civil service workforce, published by the Office of National Statistics (2007). This was used to construct multi-value attributes gauging the causal conditions associated with organizational capability, as detailed next.

## **Organizational attributes**

*Department size (Size)* - is measured as the total head count within each government department. This figure is calculated by summing the number of full and part time staff in each sub-unit within each spending department. Large organizations are sometimes thought to be especially difficult to coordinate, due to the sheer number of social relationships within them (Caplow 1957; Chapin 1951). All the same, conventional economic arguments on scale effects suggest that large public organizations can spread fixed central costs (e.g. senior management team, information technology, premises), thereby permitting the release of more resources for organizational development (Davies 1969). We therefore anticipate that large departments could have high or low capability, and that the influence of size may most likely be felt in combination with other organizational attributes.

*Structural complexity (Complex)* - is measured by constructing a Hehrfindahl index of the distribution of employees within the hierarchical levels of each department. The proportion of civil servants within each level of the organizational hierarchy (e.g. senior executive officers, executive officers) was squared and the sum of these squares subtracted from 10,000. By subtracting the sum of squared proportions from 10,000, it means that we derive a number for which a high score equals a high level of complexity within the department. This is the standard calculation economists undertake to create a measure of fractionalization within markets and has also been used extensively to derive measures of population diversity (see Trawick and Howsen 2006). Coordination problems could multiply faster in organizations that are structurally complex, because “the division of labour becomes more differentiated and specialized” (Kahn et al. 1964, 75) or they could potentially be better resolved through the same process. Thus, structurally complex departments may have low or high capability.

*Agencification (Agency)* - During the past twenty years, government departments in the UK have been subject to a process of disaggregation, whereby many of their key functions have been hived off to semi-autonomous agencies. While these agencies are formally responsible to their home departments, they enjoy considerable discretion over the management of their human resources in particular (Dillman 2007). The degree of agencification in each central government department was gauged by calculating the proportion of civil servants in each department who were employed by executive agencies. Previous research has suggested that agencification may have led to improvements in service delivery, but been detrimental for the development of management capacity within parent departments (Talbot 2004). We therefore anticipate that high capability departments could have high or low levels of agencification – and vice versa.

*Personnel instability (Instability)* - is measured by creating a ratio of new entrants to leavers in each department. This measure taps the extent to which existing staffing arrangements are being disrupted by the arrival of new employees, and therefore the extent to which departments must divert resources away from core competencies towards secondary ones associated with employee recruitment, selection and induction procedures. Such procedures are integral to the management of human resources, but do not necessarily constitute the most distinctive competences of an organization (Dillman 2007). At the same time, the measure also captures the potential for the input of positive ideas and practices from new recruits, which might enhance organizational functioning. As such, we expect that high capability departments could have low or high levels of personnel instability – and vice versa.

*Temporary employees (Temps)* - Government use of temporary employees has become more frequent in the wake of New Public Management reforms (Pollitt and Bouckaert 2011). The proportion of the staff employed on temporary contracts in each UK central government department (including those in executive agencies) is therefore measured to capture this broad shift towards public sector job insecurity. Temporary employees are sometimes, though not always, found to be less committed to their organization and less inclined to engage in organizational citizenship behaviours than their permanent counterparts (Coyle-Shapiro and Kessler 2002). Thus this measure could be seen as a proxy for the proportion of employees adhering to a transactional psychological contract, rather than the relational one thought to underpin the organizational commitment of British civil servants (Horton 2012). Nevertheless, when managed effectively temporary employees may constitute a valuable source of additional capacity, so high capability departments may have fewer or more temporary employees – and vice versa.

### **Data coding and analysis for the fsQCA**

The considered condition and outcome attributes differ in their underlying forms (e.g. interval, ratio and ordinal data – see Table A1 for their original attribute values). They were recoded for inclusion in the fsQCA on a 0 to 1 continuous scale (Ragin 2008a; Woodside, Hsu, and Marshall 2011), to construct a ‘continuous’ fuzzy set for each attribute. This involved applying the ‘direct method’ approach to coding (see Ragin 2008a). The direct method identifies three qualitative anchors for each attribute, which enable the evaluation of the degree of membership of individual data points. In effect, the degree of membership identifies the extent to which each central government department displays an attribute, e.g. Complexity. The anchors are: (1) the threshold for full non-membership (i.e. definitely not a complex department); (2) the threshold for full membership (i.e. definitely a complex

department) and; (3) the cross-over point, where there is maximum ambiguity about membership (i.e. ambiguity regarding whether a department is more complex than not). Following Rihoux and De Meur (2009), we note that the qualitative anchors were selected on the basis of technical and qualitative assessment. Specifically the distribution and meaningfulness of potential mechanical qualitative anchors (e.g. percentiles of established probability density function form of distribution of the cases over each attribute) were qualitatively evaluated, as detailed below (see Figure A1 in Appendix A for a graphical elucidation of the approach).

First, the evaluation of the qualitative anchors was technically informed by the identification of the 5<sup>th</sup> percentile (for full non-membership), 95<sup>th</sup> percentile (for full-membership) and 50<sup>th</sup> percentile (cross-over point) values, based on a constructed probability density function (pdf) graph for each considered condition and outcome. Following Greckhamer (2011), the ‘lowest’, ‘highest’ and ‘surrounding 50<sup>th</sup> percentile’ pairs of cases were identified, and considered against the anchors in terms of the threshold for full-non-membership; the threshold for full-membership and; (3) the cross-over point, respectively.

Second, each initial pair of departments, those near to them, and groups either side of the cross-over point were qualitatively assessed, drawing on the authors’ theoretical expertise and qualitative knowledge of central government departments. As illustrated in Figure A1, for the case of the Size attribute, a natural grouping of four departments of similar size – Energy and Climate Change; Culture, Media and Sport; International Development and Innovation, Universities and Skills – were closely grouped below the 5<sup>th</sup> percentile. The cross-over point based on the 50<sup>th</sup> percentile noticeably separated two departments – the Home Office and Defence, with qualitative assessment suggesting that differences in their size made this an appropriate cross-over point. Further illustrating our qualitative assessment, the median case was here ruled out as theoretically and qualitatively unjustifiable

as a cross-over point. Last, for the 95<sup>th</sup> percentile, its position between the two largest departments – Chancellor’s Departments and Work and Pensions was qualitatively justifiable, with clear differences in sheer scale. This calibration approach and associated qualitative assessment was subsequently adopted for each condition and outcome attribute. The 5<sup>th</sup>, 50<sup>th</sup> and 95<sup>th</sup> percentile were consistently adopted for the three qualitative anchors. Graphs showing the impact of the three qualitative anchors for the considered condition and outcome attributes are provided in Figure A2 in the Appendix (with qualitative anchor values also shown).

Table 1 presents an overview of the resulting membership scores for all of the conditions (Size, Complex, Agency, Temps and Instability) and the outcome ‘Capability’, for the eighteen central government departments considered. The scores presented in Table 1 illustrate that, according to the Capability Reviews carried out in 2007, the most capable government department was International Development, while the least capable was the Home Office. The largest department at that time was Work and Pensions, the most structurally complex Culture, Media and Sport, the most “agencified” the Ministry of Justice, the department with the most temporary staff the Department for Culture, Media and Sport, with the Home Office having the highest degree of personnel instability. The smallest department with the fewest temporary staff was Energy and Climate Change, the least complex department was the Ministry of Justice, the least agencified the Departments of Children, School and Families, Energy and Climate Change and International Development, with the Chancellor’s department having the greatest personnel stability.

[Table 1 about here]

The intention of the employment of fsQCA is the identification of causal configurations of conditions associated with an outcome. These configurations are elucidated through truth tables, wherein binary notation is used to denote the presence (1) or absence (0)

of the condition and outcome attributes. Truth tables are the key tool of set-theoretic analysis (Ragin 1987; Ragin, Strand, and Rubinson 2008), describing cases' diversity. However, this is often 'limited diversity' where not all logically possible configurations are represented in empirical reality, due to 'causal conditions' tendency to fall into coherent patterns' (Meyer, Tsui, and Hinings 1993, 1176). Tables 2 and 3 are truth tables showing the empirically present combinations associated with the outcomes High-capability (Table 2) and Low-capability (Table 3).<sup>2</sup> Following Greckhamer (2011), we emphasise that set-theoretic analysis does not presume linearity. Considering both outcomes separately illustrates the potential for elucidating causal asymmetry with fsQCA.

[Tables 2 and 3 about here]

There are three key issues with respect to the information in a truth table (Ragin, Strand, and Rubinson 2008; Greckhamer 2011). Firstly, each row identifies a configuration of considered conditions (organizational attributes here). The identification of which cases (i.e. government departments) have strong membership with which configuration is determined by assigning 1 to membership scores  $\geq 0.5$ , and 0 to those  $< 0.5$  (hence each case can only have strong membership with one configuration). In this analysis, the presence of five organizational attributes means there are  $2^5 = 32$  logical configurations (e.g. all logically possible configurations of the presence or absence of the five considered organizational attributes). However, Tables 2 and 3 display only the nine logical configurations for which an association with at least one actual case is observed. Those configurations not included in the truth tables are logically possible, but empirically absent (Cooper and Glaesser 2011).

Secondly, the interpretation of which configurations are particularly associated with High-capability (1s in High-capability column in Table 2) and Low-capability (1s in Low-capability column in Table 3), is based on consideration of the values in the respective raw

---

<sup>2</sup> The outcome 'High-capability' is given by the capability membership score (see Figure A2). 'Low-capability' is calculated by considering one minus the capability membership score values.

consistency columns. Consistency scores are explained in full in the results section and are, in effect, a measure of the theoretical importance of a given configuration (Ragin 2006; Young and Park 2013). The values in the raw consistency column measure how strong the relationship is between each causal combination and the outcome. This is computed for each configuration from the membership score data, by dividing the sum of consistent membership in the configuration by the sum of membership in the outcome (see Ragin, Strand, and Rubinson 2008). The choice of a consistency threshold for the raw consistency measure influences the strength of the evidence used in the subsequent analysis (Ragin 2006). The chosen threshold value of 0.85 means that configurations with lower raw consistency values are not included in the minimization process. In our analysis, a threshold of lower than 0.831 would have resulted in identification of two cases as displaying *both* High and Low capability. A threshold value above 0.868 would have resulted in cases identified as having ‘urgent development areas’ in the capability review not being identified as Low capability. Thus, qualitative assessment suggested the adoption of 0.85, addressing Schneider and Wagemann’s (2010) assertion that researchers must explicitly justify consistency thresholds, rather than referring to alleged conventions. Finally, the inclusion or exclusion of the logical remainders (possible configurations not actually observed) in set-theoretic analyses is an important consideration. There are three strategies for dealing with remainders, leading to different solution formulas. Importantly, all formulas are logically true because they do not contradict the available empirical information contained in the truth table. Rihoux and Ragin (2009, 181) define the complex solution as a ‘minimal formula derived without the aid of any logical remainders’ – i.e. only utilising the available empirical data. The parsimonious solution is a ‘minimal formula derived with the aid of logical remainders, without evaluation’ of their plausibility (ibid 183) and with atheoretical allocation, in pursuit of the simplest solution (Cooper and Glaesser 2011). Thus, this approach may yield fewer or more succinct

causal configurations. Last, the intermediate solution is a ‘minimal formula derived with the aid of only those logical remainders consistent with the researcher’s theoretical and substantive knowledge’ (ibid 182).

Due to the exploratory nature of this study, we present and analyse both the complex and parsimonious solutions, as advocated by Wagemann and Schneider (2010). However, we do note that it has recently been argued that, except where a very strong body of existing theory can support the inclusion of logical remainders, it might be safer to privilege complex solutions (Cooper and Glaesser 2011).

## **RESULTS**

In this section we present an overview of the output of our fsQCA analysis, conducted using fs/QCA Version 2.5, due to its capacity for conducting necessity analyses (see Ragin and Davey 2014). Later we detail the specific necessity and sufficiency findings for the High-capability and Low-capability outcomes respectively, namely analysing if a condition must be present for capability to occur (analysis of necessity), or if a given condition or combination of conditions can produce this result (analysis of sufficiency). Necessity analysis was conducted prior to sufficiency analysis, to avoid inappropriately declaring conditions as necessary. To begin, Table 4 presents the ‘sufficiency analyses’ used to interpret the complex and parsimonious fsQCA solutions in regard to High-capability and Low-capability outcomes.

[Table 4 about here]

Utilizing an amended version of the notation system from Ragin and Fiss (2008), each of the five columns shown in the top part of Table 4 represents an alternative causal combination of conditions linked to the respective outcome (Ragin 2008b). Specifically, H1 and H2 are the sufficient combinations associated with the High-capability outcome, while

L1, L2 and L3 are the sufficient combinations associated with the Low-capability outcome. Within these combinations, full circles (●) indicate the presence of a condition, while barred circles (⊖) indicate a condition's absence. Further, core and peripheral conditions are distinguished by symbols' size: larger circles indicate core conditions that are part of both parsimonious and complex solutions (Ragin and Fiss 2008 discuss peripheral conditions as part of the intermediate solution, not considered here). Smaller circles indicate peripheral conditions that only occur in complex solutions.

The middle part of Table 4 details the consistency and coverage values for the complex solutions (e.g. those incorporating core and peripheral conditions, indicated by large and small circles respectively). Consistency and coverage are two key parameters for assessing the fit of the fsQCA results to the underlying data (Ragin 2006). In particular, they allow consideration of the gradations of association with an outcome (not feasible under crisp-set QCA). As previously described, and following Greckhamer (2011), consistency measures the degree to which cases sharing a given configuration of conditions (the solution) are associated with an outcome. Coverage scores assess the degree to which a configuration accounts for instances of an outcome, providing an indicator of the empirical importance of a causal configuration (Young and Park 2013). Raw coverage measures the coverage of a configuration over cases, allowing for overlap with other possible combinations. Unique coverage refers to coverage of cases uniquely due to a particular combination. Solution consistency describes the extent of instances of the outcome collectively explained by all the configurations in a solution (complex or parsimonious). Lastly, solution coverage refers to the combined coverage of all the configurations associated with an outcome (see also Ragin, Strand, and Rubinson 2008).

For completeness, the bottom part of the table offers similar information based on the respective parsimonious solutions (e.g. incorporating only core conditions, indicated by large

circles). Next, the identified combinations of causal conditions associated with High-capability and Low-capability government departments are explored.

### **Combinations of causal conditions for high- and low-capability**

Fiss (2011) argues that it is important to distinguish between the core and peripheral combinations of causal conditions in a set-theoretic analysis, especially those pertaining to the derivation of organizational configurations. According to him, core causal conditions are those “for which the evidence indicates a strong causal relationship with the outcome of interest” (Fiss 2011, 398). By contrast, peripheral causal conditions are those for which the causal relationship is weaker. This distinction has strong applicability to the issue of organizational capability, since one might anticipate that certain attributes are likely to have much greater theoretical and empirical weight in shaping organizational behaviour and outcomes. Indeed, the organization studies and strategic management literatures are replete with discussions about, and research into, what constitutes a core and a peripheral organizational attribute (see, for example, Hannan and Freeman 1984; Kelly and Amburgey 1991). In the following discussion, we draw upon the notion of core and peripheral combinations of conditions to explore the results of our necessity<sup>3</sup> and sufficiency analyses in more detail.

#### *High-capability*

In response to our research question, necessity analysis suggests that an absence of personnel instability is nearly always required (0.959) for high-capability to occur. This is the only organizational attribute with a consistency value above 0.9, as per Greckhamer (2011) and Young and Park (2013). The sufficiency analysis presented in Table 4 indicates that there are

---

<sup>3</sup> Full details of the necessity analyses undertaken are available in the Appendix, in Table A2.

two core conditions associated with the parsimonious solution for high capability, namely an absence of personnel instability and an absence of structural complexity. In fact, these two conditions are present in both the causal combinations making up the complex solutions derived by our analysis (H1 and H2).

Kahn et al. (1964, 75) argue that as complexity increases, so “more levels of supervision are introduced to maintain coordination and control; and more people become involved in organizational planning”. This, in turn, implies that fewer resources are being deployed to ensure that an organization is maximising the benefits from its distinctive competencies. By contrast, simple structures may be especially effective in ensuring that organizations are able to exploit existing competencies (March 1991). In addition to the challenges posed by complexity, personnel instability seems to represent a threat to the capability of central government departments. Previous research has suggested that personnel stability is critical to organizational performance in the public sector, and to the sustained pursuit of the complex cross-cutting goals that are now the staple fare of public management (Milward and Provan 2000; O’Toole and Meier 2003). Hence, the findings presented in Table 4 indicate that analysts may be right to be concerned about the potential effects of a “human resource crisis” within public organizations (Light 2006).

In terms of peripheral conditions associated with High capability, Table 4 suggests that in H1 (consistency 0.972, raw coverage 0.404) the core conditions of structural simplicity and a stable core workforce are complemented by large size and a low number of temporary employees. Thus, big departments seem likely to have higher capability if they are less reliant on the kind of transactional contracts typical of temporary employment. The four departments which uniquely exhibit this complex configuration of conditions are the Chancellor’s departments; the Ministry of Defence, the Ministry of Justice, and the Department of Work and Pensions (DWP). Personnel stability may be especially important to

these organizations, due to the policy-specific expertise on which they rely. The Chancellor's Departments and the Ministry of Justice deal with macro-economic policy and the British legal system, while the Ministry of Defence draws upon scientific and technical advice relating to military hardware and resources in particular. At the same time, the DWP provides the technical and administrative support required to manage the UK's often complex social security system. For similar reasons, temporary staff may have much less of a role in these departments, and the need for more complicated lines of authority may be less important as a larger number of civil servants are employed at higher grades than in smaller less specialised departments.

For H2 (consistency 0.942, raw coverage 0.177), the core conditions are complemented by small size, and a high level of agencification and temporary employment. Hence, smaller departments appear more likely to have high capability if there is a higher degree of personnel flexibility and sub-unit autonomy – their small scale may necessitate judicious engagement with additional human resources. The one department uniquely exhibiting this complex configuration is Transport, which manages a range of agencies responsible for rail, road, air and water transportation, and the regulation of transport safety. The Department of Transport, like the other high-capability departments, is extremely dependent upon policy-specific expertise. However, the disaggregation of the department into agencies means that that expertise is more often drawn from sources outside government than is the case for the larger and more prestigious Chancellor's Departments, Ministry of Defence and Justice and DWP, and so the role of temporary employees likewise may be more salient to the management of transport policy.

The complex solutions incorporating the peripheral conditions highlight that fsQCA is able to identify equifinality in the relationships between organizational attributes and capability. Or, put differently, the solutions highlight that as configurational approaches to

contingency theory suggest, organizations can ‘reach the same final state, from different initial conditions and by a variety of different paths’ (Katz and Kahn 1978, 30). It is especially interesting to note the asymmetric roles that size and temporary employment play in determining high capability. The impact of being big or small in size on high capability therefore appears to be contingent on other organizational attributes. Likewise, in the right circumstances, temporary staff may be an aid rather than a hindrance to improving organizational capability. This has long been recognised – with effective organizations analysing which employee groups to internalise, and creating psychological contracts premised on synergistic HR practices, appropriately applied by line managers (McDermott et al. 2013).

#### *Low-capability*

In response to our research question, necessity analysis did not identify any necessary organizational attributes (above the 0.9 threshold detailed previously) for Low-capability to occur. Nevertheless, the results presented in Table 4 highlight that the presence of three core conditions is associated with low capability: structural complexity; agencification; and personnel instability, spread over the different causal combinations of conditions identified in L1, L2 and L3. As noted above, the findings for complexity and instability accord with previous research on the effectiveness of public organizations (c.f. Kahn et al. 1964, O’Toole and Meier 2003). Our analysis of the determinants of low capability has, however, identified another core condition shaping organizational capability in the public sector: the degree of agencification. Departments with more agencies are tasked with managing sub-units with an especially high degree of autonomy over managerial and policy decisions, which, in turn, can create additional coordination problems for departmental leaders. In fact, the UK and several other countries have introduced new structures to better facilitate the coordination of central

government agencies, including, in some circumstances, their re-integration with parent departments (see James and Van Thiel 2010). Low levels of agencification was not a core condition associated with high capability, suggesting that the problems surrounding the coordination of agencies are more consequential than the benefits gained from having fewer autonomous sub-units.

Regarding the peripheral conditions associated with low capability, Table 4 illustrates that for L1 (consistency 0.945, raw coverage 0.224), small size, low structural complexity, agencification and a low level of temporary employment complement the core condition of personnel instability. Some of the major legal and border control functions of the Home Office, which is the single department associated with this configuration, were taken away from the department or disaggregated during the 2000s. At the same time, the Home Office appears not have benefited from the low complexity and low levels of temporary employment that seemed to be important for larger departments. Although it was no longer so dependent upon expert knowledge of the legal system, the department retained responsibility for some of the most challenging and politically contentious issues in UK domestic policy, such as policing and counter-terrorism activities. In fact, each of the capability reviews carried out in the late 2000's consistently urged the Home Office to combine stronger corporate management along with a more flexible approach to staffing (<http://www.civilservice.gov.uk/about/improving/capability/reports>).

In the case of L2 (consistency 0.926, raw coverage 0.256), small size, structural complexity and low agencification combine with the core condition of personnel instability and a further peripheral one of few temporary staff. This combination is uniquely associated with the Cabinet Office, which supports the Prime Minister, cabinet committees and coordinates the civil service as a whole. This department is the only one within UK central government that has an almost exclusively administrative function, with little responsibility

for either policy formulation or implementation. As such, policy-specific expertise rarely lies within the Cabinet Office, which is in essence composed of a cadre of generalist bureaucrats. Where such expertise is required, it is typically brought in on an ad-hoc informal basis rather than through the staffing system; all of which appeared to be making it difficult for the department to develop the characteristics of a capable organization at the time of the capability review.

For L3 (consistency 0.879, raw coverage 0.406), small size and, somewhat surprisingly (perhaps related to the lowest consistency value across L1, L2 and L3) an absence of personnel instability combine with the core conditions of structural complexity and agencification. The two core conditions draw attention to the challenges of coordination issues within structurally complex departments, and across agencies. There are five departments associated with this complex solution: Business, Enterprise and Regulatory Reform; Communities and Local Government; Food and Rural Affairs; Health; and Innovation, Universities and Skills. Each of these departments manages a diverse portfolio of domestic regulatory and distributive public services, and so is not as dependent upon policy-specific expertise as those departments that have been identified as high capability organizations. Nevertheless, although these 'low-capability' departments are more likely to be staffed with generalist bureaucrats, those people don't seem to be circulating throughout the civil service. It is conceivable that the low level of personnel instability here reflects the comparatively low status of these departments in comparison with other bigger and more prestigious ones where demand for expertise may be greater, something that would be interesting to explore in more depth in subsequent research.

## CONCLUSIONS

In this paper, we examined the configurations of organizational attributes associated with high and low organizational capability in a little studied set of public organizations: UK central government departments. In doing so, we respond to O'Toole and Meier's (2015) call for empirical studies of public management in new and less familiar contexts, offering one of the first analyses of organizational capability in the public sector and developing a set of findings that illustrate the causal asymmetry between high and low capability. The results of our analyses suggest that there may be a single core organizational configuration associated with high capability in central government departments: low structural complexity and personnel stability. By contrast, two core configurations appear to be associated with low capability, one that is exclusively determined by personnel instability and another which is determined by structural complexity and agencification. Thus, our results imply that while there may be one main path to strengthening government capability, there could be several routes to reducing it. At the same time though, our findings for high and low capability complement each other, reinforcing the message that structural complexity and personnel instability are likely to be critical influences on organizational capability in the public sector. This study and these findings give rise to several important implications.

From a research perspective, integrating resource-based theory with other perspectives can help shed light on organizational functioning (Barney et al. 2011). In offering a rare synthesis of the insights of resource-based and contingency theories, we have sought to illustrate that both theoretical perspectives have considerable relevance to public administration research. Using fsQCA to identify structural configurations associated with high- and low-capability UK central government departments, we aimed to demonstrate the value of a set-theoretic approach to the study of public sector organizations. In addition to furnishing a valuable approach to studying a small-n organization population, fsQCA has

enabled us to provide a nuanced appreciation of the nature of organizational capability – taking account of combinations of organizational attributes (c.f. Mintzberg 1993) - that wouldn't be possible using conventional analytical approaches. Fiss (2011) emphasises that by allowing causal asymmetry, set-theoretic analyses offers the potential for a much enriched theoretical comprehension of the nature of organizational configurations. At the same time, causal asymmetry can underpin the development of better-targeted practical recommendations for senior managers making strategic choices about organizational improvements (*ibid.*).

In terms of the practical implications of our study, our results suggest that public organizations should pay particular attention to retaining staff. Or put differently, that organizational leaders should seek to ensure that staff feel valued and do not want to leave. That staff should feel valued and that personnel turnover hurts organizational development are not new insights to public administration research (see Moynihan and Pandey 2008), though we believe that they are observations worth repeating, particularly when discovered in an interesting and distinctive context, such as the UK civil service, for which little systematic research evidence is available. These findings follow a range of authors within the resource-based theory literature, who suggest that an organization's intellectual knowledge and social capital and networks (linked to personnel stability) are rare and difficult to imitate – making them a likely source of sustained competitive advantage and organizational capability in the human capital intensive public sector context (Bryson, Ackermann, and Eden 2007; Nahapiet and Ghoshal 1998). The application of high-commitment human resource management practices and systems is one way in which staff retention in public organizations might be improved (Cho and Lewis 2012). At a minimum, organizations should ensure congruence between the signals sent by their HR systems and their line managers' leadership styles, to

ensure employees' have clear expectations and that their psychological contracts are upheld (McDermott et al. 2013).

The simplification of organizational structures by removing or reducing layers of management would seem to be another path towards high capability. Although there is a sparse literature examining the nature of delayering in the public sector (e.g. Thomas and Dunkerley 1999), there is precious little evidence on the relationship between internal structural complexity and capability in either public (or private) organizations. Our analysis suggests that by ensuring that lines of authority are clear and simple and by avoiding the proliferation of managerial ranks, public organizations are more likely to function effectively. Likewise, we provide valuable new evidence supporting the trend towards reverse agencification in the public sector as one that could have benefits for organizational functioning. Whatever the supposed virtues of the devolution of responsibilities to semi-autonomous organizational units, the management of public organizations would appear to be more effective in their absence, especially in the professional bureaucracies within central governments.

Despite the strengths of the results we present here, the findings nevertheless raise many questions that are worthy of further research. First, our analysis has examined a particular group of public organizations during a specific time period. It would therefore be important to identify whether the configurations we observe are present in other time periods and in other organizational settings. In particular, our findings are premised on eighteen cases, which may have inhibited the minimization that emerged from the QCA, due to the relatively high degree of limited diversity. Analyses drawing upon a larger set of public agencies, in particular, could utilise Wilson's (1989) typology of government organizations to explore whether organizational type matters for configurations of capability. Second, although the aggregated index of organizational capability we use enables us to capture the

multi-dimensional nature of public management in a single measure, it would be interesting to explore the potential for configurations of capability to vary across the sub-dimensions of capability in the future. Finally, we have drawn upon fsQCA to investigate two focal outcomes – High-capability and Low-capability. One of the many advantages of fuzzy over crisp set-theoretic analyses is that it can accommodate gradations in the focal outcome attribute. Subsequent work could therefore follow Greckhamer's (2011) example, and investigate multiple gradations of capability from very low, low, quite low and neither low nor high right through to very high. This would allow the full range of causal asymmetry across possible configurations to be explored in the greatest of detail.

At the same time, it may be the case that organizational attributes other than those we consider in this analysis are equally discerning between high and low capability government departments. The public administration literature highlights the importance of the relationship between politicians and bureaucrats and organizational reputation within central government agencies (Aberbach, Putnam and Rockman, 1981; Carpenter, 2001), as well as the background of organizational leaders (Petrovsky, James and Boyne, 2015). Whilst attributes such as human and social capital, customer orientation and cognitive diversity are all identified as critical intangible resources in the strategic management literature (Newbert 2007). Analyses that brought together measures of these attributes with those that are identified as core conditions in this analysis would cast valuable further light on the nature of organizational capability in the public sector.

## REFERENCES

- Abelson, Michael A. and Barry D. Baysinger. 1984. Optimal and dysfunctional turnover: Toward an organizational level mode. *Academy of Management Review* 9: 331-41.
- Aberbach, Joel D., Robert Putnam and Bert Rockman. 1981. *Bureaucrats and politicians in Western democracies*. Cambridge, MA: Harvard University Press.
- Andrews, Rhys. 2010. Organizational Structure and Public Service Performance, In: Richard M. Walker, George A. Boyne and Gene A. Brewer (eds), *Public Management Performance: Research directions*, Cambridge University Press: Cambridge.
- Andrews, Rhys and George A. Boyne. 2014. Task complexity, organization size and administrative intensity: The case of UK universities. *Public Administration* 92(3): 656-672.
- Ashforth Blake E., David M. Sluss and Alan M. Saks. 2007. Socialization tactics, proactive behavior, and newcomer learning: Integrating socialization models. *Journal of Vocational Behavior* 70(3): 447-62.
- Ashworth, Rachel, George A. Boyne and Rick Delbridge. 2009. Escape from the iron cage? Organizational change and isomorphic pressures in the public sector. *Journal of Public Administration Research and Theory* 19(1): 165-87.
- Ashworth, Rachel, Tom Entwistle and George A. Boyne (eds). 2010. *Public service improvement: Theories and evidence*. Oxford: Oxford University Press.
- Barney, Jay B. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17(1): 99-120.
- Barney, Jay B., David J. Ketchen and Michael Wright. 2011. The future of resource-based theory: Revitalization or decline? *Journal of Management* 37(5): 1299-1315.
- Berg-Schlosser, Dirk, Giselle De Meur, Benoit Rihoux and Charles C. Ragin. 2009. Qualitative Comparative Analysis (QCA) as an Approach, 1-18 In Benoit Rihoux and Charles C. Ragin (eds) *Configurational comparative methods*. California: Sage.
- Blau, Peter. 1972. Interdependence and Hierarchy in Organizations. *Social Science Research* 1: 1-24.
- Bloom, Nicholas and John van Reenen (2006) Measuring and explaining management practices across firms and countries. *NBER Working Paper No. 12216*.
- Bovaird, Tony and Ken Russell. 2007. Civil service reform in the UK, 1999-2005: Revolutionary failure or evolutionary success. *Public Administration* 85(2): 301-328.
- Boyne, George A. 2003. Sources of public service improvement: A critical review and research agenda. *Journal of Public Administration Research and Theory* 13(3): 367-94.
- Bryson, John M., Fran Ackermann, and Colin Eden. 2007. Putting the resource-based view of strategy and distinctive competencies to work in public organizations. *Public Administration Review*, 67(4): 702-717.
- Caplow, Theodore. 1957. Organization size. *Administrative Science Quarterly* 1: 484-505.
- Carpenter, Daniel P. 2001. *The forging of bureaucratic autonomy: Reputations, networks and policy innovations in executive agencies, 1862-1928*. Princeton, NJ: Princeton University Press.
- Chapin, F. Stuart. 1951. The growth of bureaucracy: An hypothesis. *American Sociological Review* 16: 835-6.
- Cho, Yoon-Jik. and Lewis, Gregory B. 2012. Turnover intentions and turnover behaviour: implications for retaining federal employees. *Review of Public Personnel Administration* 32(1): 4-23.

- Collis, David J. 1994. How valuable are organizational capabilities? *Strategic Management Journal* 15(Supplement 1): 143-152.
- Cooper, Barry and Judith Glaesser. 2011. Paradoxes and pitfalls in using Fuzzy Set QCA: Illustrations from a critical review of a study of educational inequality. *Sociological Research Online* 16(3): 8.
- Coyle-Shapiro, Jacqueline and Ian Kessler. 2002. Contingent and Non Contingent Working in Local Government: Contrasting Psychological Contracts. *Public Administration* 80(1): 77-101.
- Dalton, Dan R., and William D. Todor. 1982. Turnover: a lucrative hard dollar phenomenon. *Academy of Management Review* 7: 212-218.
- Daneels, Erwin. 2008. Organizational antecedents of second-order competences. *Strategic Management Journal* 29: 519-543.
- Davies, Bleddyn. 1969. Local authority size: some associations with standards of performance of services for deprived children and old people. *Public Administration* 47(2): 225-248.
- Dillman, David L. 2007. Enduring values in the British civil service. *Administration and Society* 39(7): 883-900.
- Donaldson, Lex. 2001. *The contingency theory of organizations*. London, Sage.
- Doty, D. Harold, William H. Glick and George P. Huber. 1996. Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal* 36(6): 1196-1250.
- Eisenhardt, Kathleen and Jeffrey A. Martin. 2000. Dynamic capabilities: what are they? *Strategic Management Journal* 21: 1105-21.
- Feldman, Martha S. and Brian T. Pentland. 2003. Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly* 48(1): 94-118.
- Fiss, Peer. 2011. Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal* 54(2): 393-420.
- Fiss, Peer, Bart Cambre, and Axel Marx. (eds). 2013. Configurational theory and methods in organizational research. *Research in the Sociology of Organizations* vol.38.
- Grant, Robert M. 1996. Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science* 7(4): 375-387.
- Greckhamer, Thomas. 2011. Cross-cultural differences in compensation level and inequality across occupations: A set-theoretic analysis. *Organization Studies* 32(1): 85-115.
- Greenwood, Royston, C.R. Hinings and Stewart Ranson. 1975. Contingency theory and the organization of local authorities. Part 2: Contingencies and structure. *Public Administration* 53(2): 1-23.
- Greenwood, Royston and C.R. Hinings. 1977. Contingency theory and public bureaucracies. *Policy & Politics* 5(2): 159-180.
- Griffith, Rodger W. and Peter W. Horn. 2001. *Retaining Valued Employees*, 3<sup>rd</sup> ed. Thousand Oaks, CA: Sage.
- Hannan, Michael and John Freeman. 1984. Structural inertia and organizational change. *American Sociological Review* 49: 149-64.
- Hall, Richard H., Norman J. Johnson and J. Eugene E. Haas. 1967. Organizational size, complexity and formalization. *American Sociological Review* 32: 903-12.
- Harvey, Gill, Chris Skelcher, Eileen Spencer, Pauline Jas, and Kieran Walshe. 2010. Absorptive capacity in a non-market environment: A knowledge-based approach to

- analysing the performance of sector organizations. *Public Management Review* 12(1): 77-97.
- Helfat, Constance E. and Marvin B. Lieberman. 2002. The birth of capabilities: Market entry and the importance of pre-history. *Industrial and Corporate Change* 11(4): 725-760.
- Helfat, Constance E. and Margaret A. Peteraf. 2003. The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal* 24(10): 997-1010.
- HM Treasury. 2007. *Public expenditure: statistical analyses 2007*. HM Treasury: London.
- Horton, Sylvia. 2012. The public service ethos in the British civil service: an historical institutional analysis. *Public Policy & Administration* 27(1): 32-48.
- James, Oliver and Sandra van Thiel. 2010. Structural devolution to agencies. In: Tom Christensen and Per Laegrid (eds), *Ashgate research companion to the New Public Management*. Ashgate Press: Aldershot.
- Jung, Chan S. 2013. Navigating a rough terrain of public management: examining the relationship between organizational size and effectiveness. *Journal of Public Administration Research and Theory* 23(3): 663-686.
- Jung, Chan S. and S.E. Kim. 2014. Structure and perceived performance in public organizations. *Public Management Review* 16(5): 620-642.
- Kahn, Robert, Donald M. Wolfe, Robert P. Quinn, Diedrick Snoek, and Robert A. Rosenthal. 1964. *Organizational stress*. New York: Wiley.
- Katz, Daniel. and Robert L. Kahn. 1978. *The social psychology of organizations*. New York: Wiley.
- Kelly, Dawn and Terry Amburgey. 1991. Organizational inertia and momentum: A dynamic model of strategic change. *Academy of Management Journal* 34: 591-612.
- Kim, Sangmook. 2005. Individual level factors and organizational performance in government organizations. *Journal of Public Administration Research and Theory* 15(2): 245-261.
- Kimberly, John R. 1976. Organizational Size and the Structuralist Perspective: A Review, Critique and Proposal. *Administrative Science Quarterly* 21: 571-597.
- Kitchener, Martin, Malcolm J. Beynon, and Charlene Harrington. 2002. Qualitative Comparative Analysis and public services research – lessons from an early application. *Public Management Review* 4: 485-504.
- Lapsley, Irvine. 2009. New Public Management: The cruellest invention of the human spirit? *Abacus: A Journal of Accounting, Finance and Business Studies* 45(1): 1-21.
- Lepak, David P. and Scott A. Snell. 1999. The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review* 24(1): 31-48.
- Light, Paul C. 2006. A government ill-executed: the depletion of the federal service. *Public Administration Review* 68: 413-419.
- Maggetti, Martino. 2007. De facto independence after delegation: a fuzzy-set analysis. *Regulation & Governance* 1(4): 271-294.
- March, James G. 1991. Exploration and exploitation in organizational learning. *Organization Science* 2: 71-87.
- Matthews, Judy and Arthur D. Schulman. 2005. Competitive advantage in public sector organizations: explaining the public good/sustainable competitive advantage paradox. *Journal of Business Research* 58: 232-40.
- McDermott, Aoife M., Edel Conway, Denise M. Rousseau and Patrick C. Flood. 2013. Promoting effective psychological contracts through leadership: the missing link between HR strategy and performance. *Human Resource Management* 52(2): 289-310.

- McDonald, David J. and Peter J. Makin. 2000. The psychological contract, organisational commitment and job satisfaction of temporary staff. *Leadership & Organization Development Journal* 21(2): 84-91.
- Meyer, Alan, Anne Tsui and C.R. Hinings. 1993. Configurational approaches to organizational analysis. *Academy of Management Journal* 36: 1175–1195.
- Milward, H. Brint. and Keith G. Provan. 2000. How networks are governed. In Carolyn Heinrich and Laurence Lynn (eds) *Governance and performance: New perspectives*, Washington, DC: Georgetown University Press, 238-62.
- Milward, Lynne J. and Lee J. Hopkins. 1998. Psychological contracts, organizational and job commitment. *Journal of Applied Psychology* 28(16): 1530-1556.
- Mintzberg, Henry. 1993. *Structure in fives: Designing effective organizations*. Englewood Cliffs, NJ, US: Prentice-Hall.
- Moynihan, Donald P., and Sanjay K. Pandey. 2008. The ties that bind: Social networks, person-organization value fit, and turnover intention. *Journal of Public Administration Research & Theory* 18: 205-227.
- Murnane, Richard J. and Richard B. Nelson. 1984. Production and innovation when techniques are tacit: The case of education. *Journal of Economic Behaviour and Organization* 5(3-4): 353-373.
- Nahapiet, Janine and Sumantra Ghoshal. 1998. Social capital, intellectual capital and the organizational advantage. *Academy of Management Review* 23: 242-66.
- National Audit Office. 2009. *Assessment of the capability review programme*. London: The Stationery Office.
- Newbert, Scott L. 2007. Empirical research on the resource-based view of the firm: an assessment and suggestions for future research. *Strategic Management Journal* 28: 121-146.
- Nigro, Lloyd G., Felix A. Nigro and J. Edward Kellough. 2006. *The new public personnel administration*, 6<sup>th</sup> ed. Belmont, CA: Wadsworth.
- O'Toole, Laurence J. Jr., and Kenneth J. Meier. 2003. Plus ca change: Public management, personnel stability. And organizational performance. *Journal of Public Administration Research and Theory* 13(1): 43-64.
- O'Toole, Laurence J. Jr., and Kenneth J. Meier. 2015. Public management, context and performance: In quest of a more general theory. *Journal of Public Administration Research and Theory* 25(1): 237-256.
- Office of National Statistics. 2007. *Civil service statistics 2007*. Crown copyright.
- Organization for Economic Co-operation and Development. 2008. *The state of the public service*. Paris: OECD publishing.
- Pablo, Amy L., Trish Reay, James R. Dewald and Ann L. Casebeer. 2007. Identifying, enabling and managing dynamic capabilities in the public sector. *Journal of Management Studies* 44(5): 687-708.
- Petrovsky, Nicolai, Oliver James and George A. Boyne. 2015. New Leaders' Managerial Background and the Performance of Public Organizations: The Theory of Publicness Fit. *Journal of Public Administration Research and Theory* 25(1): 217-236.
- Piening, Erik P. 2013. Dynamic capabilities in public organizations. *Public Management Review* 15(2): 209-245.
- Pina, Vicente, Maria J. Arcas and Caridad Marti. 2012. Accruals and 'accounting numbers management' in UK executive agencies. *Public Money & Management* 32(4): 273-280.
- Pollitt, Christopher and Geert Bouckaert. 2011. *Public management reform: A comparative analysis: New Public Management, governance and the neo-Weberian state*. Oxford: Oxford University Press.

- Porter, Michael. 1980. *Competitive strategy: techniques for analysing industries and competitors*. New York: Free Press.
- Power, Michael. 1997. *The audit society: Rituals of verification*. Oxford: Oxford University Press.
- Radaelli, Claudio M., and Fabrizio De Francesco. 2007. *Regulatory quality in Europe: Concepts, measures and policy processes*. Manchester: Manchester University Press
- Radin, Beryl. 2006. *Challenging the performance movement: Accountability, complexity and democratic values*. Washington: Georgetown University Press.
- Ragin, Charles C. 1987. *The comparative method: Moving beyond qualitative and quantitative strategies*. Berkeley: University of California Press.
- Ragin, Charles C. 2000. *Fuzzy-set social science*. Chicago: University of Chicago Press.
- Ragin, Charles C. 2005. From fuzzy sets to crisp truth tables, Compass Working Paper.
- Ragin, Charles C. 2006. Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, 14: 291-310.
- Ragin, Charles C. 2008a. Fuzzy sets: Calibration versus measurement. In Box-Steffensmeier, J. M., Brady, H.E. and Collier, D. (eds), *The Oxford Handbook of Political Methodology*, Oxford, Oxford University Press.
- Ragin, Charles C. 2008b. *Redesigning social inquiry: Fuzzy sets and beyond*. Chicago: University of Chicago Press.
- Ragin, Charles C. and Davey, S. 2014. *fs/QCA [Computer Programme]*, Version 2.5. Irvine, CA: University of California.
- Ragin, Charles C. and Peer Fiss. 2008. Net effects versus configurations: An empirical demonstration. In *Redesigning social inquiry: Fuzzy sets and beyond*. C. Ragin (ed.), 190–212. Chicago: University of Chicago Press.
- Ragin, Charles C., Strand, S.I. and Rubinson, C. 2008. User's guide to Fuzzy-Set/Qualitative Comparative Analysis.
- Rainey, Hal G. 2009. *Understanding and managing public organizations*, 4th ed. San Francisco: Jossey Bass.
- Revelli, Federico and Per Tovmo. 2007. Revealed yardstick competition: Local government efficiency patterns in Norway. *Journal of Urban Economics* 62(1): 121-134.
- Rihoux, Benoit, Priscilla Álamos-Concha, Damien Bol, Alex Marx and Ilona Rezsöhazy. 2013. From niche to mainstream method? A comprehensive mapping of QCA applications in journal articles from 1984 to 2011. *Political Research Quarterly* 66(1): 167-198.
- Rihoux, Benoit and Charles C. Ragin (eds). 2009. *Configurational comparative methods. Qualitative Comparative Analysis (QCA) and related techniques*. California: Sage.
- Riketta, M. 2002. Attitudinal commitment and job performance: a meta-analysis. *Journal of Organizational Behavior* 23: 257-266.
- Rizova, Polly. 2011. Finding testable causal mechanisms to address critical public management issues. *Journal of Comparative Policy Analysis* 13: 105-114.
- Rushing, William A. 1967. The effects of industry size and division of labor on administration. *Administrative Science Quarterly* 12: 273-295.
- Sanderson, Ian. 2006. Complexity, 'practical rationality' and evidence-based policy making. *Policy & Politics* 34: 115-132.
- Schneider, Carsten Q. and Claudia Wagemann. 2010. Standards of good practice in Qualitative Comparative Analysis (QCA) and fuzzy-sets. *Comparative Sociology*, 9(3): 397-418.

- Schreyögg, Georg and Martina Kliesch-Eberl. 2007. How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization. *Strategic Management Journal* 28(9): 913-933.
- Sunningdale Institute. 2007. *Take off or tail off? An evaluation of the capability review programme*. Ascot: National School of Government.
- Talbot, Colin. 2004. Executive agencies: Have they improved management in government? *Public Money and Management* 24(2): 104-112.
- Talbot, Colin and Carole Johnson. 2007. Seasonal cycles in public management: Disaggregation and re-aggregation. *Public Money & Management* 27(1): 53-60.
- Thomas, Robyn and David Dunkerley. 1999. Janus and the bureaucrats: middle management in the public sector. *Public Policy & Administration* 14(1): 28-41.
- Tourangeau, Roger, Lance J. Rips and Kenneth A. Rasinski. 2000. *The psychology of survey response*. Cambridge: Cambridge University Press
- Trawick, Michelle W. and Roy M. Howsen. 2006. Crime and community heterogeneity: Race, ethnicity, and religion. *Applied Economics Letters* 13(6): 341-5.
- Ulrich, Dave and Dale Lake. 1991. Organizational capability: Creating competitive advantage. *Academy of Management Executive* 5(1): 77-92.
- Vis, Barbara. 2009. Governments and unpopular social policy reform: Biting the bullet or steering clear? *European Journal of Political Research* 48: 31-57.
- Vis, Barbara. 2011. Under which conditions does spending on active labor market policies increase? A fsQCA analysis of 53 governments between 1985 and 2003. *European Political Science Review* 3(2): 229-252.
- Wagemann, Claudius and Carsten Q. Schneider. 2010. Qualitative Comparative Analysis (ACA) and Fuzzy-Sets: Agenda for a Research Approach and a Data Analysis Technique. *Comparative Sociology* 9: 376-396.
- Walker, Richard M. 2008. An empirical evaluation of innovation types and organizational and environmental characteristics: Towards a configuration framework. *Journal of Public Administration Research and Theory* 18(4): 591-615.
- Walker, Richard M., George A. Boyne, and Gene A. Brewer (eds) 2010. *Public management performance: Research directions*, Cambridge University Press: Cambridge.
- Wilson, James Q. 1989. *Bureaucracy: What Government Agencies do and why they do it*. New York: Basic Books.
- Winter, Sidney G. 2003. Understanding dynamic capabilities. *Strategic Management Journal* 24(10): 991-995.
- Woodside, Arch, Shih-Yun Hsu and Roger Marshall. 2011. General theory of cultures' consequences on international tourism behaviour. *Journal of Business Research* 64(8): 785-799.
- Young, Kevin L. and Sung Ho Park. 2013. Regulatory opportunism: Cross-national patterns in national banking regulatory responses following the global financial crisis. *Public Administration* 91(3): 561-581.

**Table 1. Membership scores for conditions (Size, Complex, Agency, Temps, Instability) and outcome (Capability)**

	Department	Size	Complex	Agency	Instability	Temps	Capability
1	Business, Enterprise and Regulatory Reform	0.090	0.816	0.580	0.156	0.344	0.293
2	Cabinet Office	0.085	0.892	0.066	0.551	0.913	0.293
3	Chancellor's Departments	0.940	0.226	0.071	0.065	0.258	0.750
4	Children, Schools and Families	0.068	0.553	0.035	0.071	0.472	0.866
5	CLG Communities	0.063	0.942	0.624	0.151	0.495	0.190
6	Culture, Media and Sport	0.036	0.968	0.114	0.123	0.994	0.293
7	Defence	0.890	0.410	0.077	0.103	0.087	0.750
8	Energy and Climate Change	0.035	0.588	0.035	0.364	0.032	0.583
9	Environment, Food and Rural Affairs	0.131	0.708	0.796	0.464	0.555	0.190
10	Foreign and Commonwealth Office	0.069	0.967	0.039	0.033	0.082	0.583
11	Health	0.065	0.939	0.571	0.175	0.455	0.070
12	Home Office	0.444	0.389	0.952	1.000	0.131	0.014
13	Innovation, Universities and Skills	0.042	0.954	0.723	0.287	0.120	0.583
14	International Development	0.042	0.569	0.035	0.194	0.198	0.985
15	Justice	0.901	0.010	0.969	0.347	0.206	0.750
16	Law Officers' Departments	0.103	0.821	0.081	0.320	0.573	0.583
17	Transport	0.261	0.421	0.955	0.343	0.525	0.750
18	Work and Pensions	0.970	0.086	0.932	0.140	0.117	0.750

**Table 2. Truth table for logical configurations of High-capability**

Size	Complex	Agency	Instability	Temps	Number	High-capability	Raw Consistency	Cases
1	0	0	0	0	2	1	1.000	3, 7
1	0	1	0	0	2	1	0.958	15, 18
0	0	1	0	1	1	1	0.942	17
0	1	0	1	1	1	0	0.829	2
0	1	0	0	0	4	0	0.798	4, 8, 10, 14
0	1	0	0	1	2	0	0.692	6, 16
0	0	1	1	0	1	0	0.689	12
0	1	1	0	1	1	0	0.632	9
0	1	1	0	0	4	0	0.603	1, 5, 11, 13

**Table 3. Truth table for logical configurations of Low-capability**

Size	Complex	Agency	Instability	Temps	Number	Low-capability	Raw Consistency	Cases
0	0	1	1	0	1	1	0.945	12
0	1	1	0	1	1	1	0.935	9
0	1	0	1	1	1	1	0.926	2
0	1	1	0	0	4	1	0.868	1, 5, 11, 13
0	0	1	0	1	1	0	0.831	17
0	1	0	0	1	2	0	0.807	6, 16
0	1	0	0	0	4	0	0.679	4, 8, 10, 14
1	0	0	0	0	2	0	0.615	3, 7
1	0	1	0	0	2	0	0.598	15, 18

**Table 4. Sufficiency analyses results for capability outcomes (including complex and parsimonious solutions)**

Conditions	High-capability		Low-Capability		
	H1	H2	L1	L2	L3
Size	●	⊖	⊖	⊖	⊖
Complex	⊖	⊖	⊖	●	●
Agency		●	●	⊖	●
Instability	⊖	⊖	●	●	⊖
Temps	⊖	●	⊖	●	
<b>Complex (cases)</b>	3, 7, 15, 18	17	12	2	1, 5, 9, 11, 13
Consistency	0.972	0.942	0.945	0.926	0.879
Raw Coverage	0.404	0.177	0.224	0.256	0.406
Unique Coverage	0.275	0.048	0.068	0.089	0.211
Solution Consistency	0.952		0.885		
Solution Coverage	0.452		0.569		
<b>Parsimonious (cases)</b>	3, 7, 15, 17, 18		2, 12	1, 5, 9, 11, 13	
Consistency	0.959		0.922	0.893	
Raw Coverage	0.593		0.516	0.478	
Unique Coverage	0.593		0.231	0.193	
Solution Consistency	0.959		0.890		
Solution Coverage	0.593		0.709		

**APPENDIX A****Table A1. Raw data matrix for Size, Complex, Agency, Temps and Instability, and Capability**

Department	Size	Complex	Agency	Instability	Temps	Capability
1 Business, Enterprise and Regulatory Reform	8560	7306.028	55.96	0.598	3.154	60
2 Cabinet Office	8070	7418.514	92.32	1.370	11.896	60
3 Chancellor's Departments	100120	6483.909	91.27	0.248	2.687	66
4 Children, Schools and Families	6120	7075.083	100.00	0.283	3.758	68
5 CLG Communities	5440	7538.691	52.94	0.583	3.860	58
6 Culture, Media and Sport	610	7651.169	85.25	0.500	21.312	60
7 Defence	82800	6874.167	90.24	0.429	1.220	66
8 Energy and Climate Change	280	7100.592	100.00	1.000	0.000	64
9 Environment, Food and Rural Affairs	12080	7196.607	38.74	1.148	4.636	58
10 Foreign and Commonwealth Office	6150	7649.071	98.70	0.000	1.138	64
11 Health	5710	7529.360	56.57	0.648	3.678	54
12 Home Office	25960	6834.451	11.83	9.303	1.733	48
13 Innovation, Universities and Skills	1850	7583.346	45.41	0.875	1.622	64
14 International Development	1740	7086.801	100.00	0.692	2.299	74
15 Justice	85790	4998.018	4.28	0.975	2.355	66
16 Law Officers' Departments	9810	7311.227	89.70	0.931	4.893	64
17 Transport	19160	6894.210	10.44	0.967	4.228	66
18 Work and Pensions	119180	5976.281	17.86	0.552	1.586	66

**Table A2. Full details of the necessity analyses undertaken**

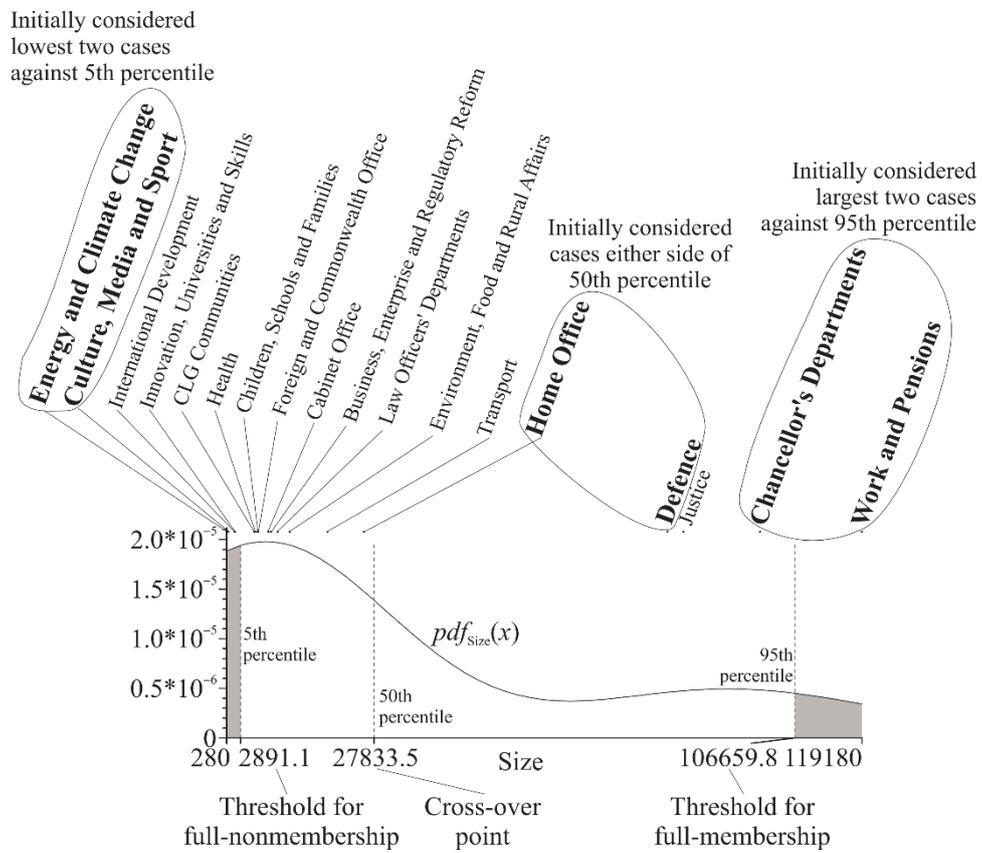
Table A2 presents the full results of the two necessity analyses undertaken on High-capability and Low-capability (found using fsQCA v2.5) using consistency value threshold above 0.9 (see Ragin (2009) and Cebotari and Vink (2013)).

	High-Capability		Low-Capability	
	Consistency	Coverage	Consistency	Coverage
size	0.442	0.784	0.286	0.477
~size	0.705	0.512	0.871	0.595
complex	0.641	0.529	0.871	0.675
~complex	0.605	0.833	0.392	0.506
agency	0.447	0.541	0.599	0.682
~agency	0.738	0.662	0.598	0.504
instability	0.352	0.668	0.516	0.922
~instability	<b>0.959</b>	0.678	0.814	0.541
temps	0.432	0.612	0.585	0.778
~temps	0.843	0.684	0.708	0.540

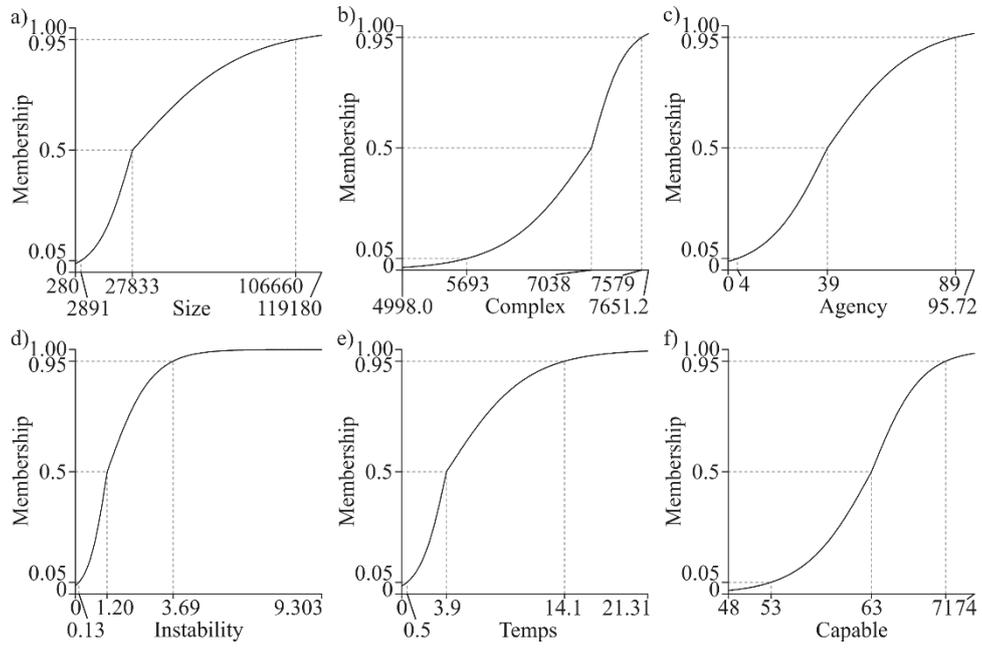
Based on using the consistency threshold value of 0.9, shown in bold here, only the absence of instability is considered a necessary condition in respect to High-capability. Due to space limitations, these full details are not included in the paper.

See: Cebotari, V. and Vink, M. P. (2013) A configurational analysis of ethnic protest in Europe, *International Journal of Comparative Sociology*, 54(4) 298–324.

**Figure A1. Probability density function ( $pdf_{Size}(x)$ ) graph of Size condition, with thresholds for full-nonmembership, cross-over point and full-membership**



**Figure A2. Plots of degrees of membership to conditions and outcome (Size, Complex, Agency, Temps and Instability, and Capability)<sup>a</sup>**



a For each attribute, the five values shown on its horizontal axis, are (left to right): Minimum attribute value, threshold for full non-membership, crossover point, threshold for full membership and maximum attribute value.