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# **ARE PUBLIC SECTOR MANAGERS A ‘BUREAUCRATIC BURDEN’? THE CASE OF ENGLISH PUBLIC HOSPITALS**

## **ABSTRACT**

Although managers are, globally, a central part of the new public management reform agenda, in recent years policy makers, the media and the general public have raised concerns about their effectiveness and contribution. In some countries, notably the UK and the US, this debate has been heavily influenced by Public Choice Theory (PCT), which depicts ‘bureaucrats’ as rent seeking, self-serving individuals. In this study, focusing on the case of acute care hospital trusts in the English National Health Service, we formally test whether public sector managers represent a ‘bureaucratic burden’. Using a longitudinal database spanning six years (2007-2012) and employing a dynamic panel data model, the findings reveal that, contrary to PCT assumptions, managers do not engage, in the main, in rent seeking behaviour and, crucially, appear to have a positive impact on organisational performance. Implications for theory, policy and practice are discussed.

## **INTRODUCTION**

For over three decades, investments in managers and management have been central to the reform of public services around the world (Pollitt and Bouckaert, 2011; Verbeeten and Speklé, 2015). While the latter emphasises the importance of management tools and techniques (Hood, 1995), the former involves ‘the creation of (new types of) managerial posts and positions’ in public sector organisations and the development of a ‘separate and distinct organisational function’ (Diefenbach, 2009; p. 894). In some cases, this has simply meant changing the job titles of senior administrators (or professionals). In others, it has

involved more substantive changes, asking traditional bureaucrats (turned ‘managers’) to embrace ‘private sector management wisdom’ (Meyer et al. 2014; p. 865) and actively recruiting managers from the commercial sector with different skill sets and motivations (Petrovsky, James and Boyne, 2015). Either way, the focus has been on strengthening the identity and resources of managers as a ‘distinct occupation’ (Grey, 1999) and on using business-like incentives (such as performance related pay) as a motivational tool (Weibel, Rost and Osterloh, 2009).

However, this expansion in the numbers (and influence) of managers has not gone unchallenged. Historically, in both the UK and the US, policy makers have cast doubt on the contribution of managers, claiming that they soak up resources that might otherwise be used to improve front line services (Cohen and Brand, 1993). More recently, these concerns have grown against a backdrop of deepening financial pressures and distrust in government (Boyne and Meier, 2013). In some instances, this has led to a backlash against managers, with policies aimed at streamlining public organisations to reduce so-called ‘bureaucratic bloat’ (Boon and Wynen, 2017; Rutherford, 2016). In the UK National Health Service (NHS), for example, the former Secretary of State for Health Alan Milburn famously described managers as ‘men in grey suits’, pledging to reduce their number (Burgess and Currie, 2013). After 2010, the Coalition government also promised to reduce management overheads in the NHS by 45% in its planned reform of primary care. In the US, President Trump has made the reduction in size and cost of the federal government, including managers, one of the early objectives of his administration (Kettl, 2017).

Unsurprisingly, these policies aimed at controlling the growth and remuneration of managers are often very popular, conforming to media stereotypes of managers as un-productive ‘fat cats’ (Kirkpatrick, Altanlar and Veronesi, 2017a). However, it is important to acknowledge that they also have deeper intellectual origins. Critical, in this regard, is ‘the extensive

acceptance of public choice reasoning and conclusions by...policy-relevant professions and some politicians' (Dunleavy 1991; p. 3). Drawing from classical economic arguments, Public Choice Theory (PCT) (Downs, 1967; Niskanen, 1971) sees public officials (referred to generically as 'bureaucrats') as rational decision makers who act as self-interested, rent seeking individuals aiming to maximize their personal utilities (salary, perquisites of the office, power and so on) (Jacobsen, 2006). This behaviour, it is argued, will ultimately lead to the costly expansion of administrative hierarchies and sub-optimal outcomes for service users. According to Aucoin (1990), PCT-driven ideas, emphasising 'distrust of the permanent bureaucracy' (p. 121), have sat uncomfortably with the objectives of management reform. While the latter stresses the need to re-structure bureaucracy to 'empower' managers (Hood, 1995), when looked at through the lens of PCT, managers themselves are also part of the problem. Implied here is that policy makers should make no distinction between managers and old-style bureaucrats, with the risks (and negative consequences) of rent seeking behaviour seen as applying equally to both (Aucoin, 2013).

Despite their direct and indirect influence, to date, these PCT assumptions have not been formally tested in relation to managers. Of course, this is not to ignore studies that have explored the preferences of bureaucrats (more generally) with regard to spending on administration and outcomes for efficiency (Duncombe, Miner and Ruggiero, 1997). There has also been a parallel debate concerning the impact of 'administrative intensity'. Drawing on ideas from contingency theory, this research looks at the antecedents and outcomes of administrative overheads in public organisations (Andrews and Boyne, 2014; Villadsen, 2014). Yet, with some exceptions (Rutherford, 2016), this research has not focused explicitly on the impact of managers as a distinct occupation. In most studies, 'managers' are generally lumped together with other staff not directly involved with the provision of services (professionals and street-level bureaucrats) and, therefore, classified as part of the central

administrative function (Andrews, Boyne and Mostafa, 2017; Van Helden and Huijben, 2014). The risk is that this approach does not distinguish sufficiently between administrators (in general) and managers as a relatively new occupation (in the public sector) with distinctive roles (Rutherford, 2016), skill sets and orientations (Diefenbach, 2009).

Given these limitations, the aim of this paper is to provide a more explicit test of how far the assumptions of PCT apply to managers in public sector organisations. To do so, we seek to address two related questions. First, do managers engage in rent seeking behaviour? We explore this question in three ways, looking at whether a greater presence of managers in public sector organisations leads to an upward trend in management staff numbers (self-reproduction), financial rewards (self-retribution) and increased job security (self-preservation). Second, what impact does a larger management function have for performance? If the predictions of PCT are correct, we would expect managers to represent a 'bureaucratic burden' (Boon and Verhoest, 2014), with largely negative implications for performance. But is this necessarily the case?

To address these research questions, we focus on the empirical case of acute care hospital trusts in the English NHS. The NHS is theoretically interesting for two main reasons. First, it represents a public service where, historically, there has been a strong push to employ managers. This process began in 1983, following a review of the service by Sir Roy Griffiths, the CEO of a leading supermarket chain. After only a few months, Griffiths famously observed '...if Florence Nightingale were carrying her lamp through the corridors of the NHS today, she would almost certainly be searching for the people in charge' (DHSS 1983; p. 12). In the aftermath of this report, the NHS began to recruit general managers to run hospitals and other services (The King's Fund, 2011), with their numbers rising steadily to around 37,000 in 2012 (the last year used in this study).

A second reason for looking at the NHS is that, somehow paradoxically considering the drive to increase ‘management’ (noted above), it represents a service where governments have, more recently, expressed growing concern about the perceived risks of managers (Burgess and Currie, 2013). This has led to policies aimed at cutting management ‘overheads’ which are broadly consistent with the prescription of PCT to ‘reduce the total size of government bureaucracies’ (Aucoin, 1990; p. 122). Political concerns have also been fuelled by negative media headlines, such as ‘death by bureaucracy’, or ‘cure the NHS with fewer managers’, and by sceptical public opinion (Kirkpatrick et al., 2017a). A poll published in January 2015, for example, found that ‘too much being spent on management and bureaucracy’ ranked first amongst public concerns, ahead of (arguably more pressing) issues such as hospital closures, staff shortages and access to drugs and treatments (Lord Ashcroft KCMG, 2015).

The remainder of this paper is structured as follows. In the next section, we outline some of the key ideas of PCT and, drawing on them, articulate five hypotheses relating to the likely behaviour and impact of managers in public sector organisations. We, then, describe our study, using a variety of administrative data sources over six years (2007-12) and present the main results of dynamic panel estimations. As we shall see, our findings do not offer compelling evidence to support the assumptions of PCT in relation to managers. In the concluding part of the paper, we explore some of the wider implications of this finding both for theory and policy.

## **THEORETICAL BACKGROUND**

Since its original formulation, PCT has had an important role in political debates in the western world. It has been actively embraced by a score of key intellectuals, pressure groups

and many politicians (Dunleavy, 1991), notably in the UK and the US (Pollitt and Bouckaert, 2011). Ideas from PCT have influenced reforms aimed at the marketization of public services, including privatisation and outsourcing (Boyne, 1998). As we noted earlier, they have also – indirectly – shaped attitudes and policies regarding the structure and workforce composition of public sector organisations (Boon and Wynen, 2017; Rutherford, 2016). Specifically, PCT adopts a very sceptical view of the motivation and behaviour of public service officials (referred to as bureaucrats), including, by default, managers (Aucoin, 2013).

Central to PCT is the idea that public service bureaucracies are associated with risks and moral hazards (Niskanen, 1971; Tullock, 1965; Weatherby, 1971). According to Niskanen (1971), in most instances the growth in public expenditure will far outweigh what is necessary or what is preferred by citizens, leading to an overproduction (or oversupply) of services. Ultimately, this arises from the rent seeking behaviour of public officials - bureaucrats - who engage in ‘empire building’ to maximise personal benefits (Jacobsen, 2006). As Migué and Belanger (1974) put it: ‘the problem resides in bureaucrats enjoying rents at the expense of the consumer. The citizens have good grounds for holding bureaucrats in suspicion [sic!]’ (p. 34).

This characterisation of the motives of bureaucrats is underpinned by classic economic theory and the view that humans are essentially rational decision makers (‘homo economicus’) (Kaboolian, 1998). The ‘rational actor’ model states that individuals have a set of well-performed preferences and, as maximisers of benefits, are egoistic, self-regarding and instrumental in their behaviour (Dunleavy, 1991). According to Downs (1967), ‘every official is significantly motivated by his...own self-interest even when acting in a purely official capacity’ (p. 2), such that ‘the pressure on them to seek representative goals is much weaker’ (p. 223). The impact of this behaviour is also exacerbated by delegation and moral hazards

which arise from informational asymmetries between principals (governments and tax payers) and bureaucrats (Aucoin, 1990; 2013).

Hence, at the core of PCT is the argument that bureaucrats will engage in rent seeking behaviour. However, there is less consensus within this approach over precisely what impact this will have. Some have pointed to the tendency for public officials to support increases in this overall size of government budgets (Blais and Dion, 1991; Garand, Parkhurst and Seoud, 1991). By contrast, others employ more fine-grained distinctions between the overall budget (necessary to provide basic services) and discretionary or slack recourses (Migué et al., 1974; Niskanen, 1975). Bureaucrats, it is argued, will focus primarily on the latter (discretionary budgets) (Duncombe et al., 1997), which might be ‘used to purchase whatever non-productive expenditures the bureaucrat desires’ (Wyckoff, 1990; p. 35). As such, the emphasis is on bureau-shaping activities, expanding the ‘core budget’ (consisting mainly of salaries and administrative overheads) rather than the wider ‘programme budget’ (which includes payments to other individuals and organizations) (Boyne, 1998; p. 698). As Egeberg (1995) also suggests, budget-maximisation efforts will impact mainly on policies that focus on the structure and staffing of government agencies.

This drive to maximise (discretionary) budgets could have mixed implications depending on the goals of bureaucrats. Niskanen (1971) notes how public officials may be motivated by ‘salary, perquisites of the office, public reputation, power, patronage, output of the bureau, ease of making changes, and ease of managing the bureau’ (p. 38). However, most PCT accounts tend to emphasise *two* primary outcomes of budget maximisation: a) the further expansion in the number of administrators (bureau shaping); and, b) improved extrinsic rewards for bureaucrats themselves (such as pay and employment stability).



Regarding the first outcome, the predictions of PCT are very similar to those of Parkinson's Law concerning the self-aggrandizing nature of bureaucratic hierarchies (Parkinson and Osborn, 1957). As Downs (1967) suggests, 'as the organisation grows, the proportion of all activity therein devoted to direct action declines, and the proportion devoted to internal administration rises' (p. 141). Yet, while these tendencies are present in all organisations, they are assumed to be most pronounced in the public sector. This is because external forces (such as market demands for efficiency) play a less significant role in influencing staffing decisions, thus imposing fewer constraints on the self-interested behaviour of officials (Boyne and Meier, 2013). If a bureaucrat 'does not have to pay the costs of adding more personnel, he will be motivated to increase the size of the organization indefinitely, since each new member adds somewhat to his total direct-action capabilities' (Downs 1967; p. 141).

Hence, within PCT it is argued that attempts to maximise the budget will focus primarily on internal administration and lead ultimately to a growing number of bureaucrats (Tullock, 2006). According to Niskanen (1971), this may occur even in situations where 'some bureaucrats, by either predisposition or indoctrination...try to serve (their perception of) the public interest', p. 39. In this context, bureaucrats may still regard an expansion in the number of staff as necessary to respond to targets set by policy makers or simply to cope with the challenges of managing complex organisations.

In addition to this bureau shaping outcome, it is further assumed that bureaucrats will try to improve their own extrinsic rewards (Duncombe et al., 1997; Jacobsen, 2006). As the size of the budget grows, bureaucrats have greater ability to expropriate resources for their own salaries and other fringe benefits (perquisites), using the argument that greater responsibility (in managing larger organisations) justifies higher remuneration (Dunleavy, 1986). Bureau

expansion may improve career advancement and promotion prospects as well as access to training and development opportunities (Dunleavy, 1991). Senior officials will also be able to redistribute perquisites to other lower level bureaucrats (Niskanen, 1975). Because the latter are assumed to be equally motivated by financial rewards (Chen and Hsieh, 2015), it is assumed that they will not oppose these actions, thus further reinforcing the legitimacy of rent seeking behaviour by senior bureaucrats and their control over discretionary resources.

Therefore, PCT encourages a cynical interpretation of the behaviour of public officials, which, as we suggested earlier has, more recently, been extended to managers. The latter is especially true in those countries where NPM reforms have led to the de-privileging of public service employment (Pollitt and Bouckaert, 2011), making it possible to recruit managers directly into the civil service. In these situations, where managers have become part of the permanent bureaucracy (Aucoin, 1990), PCT would predict very similar forms of rent seeking behaviour aimed at maximising (discretionary) budgets to enlarge and empower the management function itself. Specifically, this leads to what might be termed a ‘self-reproduction’ hypothesis:

*H1: A higher proportion of managers-to-staff in public sector organisations will lead to a positive change in the number of managers in relation to staff.*

Similarly, PCT might further predict that any delegation of budgetary authority to managers will result in improved extrinsic rewards for managers that are largely unrelated to performance. These extrinsic rewards could take many forms, including pay, employment stability, related fringe benefits and access to resources such as training and development. However, in practice it is likely that in the public sector context, the most significant (extrinsic) rewards will be those associated with both higher salaries and enhanced employment stability (Chen and Hsieh, 2015; Lewis and Frank, 2002). This assumption is

also confirmed by comparative research focusing on public managers, which suggests that job security and pay are ranked highest (by managers) in most countries surveyed (Chen and Bozeman, 2013). As such, following the logic of PCT, it seems reasonable to develop two further hypotheses (what we term as ‘self-retribution’ and ‘self-preservation’ assumptions) concerning the likely impact of rent seeking behaviour with regard to the distribution of extrinsic rewards:

*H2: A higher proportion of managers-to-staff in public sector organisations will lead to an increase in management salaries.*

*H3: A higher proportion of managers-to-staff in public sector organisations will lead to increased employment stability for managers.*

Building on these concerns, a further (critical) assumption of PCT is that the rent seeking behaviour of bureaucrats (and managers) will have largely negative implications for the performance of public sector organisations. Self-interested bureaucrats will grab a larger portion of the budget to use for their own benefit, thus starving organisations of resources needed to deliver core services (Boyne and Meier, 2013; Dunleavy, 1991). Due to asymmetric information, only bureaucrats know exactly at what costs their functions are carried out. Consequently, they are in the position of being able to expand budgets (or shape slack resources) to increase their own numbers and rewards beyond levels that are optimal for their organisation (Mueller, 2003). According to Downs (1967), bureaucratic growth also leads to the ‘ossification’ of public organisations and a reduced ability to respond to new circumstances. As such, in line with Parkinson’s Law, it is assumed that growing numbers of (over paid) administrators will place unnecessary burdens on public sector organisations (Duncombe et al., 1997; Migué et al., 1974). By the same token, it is argued that more streamlined (or flatter) organisations will perform better than ‘bloated’ ones because they are

more effective in channelling resources to protect the quality and quantity of core services (Ford and Slocum, 1977).

Returning to the issue of managers, these assumptions lead us to predict that an expansion of ‘unproductive’ (due to the related self-interested behaviours) management functions could be sub-optimal, pulling resources away from essential front line services and therefore increasing their cost (Rutherford, 2016). Specifically, it can be hypothesised that:

*H4: In public sector organisations, rent seeking behaviour of managers will be negatively related to organisational performance.*

However, it may be possible that increasing management numbers will only be negative for performance after a certain threshold level. This idea is acknowledged within PCT, which notes that, up to a certain point, bureaucrats may be needed to ensure the effective coordination of street-level staff (Andrews et al., 2017). According to Tullock (1965; p. 51), ‘it seems clear that the declining “marginal efficiency” associated with increasing size would guarantee that a point would be attained at which further gains from expansion would be less than the added costs’. In this regard, a small increase in bureaucracy might be necessary to effectively distribute command and control tasks (Rutherford, 2016), with economies of scale helping to overcome the negative empire building tendencies described earlier. Nevertheless, it comes a point where ‘the balance shifts and organisations begin to suffer from “bureaucratic congestion”’ (Boyne and Meier, 2013; p. 309), and, so, diseconomies of scale are generated with negative impact, in particular on efficiency. Hence, when applied to managers, these insights lead to a final hypothesis which states that:

*H5: In public sector organisations the negative impact of rent seeking behaviour of managers on organisational performance will be non-linear.*

## **RESEARCH DESIGN**

As noted, to test our main hypotheses, we focused on one part of the English public sector: the NHS. In contrast to the US and other insurance funded systems, the NHS is an entirely tax funded healthcare system with services free at the point of delivery regardless of ability to pay. Hospitals and other healthcare services are substantially part of the public sector with the vast majority of the clinical and non-clinical workforce employed directly by the state (as civil servants).

Partly as a way of controlling spiralling costs, since the 1980s governments in the UK have sought to increase the number of general managers in the NHS as a means to develop management capabilities. This process went hand in hand with the re-structuring of the service to allow greater autonomy for hospitals (re-designated as ‘trusts’) and to stimulate competition through the development of internal markets (Battilana, 2011). However, as we noted earlier, more recently political support and enthusiasm for managers has greatly diminished. While the importance of ‘managing’ the NHS is still acknowledged, consistent with the assumptions of PCT, questions have been raised about the motives of managers, their high remuneration and value for money relative to alternative ways of using the same resource (such as investment in front line services).

To investigate the validity of these concerns, we focused on one part of the NHS – acute care hospital trusts in England – where the vast majority of general managers are employed (The King's Fund, 2011). Our approach also draws heavily on publicly available secondary data relating to the characteristics of managers, the organisational context and various performance outcomes.

### **Data sources**

To test our hypotheses, we relied on a mix of official NHS statistics and a commercial database (Binley's NHS Directory) supplied by the industry leader. Collected and published since 1991, the NHS Directory contains detailed information on NHS managers. A new updated edition is published every four months with the latest edition used in our study (64 - May 2012) comprising more than 30,000 individuals. This data is, in the first instance, gathered by the relevant NHS organisation and then double-checked by Binley's analysts to correct any omissions or mistakes. In Binley's, a managerial role is given to any individual with decision making power, specifically in relation to budgeting, financial management and allocation of resources (Kirkpatrick et al., 2017a). As such, the data captures both general (or 'pure play') managers and 'hybrid' clinical managers (i.e. doctors and nurses' managers with clinical directorates).

To complement this resource, additional data was acquired through NHS Digital. This body hosts a number of publicly available repositories of information, including: the Hospital Episode Statistics database (offering data on the activity of trusts, such as patient admissions or their profile); the National Workforce Data Set (providing information on trusts' workforce characteristics, including pay and turnover rates); the Hospital Estates and Facilities Statistics (providing a categorisation of trusts according to their location, legal status and main function); the NHS Bed Availability and Occupancy (offering data on beds numbers and usage); the Safety Data on Planned Care (containing information on the incidence of *Clostridium difficile*); the NHS Adult Inpatient Survey (gathering the views of patients and their carers on the service provided); and the NHS Reference Costs Data Set (a repository information used to establish prices for NHS-funded services in England).

The cumulative database spanned six years (from 2007 to 2012) of information at the organisational level. It is important to note that, on average, for each year the sample

provided information for around 163 trusts, effectively the entire acute care trust population in England. However, missing data on the workforce characteristics related to pay and stability led to fewer observations in the regression analysis.

### **Variables employed**

The main variable employed to test PCT assumptions was the size of the management function in hospital trusts, measured as the proportion of managers relative to all staff. This proxy was derived from two main sources. First, to identify ‘managers’ we relied on the classification contained in the Binley’s NHS Directory, including both clinical and non-clinical (general manager) roles. Each management role listed by Binley’s was also double-checked against the standard NHS occupation codes. Second, we used the Workforce National Data Set to calculate the total number of Full Time Equivalent (FTE) employees per hospital trust. In the NHS, the organisational workforce divides into a number of categories: doctors; qualified nursing; midwifery and health visiting staff; qualified scientific, therapeutic and technical staff; qualified ambulance staff; support to clinical staff; and, lastly, infrastructure support (comprising central functions, estate personnel, senior managers and managers). Because these statistics refer to the contracted (or established) workforce, they included those individuals who may have been temporarily absent (for instance on sick or maternity leave). Using these sources, we were able to determine the relative ‘manager-to-staff ratio’ for trusts in the sample changes in this ratio over time.

In order to test our second and third hypotheses in relation to rent seeking behaviour of managers and extrinsic rewards, two further variables were included. The first related to the monetary compensation (i.e. salary) of managers. This information was compiled from the section of the Workforce National Data Set related to the annual earnings of NHS staff broken down by job roles. Specifically, we focused on the annual earnings of ‘senior

managers' and 'managers'. Second, using the same source, we derived a measure of the contractual stability of managers. Here, we focused on the stability index used by the NHS to record turnover levels for senior managers and managers, as a proxy for stability of employment.

With regard to the fourth hypothesis, to investigate the impact of these possible outcomes of rent seeking behaviour (growing numbers of managers and extrinsic rewards), we looked at three separate indicators of organisational performance. First, in keeping with the expectations of PCT, we focused on the efficiency of hospital trusts. As is customary in the healthcare literature, an efficiency score for each hospital trust was calculated using a non-parametric linear programming method – Data Envelopment Analysis (DEA) – that compares organisations by constructing a productivity production frontier (Hollingsworth and Smith, 2003). The relative efficiency of each hospital trust is measured by its ability to increase (decrease) all of its outputs (inputs) given its inputs (outputs). Specifically, we used a radial input-oriented Constant Returns to Scale model where technical efficiency is captured by the ability of the organisation to use the minimum inputs for a given level of output. Following previous studies (Hollingsworth, 2008; Kohl, Schoenfelder, Fügner and Brunner, 2018), we employed capacity-related (number of beds and sites), labour-related (number of employees) and expenses-related (level of outsourcing of non-clinical services) inputs. The output indicators (including activity and quality outputs) comprised case-mix adjusted by admissions, day-cases, emergency admissions, and percentage of bed occupancy. We also included the Reference Cost Index (RCI), which records the average unit cost to the NHS of providing defined diagnosis and treatment services to NHS patients (Llewellyn and Northcott, 2005), and the patient mean waiting time on list for hospital treatments. The DEA



score<sup>1</sup> for each hospital trust was, then, used as dependent variable in the regression estimations.

Although the assumptions of PCT relate mainly to the efficiency of public sector organisations, in this study we also sought to capture broader measures of effectiveness. This is especially important in the healthcare context given the professionalised nature of services and value placed on maintaining and improving quality. By diverting finite resources (towards higher salaries or new appointments), rent seeking by managers could undermine quality outcomes. On the other hand, even if (contrary to the assumptions of PCT) managers do succeed in raising efficiency, this could also have a negative impact on service outcomes. The latter follows from the often reported trade off or tension between management goals of cost containment and service improvement (McKay and Deily, 2008; Stargardt, Schreyögg and Kondofersky, 2014). To explore these possibilities, we focused on two additional ‘quality’ measures - patient experience and infection rate – both of which might, arguably, be impaired by any (rent seeking) tendency of managers to divert resources away from front line services.

With regard to patient experience, we gathered data from the NHS Adult Inpatient Survey. This survey, run by the Care Quality Commission since 2001, collects the perceptions of NHS adult patients (16+ and excluding maternity patients, day cases and private patients) on a number of aspects such as being involved in decisions about their care and treatment, information sharing and support when leaving hospital, waiting times on so forth. We used the overall patient experience score for each hospital trust. Turning to control of outbreaks of infection, a measure of the quality of clinical processes, we concentrated on the rate of infection in hospital trusts for *Clostridium difficile* (*C. difficile*). This relates to a hospital-

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<sup>1</sup> Analogous results were obtained when employing the radial Variable Returns to Scale model. These DEA scores are not reported but available on request.

acquired infection that affects people who have been treated with antibiotics, caused by a bacterium that can infect the bowel leading to diarrhoea. All incidents of *C. difficile* are self-reported by hospital trusts.

A number of control variables were introduced in the two stages of the regression analysis (see below). In relation to the rent seeking behaviour of managers (H1-3), our objective was to account for factors that might have an impact on their ability to maximise budgets and divert resources towards empire building. First, hospital trusts were categorised according to their legal status, whether they had obtained greater financial autonomy as independent Foundation Trusts (FT). FT status is only awarded to hospital trusts that formally apply and are judged to be higher than average performers across a range of indicators (Wright, Dempster, Keen, Allen and Hutchings, 2012). Because FTs (at least in theory) have greater autonomy and are financially solvent (often declaring a budget surplus) one might expect this to increase the opportunities for managers to engage in rent seeking behaviour. Second, we distinguished between hospital trusts in terms of their involvement in education (teaching and non-teaching hospitals). Here again the assumption was that rent seeking by managers would be greater in trusts with a stronger resource base such as teaching hospitals.

As a third control, we accounted for the likely impact of organisational size - proxied by using the number of beds available for overnight patient stay (precisely the log-transformation of the total number of beds). Larger organisations might provide greater opportunities for empire building by managers, for example making it easier to secure and justify resources for increasing salaries. Fourth, we considered the effect on the demand for care and treatment generated by the characteristics of patients admitted. Using the grouping of patient events in Healthcare Resource Groups<sup>2</sup> (available from the National Case-mix

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<sup>2</sup> The Healthcare Resource Groups (HRGs) are the English version of the Diagnose Related Groups used in many other healthcare systems including the U.S. HRGs represent the essential component of Payment by

Office), we derived a case-mix index dividing the case-mix value for each hospital trust by the mean of all case-mix values. This index aggregates information about patients and associated procedures based on the type and mix of patients treated. Consequently, a higher case-mix implies a more complex, resource intensive form of care (e.g. greater presence of patients with long term and/or multi-morbidity conditions), which we assumed would also lead to fewer opportunities for managers to engage in rent seeking.

As a fifth control, we tried to account for the possible counter-veiling influence of professionals (notably doctors) within hospital trusts on resource allocation (Battilana, 2011). To explore this, we focused on clinical staff turnover (derived from the same workforce database mentioned above) as an indicator of the strength (or weakness) of cadres of professionals within trusts to mobilise rival claims to control discretionary budgets. Sixth, we took into account variations in the managerial rank amongst hospital trusts, based on the assumption that organisations with top-heavy management structures would be more likely to suffer from rent seeking behaviours. This variable was operationalised as a ratio between the number of managers operating at the strategic level, who have more direct control over allocation of resources (and so greater opportunity to divert them for personal benefits), and the total number of managers. Finally, we included dummies to control for years and hospital trust location, the latter by using the areas corresponding to the 10 Strategic Health Authorities (SHAs) still existing during the period under investigation. This list of controls was also used to frame the second set of tests, focusing on performance (H4-5)<sup>3</sup>.

## **Empirical approach**

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Results, which is an activity based system used by the Department of Health to reimburse hospital trusts for patient stays, procedures and treatment offered.

<sup>3</sup> The proxies for organizational size (ln of beds) and operational complexity (case-mix) were excluded in the set of regressions for H4-5 to avoid issues of collinearity with the DEA scores, where they are employed as output indicators. Results were qualitatively similar when included in the estimations.

As noted, the analysis proceeded in two stages. The first set of tests examined H1-3 in relation to the extent of rent seeking behaviour of hospital trust managers. Specifically, we looked at the impact of manager-to-staff ratio on the percentage change in that ratio, pay levels of managers and employment stability over time. In the different specifications of the regression model, we also included previous levels of manager pay and stability in management numbers as controls. This was based on the assumption that changes in the manager-to-staff ratio might be conditional on the amount of discretionary budget available at an earlier period and that this, in turn, would be more limited in the case of a highly paid, stable management cadre. The second set of estimations investigated the impact of managers on organisational performance (H4-5). The high likelihood of a persistence of levels of hospital trust performance over time necessitated controlling for this (possible) path dependency with estimations that included lags of the dependent variables, as the hypothesised rent seeking behaviours could be affected by greater (lower) slack related to previous performance.

Using time series cross-sectional (panel) data with hospital trust-year cases, we employed Arellano-Bover/Blundell-Bond (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998) dynamic panel data estimator to overcome a number of challenges in the model specification. This system Generalized Method of Moments (GMM) estimator is an extension to the difference-GMM estimator proposed by Arellano and Bond (1991). In the difference-GMM, equations are presented in terms of first differences eliminating the fixed effects (i.e. time-invariant trust characteristics), which is a problem if the time-series is highly persistent (Blundell and Bond, 2000). Thus, in the system-GMM regressions differences and levels form a system of equations. Whereas lagged levels are employed as instruments in the differenced equation, lagged differences are used as instruments in the level equation.

Therefore, system-GMM allows to include time-invariant control variables (e.g. teaching

trust) into the model via the level equation. Arellano-Bover/Blundell-Bond system-GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) also controls for time-varying unobserved effects as well as for heteroscedasticity and autocorrelation within hospital trusts. Furthermore, it works effectively with panels with small T (time dimension) and large N (cross-section dimension) and controls for heteroscedasticity and autocorrelation of the errors within organisation-level observations.

In addition to its suitability for dynamic left-hand-side variables (i.e. inclusion of lags of dependent variables as explanatory variables), the system-GMM estimator is appropriate for explanatory variables that are not strictly exogenous (i.e. correlated with past and current – endogenous - realisations of the error term). Accordingly, we treated all management related explanatory variables as fully endogenous in all sets of estimations. This helped to deal with the possibility that, say, past and current pay levels would have an impact on the size of the discretionary budgets (thus limiting the ability of managers to pursue empire-building strategies) or that the management related explanatory variables would be affected by past and current hospital trust performance levels. We also assumed that past and current hospital trust performance could impact on clinical staff stability levels and foundation trust status, as only trusts with a robust performance record – including those able to retain their clinical workforce - are allowed to become FTs. Hence, these two control variables were also treated as fully endogenous. On the other hand, teaching trust status, natural log of the number of beds, case-mix index, year and location dummies were all treated as strictly exogenous. All estimations were run with clustered robust standard errors at the hospital trust level.

### **Robustness tests**

As the system-GMM approach can potentially underperform when the data employed is characterized by a relatively small number of clusters (<200) and persistent series, we utilised

an alternative dynamic panel data estimation technique, developed by Ahn and Schmidt (1995), which combines linear as well as additional nonlinear (quadratic) moment conditions. This estimator is asymptotically equivalent to the optimal minimum distance estimator of Chamberlain (1984). Following the assumption of serially uncorrelated idiosyncratic errors, these additional nonlinear moment conditions can yield potentially sizeable efficiency gains and they also improve the finite-sample performance. Importantly, the Ahn and Schmidt (1995) estimator relaxes a number of assumptions of the system-GMM estimator, e.g. mean stationarity.

To further check the robustness of the system-GMM estimations, we ran a number of post-estimation specification tests recommended by Blundell and Bond (1998) and Roodman (2009b): the Sargan-Hansen test of over-identifying restrictions to test the validity of the instruments; the Arellano and Bond (1991) test to over-rule a second-order serial correlation in the first-differenced residuals; and the Difference-in-Hansen test for the levels equation for both the full set of instruments and the subset based on the dependent variable. We also report the number of instruments generated for each regression to check the potential of ‘instrument proliferation’. The latter occurs when too many instruments – defined as situations where instruments outnumber individual units in a panel (see Roodman (2009a)) – over-fit instrumented endogenous variables resulting in biased estimates (Roodman (2009b)).

## RESULTS

The descriptive statistics reported in Table 1 show that, on average, the proportion of managers-to-staff stood at roughly 2%. This figure is significantly lower than the 9.5% that is the average for the UK workforce as a whole (Kirkpatrick et al., 2017a) and, in itself, seems to disconfirm the perception of a bloated management cadre in the NHS (also see The King’s

Fund (2011)). The mean manager annual salary was around £53,000, although predictably this varied according to seniority. Average annual turnover for managers was roughly one in ten, with similar levels also applying to clinical staff. The year-on-year change in manager-to-staff ratio was marginally negative, but considerable variations were observed between organisations. The percentage of top managers to all managers stood at around a third, but again there were some interesting variations between hospital trusts. In terms of organisational profile, FTs represented half of the sample, whereas teaching trusts made up 17% of all organisations investigated. The average size of hospital trusts was roughly 800 beds with a workforce of 3,900 full time equivalent staff (data not reported in the table).

Insert Table 1 here

In Table 2, we report the bivariate Pearson correlation matrix for all variables employed in the estimations. As can be seen, all the values were well within acceptable limits and, so, they did not generate any issue of possible multi-collinearity. To further mitigate the concern that regression coefficients would be increased due to collinearity, we also calculated the Variance Inflation Factors in each of the estimations. Again, all the relevant values fell comfortably within the acceptable threshold ( $<5$ ).

Insert Table 2 here

### **Rent seeking behaviour**

Turning to our first three hypotheses, Table 3a reports the outcomes of the system-GMM estimations, with all three management proxies were treated as fully endogenous variables. Overall, the results here offered very limited support for the assumptions of PCT. First, we observe in relation to H1 that the previous year manager-to-staff ratio had a significantly *negative* impact on the change in the management cadre ( $p < 0.10$ ). Therefore, the prediction

that public sector managers will self-reproduce by pursuing empire building strategies is disconfirmed by our analysis, leading to a rejection of H1. In economic terms, this means that if the past period manager-to-staff ratio increased from 1.8% to 2.8% (i.e. a 'one unit' increase - essentially 1 SD), the change in manager-to-staff ratio would reduce by a sizeable 5 percentage points (from -1.1% to around -6.7%). Furthermore, previous pay levels and stability in the management group did not appear to have any significant effect on the change in the manager-to-staff ratio.

Second, the analysis reveals that higher levels of managers to hospital trust staff effectively led to higher managerial pay levels ( $p < 0.05$ ). As such, we found support for H2 related to self-retribution tendencies of public sector managers. Specifically, if past period manager-to-staff ratio increased by 'one unit', manager pay would increase from around £52.8k to around £56.6k, or a 7-point increase in percentage terms. As expected, pay levels were also positively affected by previous high salary levels, in the sense that if salary levels for managers were already high, they were unlikely to decrease in subsequent periods.

Conversely, lower turnover in managers did not appear to have a significantly negative influence on pay levels. Third, we did not find evidence to support the idea that higher past manager-to-staff ratios had any significant effect on the employment stability of managers. This leads us to reject H3.

Turning to our main controls, as expected, the analysis showed that higher stability in clinician numbers (a proxy for professional influence) negatively impacted on the change in manager-to-staff ratio. FT status was also found to have a negative impact on the management-to-staff ratio. This is despite the opportunity that FT status (associated with greater formal autonomy) might afford managers to engage in self-serving behaviour by



exploiting slack resources. Furthermore, larger hospital trusts were more likely to offer higher financial rewards to their managers.

Crucially, we obtained qualitatively very similar findings when using the alternative panel data estimator designed by Ahn and Schmidt (1995) (see Table 3b). Although the magnitude of the coefficients differed slightly, the supplementary analysis confirmed that the ratio-of-managers had, respectively, a negative impact on changes in the same ratio, a positive effect on pay levels and no significant impact on managerial stability. As with the system GMM regressions, the other two proxies of managerial rent seeking did not have any statistically significant impact. Thus, the evidence gathered in relation to the first set of hypotheses about rent seeking behaviour is somehow mixed. While we find support for H2, regarding pay levels, the analysis leads us to reject H1 and H3. This is especially notable in the case of H1 where we found that high manager-to-staff ratios in hospital trusts actually had a negative impact on rates of change in the size of management cadres.

Insert Table 3a here

Insert Table 3b here

### **Impact on performance**

With reference to our second set of hypotheses (H4-5), we explored the PCT-derived assumption that public sector managers (through rent seeking behaviour) would divert valuable organisational resources for their own benefit and, in the process, negatively impact on overall performance. To explore this concern, two main tests were conducted: one looking at our key explanatory variables in isolation and a second looking at them in combination. The assumption here is that the three manifestations of rent seeking behaviour, in combination, would generate a kind of vicious cycle that exaggerates their negative impact on

the efficiency and effectiveness of hospital trusts. This analysis involved adding two and three-way interaction terms in the estimation models.

Using Arellano-Bover/Blundell-Bond dynamic system-GMM panel estimations, we first investigated the separate impact of manager-to-staff ratios, pay and employment stability. As shown in Table 4a columns 1, 3 and 5, the analysis appeared to disconfirm the predictions of PCT (captured by H4). Specifically, the manager-to-staff ratio had a significantly ( $p < 0.05$ ) negative impact on the infection rate (thus, the infection rate decreases as the ratio of managers-to-staff increases). Additionally, this ratio was not significantly associated - at least linearly (see later H5) - with the DEA technical efficiency score of hospital trusts (meaning that a higher ratio does not lead to greater inefficiency), but positively affected overall levels of patient experience ( $p < 0.05$ ) (essentially, better experience was linked to higher proportion of managers to staff). With regard to the other two indicators of managerial rent seeking behaviour, (manager pay and employment stability), there was no significantly negative impact on any of the three performance outcomes – although stability did positively impact on patient experience. Interestingly, none of the (two and three-way) interaction tests between the proxies for managerial rent seeking behaviour revealed statistically significant associations, providing further evidence to contradict the assumptions of PCT (results not reported for the sake of simplicity and brevity).

Importantly, as shown in Table 4b columns 1, 3 and 5, these findings were largely confirmed when employing Ahn and Schmidt (1995) estimator. The only exception here is that the impact of the manager-to-staff ratio and employment stability on patient experience was no longer significant, possibly due to higher level of persistence in the data. Although we need to exercise caution, this set of results appeared to disconfirm H4, suggesting that higher manager levels, pay and contractual stability are not having a negative impact on

performance. On the contrary, a higher proportion of managers to staff seemed to be associated with performance improvements for two out of three indicators (infection rates and patient experience).

In economic terms, for an average size hospital trust (employing 3,900 staff) a 1% growth in the managers-to-staff ratio would mean employing approximately 39 more managers at a basic gross salary cost of £2.06 million (given average salary of £52,830). According to our findings, if the manager-to-staff ratio increased from 1.8% to 2.8% (a ‘one unit’ increase - 1 SD), the infection rate would decrease from around 0.87 to around 0.75. This represents a sizeable improvement of nearly 15 percentage points. In relation to patient experience, a ‘one unit’ increase in the proportion of managers to staff would generate a growth in the overall level of patient experience of around 0.5 points (up from the median value 75.4) – representing a moderate improvement of less than a percentage point.

As far as the efficiency is concerned, an increase in the manager-to-staff ratio was not significantly associated with improvements (in terms of decreasing DEA scores). However, we did find evidence of a quadratic relationship between the main explanatory and the dependent variables, suggesting that increases in the manager-to-staff ratio might be positive up to a certain tipping point (see below in relation to for H5).

Insert Table 4a here

Insert Table 4b here

Accordingly, the final set of results is related for our final hypothesis (H5) regarding the non-linear relationship between managers rent seeking behaviour and performance. To briefly recap, the prediction of PCT is that the performance consequences of managers will turn increasingly negative with higher numbers, salaries and employment stability. Due to

‘bureaucratic congestion’ (Boyne and Meier, 2013), a tipping point will be reached, after which the presence of managers becomes a growing problem. To test for this possibility, a quadratic term for manager-to-staff was introduced in the system-GMM regressions. This analysis produced mixed results.

As can be seen in Table 4a, columns 2, 4 and 6, we found evidence of a non-linear relationship between manager-to-staff ratio and efficiency outcomes (proxied by the DEA scores). Specifically, looking at column 4, it can be observed that the management-to-staff ratio was significantly and positively associated with the DEA scores while its square value was significantly (at 5% confidence level) and negatively linked to efficiency levels. When running marginal effects analysis, it appeared that the tipping point for the positive impact of more managers in relation to staff hovered at around 3% (corresponding to the 90<sup>th</sup> percentile in the distribution). Before this threshold is met, a ‘one unit’ increase in the manager-to-staff ratio would lead to a growth in the DEA score of around 5% (or 0.05 units). Above that level, an increase in the manager-to-staff ratio did not have any significant impact on organisational efficiency but, interestingly, it never turned negative.

Conversely, where infection rate and patient experience are concerned, the coefficient of the quadratic term was not statistically significant at the customary levels, negating the presence of a non-linear relationship. These findings were again largely confirmed when using the alternative panel data approach as indicated in Table 4b columns 2, 4 and 6. Hence, this analysis lends only partial support for H5. On the one hand, it suggests that the positive consequences of higher manager ratios steadily diminished with regard to organisational efficiency. Nevertheless, consistent with our findings in relation to H4, at no point did this relationship become negative, as predicted by PCT. Furthermore, it appeared to be linear (and positive) in relation to infection rate and patient experience.

With reference to the control variables, higher levels of clinical stability appeared to have a positive influence on the infection rate. Furthermore, FT status surprisingly did not have any effect on hospital trust efficiency as well as the other two indicators, with similar results observed in relation to teaching status. The only statistically significant result was associated with a top-heavy management structure, which appeared to lead to lower efficiency levels. As mentioned, in all sets of regressions we included years and location fixed effects. It is also worth pointing out that there was evidence of path-dependency in performance, as suggested by the size and significance of the coefficients of the first lags of the dependent variables.

As reported in Tables 3 and 4, all tests undertaken confirmed the robustness of the findings, in relation to both the full set of instruments and the relevant subsets. Given that the number of instruments was comfortably below the total number of groups, we could also reasonably exclude the existence of a proliferation of instruments and, hence, of biased estimates due to overfitting of the endogenous variables. To further reinforce this conclusion, we followed the advice of Roodman (2009b) and proceeded to collapse the instruments. The system-GMM regressions run with a reduced number of instruments generated largely analogous results except for the coefficient of manager-to-staff ratio as predictor of patient experience, which was just outside the customary confidence level. No changes were noted in relation to the other two performance outcomes (efficiency and infection rates), including significance levels. Although not included in the main analysis, we also controlled for the effect of providers' concentration (i.e. competition) by introducing in the estimations the Herfindahl Index (based on the number of admissions for each hospital trust in neighbouring areas). The results (which are available on request) remained unchanged.

## DISCUSSION AND CONCLUSION

The main point of departure for this paper was the renewed academic and policy debate about managers in the public sector and their contribution. While NPM reforms globally have emphasised the need for more (and better trained) managers (Diefenbach, 2009), cash strapped governments have more recently begun to question this strategy, with managers finding themselves ‘in the eye of the storm’ (Boyne and Meier, 2013). We also noted how these policies have drawn implicitly on the assumptions of PCT about the rent seeking behaviour of bureaucrats (Jacobsen, 2006). However, while these ideas are influential, especially in Anglo-American policy contexts, it is not clear how far (if at all) they apply to the distinct occupation of public managers.

Focusing on the illustrative case of the English NHS, a sector where over the past three decades there has been a marked drive to recruit managers, we found very little support for PCT arguments. Our results indicate that while a higher proportion of managers to staff does impact on salaries, it is not leading to a positive change in the growth of managers or in their employment stability. This is in stark contrast to the idea that managers, like bureaucrats, will engage in empire building activity by exploiting slack resources (Boyne and Meier, 2013; Kelman, 2006; Pandey, 2010). Nor did this analysis offer any support to the assumption that rent seeking behaviour of managers will have negative implications for performance. On the contrary, while caution needs to be exercised, *higher* manager-to-staff ratios in public hospitals appear to have a statistically significant *positive* impact on a range of performance outcomes (including the efficiency and effectiveness of services).

These conclusions are strengthened by the quality of the data and the methodological approach chosen. Regarding the former, the study was able to combine a number of publicly available databases with a unique, proprietary dataset of NHS managers. This made it

possible to explore multiple performance indicators (efficiency and quality) and go beyond previous studies of ‘administrative intensity’ (Andrews and Boyne, 2011; Andrews et al., 2017; Rutherford, 2016) by focusing not just on the relative size of management cadres but also on human resource management practices (pay and employment contracts). In addition, the longitudinal nature of these datasets allowed us to investigate the existence and subsequent impact of (assumed) management rent seeking behaviours over time. Turning to methods, the use of system-GMM estimations helped to limit the risks of reverse feedback loops between explanatory factors and outcome (dependent) variables. By treating relevant variables as fully endogenous, this method helps to deal with reciprocal influence between variables and, therefore, increases confidence in the assumed direction of causality. Our confidence in the findings was also reinforced by the robustness tests conducted, including the use of an alternative dynamic panel data estimator (Ahn and Schmidt, 1995). However, we cannot completely rule out the existence of some residual endogeneity concerns.

The main findings reported here connect with a number of parallel strands of literature. On the one hand, they are broadly consistent with studies that have questioned PCT assumptions regarding the budget maximising tendencies of ‘bureaucrats’. Lewis (1990), for example, reports that that federal, state, and local public administrators are not more inclined than citizens to favour increases in government spending. Similarly, Dolan (2002) finds that federal administrators favour less spending than the general public on a broad number of spending categories. In this regard, our findings lend support to the idea that ‘bureaucrats’ (including managers) ‘do not have much to [*personally*] gain from growth in the public sector’ (Jacobsen 2006; p. 197).

These results also chime with a growing body of research focusing on ‘administrative intensity’ in public organisations (Andrews and Boyne, 2014; Boon and Verhoest, 2014;

Boyne and Meier, 2013). Some studies from this perspective offer support for the assumptions of PCT, emphasising the bureaucratic burden of large administrative functions (including managers) (Bohte, 2001; Chubb and Moe, 1990; Chubb and Moe, 1988).

However, although focusing on managers as opposed to (the broader category of) administrators, the NHS case appears to point in the opposite direction. Specifically, it suggests that larger management functions can, potentially, have generally positive consequences for performance (Andrews et al., 2017; Rutherford, 2016; Smith and Meier, 1995). In this regard, our findings are broadly consistent with Andrews and Boyne (2011) conclusion that PCT claims regarding ‘excessive and extravagant’ administration in public organisations are often ‘misplaced’ (p. 906).

These observations highlight a number of more specific contributions of our study, for theory research and policy. First, and most obviously, our results cast doubt on validity and usefulness of PCT as a theoretical framework specifically for explaining the behaviour and likely impact of managers. As we saw, in recent public debates PCT assumptions have been applied implicitly, making no distinction between managers as a discreet occupation and the great mass of career civil servants (or bureaucrats) (Aucoin, 2013). From this perspective, the risks associated with rent seeking and ‘bureaucratic bloat’ apply equally to all groups (Aucoin, 1990). And yet, what the NHS case appears to imply is that the behaviour and impact of managers is quite different to that which PCT assumes will apply to administrators in general. Instead of being ‘budget-maximizers’ (Dolan, 2002), public sector managers seem to behave more like budget-optimisers. Rather than generate a ‘bureaucratic burden’ (Boon and Verhoest, 2014), larger management functions in hospital trusts are, on balance, more likely to add value.



This conclusion, of course, raises wider questions about *why* public managers fail to conform to the predictions of PCT. Given the nature of our data it is possible only to speculate about this, although two possible explanations seem compelling. First, there are possible limits on the ability of managers to engage in rent seeking behaviour that arise from the altered context of public sector organisations. It might be argued that PCT assumptions concerning bureaucrats as relatively autonomous actors are less relevant in those organisations that have undergone NPM reforms and are subject to more systematic forms of control and oversight (Pollitt and Bouckaert, 2011). While the emergence of performance management regimes and ‘results oriented cultures’ (Verbeeten and Speklé, 2015; p. 955) in public organisations may not exclude all forms of opportunism by managers, they arguably limit the potential for this. In the NHS, for example, it is noted how ‘the increasingly exposed position that some hospital managers find themselves in appears to have encouraged behavior that is sometimes risk-averse’ (Anand et al. 2012; p. 215). If anything, this risk aversion will be exaggerated by the fact that managers themselves have formal roles as accountable agents in the policing and overseeing of these new control regimes (Diefenbach, 2009).

Second, it might be argued that PCT largely ignores the productive potential of managers. This is in contrast to a wider body of literature focusing on management policies and practices in public sector organisations (Favero, Meier and O’Toole Jr, 2014; Meier and O’Toole Jr, 2011; Meier, O’Toole Jr, Boyne and Walker, 2006; O’Toole Jr and Meier, 1999; Walker, 2013). Meier et al. (2006), for example, find that management is a ‘critical contributor’ to improved organisational performance, while Meier and O’Toole Jr (2002) shows that ‘managerial quality’, measured in terms of additional salary paid, is positively associated with the performance of Texas School districts.

These conclusions also have policy implications, raising questions about the usefulness of PCT ideas as a way of framing policies relating to the workforce re-structuring of public organisations. Specifically, our study suggests that policies aimed at downsizing managers to ‘trim the fat’ (Cohen and Brand, 1993) or reduce so called bureaucratic bloat are potentially misguided. While they may offer (short term) savings in terms of salary costs, by undermining the productive potential of managers, they could, in the longer term, be counterproductive for performance. These concerns are especially important in complex services such as healthcare, where managers are frequently viewed (incorrectly) as a largely unnecessary imposition on work of front line clinicians (Battilana, 2011; Glouberman and Mintzberg, 2001). In a speech to the NHS Annual Conference in December 2016, for example, the UK Minister of Health, Jeremy Hunt declared: ‘...we should today ask whether the NHS made a historic mistake in the 1980s by deliberately creating a manager class who were not clinicians’. This, of course, is not to ignore the relationship between incompetent management practice and performance failure in some NHS organisations (see for example the Francis Report (2013)). Rather, it is to emphasise the overall net positive contribution that managers appear to make.

When drawing these conclusions, it is, obviously, important to note certain caveats and avenues for future research. First, more work is needed to understand why, against the expectations of many, larger management functions are contributing to performance. Here, it would be useful to investigate the impact of managers focusing on their ability, motivation and opportunity (Appelbaum, 2000). Concerning ability, the distinctive human capital of (some) managers may directly contribute to improved resource allocation (Kirkpatrick, Vallascas and Veronesi, 2017b) or better planning and ‘internal synchronization’ (Van Helden and Huijben, 2014). The motivation of managers to focus on the organisational performance goals may also be significant, especially when coupled with incentive policies

such as performance related pay (Weibel et al., 2009). Related to this is the possibility that managers have developed a strong public service ethos and that this, too, has impacted on their behaviour (see Perry (2000)). The latter is strongly suggested by Meyer et al. (2014), who note how managerial logics can often coexist with the traditional ethos of public services. Lastly, managers potentially have greater opportunities to contribute to performance goals, especially in organisations that have undergone corporatization and where (formal) autonomy to make decisions has increased (Lindlbauer, Winter and Schreyögg, 2015).

Second, we have concentrated on one specific public service - the healthcare sector - and one type of service provider – acute care hospitals - in a country (the UK) at the forefront of public management reforms. This raises obvious questions about the representativeness of our sectoral study. The absence of any negative impact of managers on performance even at higher levels (H5) may be explained by the organisational complexity of health services, which, arguably, require more managers to ensure co-ordination (Andrews and Boyne, 2014). However, is this also true of public services such as education, police or fire services which pose quite different demands? Furthermore, the data does not allow us to investigate the effect of hidden management-type work undertaken by other employees (especially clinicians) who take on leadership roles without formal managerial duties.

Lastly, more work is needed to assess the opportunity costs associated with managers and the benefits of recruiting more of them relative to investments in other areas (such as frontline services). This is especially important for cash strapped public organisations forced to make (increasingly) tough choices about resource allocation under the media spotlight. While managers may be a productive resource up to a certain level, are they also practical and affordable?

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**Table 1**  
Descriptive Statistics

Variable	Definition	N.	Mean	Median	Min	Max	St.Dev.
Infection Rate	Count of C.difficile infections adjusted by total number of admissions	773	1.21	0.87	0.00	8.18	1.03
DEA Efficiency Score	Technical efficiency score based on input-oriented CRS model	961	0.89	0.93	0.28	1.00	0.12
Patient Experience	Overall patient experience score	941	75.71	75.40	66.80	87.80	3.46
Change in Manager-to-Staff	Change in annual % of manager-to-staff	806	-0.14	-1.10	-70.94	216.58	17.01
Manager-to-Staff Ratio	Total number of managers over total number of FTE employees	978	2.01	1.78	0.51	11.35	1.11
Manager Pay (000s)	Management earnings in £	606	52.83	52.24	37.95	94.79	7.35
Manager Stability	Managers stability index expressed in %	634	87.54	88.49	55.05	100.00	6.52
Top Managers	% of manager in senior executive roles to total number of managers	978	27.31	26.76	9.68	55.56	6.69
Clinical Stability	Clinicians stability index expressed in %	634	91.76	92.13	80.53	96.53	2.22
Foundation Trust	Dummy variable for FT status	978	0.50	0.00	0.00	1.00	0.50
Teaching Trust	Dummy variable for teaching status	978	0.17	0.00	0.00	1.00	0.37
Ln Beds	Natural log of total number of beds	978	6.51	6.60	3.14	7.99	0.68
Case-mix Index	Case-mix for each hospital trusts divided by mean case-mix	978	1.00	0.23	0.05	11.96	1.55

**Table 2**  
Bivariate Pearson correlation matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1-Infection Rate	1												
2-DEA Efficiency Score	-0.148*	1											
3-Patient Experience	-0.113*	0.019	1										
4-Change in Manager-to-Staff	-0.048	0.006	-0.016	1									
5-Manager-to-Staff Ratio	-0.071*	0.238*	0.378*	0.136*	1								
6-Manager Pay (000s)	-0.224*	-0.001	-0.175*	-0.067	-0.185*	1							
7-Manager Stability	0.004	-0.080*	0.023	0.033	-0.201*	-0.148*	1						
8-Top Managers	-0.068	0.138*	0.172*	-0.139*	0.319*	0.118*	-0.161*	1					
9-Clinical Stability	-0.039	0.063	0.173*	-0.090*	-0.103*	-0.165*	0.254*	-0.095*	1				
10-Ln Beds	0.144*	-0.262*	-0.380*	0.062	-0.736*	0.095*	0.222*	-0.585*	0.127*	1			
11-Case mix Index	-0.327*	0.151*	0.184*	0.024	0.117*	0.275*	-0.033	0.052	0.006	-0.155*	1		
12-Foundation Trust	-0.158*	0.090*	0.356*	-0.053	0.061	-0.032	0.097*	0.081*	0.128*	-0.129*	0.144*	1	
13-Teaching Trust	0.125*	-0.305*	-0.046	0.030	-0.321*	0.148*	0.055	-0.281*	-0.055	0.425*	0.037	0.055	1
Variance Inflation Factor (VIF)					2.76	1.27	1.15	1.60	1.13	3.98	1.19	1.09	1.34

*Notes:* VIF values are from the regression where Change in manager-to-staff (%) is the dependent variable. Significance at \*  $p < 0.05$ .

**Table 3a**

Coefficients for System-GMM estimations: H1-3

Variable	(1)	(2)	(3)
	Dependent Variable		
	Change in Manager-to-Staff Ratio	Manager Pay (000s)	Manager Stability
First lag of the dependent variable	-0.217***[0.054]	0.748***[0.206]	0.046 [0.097]
Past period Manager-to-Staff Ratio	-5.569* [3.108]	4.372** [2.090]	-1.884 [1.263]
Past period Manager Pay (000s)	0.156 [0.353]		-0.163 [0.186]
Manager Stability	-0.020 [0.396]	-0.009 [0.102]	
Clinical Stability	-4.077***[1.592]	-0.174 [0.441]	-0.396 [0.511]
Top Managers	-0.608 [0.451]	-0.003 [0.016]	-0.013 [0.225]
Foundation Trust	-3.372* [1.851]	0.575 [0.834]	0.805 [0.737]
Teaching Trust	-0.140 [2.367]	0.480 [0.900]	-0.712 [0.973]
Ln Beds	-5.658 [4.226]	0.545* [0.316]	0.279 [2.049]
Case-mix Index	0.369 [0.490]	-0.007 [0.015]	0.236 [0.261]
Year Dummies	YES	YES	YES
SHA Dummies	YES	YES	YES
Observations	451	446	452
Number of groups	155	153	155
Number of instruments	54	49	46
Hansen test <sup>a</sup> (chi <sup>2</sup> )	23.30 (0.76)	24.90 (0.47)	20.24 (0.57)
Ar(2) <sup>b</sup> (z)	1.02 (0.15)	0.50 (0.32)	0.24 (0.41)
Diff-in-Hansen test <sup>c</sup> (chi <sup>2</sup> )			
full set	16.68 (0.34)	17.60 (0.17)	13.69 (0.25)
subset	3.55 (0.62)	6.76 (0.15)	1.29 (0.73)
Wald (chi <sup>2</sup> )	124***	612***	76***

*Notes:* Clustered robust standard errors at the hospital trust level are in brackets. All estimations include a constant, year dummies and Strategic Health Authority (SHA) dummies, which are not reported due to space reasons. <sup>a</sup>In the Hansen test, the null hypothesis is that the instruments as a group are exogenous. <sup>b</sup>In the Arellano-Bond test, the null hypothesis is that the errors in the first-difference equation do not have second-order serial correlation. <sup>c</sup>In the Difference-in-Hansen test, the null hypothesis is that the instrument subset is exogenous. Difference-in-Hansen test statistics are presented for the levels equation for both the full set of instruments and the subset based on the dependent variables. P-values are in parentheses for Hansen, Arellano-Bond and Difference-in-Hansen tests. Significance at \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

**Table 3b**

Coefficients for Ahn and Schmidt (1995) estimations: H1-3

Variable	(1)		(2)		(3)	
	Dependent Variable					
	Change in Manager-to-Staff Ratio		Manager Pay (000s)		Manager Stability	
First lag of the dependent variable	-0.247*	[0.147]	0.574***	[0.201]	-0.010	[0.124]
Past period Manager-to-Staff Ratio	-5.298***	[1.910]	3.342*	[2.005]	-2.593	[2.203]
Past period Manager Pay (000s)	-0.298	[0.434]			0.023	[0.337]
Manager Stability	0.286	[0.364]	-0.213	[0.140]		
Clinical Stability	-2.779***	[1.057]	-0.789	[0.504]	-0.231	[0.627]
Top Managers	0.473	[0.322]	0.324**	[0.159]	-0.087	[0.310]
Foundation Trust	-3.362*	[1.916]	0.546	[0.777]	0.514	[0.779]
Teaching Trust	0.638	[2.278]	0.328	[0.949]	-0.846	[1.064]
Ln Beds	0.816	[3.394]	0.729**	[0.297]	-1.261	[2.874]
Case-mix Index	0.487	[0.479]	-0.014	[0.193]	0.255	[0.308]
Year Dummies	YES		YES		YES	
SHA Dummies	YES		YES		YES	
Observations	451		446		452	
Number of groups	155		153		155	

*Notes:* Clustered robust standard errors at the hospital trust level are in brackets. All estimations include a constant, year dummies and Strategic Health Authority (SHA) dummies, which are not reported due to space reasons. Significance at \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.



**Table 4a**  
Coefficients for System-GMM estimations: H4-5

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable					
	<i>Infection Rate</i>		<i>DEA Efficiency Score</i>		<i>Patient Experience</i>	
First lag of the dependent variable	0.385***[0.055]	0.407***[0.046]	0.529***[0.088]	0.519***[0.089]	0.466***[0.084]	0.465***[0.080]
Manager-to-Staff Ratio	-0.123** [0.053]	-0.020 [0.083]	0.010 [0.012]	0.051***[0.017]	0.531** [0.215]	0.806** [0.382]
Manager Pay (000s)	-0.002 [0.005]	-0.003 [0.004]	0.000 [0.001]	0.000 [0.001]	-0.011 [0.032]	-0.004 [0.032]
Manager Stability	-0.002 [0.007]	-0.001 [0.006]	-0.000 [0.002]	0.000 [0.002]	0.115***[0.031]	0.104***[0.027]
Manager-to-Staff Ratio <sup>2</sup>		-0.002 [0.008]		-0.004** [0.002]		-0.030 [0.042]
Clinical Stability	-0.060** [0.029]	-0.048** [0.022]	-0.006 [0.005]	-0.006 [0.005]	-0.231 [0.145]	-0.200 [0.125]
Top Managers	0.006 [0.007]	0.003 [0.006]	0.002* [0.001]	0.002* [0.001]	0.038 [0.037]	0.036 [0.036]
Foundation Trust	-0.023 [0.077]	-0.022 [0.068]	0.018 [0.014]	0.014 [0.015]	0.028 [0.376]	-0.039 [0.365]
Teaching Trust	0.002 [0.070]	0.064 [0.061]	-0.020 [0.018]	-0.002 [0.017]	0.434 [0.300]	0.567* [0.324]
<i>Year Dummies</i>	YES	YES	YES	YES	YES	YES
<i>SHA Dummies</i>	YES	YES	YES	YES	YES	YES
Observations	590	590	589	589	581	581
Number of groups	153	153	157	157	154	154
Number of instruments	77	90	81	94	81	94
Hansen test <sup>a</sup> (chi <sup>2</sup> )	65.93 (0.13)	75.81 (0.19)	68.84 (0.16)	76.17 (0.29)	45.20 (0.87)	61.99 (0.71)
Ar(2) <sup>b</sup> (z)	-0.41 (0.68)	-0.55 (0.59)	-1.63 (0.10)	-1.48 (0.14)	0.91 (0.36)	0.86 (0.39)
Diff-in-Hansen test <sup>c</sup> (chi <sup>2</sup> )						
full set	41.47 (0.15)	46.13 (0.27)	46.59 (0.11)	50.97 (0.22)	23.01 (0.94)	30.69 (0.92)
subset	13.77 (0.32)	18.53 (0.24)	14.29 (0.35)	21.64 (0.16)	8.87 (0.71)	10.49 (0.79)
Wald (chi <sup>2</sup> )	6019***	7384***	75311***	67333***	1310***	537***

*Notes:* Clustered robust standard errors at the hospital trust level are in brackets. All estimations include a constant, year dummies and Strategic Health Authority (SHA) dummies, which are not reported due to space reasons. <sup>a</sup>In the Hansen test, the null hypothesis is that the instruments as a group are exogenous. <sup>b</sup>In the Arellano-Bond test, the null hypothesis is that the errors in the first-difference equation do not have second-order serial correlation. <sup>c</sup>In the Difference-in-Hansen test, the null hypothesis is that the instrument subset is exogenous. Difference-in-Hansen test statistics are presented for the levels equation for both the full set of instruments and the subset based on the dependent variables. Estimations (5) and (6) also include second lag (not reported) of the dependent variable to obtain satisfactory Arellano-Bond test results, i.e. not rejecting the null of the errors not having second-order serial correlation. P-values are in parentheses for Hansen, Arellano-Bond and Difference-in-Hansen tests. Significance at \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

**Table 4b**

Coefficients for Ahn and Schmidt (1995) estimations: H4-5

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable					
	<i>Infection Rate</i>		<i>DEA Efficiency Score</i>		<i>Patient Experience</i>	
First lag of the dependent variable	0.337***[0.051]	0.341***[0.049]	0.451***[0.134]	0.345***[0.121]	0.101 [0.132]	0.103 [0.124]
Manager-to-Staff Ratio	-0.197***[0.070]	-0.081 [0.177]	0.002 [0.023]	0.129** [0.061]	0.124 [0.455]	0.828 [1.348]
Manager Pay (000s)	-0.000 [0.001]	-0.000 [0.001]	0.002 [0.002]	0.003 [0.002]	-0.048 [0.032]	-0.041 [0.032]
Manager Stability	-0.004 [0.004]	-0.004 [0.004]	0.001 [0.001]	0.001 [0.001]	0.026 [0.020]	0.021 [0.019]
Manager-to-Staff Ratio <sup>2</sup>		-0.011 [0.021]		-0.015** [0.007]		-0.083 [0.191]
Clinical Stability	-0.043** [0.018]	-0.046** [0.020]	-0.006 [0.004]	-0.002 [0.003]	-0.043 [0.082]	-0.038 [0.081]
Top Managers	-0.006 [0.008]	-0.010 [0.008]	0.002 [0.003]	0.003 [0.003]	-0.009 [0.028]	-0.000 [0.037]
Foundation Trust	-0.045 [0.204]	-0.046 [0.184]	0.031 [0.059]	0.020 [0.052]	0.189 [0.775]	0.084 [0.886]
Teaching Trust	0.077 [0.073]	0.093 [0.073]	-0.043 [0.033]	0.012 [0.044]	0.242 [0.537]	0.580 [0.775]
<i>Year Dummies</i>	YES	YES	YES	YES	YES	YES
<i>SHA Dummies</i>	YES	YES	YES	YES	YES	YES
Observations	590	590	589	589	584	584
Number of groups	153	153	157	157	154	154

*Notes:* Clustered robust standard errors at the hospital trust level are in brackets. All estimations include a constant, year dummies and Strategic Health Authority (SHA) dummies, which are not reported due to space reasons. Significance at \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Online Appendix

Simar and Wilson (2007) Efficiency Analysis (All Years)

Variable	(1)		(2)	
	DEA Efficiency Score			
Manager-to-Staff Ratio	0.043***	[0.015]	0.171***	[0.053]
Manager Pay (000s)	0.001	[0.001]	0.002	[0.001]
Manager Stability	-0.003	[0.002]	-0.002	[0.002]
Manager-to-Staff Ratio <sup>2</sup>			-0.028***	[0.011]
Clinical Stability	0.004	[0.005]	0.004	[0.005]
Top Managers	0.004**	[0.002]	0.005***	[0.002]
Foundation Trust	0.007	[0.018]	0.001	[0.018]
Teaching Trust	-0.087***	[0.023]	-0.065***	[0.024]
Year Dummies	YES		YES	
SHA Dummies	YES		YES	
Observations	398		398	
Number of efficient DMUs	198		198	
Wald (chi <sup>2</sup> )	78.95***		82.72***	

*Notes:* Bootstrap standard errors at the hospital trust level are in brackets. All estimations include a constant, year dummies and Strategic Health Authority (SHA) dummies, which are not reported due to space reasons. Significance at \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.