Gradual Quick Wins? Analysis of Functional Alignment through the UK's Shared Services Strategy for Government

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Abstract

Amid civil service reforms and increased digitisation, shared service centres (SSCs) have been expressed as an effective method to address budgetary overspend and ineffective government services. This dissertation used longitudinal multivariate linear regression and econometrics to capture proposed public- and private sector-theorised efficiency savings as they relate to corporate profession compositions between groups of government departments. Regression models found statistically significant findings that *administrative expenditure to total resource expenditure* is related to changes in the scale and location of finance staff in the civil service. However, limited results countered the reliability both high-level explanatory variables and reactionary variables. It was found that, consistent with themes in a multitude of shared service centre studies, that expansive benefits stemming from functional alignment via professional concentration were generally overestimated. Implications of these findings clarify future direction and goals of SSCs in the civil service and the research agenda for public sector shared services, and specify that cluster/department-specific approaches should be favoured.

Keywords: Shared service centres, administrative expenditure, efficiency savings, collaborative governance, civil service reforms

To Grandma, in loving memory

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Abbreviations

ALB(s)	Arm's Length Body
CCT	Compulsory Competitive Tendering
CO	Cabinet Office
COI	Central Office of Information
DEL	Departmental Expenditure Limit
DfID	Department for International Development
DfT	Department for Transport
DVLA	Driver and Vehicle Licensing Agency
ERM	(European) Exchange Rate Mechanism
ERP	Enterprise Resource Planning
FCDO / FCO	Foreign, Commonwealth and Development Office / Foreign and Commonwealth Office
GPG	Government People Group
HMRC	His Majesty's Revenue and Customs
HMT	His Majesty's Treasury
HO	Home Office
IPA	Infrastructure and Projects Authority
ISSC 1/2	Independent Shared Service Centre 1/2
MoD	Ministry of Defence
MoJ	Ministry of Justice
NPM	New Public Management
ONS	Office for National Statistics
OSCAR II	Online System for Central Accounting and Reporting II
PFI(s)	Private Finance Initiative
PFP	Private Finance Panel
PPP(s)	Public-Private Partnership
RDEL	Resource Departmental Expenditure Limit
SaaS	Software as a Service
SBU(s)	Strategic Business Unit
SOP(s)	Single Operating Platform
SSC(s)	Shared Service Centre
SSCL	Shared Services Connected Limited
SSSfG (the strategy)	Shared Services Strategy for Government

1. Introduction

The United Kingdom's civil service is at a crossroads. Lacklustre collaboration in government faces problematic criticism, and outdated systems and processes threaten to undermine the efficacy of the state's public administration (Lynas, 2015; Provost and Esteve, 2016). Meanwhile, private sector privilege in public procurement contracts has solidified amid critiques of an ill-equipped and ineffective public service following recent unprecedented pressures on government services (Richards et al., 2023; Redman and Fletcher, 2021; Dávid-Barrett and Fazekas, 2020; BMA, 2020; Loader, 2017).

Whilst citizen-facing digital services have been branded a "gold standard" with a wealth of academic research to back it (Kattel and Takala, 2023, p1), internal reforms in government departments continue to suffer from legacy IT issues (Davies, 2022; Irani et al., 2023; Alexandrova et al., 2015). Widely used solutions from the private sector have been endorsed as a quick and easy method to resolve back-office duplication and free-up public delivery capacity. Claims of efficiency savings and enhanced coordination via shared service centres (SSCs)—centrally hosted corporate service hubs for organisation-wide usage—have headlined these claims. However, recent research has criticised SSCs for overpromising and underdelivering, and without careful consideration and management, they threaten to repeat previous failures in government to streamline and coordinate government functions (Richter and Brühl, 2020; Davies, 2022).

This dissertation aims to clarify developments of and supposed benefits from shared service centres in UK public administration. Specifically, it will centre around literature-backed and end goal motivation measures of SSC integration by groups of government departments for improved service and policy delivery. As examined below, a high-level, flexible and comparable metric of SSC integration and strategy development—back-office profession concentration ratios—will be used. This measure matches the government's goal of functional alignment: making government functions consistent and easier to access, use and apply across the civil service (CO, 2021; GPG 2023 & 2024). Likewise, similar government-wide aims-based metrics (efficiency savings) will be justified to measure benefits.

To uncover detailed findings of both the Shared Services Strategy for Government's (SSSfG or *'the strategy'*) development and the benefits it and SSC literature promotes, a two-part hypothesis will be used. This also ensures sweeping assumptions are not made directly between the strategy and its theorised, although potentially external, effect on efficiency savings.

H_1 *SSCs will result in functional alignment via the reduction of duplicate back-office functions and the concentration of administrative professions.*

H_2 *SSCs in UK public administration will result in efficiency savings by reducing administrative burdens.*

Methodological, theoretical and practical contributions will be made for SSCs, the SSSfG and wider collaborative governance with nuanced considerations for key actors in each area and context-dependent approaches for developments in explicit, applied domains. The following section will inform this dissertation's theoretical framework (the lens through which measurements, developments and effects are captured and described) with an overview of SSCs and UK government reforms. Analysis methods will then be detailed and justified with reference to literature-informed approaches for interpreting shared service strategies in public administration. Finally, this dissertation aims to provide illustrative findings applicable to real-world government strategy and a discussion highlighting common trends with actionable recommendations for theory and practice.

2. Literature Review

2.1 Shared Services

Private businesses strive to become competitive and adaptive; they attempt to out-perform other businesses in the market and do so often by adopting dynamic ICT capabilities to more effectively deploy resources, such as through process automation (like the simpler sending of invoices) or the exploitation of machine learning (such as in automatically analysing business transactions (Cho et al., 2020)) (Ferreira and Janssen, 2022; Richter and Brühl, 2020). Whereas small organisations lack the "critical mass" to coordinate inter-departmental tasks, large businesses can exploit economies of scale to further reduce administrative costs (Elston, 2021, p3). Learning from the successes of the private sector and establish greater coordination, SSCs have been quickly adopted in public administrations globally (Elston, 2017; Richter and Brühl, 2017).

2.1.1 Overview of Shared Services

Shared services are an organisational strategy to align and streamline common back-office business services across organisations. Realised through shared service centres (SSCs), it involves the integration, coordination and sometimes automation of supportive tasks (Ferreira and Janssen, 2022; Richter and Brühl, 2021; Nasir et al., 2011), primarily HR and finance functions (Howcroft and Richardson, 2012). The services themselves aid strategic business unit (SBU)-levels of organisations by reducing administrative burden (Bergeron, 2003).

Business services are a "cornerstone of contemporary economic activity in advanced economies" in that they allow front-line employees to focus towards 'on-the-ground' service delivery due to reduced administrative work (Nasir et al., 2011, p177). This is especially true with the proliferation of information and communication technologies (ICTs), which is largely seen as the primary reason for growth in the services industry (Howcroft and Richardson, 2012; Bryson et al., 2004; Vargo and Lusch, 2004).

Predominately a private sector practice, SSCs were conventionally services offered by decentralised organisations (sometimes completely outsourced) to large corporations. Corporations have many sub-groups and departments which often repeat transactional tasks, and thus innovative ways to pool or slim down their associated back-office work were introduced (Richter and Brühl, 2021; Strikwerda, 2014; Gospel and Sako, 2010).

Due to loss of control and sometimes revenue hits, in-house SSCs have become a popular alternative (Herbert and Seal, 2014). Modern systems use technologies like ERP systems (enterprise resource planning), cloud computing and remote and mobile working (Ferreira and Janssen, 2022; Howcroft and Richardson, 2012; CO, 2021; Ramaraj, 2019; CO, 2010).

2.1.2 Motivation for Shared Services

In governments, Elston (2021) notes that New Public Management (NPM) and government decentralisation has fragmented public administrations, characterised as "a shift in emphasis from policymaking to management skills, from a stress to process to a stress on output, from orderly hierarchies to an intendedly more competitive basis for providing public services" (Hood, 1995, p95). Accompanied by stringent fiscal policies and increasing demands for public services (such as due to ageing populations or increased welfare services), SSCs were championed by managerial consultancies and policymakers to cut expenditure across polycentric departments (Elston 2020 & 2021).

SCCs in the public sector have developed a uniquely service side too. To disperse power amongst government departments and to delegate administrative responsibilities closer to service providers, SSCs can rebalance power dynamics in polycentric systems (Elston, 2021). Equally, as citizens and civil servants become reliant on technology, aligning—and sometimes automating—inter-departmental services can unclog front-line delivery (MacCarthaig et al., 2018; Meijerink and Bondarouk, 2013). In the development of these services, SBUs can collaborate by sharing development processes of SSCs (Bergeron, 2003). Resource sharing is then enabled by spanning of shared processes across a business, and SBUs can cooperate with each other with less friction (ibid; Richter and Brühl, 2021; Elston and Dixon, 2020; Janssen and Joha, 2006). Furthermore, SSCs reflect wider efforts to exploit IT, as Mazihorak (2017, p433) notes, for increased control over subordinate departments.

2.2 Shared Services in UK Public Administration

UK political history has shaped the civil service from an expansive array of service institutions to a lean, efficiency-driven arm of government. Economic declines have heightened spending concerns and NPM has questioned the state's centralised power. This has necessitated innovative methods to save money and streamline government services.

2.2.1 Background and Machinery of Government Reforms

After Haldane's 1918 *Report of the Machinery of Government*, post-war "super-ministries" (Elston, 2021, p4) continually reflected the report's centralised, elitist mantra. Ever-expanding ministerial responsibilities, a complex periphery of policy institutions, and political support characterised the period (Warner et al., 2023; White and Dunleavy, 2010). Conservative government in 1951 to Labour in 1964 had an inconsequential effect on the Westminster Model; the number of departments only dropped from 29 to 28 (Davis et al., 1999). Modern British government reform, however, arrived with Ted Heath in 1970.

Although Heath's administration remained warm to big government, *The Reorganisation of Central Government* whitepaper emphasised the *size* of government departments, not *amount*, and 11 departmental changes followed (UK Parliament, 1970; White and Dunleavy, 2010). Whilst the sharp decrease in the total number of departments

was softened by a pragmatic returning Labour government, abundant, post-war super-ministries numbers did not recover. Machinery of government changes remained stable thereafter (Davis et al., 1999).

With the expansion of the state slowing, opportunity opened to shrink society-encompassing public administration. States and central banks assumed the role of credit guarantors when the Bretton Woods system collapsed, and what resulted was the *de facto* politicalisation and vulnerability of UK monetary policy (Clarke, 1990; Innes, 1981). Operating in a largely unregulated, globalised economic system, social and labour policy depended on market trends and worsened with the early-1980s recession. Balancing deficit reduction and growing the economy resulted in state services regressing (Kerr, 1998).

The New Right pioneered efforts to strengthen the pound whilst saving costs. The *Financial Management Initiative* by Lord Derek Rayner and a Sir Robin Ibbs-*commissioned Next Steps Programme* recommended that delivery functions be separated into autonomous arm's length bodies. Under doctrines of NPM, government agencies would be emancipated from rigid bureaucracy to pursue customer-orientated services whilst remaining accountable via performance monitoring and market trends (Warner et al., 2023; Elston, 2014). NPM, equally, liberalised public borrowing and accelerated managerialism in the public sector, yet economic growth struggled to keep up (Kerr, 1998). The UK temporarily relinquished a degree of fiscal policy to stabilise the pound by seeking to match currency exchange rates in Europe via the Exchange Rate Mechanism (ERM) in 1990. Poor domestic conditions and anti-inflation measures by the ERM, however, resulted in global financial markets betting against the pound which exacerbated the ongoing early-1990s recession. The privatisation arm of NPM thusly became entrenched on the road to recovery, as demonstrated by Private Finance Initiatives (PFIs) (Kerr, 1998; Ferguson and Schlefer, 2009; Eichengreen et al., 1993; Turner 2022).

A breakdown of the *Ryrie rules* resulted, which were meant to curb attempts to protect private capital from risk (Heald and McLeod, 2002). For businesses entered into Public-Private Partnerships (PPP) with government departments (via PFIs), financial risk was reduced as funding was guaranteed from the government (Shaoul, 2001). Public "long-term asset-based service" (Ruane, 2010, p521) contracts for design, implementation and day-to-day operations became increasingly awarded to the private sector (Kerr, 1998). New room for state investment was facilitated by New Labour's omission of PFIs from public balance sheets—which also projected an image of financial stability (Ruane, 2010). Government in-house solutions were also cut for cost-effective market solutions via Compulsory Competitive Tendering (CCT) (Gash and Roos, 2012; Panchamia and Thomas, 2014).

Whilst industry specialists had increasingly close connections to central government on the Private Finance Panel (PFP), Labour's 1997 victory institutionalised professional networks tenfold. The PFP was scrapped and *Partnerships UK* took its place to centralise and standardise PPPs. This body was ultimately privately-owned (with established business leaders frequenting between it and the government) but it negotiated numerous complex government contracts (Broadbent and Laughlin, 2004; Ruane 2010; Kerr, 1998). NPM

established itself in UK government, bringing flatter managerial hierarchies, audit and performance monitoring cultures, and a centre compelled to modernise administrative practices amongst plural agencies and interests (Warner et al., 2023).

2.2.2 Introduction of Shared Services and Civil Service Reforms

What brought the introduction of SSCs into UK public administration were concerns over bloated "transactional administration" (Elston, 2021, p9). Unease prompted a PM- and Chancellor-commissioned *Gershon Efficiency Review* in 2004 for a leaner civil service. ERP systems, provided by IT companies like Oracle or SAP, were insisted as a solution. Shared finance and HR functions between departments—and also citizen-facing e-government services—aimed to match digital private sector experiences akin to "online shopping, banking or booking travel" (Gay, 2006, p13; Morse, 2012). Developments were solidified by Lyons's (2004) *Review of Public Sector Relocation* which further diluted power from Whitehall (CSC, 2009a). The cumulation of efforts would also reduce bureaucracy for front-line civil servants and private sector IT firms to accelerate progress (see *The Civil Service Reform: Delivery and Values* (CO, 2004)).

Success in enhancing government coordination, in reality, was limited. Local, intra-departmental arrangements first went live in 2006 at the MoJ (Ministry of Justice), then seven more ministries by 2011. But department-to-department services lacked. Despite assistance from the Cabinet Office (CO) for departments to join HMRC's (His Majesty's Revenue & Customs) or DWP's (Department for Work and Pensions) digital infrastructure, initial irrecoverable VAT costs of implementation and the underestimated weight of change on staff culture meant the *notably optional* second stage of the programme halted (Bourn, 2007; Morse, 2012). Various other IT projects showed signs of failure on the back of delayed, inflexible or overly expensive procurement shortfalls (Stephen et al., 2011).

The siloed shared services approach was underlined as an opportunity for value-for-money reforms amid the 2007-2008 global financial (Elston, 2021; Turnbull, 2007). A rework of government shared services featured in the *Public Value Programme* and *Operational Efficiency Programme* to gain greater mileage out of public spending, such as with experience from external business leaders (White and Dunleavy, 2010; CSC, 2009b; COI, 2009).

The UK's shrinking economy affected much of public administration; reducing welfare was the aim of a new *Work Programme*, which originated from a Labour advisor-carry-over and continued into the new Coalition government (see *Lord David Freud report* (2007)) (Gash and Roos, 2017). The scaling down meant a reduced civil service headcount. Some departments, non-departmental public bodies and quangos (quasi non-governmental organisations) closed or merged. Groups previously at the periphery of government authority thus became near-centralised (UK Government, 2012; Thomas et al., 2013; Thomas, 2012). *Departmental Business Plans* afforded ministers increased reach in managing public bodies (Warner et al., 2023). For SSCs, a top-level overview in *Government Shared Services: A Strategic Vision* (CO, 2011) sought to marry an ambition of centralised, vertical control and inter-departmental IT coordination. Two Oracle-based centres were to cover HR and

finance functions for the majority of government (*ISSC 1* and *ISSC 2*), and bespoke stand-alone solutions would serve the MoD (Ministry of Defence), MoJ and HMRC individually (CO, 2011; CSC, 2012).

The Coalition's consolidation of control was specified in the *Next Generation Shared Services: The Strategic Plan* (UK Government, 2012). It put the Cabinet Office at the heart of strategic management via the creation of the *Crown Oversight Function*: a group to negotiate and assist government departments in procurement. Furthermore, in 2014, the *Crown Commercial Service* was formed to advise on buying frameworks and public procurement, and even purchased services itself (Morse, 2016).

The Cabinet Office established a joint-venture for ISSC 2 with Steria UK (now Sopra Steria), called *Shared Services Connected Limited* (SSCL), for closer oversight (Morse, 2014; UK Government 2012).

ISSC 1 was divested from the Department for Transport (DfT) to *Arvato* in 2013 to use the *Agresso* ERP system (now Unit4) (Morse, 2014). However, despite coordination from central government, ISSC 2 stalled and the *Next Generation* model underperformed (Davies, 2022). Coordination was undermined by outside consultants and 2015 Conservative cuts destabilised the plan's lofty ambitions, which muddied departmental responsibility versus central government (Warner et al., 2023; Morse, 2016; Barber, 2017).

Despite setbacks, *joined-up-government* had improved "project delivery, finance and commercial services" (Aoki et al., 2023; Durrant et al., 2021; Warner et al., 2023, p321) favourably. The government's 10-year strategy for SSCs in 2018 prioritised process convergence and user-adaptability through a new *Government Design Authority*, and the *Governmental Digital Service* partnered to codify service standards akin to UK e-government efforts (GSS, 2019; Davies, 2022; CO, 2018).

Whilst centralised governance strengthened—through procurement framework oversight, departmental performance benchmarking and an ever-active Cabinet Office, Treasury, and Number 10—, a balanced, hands-off approach in *implementing* the strategy saw comparative success (Davies, 2022).

2.2.3 Current State of Shared Services

The Cabinet Office built on this success with a major refresh of the delivery model in 2021. Departments were separated into five clusters, each acting as a 'family' to procure their own IT systems. The new SSCs would be Defence, Overseas (aka Hera), Matrix (*né* Policy), Synergy (*né* Delivery) and Unity (*né* HMRC-*led*), each with a lead department (Clark, 2023a; IPA, 2023; FCDO, 2024). As part of the refresh, each ERP platform was planned to be delivered as software-as-a-service (SaaS) via cloud technology (Davies, 2022; CO, 2021), as informed by extensive private sector consultation (Clark, 2020). It would coordinate departments which have, in recent years, dispersed out of Whitehall and ensure an easier

transition to a single operating platform (SOP)[1] in which administrative functions can be accessed from a single space. Remotely hosted services would be accessible from anywhere with an internet/intranet connection (Coats, 2018).

Previous initiatives to establish SSCs in government slowed due to limited civil service IT skills (Davies, 2022; Morse, 2012 & 2016), and new reforms now featured a self-service element to HR and finance functions on new technologies (Coats, 2018)—for an already stretched public administration (Worlidge et al., 2024). Thus, recent efforts to digitise internal government services required upskilling initiatives. For example, the *Civil Service People Plan* established a *Campus* model to improve management, leadership and IT skills (GPG, 2024). Private sector consultants were also contracted to support on-boarding (HMRC, 2023).

The refresh has included hiccups, however. It included three top-level governance boards on top of existing cluster governance structures (Davies, 2022), which reverberated *ambiguous leadership and excess bureaucracy* criticisms of previous projects (Morse, 2016; Maude, 2023). For example, the Matrix cluster had "major issues with project definition [and] schedule and scope" (IPA, 2023, p40). Amidst criticisms, each cluster received a Design Authority to demystify and advise on overall direction. They reference the GPG's (Government People Group) *Design Principles* paper to promote collaborative decision-making and wider standardisation by, for example, adopting open technologies and existing solutions (GPG, 2023).

HMRC (in Unity), conversely, was granted an exemption to the strategy due to its contract with SAP until 2027 (Clark, 2022b). That said, in 2024 a deal was struck with Arvato to support a future transition to a cluster-wide ERP platform (Say, 2024). The cluster includes the DfT, which has used Arvato since 2013; the company plans to transition existing DfT services to the wider cluster (Arvato, 2024).

Similarly, the Home Office (in Synergy) went live with their own ERP platform (dubbed *Metis*, not used by the wider cluster) contracted to Oracle at the launch of the refreshed strategy, which was then extended the following year (Clark, 2021b & 2022a). The rest of the Synergy cluster has pre-existing HR and finance service arrangements with SSCL (fully owned by private firm Sopra Steria as of 2023 (CO, 2023)), and is looking to further integrate systems by moving to cloud services with tendering opened in 2023 (Ambasna-Jones, 2023; Trendall, 2023). Moreover, SSCL continues to manage HR and finance functions for the MoD and Veterans UK (in Defence cluster) (Davies, 2022). Before the Shared Services for Government refresh, the MoD procured Microsoft's Azure platform for cloud services on Oracle cloud infrastructure (Say, 2020; SSCL, nd; Oracle, 2021), and these agreements were later reinforced upon the strategy's launch (CO, 2021).

Alternatively, some departments could not continue existing arrangements. The MoJ, for example, had to cancel shared services procurement (Clark, 2021a)—which followed a

[1] 'SOP' previously referred to the practice of using a single provider, service or technology. Recent usage refers to the practice of using a single front-end portal or 'one-stop-shop' consolidated user interface despite potentially having multiple back-end operators.

previous ERP failure in 2014 (Kunert, 2014). And the Cabinet Office, striving to set a good leadership example, cancelled procurement for SaaS ERP migration assistance soon after (Clark, 2021c).

The Matrix cluster launched SaaS ERP procurement in 2023 and is currently tendering, despite some member departments' existing SSC agreements (Clark, 2023b; Say, 2023).

The Overseas (lead by FCDO) cluster is, outwardly, the most mature in its transformation to cloud-based, SaaS ERP. In just six months, it launched an Oracle Fusion platform by combining legacy '*Prism*', '*Aries*', and '*HR Passport*' systems (CO, 2023; Ambasna-Jones, 2023).

Despite a rocky start due to poor management, clusters are beginning to implement ERP systems and exploit new technologies to align back-office functions. The strategy's success and wider role in government coordination efforts, however, remains ambiguous.

2.3 Theoretical Framework

The following theoretical framework examines collaborative governance and organisation theory to interpret developments in the UK's shared services strategy. Close inspection of evolving theoretical foundations for collaborative governance assist in focusing research to relevant measures of SSC success for academics and policymakers.

The Shared Services Strategy for Government (SSSfG) aims to enhance administrative collaboration via network governance. Sørensen and Torfing (2021) describe this as the strategy to mobilise resources and political support to improve public policy implementation in a "pluricentric" network (ibid, p1590). Whilst initial governance shifts stemmed from actor plurality and new managerialism, recent collaborative developments address bureaucratic inefficiencies, stakeholder conflicts and budget deficits (Gjaltema et al., 2020). These developments stimulate cross-boundary innovation and policy learning through flatter hierarchies, and they enable executives to balance public value and political steering (Hood and Margetts, 2007; Bianchi et al., 2021; Emerson and Nabatchi, 2015)—exemplified by the 2007 *Lord David Freud report* and *Departmental Business Plans* which reduced headcounts and extended central oversight.

Although governance models have succeeded in coordinating multiple organisations, accountability concerns have arisen (Sørensen and Torfing, 2009). But meta-governors, such as high-ranking civil servants or project managers, foster collaboration whilst managing progress through performance monitoring, project targets, and centralised project shaping, thereby holding constituent units accountable (Gjaltema et al., 2020; Miller and Lessard, 2000; Sørensen and Torfing, 2009).

Kinder et al. (2021) clarifies developments from the bottom up, viewing pluralistic public management and loose central control as an 'ecosystem' where agents pursue local goals within individual structures to strengthen the wider system. In the UK, flattened hierarchies—whilst shortening the distance between departments and executives—have increased government instability by exposing peripheral functions to more scrutiny. To

address this, ecosystem theory suggests agents develop collective consciousness to bolster group stability through constituent-level innovation. Leaders here accelerate progress by fostering legitimising strategies and learning frameworks, such as through low-level departmental consultation with private experts and governance boards between groups (Michie and Gooty, 2005; Hirst et al., 2004; Ilies et al., 2005).

In context of the SSSfG, Sørensen and Torfing (2021) suggest central groups facilitate discussions between upstream and downstream project actors to advance collaboration and strategy (see Bjerke-Busch and Thorp, 2024). Brunet et al. (2023) dub this *metaorganisation design*, emphasising that government actors are influenced more by *organisation structure* and *project context* than ministerial or senior management control (Gjaltema et al., 2020; Danwitz, 2018). Thus, this dissertation employes *structural contingency theory* to highlight that organisation-wide projects with many 'owners' require flexibility and renegotiation to succeed (Klein et al. (2019) (see *Figure 1*).

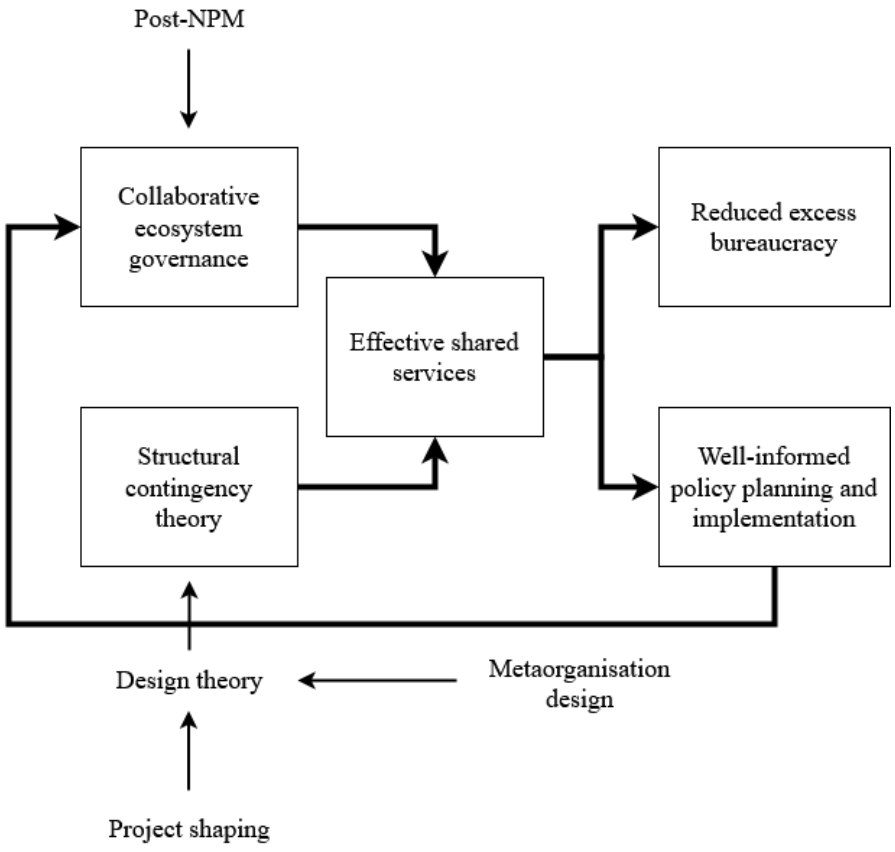


Figure 1: Theoretical framework

The framework goes as follows: Concerns around new plural interests and ambiguous bureaucracy have echoed NPM desires for value-for-money collaborative governance and innovative coordination. SSCs have been said to address these concerns by reducing duplicate back-office services, and whilst the motivations for pooling corporate functions are widely accepted, implementation relies on wider trends in public administration. As the UK has shifted to ecosystem governance, where departments

prioritise local goals amid diverse stakeholder interests, coordination relies on the formulation of common objectives and central facilitation.

3. Methodology

This section details the rationale for case selection and timeframe, then explains how progression and advantages of shared services clusters are measured and controlled for within wider developments. It also justifies the quality of data sources and research methods to be used.

The UK Government's shared services strategy has had numerous changes as it has evolved with civil service reforms. Criticisms have been levelled at the strategy over its ambiguity: exactly what it does, what it aims to do, and sometimes *what is it* (Davies, 2022). The following section outlines quantitative analysis methods used to measure strategy development and cluster-specific maturity and efficiency savings. The methods will allow ambiguous developments to be uncovered, especially over different periods of the strategy, and the usage of high-level, general variables will be justified.

3.1 Case Selection and Timeframe

The analysis focuses on clusters and their departments, generally clustered by remit like 'defence' or 'policy' (Davies, 2022). Departments are retrospectively grouped according to SSSfG's classification and only included if observed across all datasets (see Table 11 & 12, Appendix). This enables measurement of trends for departments with similar scopes before and after cluster classification, rather than examining disaggregated departments outside existing collaborative initiatives—many departments operate in groups like those later formalised. Studying clusters individually allows for comparison of strategy progress and insight into whether benefits occur due to SSC integration or background trends.

The timeframe of this analysis is 2017 to March 2024, observed quarterly. This spans the end-of-life stage of the *Next Generation* plan into the 10-year strategy, and the 2021 strategy refresh. It corresponds to comprehensive reporting of professions by department, opposed to only 'Administrative Officer/Assistant' distributions previously, which, despite its name, do not cover HR and finance.

To ensure trends over the length of the strategy are captured, departments which merged during the analysis continue to be recorded in their succeeding organisation[2], like DfID's into FCO in 2022 (Dalton, 2023). ALBs (Arm's Length Bodies) are not included individually; their data is integrated into parent departments', e.g., the DVLA is captured indivisibly in DfT data.

Novel methods of extrapolating domestic concentration ratios to *overseas only* Department for International Trade staff are excluded as it assumes identical conditions as UK-based staff, potentially generating inaccurate results. Furthermore, Overseas and

[2] Whilst mergers are not necessarily 1-to-1 (a department may split into multiple other departments), new/absorbing departments *remain in the same cluster* in this analysis. Therefore, results are not affected by potential situations where a department's functions and staff *completely leave* a cluster, which would have naturally affected concentration ratios and longitudinal comparisons (see *Section 3.2.2*).

Defence each have one[3] department, so their SSC progress is measured at executive agency level (see Table 12, Appendix).

Whilst SSCs align many back-office processes, such as commercial, IT support, legal or logistics, the SSSfG focuses on HR and finance. As ERP solutions primarily manage these functions, this dissertation analyses only these specific processes.

Although part of wider digital transformation, this dissertation does not concern e-government or open government data initiatives (citizen-facing services), though the development and origin patterns may allow for parallel insight.

3.2 Variables

Levels of measurement in this dissertation are informed by recent literature on SSCs and the UK's shared services strategy. Methods of manipulating metrics for observing the development of and integration into the SSSfG and supposed benefits of similar shared services centres are detailed with reference to scholarly consensus and foundational managerial motivations (see *Figure 2*).

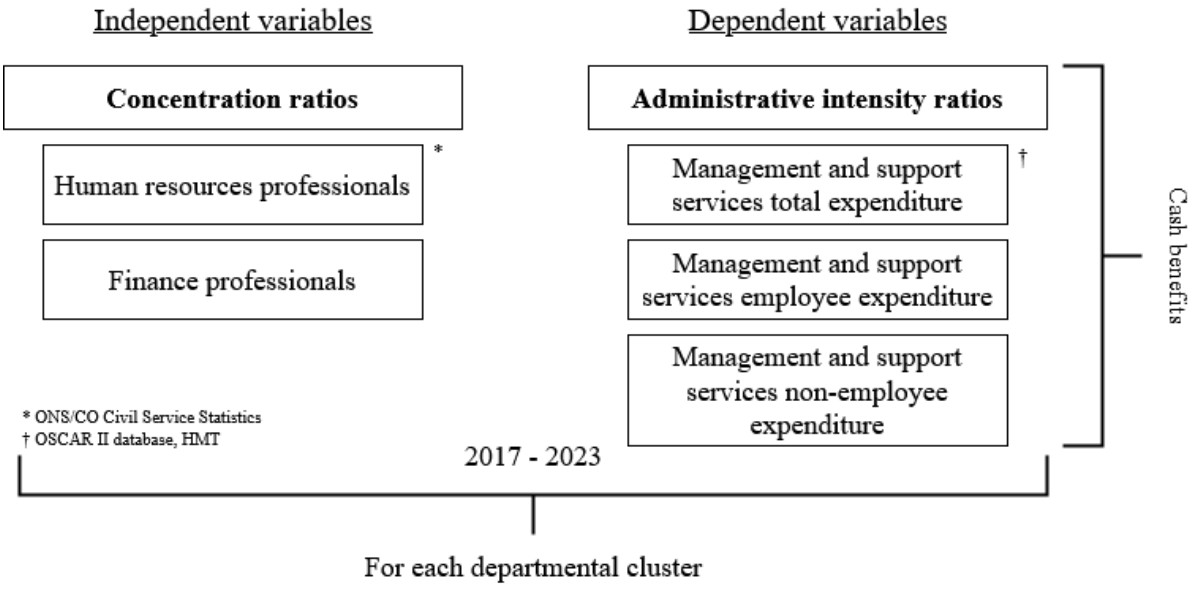


Figure 2: Research variables and data sources

3.2.1 Dependent Variables

SSCs aim to pool corporate functions to increase efficiency via reduced bureaucracy. For government coordination, they enhance public value by streamlining civil service work and facilitating cross-government initiatives. Whilst the CO has key performance indicators for short- to medium-term trends (such as payroll accuracy, JLM[4] process time, etc.), these

[3] Non-child agencies (of lead departments) exist in both clusters, but are, in practice, clients of the lead departments or too minor to appear in workforce datasets.

[4] Joiners (staff hire), leavers (redundancy) and movers (transfers).

shift with strategy changes as their power in explaining wider SSC integration plateaus. Therefore, this dissertation measures hypothesised-conclusions of these indicators and immediate motivations from private sector *value-for-money* backgrounds.

Cash-saving variables borrow from Elston and Dixon (2020) to measure back-office expenditure, namely *administrative intensities*. This captures ratios of administrative expenditure against total expenditure, recorded at cluster level as a sum of *all*[5] spend from constituent departments (see Table 11, Appendix).

To appreciate trends in automation and employee-versus-nonemployee investment, three indicators are recorded. Relative changes are measured with the slope of natural logarithm (ln), which ensures financial trends account for non-linear compounding interest and financial growth (Hamilton and Chinn, 2014), and also to limit outliers.

Administration Running Cost Intensity records operational costs (all minus staff earnings) of administrative (not programme) expenditure as a fraction of total resource spending. Total resource spending includes programme and administrative RDEL (resource Departmental Expenditure Limit) but excludes capital budgets such as acquisition of assets (HMT, 2023a). Programme spending (front-line delivery) does not include AME (Annually Managed Expenditure) which is generally demand-led (HMT, 2023b). The calculated figure is total administrative running costs of *all departments in a cluster* (*d*) proportional to the aggregated resource expenditure of *the same cluster* (*c*), where smaller ratios indicate lower administrative costs.

$$\ln(\text{Admin Running Cost Intensity})_c = \ln\left(\frac{\left(Admin\ RDEL_d - Admin\ Staff\ Cost\ RDEL_d\right)}{\left(Programme\ RDEL_d + Admin\ RDEL_d\right)}\right)$$

Administration Staff Cost Intensity concerns the sum of within-cluster departmental administrative employee expenditure (such as HR and finance salaries) against cluster-wide total staff expenditure. Here, lower ratios mean a lower amount of staff earnings expenditure on administrative resources.

$$ln\ (Admin\ Staff\ Cost\ Intensity)_c = \ln\left(\frac{Admin\ Staff\ Cost\ RDEL_d}{\left(Programme\ Staff\ Cost\ RDEL_d + Admin\ Staff\ Cost\ RDEL_d\right)}\right)$$

[5] Administrative intensity may reduce in total but simultaneously increase in lead departments where SSCs concentrate, therefore entire clusters are observed.

Total Administration Intensity captures trends respective of changes in personnel or functional spend, and in administrative resources distribution (between running costs and staff costs). Smaller ratios mean less administrative expenditure as a total of cluster resource expenditure. For example, measures will show £30 spent on total administrative tasks for every £100 spent on total resources.

$$\ln(\text{Total Admin Intensity})_c = \ln\left(\frac{Admin\ RDEL_d}{\begin{pmatrix} Programme\ RDEL_d \\ + \\ Admin\ RDEL_d \end{pmatrix}}\right)$$

3.2.2 Independent Variables

Quantitative analysis helps senior public servants and democratic representatives understand government-wide developments and pursue objectives without diagnosing micro-level problems. However, this data often suffers from poor availability and inconsistent reporting. High-level data[6], like that measuring cross-government initiatives like SSSfG, is inherently constrained if it requires existing cross-government collaboration (Wang and Ran, 2023). Therefore, this dissertation uses *bureaumetrics*: an unobtrusive, macro research method to capture general, comparative compositions of public administrations (Hood and Dunsire, 1981). Elston's (2021) *location and scale* of professional concentration metrics are used to determine both departmental SSC integration and wider strategy maturity.

The UK civil service has several cross-government professions, and as SSCs mature, the need for permanent back-office professionals in each department will decrease, with front-line staff benefiting from central services. Therefore, cross-government HR and finance professionals will concentrate in departments hosting SSCs as SSSfG matures.

Using Elston's (2021) *concentration ratios* method, independent variables are calculated as the proportion of HR and finance professionals per department relative to the total in the same cluster, repeated annually. This produces a list of concentrations for *each department in a cluster* (i) (see Table 12, Appendix).

HR Concentration Ratios arrays represent one cluster each, for each year. The components, department-level HR concentrations, sum up to total whole-cluster HR numbers.

$$\text{HR Concentration Ratios}_c\text{: } [HRR_1, HRR_2, HRR_3, \dots, HRR_n]$$

[6] Such as resource dependence, inter-departmental interactions and collaboration in joint decision-making.

$$where\ HRR_i = \frac{HR\ Professionals\ in\ Department_i}{Total\ HR\ Professionals\ in\ Cluster_c}$$

For example, if fictional cluster *Alliance*'s 100 HR professionals are concentrated as [*0.17, 0.25, 0.21, 0.25, 0.12*], the first element, *Department One*, would have 17% (*0.17*) of total HR professionals. This adjusts for disparities in profession headcount by equalising differences in HR (and finance) representation across clusters.

Finance Concentration Ratios are processed like HR. They quantify professional concentration through quantile rates of changes. As SSCs aim to increasingly centralise corporate functions, this method facilitates the reporting of progressively skewed professional concentrations in clusters over time.

$$\text{Finance Concentration Ratios}_c\text{: } [FR_1, FR_2, FR_3, \dots, FR_n]$$

$$where\ FR_i = \frac{Finance\ Professionals\ in\ Department_i}{Total\ Finance\ Professionals\ in\ Cluster_c}$$

Measuring concentration at *Q3* across departments enables varying SSC integration developments to be mapped. To illustrate, the fictional Alliance cluster wishes to concentrate finance professionals towards the top 25% of its 5 departments (1.25 departments). Initially with [*0.06*, *0.10*, *0.20*, *0.26*, *0.38*], the top 25% (Q3) of departments (1.25 departments of 5) hold 32% of finance professionals or higher. After an SSC strategy, it improves to [*0.01*, *0.01*, *0.17*, *0.30*, *0.51*] meaning now the top 25% of departments in Alliance have financial professional ratios of 41% *and more*; subsequentially, the bottom 75% have concentration ratios at 41% *and less*.

Natural cubic spline interpolation is used to fill quarterly gaps between annual data for administrative intensities. This method uses a third-degree polynomial line of fit to estimate values between evenly spaced data points; separate from linear interpolation which generates sharp and unrealistic rates of change—unfit for government reform trends (Boon and Verhoest, 2018; Elston and MacCarthaigh, 2016; Chesterman, 2013). Although natural cubic splines do assume linearity at boundaries, they provide a smoother fit than second-degree polynomials which may oscillate between values and thus under or overestimate trends. Hermite cubic splines, which would require known derivatives before 2017 and after March 2024, are not used (Lai and Kaplan, 2022).

This dissertation is limited by its relatively small sample size of annual data, and interpolation does not resolve these concerns. As with all data models, more real information would improve accuracy. Features in administrative intensity may go unreported and distinction between meaningful relationships and random noise may be hampered.

3.2.3 Control Variables

Public administrations are complex, and background trends are likely to influence outcomes. To ensure valid inferences, external trends are accounted for by equalising their effects in each statistical model.

The first control variable is department size. As Elston (2021, p9) notes, "the number of professionals employed by an organisation should be a function of agency task and size. All else equal, larger entities have bigger operations and a greater need of support services". Whilst this effect generally weakens as SSC integration progresses, it cannot be assumed universally due to varied cluster progress (Elston and Dixon, 2020). This is measured as number of FTE (full-time equivalent) employees per cluster.

Secondly, two weighted averages of mean earnings are also used, due to varying *seniority distribution* (*s*) and regional pay differences across clusters. Departments focusing on project delivery tend to have more junior civil servants, whereas ones with fewer delivery functions have a higher concentration of senior civil servants and median salary (SCSs) (IfG, 2017; Urban and Olajugba, 2022; Clyne and Savur, 2023).

Although regional pay is not formalised like pay grades across ranks, the proximity to government and local economic conditions create variation in salary. Thus, this dissertation isolates SSC trends from *each region* (*r*) and associated pay-based disparities for *all* professions.

Although related, control variables are separated so effects could be captured respectively. For each region, the distribution of staff by department as a proportion of total cluster-wide staff is multiplied by average regional earnings. Then repeated across all clusters.

$$\text{Regional Weighted Mean Earnings}_c\text{: } [RE_1, RE_2, RE_3, \dots, FR_n]$$

$$where\ ln(RE)_i = \ln\left(\frac{1}{n}\sum\nolimits_r \left(Staff\ Distribution_{i,r} \times Median\ Earnings_r\right)\right)$$

For instance, if fictional cluster Alliance concentrates 80% of its staff in London at a median salary of £30,000 and 20% in Northern Ireland at £25,000, its region-weighted average earnings would be £28,800. Therefore, this dissertation isolates occurrences where, for instance, administrative staff spend increases from higher concentrations of staff in London and not from administrative process changes.

$$\text{Seniority Weighted Mean Earnings}_c\text{: } [SE_1, SE_2, SE_3, \dots, SR_n]$$

$$where\ ln(SE)_i = \ln\left(\frac{1}{n}\sum\nolimits_s \left(SCS\ Distribution_{i,s} \times Median\ Earnings_s\right)\right)$$

This is similarly applied for seniority distributions, with rank-proportions of staff multiplied by their average salary at each pay grade. This approach helps distinguish between trends in administrative intensity and secondary changes from staff moving to higher-paying bands[7].

3.2.4 Data Sources

All data sources come from government publications, ensuring robust standards suitable for analysis. Although this relinquishes sampling methods, these datasets are commissioned for internal strategy, meaning quality is fit for government planning and reporting. These datasets allow for the measurement of high-level, ambiguous trends in complex institutions beyond that are not achievable from individual researchers.

Civil Service Statistics provide concentration ratios, published by ONS and CO, with headcounts by profession and department—apart from where redacted for security/privacy (<5).

Quarterly Administrative intensity ratios are sourced from HMT's OSCAR II database[8]. *Outturn* data is used over pre-arranged budgets to reflect actual expenditure. Departments may retrospectively update figures due to machinery of government changes, and detail can vary with reported spending. But, since OSCAR records middle to top-level expenditure, the risk of overfitting statistical models from irregular itemised spending is reduced (HMT, 2023a).

3.3 Method of Analysis

The primary method of analysis is comparative longitudinal multivariate linear regression, allowing comparison of trends between clusters at different SSC integration. Additional insight first comes from exploratory data analysis for trends in administrative intensity and cluster-by-cluster developments. [redacted]

Regression models are conducted for all clusters separately, covering trends from 2017 to March 2024. Each includes HR and finance professionals separately and all control variables. Where a model's standardised residuals lie above Cook's distance (cd) (>0.5), meaning a given observation has undue leverage on the model's accuracy, it is removed (Cook, 1977).

[7] Only seniority and regional distribution percentages of *total headcount* were available in Civil Service Statistics (see *Section 3.2.4)*, which included part-time roles.

[8] Departments in the OSCAR II dataset do not consistently include child agency expenditure due to inconsistent departmental and year-on-year reporting procedures (Clyne et al., 2023). However, since accurate spending accounts in OSCAR II are a priority for departmental spending analysis *firstly* (and for wider public transparency *secondly*) (HMT, 2023a & 2023b), generalisations can still be made from longitudinal comparisons between individual department/cluster spending year after year.

4. Results

4.1 Descriptive Statistics

The following section reports descriptive statistics for professional concentration ratios and administrative expenditure intensities. As development stages differed with respect to SSSfG integration, and because the maturity of the strategy was criticised for its ambiguity (Davies, 2022), descriptive statistics allowed insight into civil service reforms and public expenditure separate from relational findings. The mean (*M*) or median (*Med*) are given for each high-level independent and dependent variable, and illustrative datapoints are highlighted to demonstrate trends or findings. The coefficient of variance (*CV*) is given for non-log-transformed data and the standard deviation (*SD*) is given for log-transformed (base *e*) data[9].

This dissertation hypothesised that HR and finance professionals would centralise in fewer business units following an SSC strategy, and thus reduce the requirement for these professions in *every* organisation (H_1). This was measured through professional concentration ratios at the top 25% (Q3) of departments per cluster (top 50% for Overseas), where the proportion of HR/finance staff *by organisation* to HR/finance staff *by parent cluster* was captured. Concentrations were generated from FTE numbers in CCS.

In 2017, 2 departments (top 25% of 8 departments) in Matrix held HR concentration ratios of 19.27% or higher, dropping to 11.33% in 2024. Inversely, this meant the remaining 6 departments had HR concentrations at 19.27% or lower and 11.33% or lower, in 2017 and 2024 respectively. Matrix HR concentration at Q3 (*M = 15.63%, CV = 17.08%*) therefore weakened over 6 years. Opposed to assumptions in H_1, HR professionals *dispersed* over time. Equally, HR professionals *also dispersed* in Synergy (*M = 32.63%, CV = 8.24%*), Unity (*M = 46.76%, CV = 2.12%*) and Defence (*M = 28.83%, CV = 3.06%*) at the 75th percentile. For clusters with 4 departments, Synergy for example, in 2017, 34.25% of HR staff were concentrated in the top 1 department, then falling slightly to 33.39% in 2024 (see *Figure 3*).

[9] The former allows for comparisons of relative variability among datasets with large means (such as financial data) or datasets on different scales (such as professional concentrations because the denominator [total profession count] is not constant) (Arachchige et al., 2020; Diwakar, 2017). The latter measures absolute dispersion of data with means near zero (such as relative growth rates) or data transformed to the linear gradient of the natural logarithm (Elston, 2020; West, 2021; Frost, 2020).

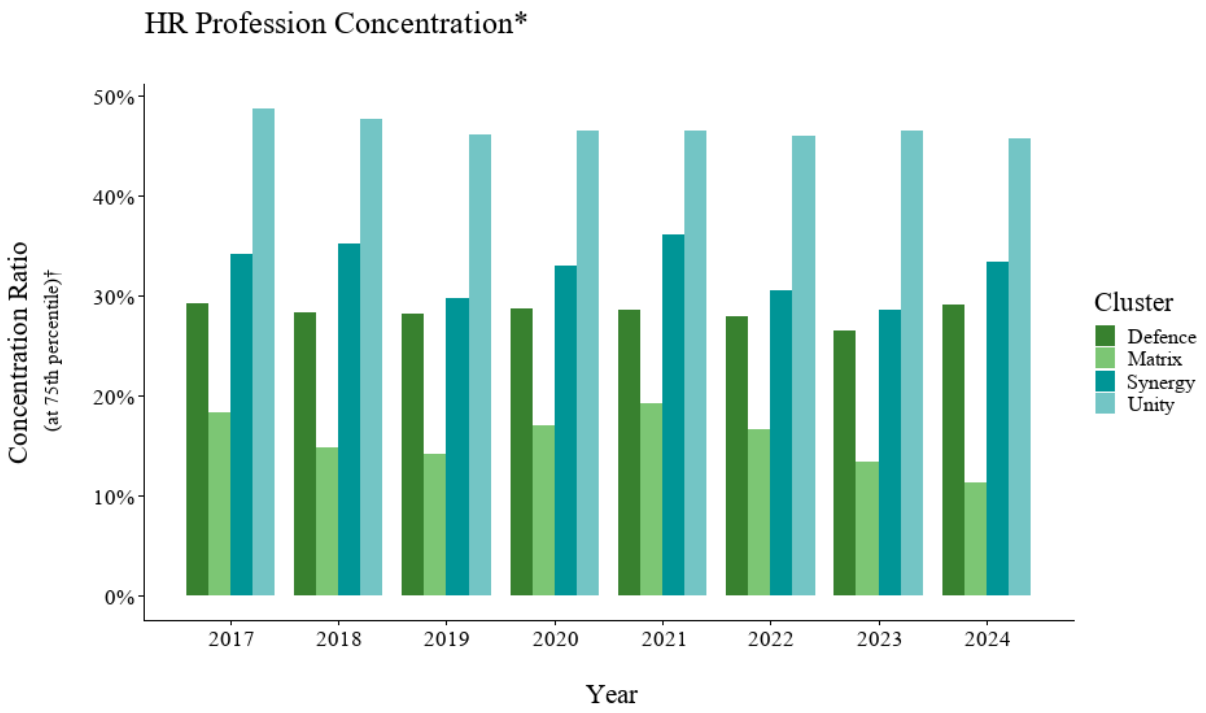


Figure 3 (CSS, 2017; CSS, 2018-2024)

* Data is presented for every cluster except Overseas, as this was instead recorded at the 50th percentile

† Figures show the concentration of HR professionals at the top 25% of departments per cluster (Matrix: 2 [of 8] departments, Synergy: 1 [of 4] departments, Unity: 0.75 [of 3] departments, Defence: 1 [of 4] departments).

The same universal diffusion did not repeat for financial professional concentration, however. Of the 75th percentile of professional concentration ratios, Matrix (*M = 19.48%, CV = 16.10%*) and Defence (*M = 35.51%, CV = 10.43%*) decreased but Synergy (*M = 30.94%, CV = 5.62%*) and Unity (*M = 46.17%, CV = 1.76%*) increased. For Unity, for example, a cluster with 3 departments, this meant that in 2017 3-quarters of the top 1 department had finance concentration ratios of 44.69% and higher, which increased slightly to 45.72% in 2024 (see *Figure 4*). Thus, assumptions for the finance profession in H_1 hold true for only half of cases at the 75th percentile.

HR concentration at Q3 for Overseas stayed at exactly 50% for every observation, meaning 3-quarters of the top 1 department (of 3) consistently held half or more of HR professionals. To view trends over time, albeit at a lower threshold, the median (Q2) was recorded instead. Comparisons between professions in the Overseas cluster were then enabled by also recording finance professional concentration at the 50th percentile. Thus, for assumptions of H_1 to hold, Q2 would need to *decrease*—as was the case for financial professionals (*M = 20.78%, CV = 62.48%*). In 2017, 50% of financial professionals were found in half of the departments, which decreased to 8.19% in half for 2024. The opposite occurred for HR (*M = 13.71%, CV = 30.69%*), however, where half of departments had 7.69% of professionals in 2017 and 12.19% in 2024, peaking at 22.22% in 2020 (see *Figure 5*).

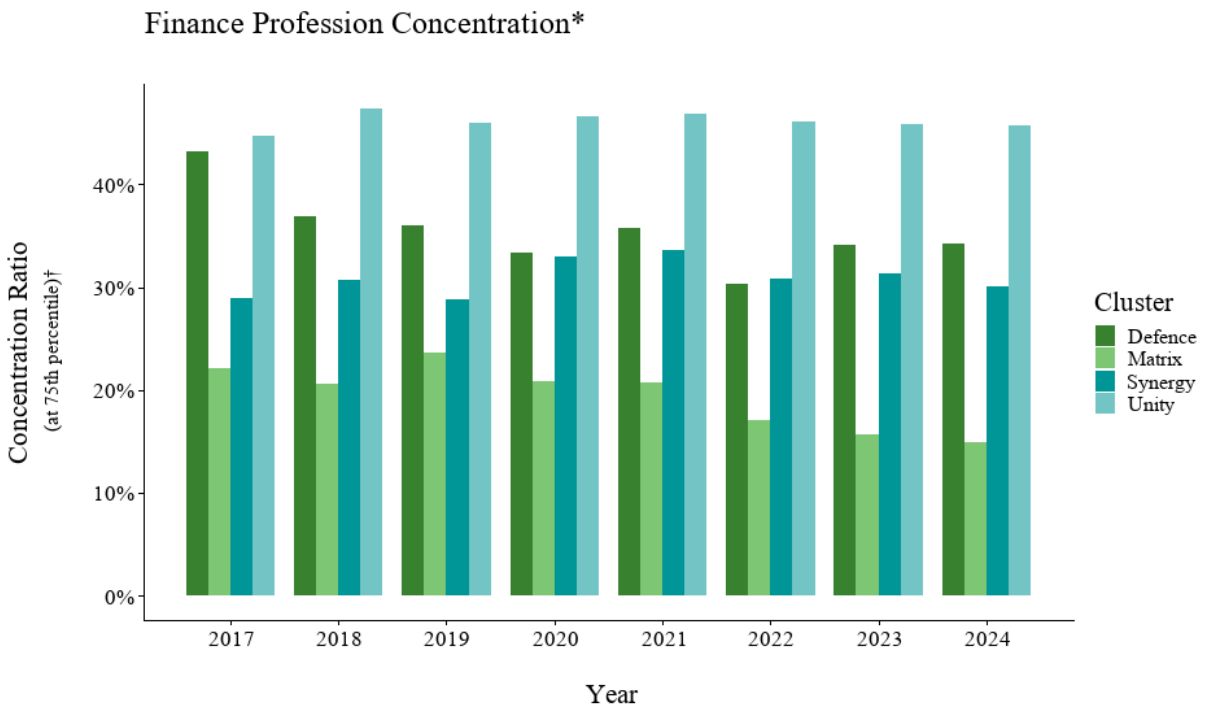


Figure 4 (CSS, 2017; CSS, 2018-2024)

* Data is presented for every cluster except Overseas, as this was instead recorded at the 50th percentile

† Figures show the concentration of HR professionals at the top 25% of departments per cluster (Matrix: 2 [of 8] departments, Synergy: 1 [of 4] departments, Unity: 0.75 [of 3] departments, Defence: 1 [of 4] departments).

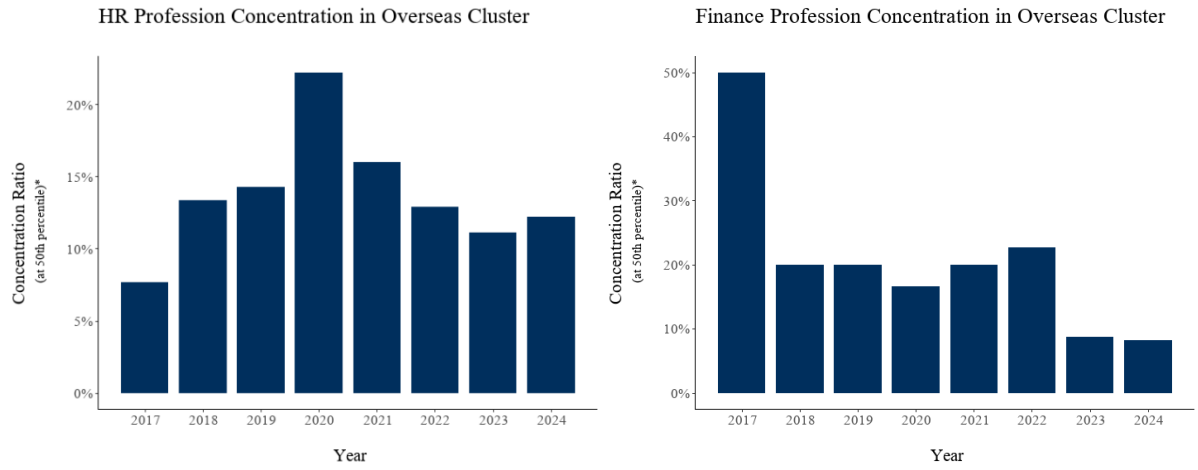


Figure 5 (CSS, 2017; CSS, 2018-2024)

* Figures show the concentration of HR and finance professionals at the top 50% (half) of departments in the Overseas cluster (1.5 [of 3] departments).

Administrative expenditure data was processed from OSCAR II using actual (not planned) administrative resource spend. This data informed, in part, H_2 which expected administrative intensities—ratio of administrative expenditure to total expenditure—to decrease with SSCs. By capturing two subsets of expenditure (running costs and staff costs), the separate impacts of SSCs on personnel savings and project savings could be contrasted.

Please note that the following line graphs used *loess* line smoothing[10] for ease of viewing (Jacoby, 2000) but in-text figures and statistical models report all observations.

Total administrative expenditure increased between 2017 and 2024 for all clusters, except Overseas where it initially increased to £714,766k in 2022 from £96,683k in 2017 but then reduced to £96,652k in 2024 (*M = £323,483k, CV = 39.88%*) (see *Figure 6*). For example, Synergy spent £871,777k on total administrative resources in 2017, increasing to £1,470,499k in 2024 (*M = £950,250k, CV = 28.29%*) (see *Figure 7*).

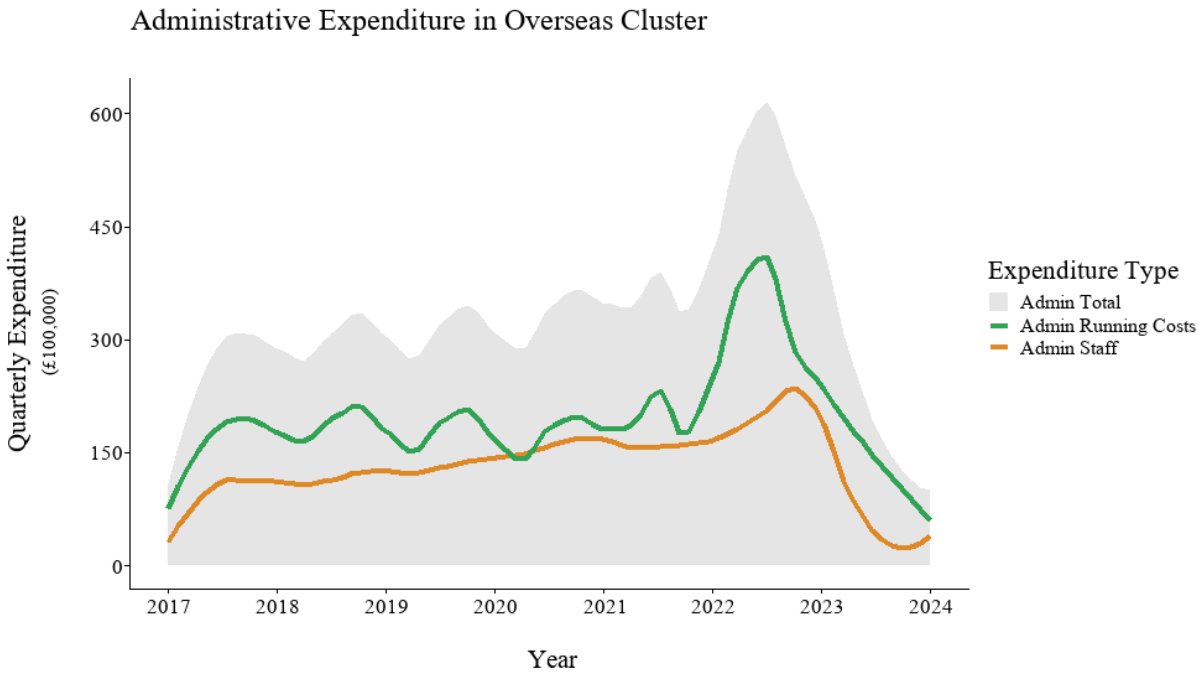


Figure 6 (OSCAR II, 2017-2024)

Moreover, administrative running costs were higher than administrative staff costs at *both the start and end* of this dissertation's time series in all clusters except Defence and Matrix. Defence was unique in that administrative staff expenditure consistently topped running costs annually from 2017 to 2024 (*M = £481,419k, CV = 19.29%*) (see *Figure 8*), and Matrix was the only cluster where one type of administrative expenditure overtook the other over the complete, inclusive duration of the entire time series (*M = £1,617,746k, CV = 23.48%*) (see *Figure 9*).

Notably, Unity was the only cluster to feature frequent fluctuations between the leading subset of administrative expenditure, with staff costs exceeding running costs at 5 intervals—however, running costs remained the most substantial subset of total administrative expenditure (*M = £450,092k, CV = 21.78%*) from 2017 to 2024 (see *Figure 10*).

[10] Each local regression considers 25% ($\alpha = 0.25$) of total data points.

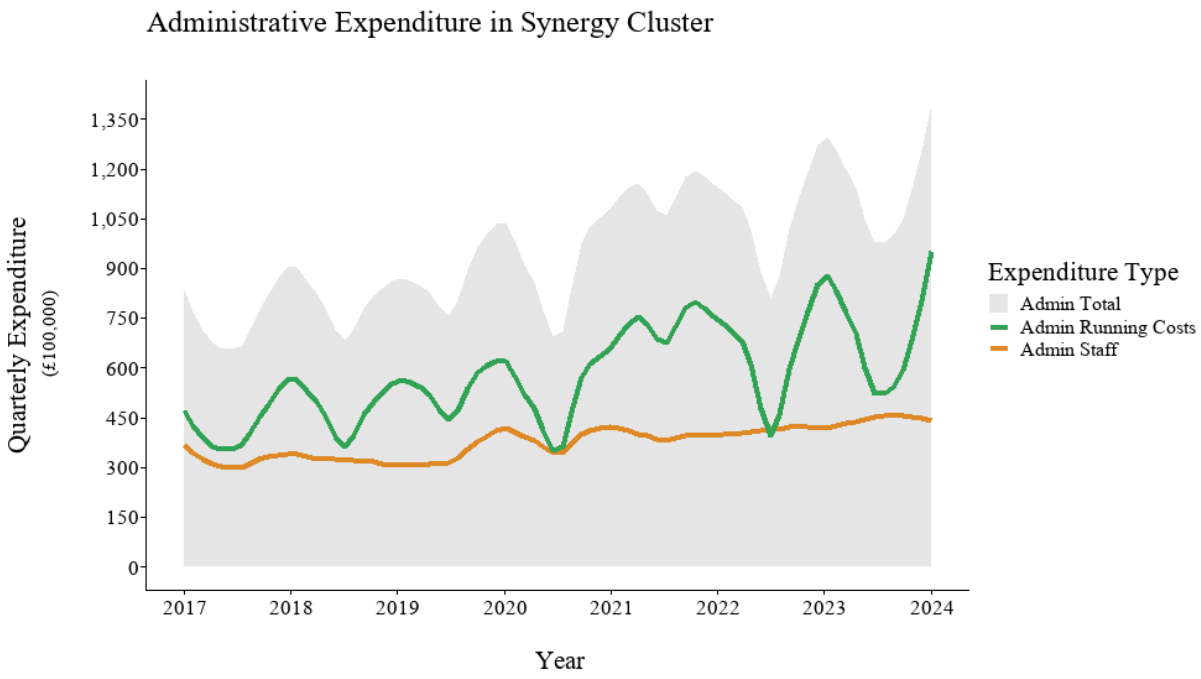


Figure 7 (OSCAR II, 2017-2024)

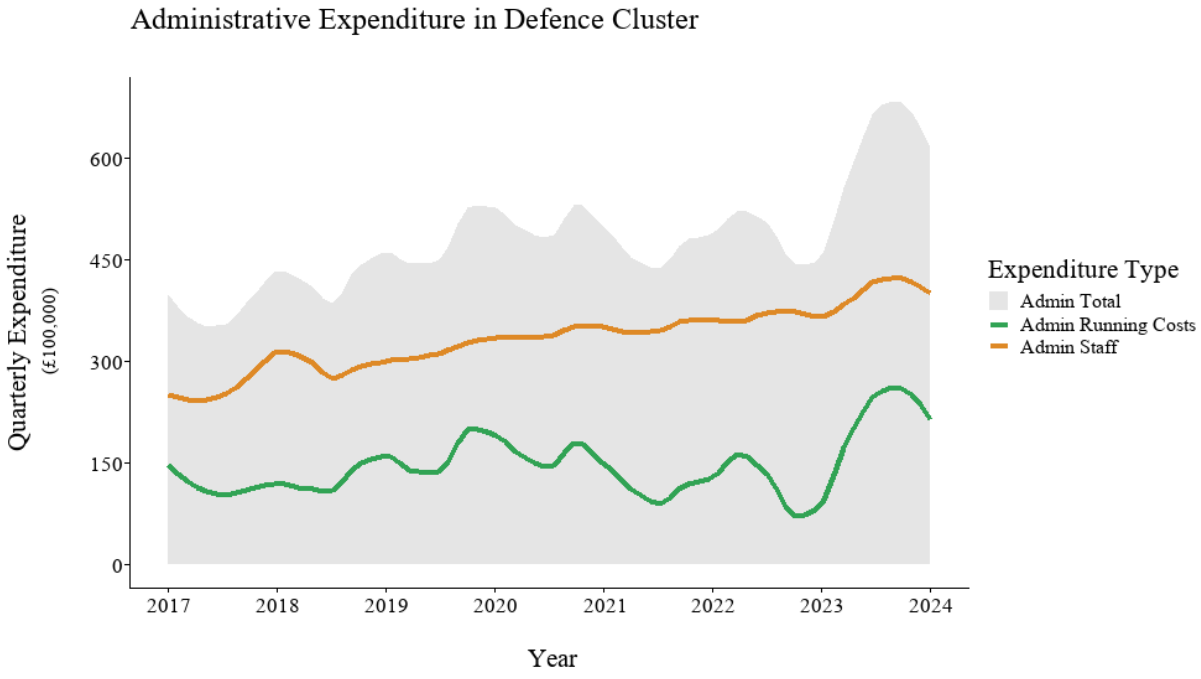


Figure 8 (OSCAR II, 2017-2024)

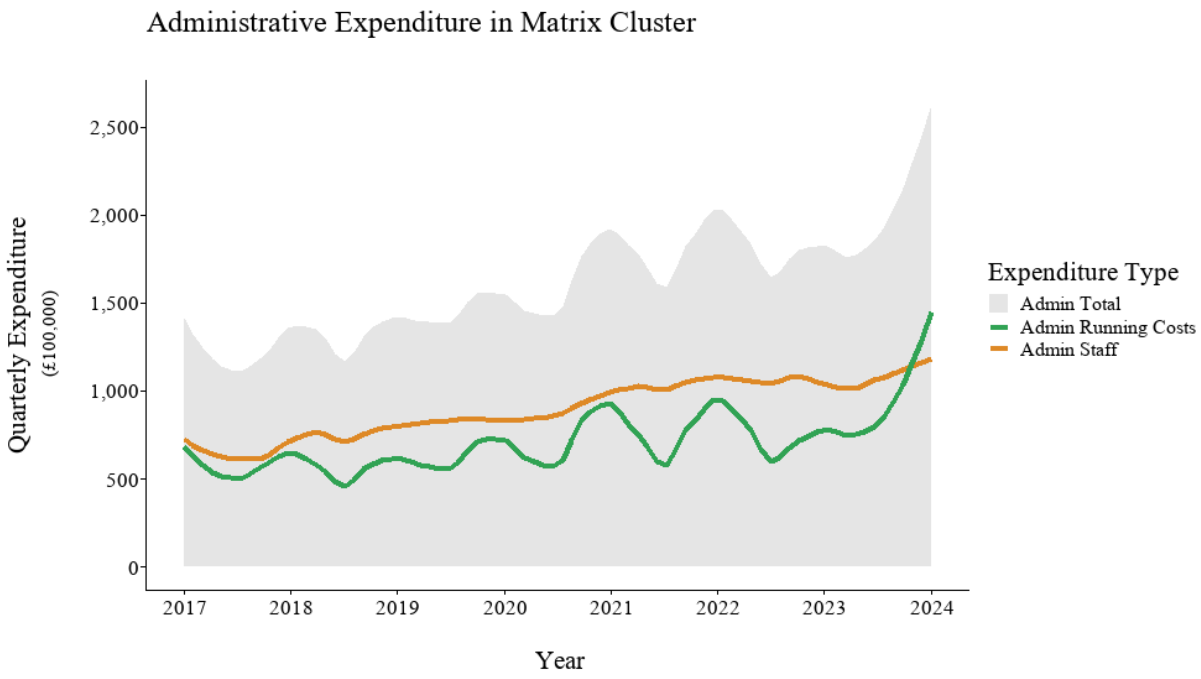


Figure 9 (OSCAR II, 2017-2024)

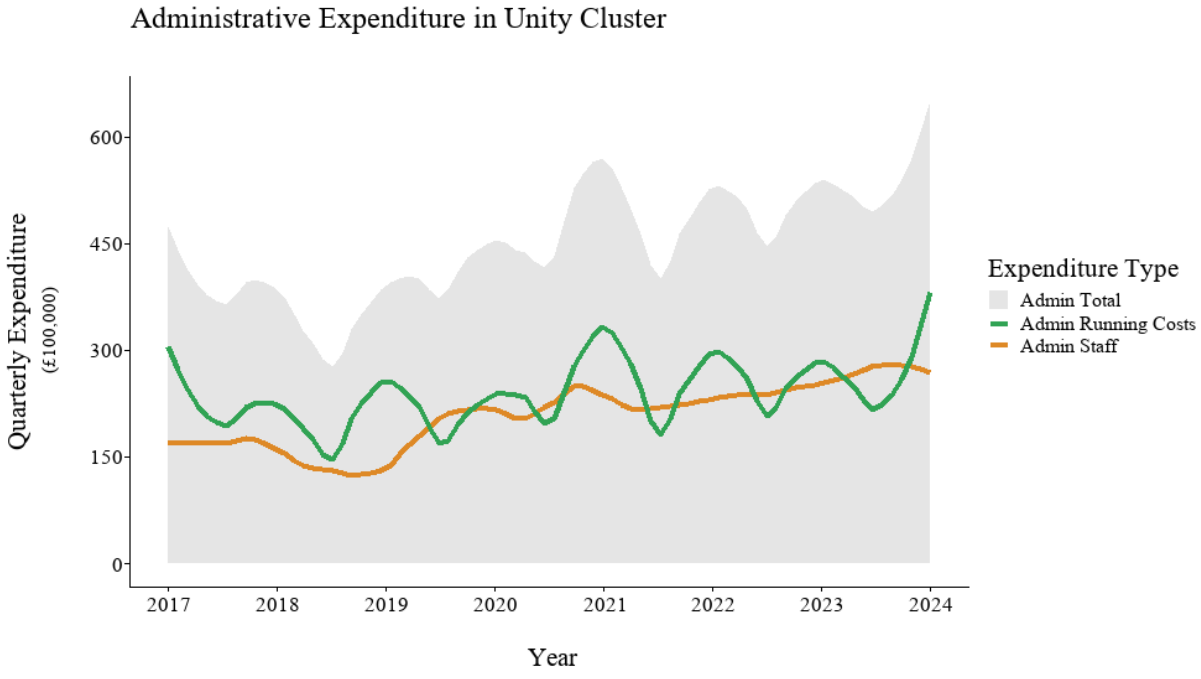


Figure 10 (OSCAR II, 2017-2024)

Administrative expenditure findings alone, whilst useful for capturing theorised savings that come from SSCs, show little in regard to the wider landscape of public spending. To account for situations where, for example, administrative expenditure changed *and* programme expenditure changed *at a different rate*, administrative expenditure findings were taken as a proportion of total resource expenditure; this ensured pure administrative

expenditure in isolation did not mislead results. Furthermore, proportional findings ('intensities') were log-transformed at base *e* to normalise skewed financial data due to compounding interest and inflation (Hamilton and Chinn, 2014). This method allowed for the annual relative rate of change to be captured for administrative intensity ratios. Total resource expenditure was processed from administrative *and* programme resource expenditure in OSCAR II.

The following bar graphs show rates of change between *annual* findings (the mean of all quarterly observations per year) to enhance ease of viewing, but upcoming in-text findings and later statistical models primarily used *quarterly* observations. Moreover, the median is reported instead of the mean to minimise situations where few substantial observations potentially dilute the average trend of rates of change overall.

Two clusters increased total administrative expenditure intensity on average, Matrix (*Med = 1.34%, SD = 17.87*) and Synergy (*Med = 1.14%, SD = 32.03*), whilst three, Unity (*Med = -0.26%, SD = 22.20*), Overseas (*Med = -9.84%, SD = 96.67*) and Defence (*Med = -0.84%, SD = 106.60*), decreased on average. The single largest *quarterly* rate of change was +549.90% in December 2017 in Defence, and the single largest *annual* rate of change was +184.53% in Overseas in 2018 (see *Figure 11*). As reflected by their large standard deviations, Defence and Overseas also held the largest *quarterly* (*-82.66%*) and *annual* decreases (*-67.43%*) in September 2017 and the year 2021, respectively. To illustrate, results show that, for example, from 2022 to 2023 Unity's proportion of total administrative expenditure to total resource expenditure increased by 21.97%: from £3.26 ($e^{1.183248}$) per £100 to £3.98 ($e^{1.381859}$) per £100.

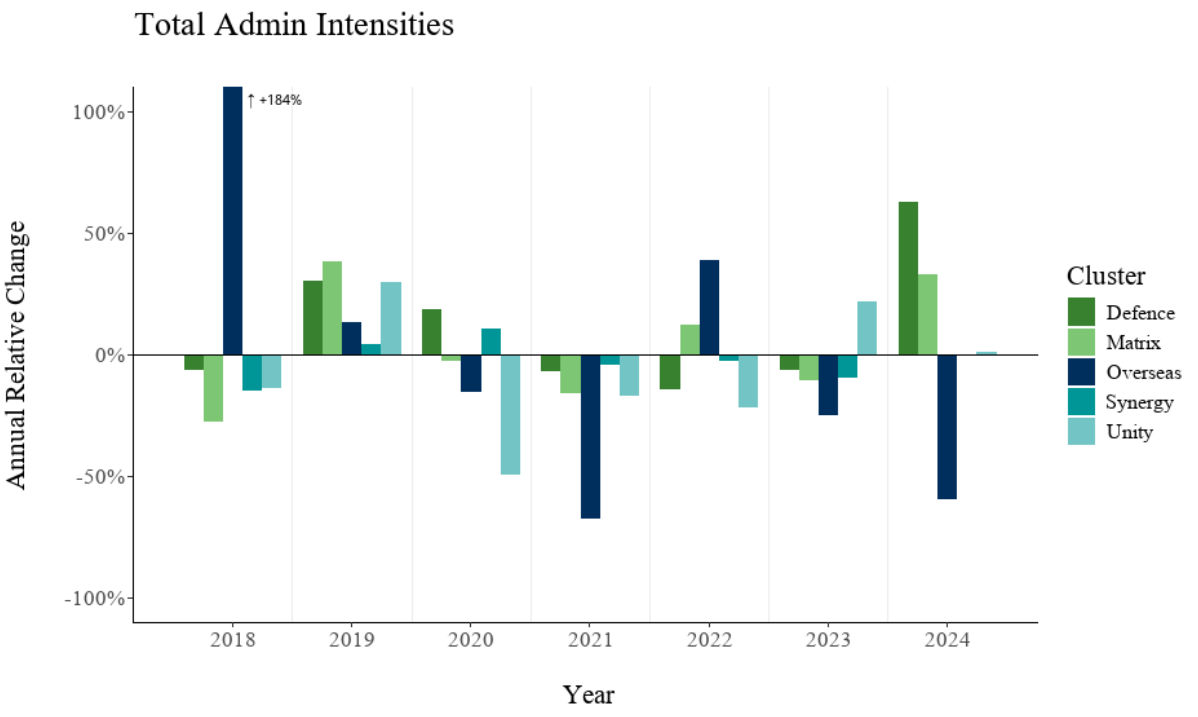


Figure 11 (OSCAR II, 2017-2024)

The median rates of change in administrative staff expenditure intensity increased in only Unity (*Med = 0.95%, SD = 14.51*), whilst rates in Matrix (*Med = -0.37%, SD = 19.05*), Synergy (*Med = -0.74%, SD = 15.87*) and Defence (*Med = -0.07%, SD = 10.63*) decreased. Rates averaged at exactly no change for Overseas (*Med = 0.00%, SD = 73.22*). However, Overseas had the largest annual increase *and* decrease in administrative staff expenditure intensity at +373.21% in 2018 and -83.94% in 2024 (see *Figure 12*). The largest overall swing in quarterly findings was +83.66% for Matrix in June 2018. To explain these findings, consider the largest *quarterly* decrease was in Overseas in September 2023 at -77.01%, which means that from June to September 2023, administrative staff expenditure to total staff expenditure went from £98.99 ($e^{4.595107}$) per £100 to £22.75 ($e^{3.124633}$) per £100.

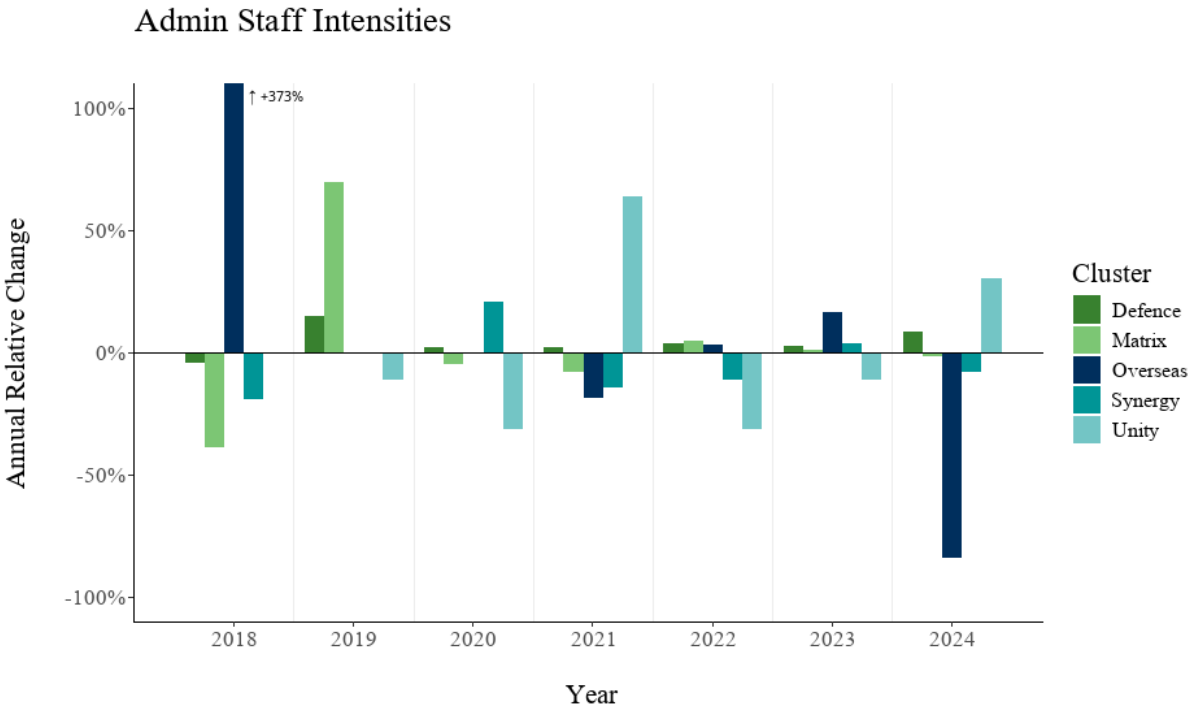


Figure 12 (OSCAR II, 2017-2024)

Quarterly median rates of change for administrative running cost expenditure intensities increased for three departments—Matrix (*Med = 9.37%, SD = 25.99*), Unity (*Med = 1.51%, SD = 30.91*) and Defence (*Med = 7.93%, SD = 121.75*)—and decreased for two, Synergy (*Med = -3.34%, SD = 51.79*) and Overseas (*-6.84%, SD = 161.00*). For *annual* rates of change, Defence had the largest increase *and* decrease at +1107.84% in March 2024 and -79.93% in March 2023 (see *Figure 13*). As an example, consider the largest single *quarterly* increase, 779.11% in September 2022 for Overseas, this meant that administrative running cost expenditure at £2.82 ($e^{1.0397194}$) per £100 of total expenditure in June increased to £24.86 ($e^{3.2135477}$) per £100 of total expenditure in September 2022.

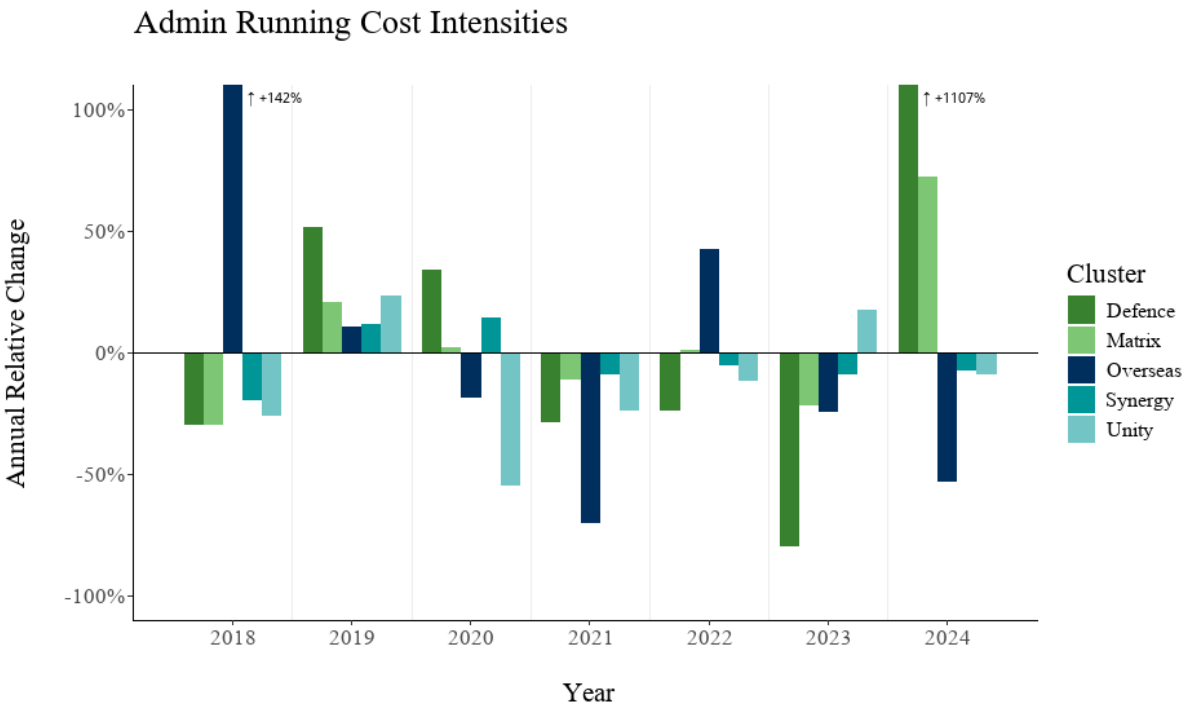


Figure 13 (OSCAR II, 2017-2024)

4.2 Inferential Statistics

Multiple linear regression tested correlations between professional concentrations and administrative expenditure intensity due to its theorised constant relationship. Each model controlled for median income relative to seniority/regional distribution. Coefficients (estimates) are given for predictor variables to determine relationship strength; adjusted R-squared is reported for regression models to determine performance of independent variables in predicting the dependent variables. Finally, p-values (<0.05) determine statistical significance by finding the probability of similar results from random sample error if the null hypotheses were assumed true, and Cook's distance (>0.5) removes influential outlier observations where applicable.

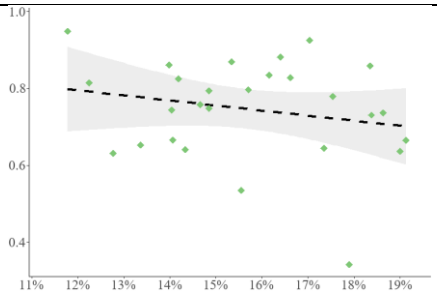
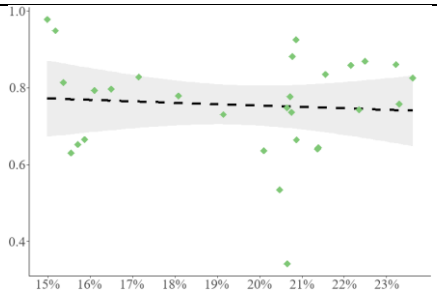
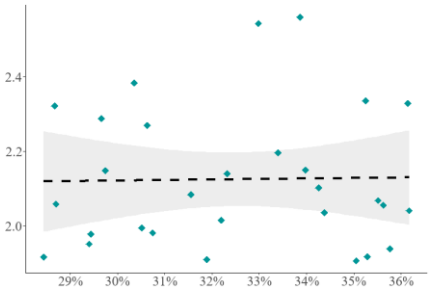
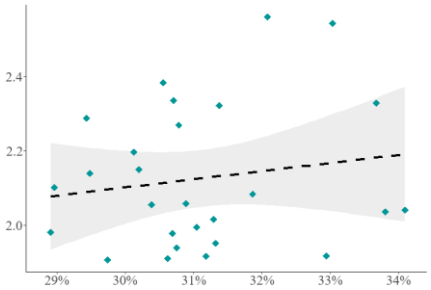
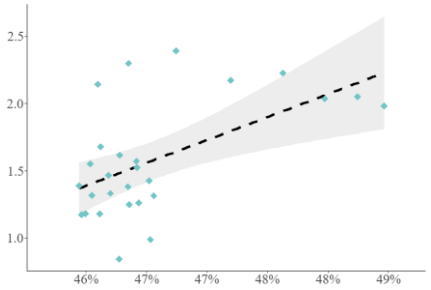
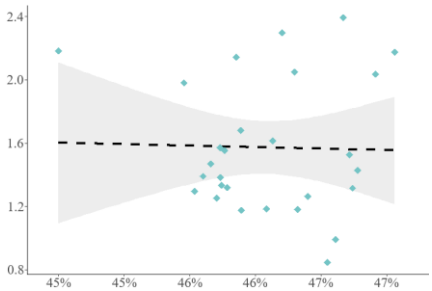
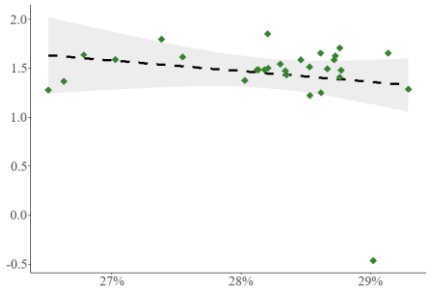
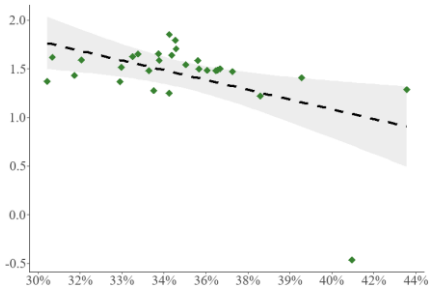
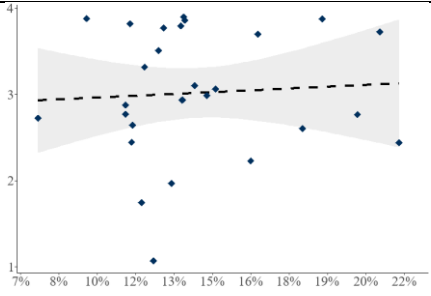
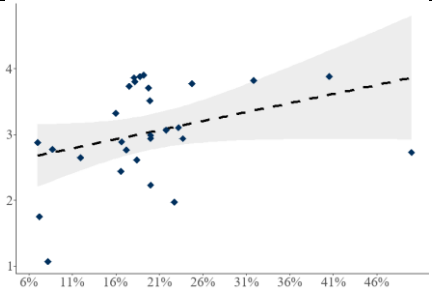
To enhance ease of viewing, the line graphs below show only the relationship between dependent and independent variables *without* control variables, but the linear trend line (and summary regression tables and in-text references) reflect statistical significance of the same (in)dependent variables *with all* control variables.

Table 1 shows that there were no statistically significant results ($p<0.05$) for professional concentration at the 75th or 50th percentile on total administrative expenditure intensity. This means that this dissertation fails to reject the null hypothesis for H_1 and H_2 in this instance, it being:

> H_0 *SSCs have no effect on total administrative expenditure intensities via back-office functions and staff concentration ratios.*

Nonetheless, one regression model was borderline statistically significant (*p=0.05891*), which showed the strongest positive correlation of all models for total administrative intensity (see *Figure 14* and *Table* 3, Appendix).

Table 1: Professional Concentrations on Total Administrative Expenditure Intensity*

	Dependent variable: Natural logarithm of total administrative expenditure intensity	
Cluster	*HR Concentration (at 75th percentile)*	*Finance Concentration (at 75th percentile)*
Matrix		
Synergy		
Unity		
Defence		
Cluster	*HR Concentration (at 50th percentile)*	*Finance Concentration (at 50th percentile)*
Overseas		

*Dashed line shows no statistically significant correlation (p>0.05), solid line shows statistically significant correlation (p<0.05) (for dependent variable in regression models which include all control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

For a 1%pt increase in finance profession concentration at Q3 in Unity, there was a 48.65% ($e^{0.39646733} - 1$) increase in total administrative intensity. This meant that as 3-quarters of the top 1 Unity department (top 25% of 3 departments) held—for example—10 of 100 finance employees or higher, its increase to 11 of 100 finance employees meant an associated 48.65% continuous increase in total administrative expenditure to total resource expenditure. From—for example—£5 per £100 to £7.43 per £100. But the null hypothesis fails to be rejected ($p = 0.05891$).

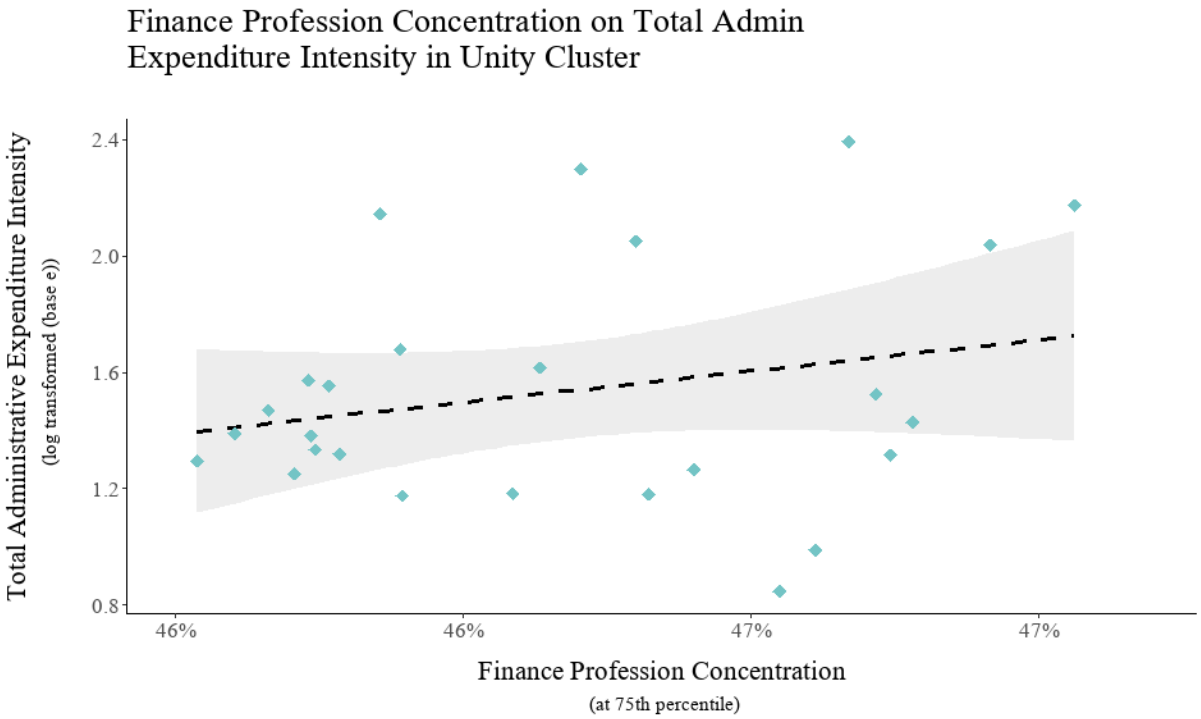


Figure 14 (no control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Table 2 demonstrates that all relationships found were positive at Q3 except in Matrix. Matrix's HR concentration had the biggest negative effect on total administrative intensity at -1.31% ($e^{-0.013193417} - 1$), which meant that as the top 2 Matrix departments (top 25% of 8) holding *x*% of total-Matrix HR staff or higher increased by 1%pt, the proportion of total administrative spend to total resource spend decreased continuously by -1.31%. To illustrate, say the CO and HMT hold 30 of 100 Matrix HR employees one quarter and 31 the next (HR becoming *more concentrated*), the ratio of total administrative expenditure to total resource expenditure would go from—for example—£60 per £100 to £59.21 per £100. However, this dissertation fails to reject the null hypothesis here too ($p = 0.14228$).

The estimate for Overseas also decreased in these findings. However, as it was at the 50th percentile (where its *increase* means *increased professional dispersion*), professional concentration decreases in fact meant higher concentrations. Where professional concentration in half of Overseas' departments increased by 1%pt, total administrative intensity changed by -5.24% ($e^{-0.0538399} - 1$) for HR and -0.87% ($e^{-0.0087883} - 1$) for finance. To demonstrate, if 10% of HR professionals were concentrated in half of Overseas departments and this decreased to 9% (an increase in professional concentration as the upper quartiles hold more of a skewed distribution), every—for example—£50 of all administrative expenditure per £100 of total expenditure would decrease to £49.56 per £100. But once again, these findings were not statistically significant (HR $p = 0.247$, finance $p = 0.717$).

Although not statistically significant ($p = 0.05891$), the adjusted R-squared for finance concentrations (including control variables) on Unity's administrative intensities accounted for 60.55% (*Adj. R-sq. = 0.6055*) of variation in total administrative spend to total resource spend (see *Table 3,* Appendix).

Observations with Cook's distance > 0.5 were removed to ensure large residuals did not affect regression models outwith primary relationships. It is important to note that these are still *real values*, however they are removed to capture stronger, albeit slightly less accurate, results. The largest removed was observation 1 for finance concentrations on administrative intensity in Defence (*cd = 1.8541*) (see *Table 35, Appendix*).

Table 2: Summary of Total Administrative Intensities

	Dependent variable: Natural logarithm of total administrative intensity			
Predictors (at 75th percentile)	*Estimate*	*P-value*	*Adj. R-Squared †*	*N*
Matrix				
HR concentration	-0.013193417	0.14228	0.2482	28
Finance concentration	-0.000379998	0.9830	0.1728	28
Synergy				
HR concentration	0.023597824	0.550	-0.1034	29
Finance concentration	0.048360950	0.215	-0.008315	28
Unity				
HR concentration	0.09878705	0.3892	0.5551	29
Finance concentration	0.39646733	0.05891	0.6055	29
Defence				
HR concentration	0.02747347	0.5741	0.2532	27
Finance concentration	0.01399238	0.4025	0.2665	27

Predictors (at 50th percentile)	*Estimate*	*P-value*	*Adj. R-Squared* †	*N*
Overseas				
HR concentration	-0.0538399	0.247	0.549	28
Finance concentration	-0.0087883	0.717	0.5241	28

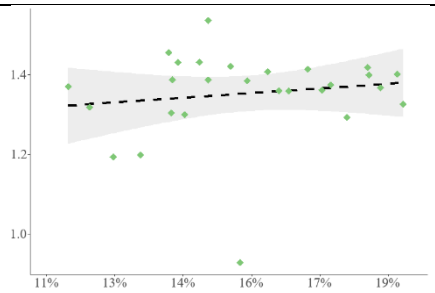
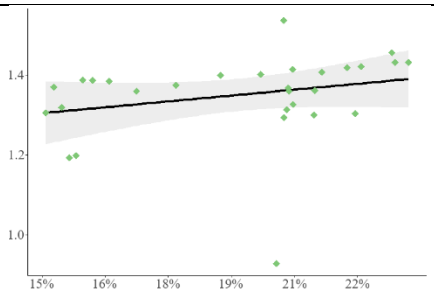
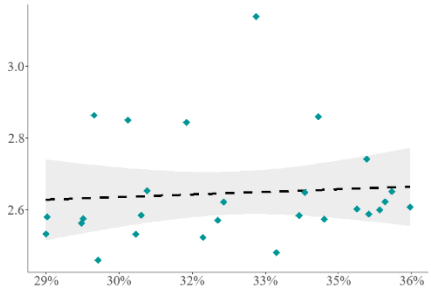
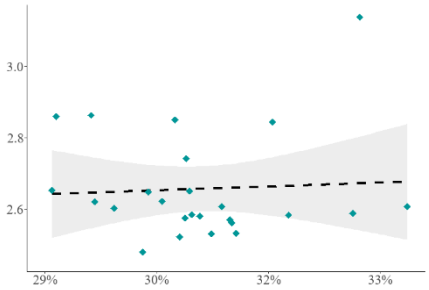
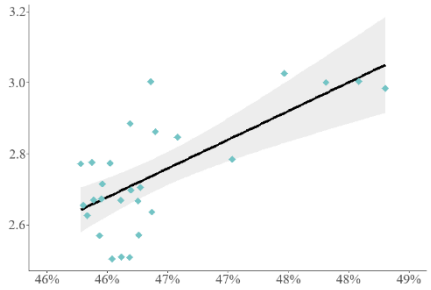
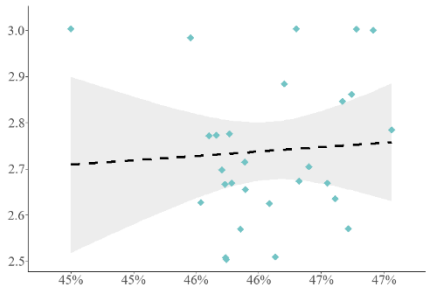
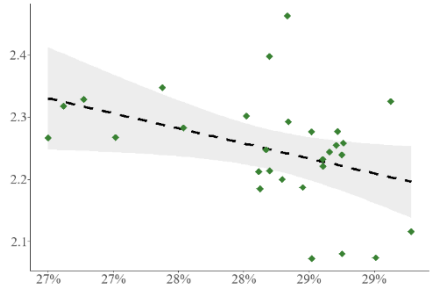
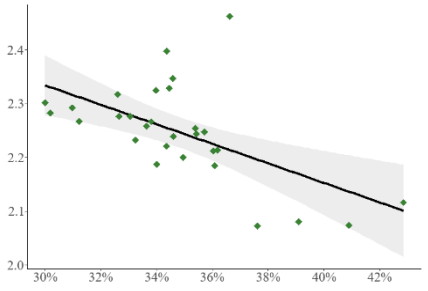
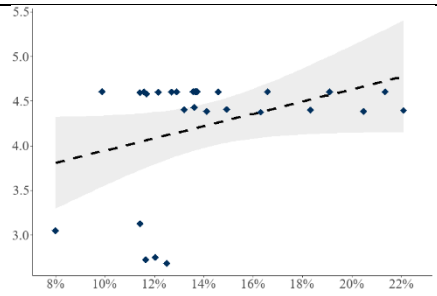
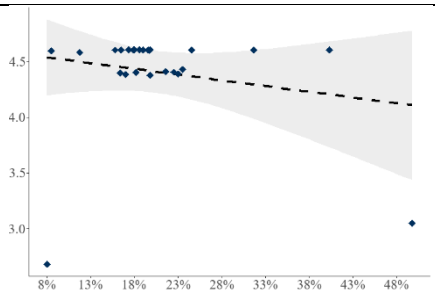
* p < 0.05, ** p < 0.01, *** p < 0.001

† Adjusted R-Squared of regression model including control variables

Administrative staff expenditure intensity results were the most impactful findings, with 3 being statistically significant (*p<0.05*) (see *Table 4* and *Table 8*). In Matrix, 1%pt increases in financial staff ratios at Q3 resulted in a 2.69% ($e^{0.02661350} - 1$) increase for administrative staff intensities (see *Figure 15*). To contextualise, say the top 2 Matrix departments had 60% of cluster-wide finance staff or above in quarter 1, 61% in quarter 2 and 62% in quarter 3, and an initial administrative staff spend to total (programme and administrative) staff spend ratio of 2:5 (*e.g.* £40/£100). Quarter 2 administrative staff intensity would be £41.08 per £100, and quarter 3 would be £42.19 per £100—because these findings are *compounding*. Holding seniority and regional distribution effects on median earnings and FTE count constant, financial professional concentration at the 75th percentile accounted for 40.35% (*Adj. R-sq. = 0.4035*) of the variation in administrative staff expenditure intensity. As results were significant (*p = 0.01741*), this dissertation can reject the null hypothesis in this instance that SSCs have no effect on administrative staff expenditure intensity in Matrix via finance staff concentration ratios (see *Table 5,* Appendix).

Unity was the only other cluster to show a statistically significant (*p = 0.000693*) increase in administrative staff intensities with professional concentration. This dissertation found that for every 1%pt change in HR concentration ratios at the 75th percentile, the intensity of administrative staff spend on total staff spend also changed by 18.65% ($e^{0.17108725} - 1$) (see *Figure 16* and *Table 6,* Appendix). In Defence, conversely, the same change in finance profession concentration ratios (*p = 0.01062*) decreased administrative staff spend by -0.86% ($e^{-0.00867249} - 1$) (see *Figure 17* and *Table 7,* Appendix). For HR professionals in Unity and finance professionals in Defence, the null hypothesis could also be rejected.

Table 4: Professional Concentrations on Administrative Staff Expenditure Intensity*

	Dependent variable: Natural logarithm of administrative staff expenditure intensity	
Cluster	*HR Concentration (at 75th percentile)*	*Finance Concentration (at 75th percentile)*
Matrix		
Synergy		
Unity		
Defence		
Cluster	*HR Concentration (at 50th percentile)*	*Finance Concentration (at 50th percentile)*
Overseas		

Administrative Staff Expenditure Intensity (log transformed (base e))

Administrative Staff Expenditure Intensity (log transformed (base e))

* Dashed line shows no statistically significant correlation (p>0.05), solid line shows statistically significant correlation (p<0.05) (for dependent variable in regression models which include all control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

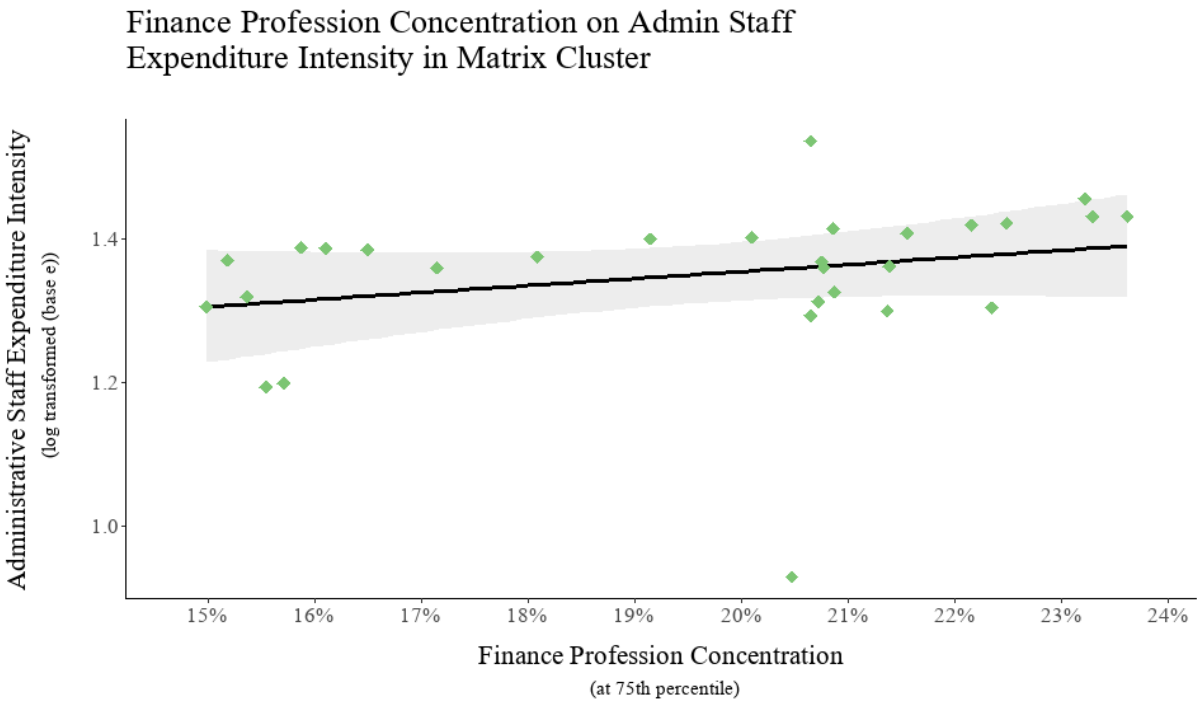


Figure 15 (no control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

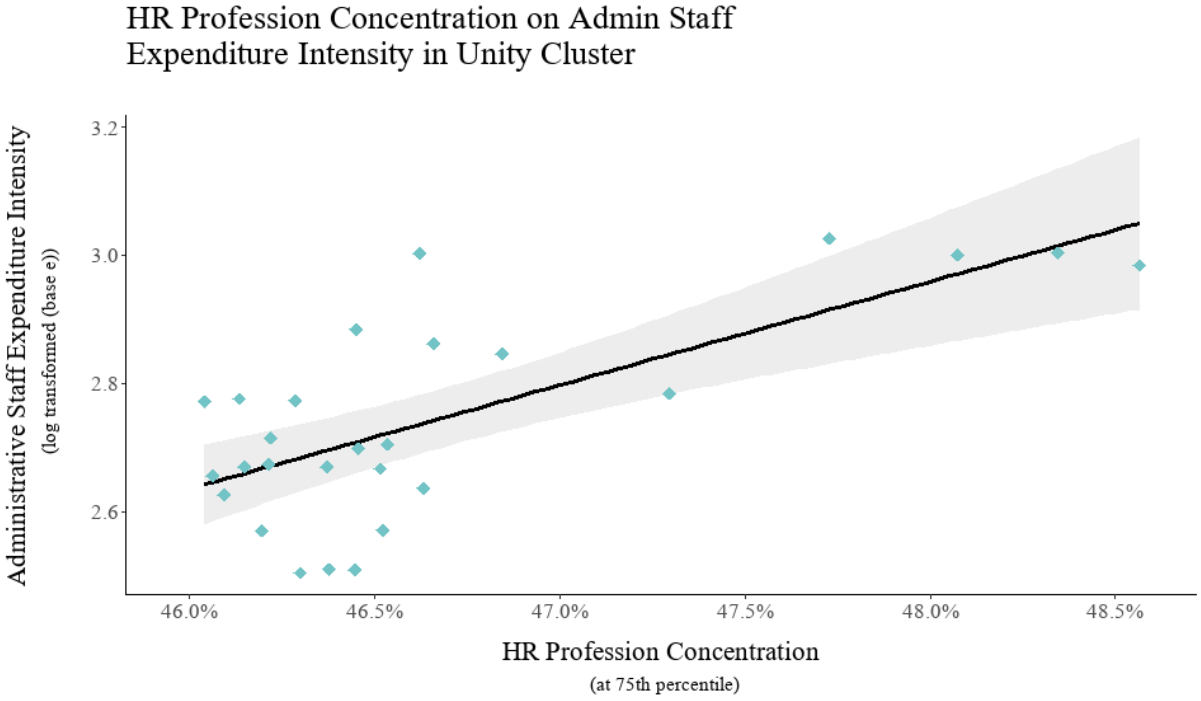


Figure 16 (no control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

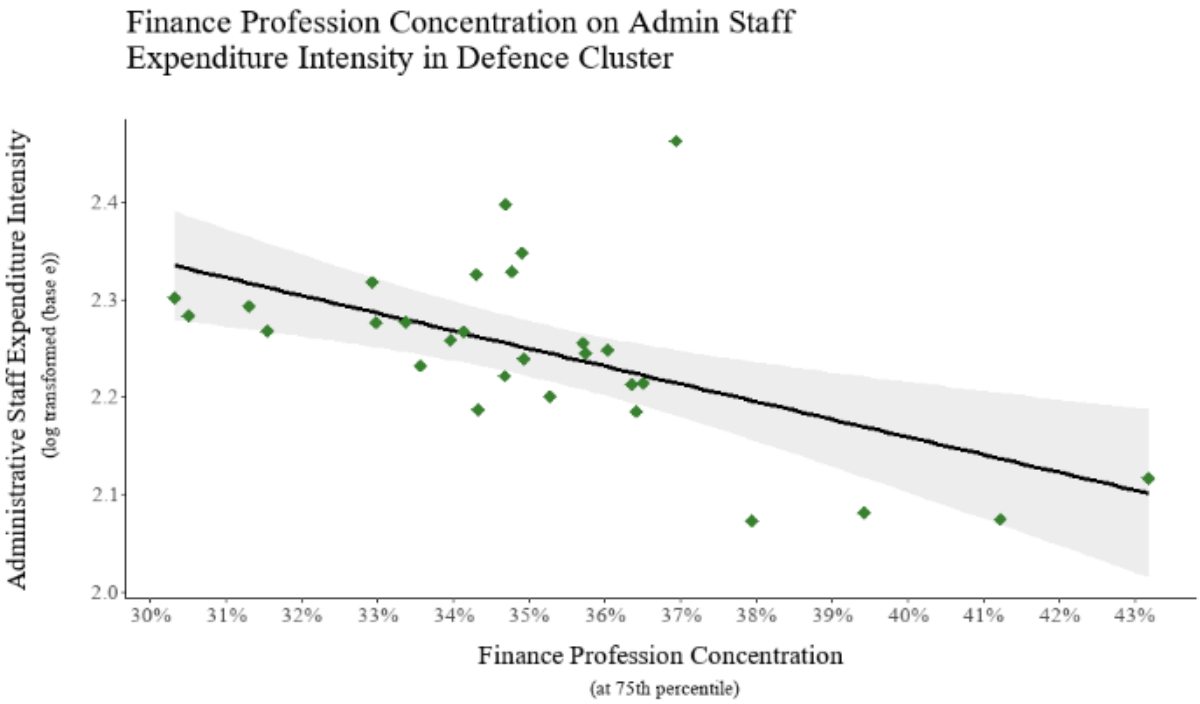


Figure 17 (no control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Unlike with total administrative expenditure intensities, however, Overseas administrative staff intensity increased with more dispersion of HR and finance staff (+1%pt), although not significant ($p = 0.53860$, $p = 0.3055$), at 2.56% ($e^{0.0253142} - 1$) and 2.18% ($e^{0.0215843} - 1$) respectively.

Table 8: Summary of Administrative Staff Intensities

	Dependent variable: Natural logarithm of administrative staff intensity			
Predictors (at 75th percentile)	*Estimate*	*P-value*	*Adj. R-Squared †*	*N*
Matrix				
HR concentration	0.002015906	0.844	-0.05592	29
Finance concentration	0.02661350	0.01741 *	0.4035	27
Synergy				
HR concentration	-0.018604322	0.3087	0.3454	28
Finance concentration	-0.010367625	0.5196	0.3271	28
Unity				
HR concentration	0.17108725	0.000693 ***	0.5336	29
Finance concentration	-0.06634045	0.533	0.2517	29
Defence				

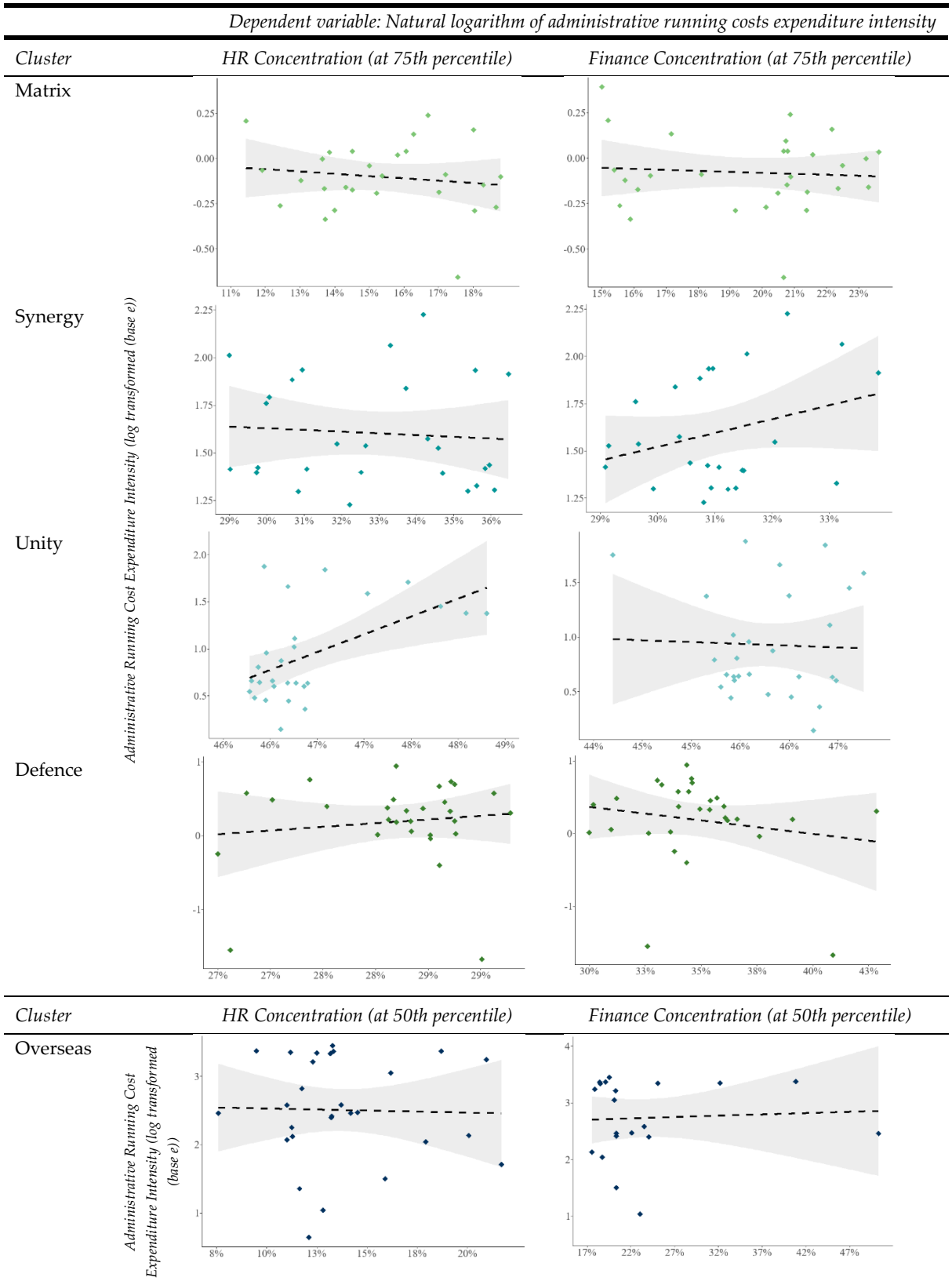
HR concentration	0.00110595	0.94016	0.847	27
Finance concentration	-0.00867249	0.01062 *	0.8579	27
Predictors (at 50th percentile)	*Estimate*	*P-value*	*Adj. R-Squared †*	*N*
Overseas				
HR concentration	0.0253142	0.53860	0.5015	28
Finance concentration	0.0215843	0.3055	0.5161	28

* p < 0.05, ** p < 0.01, *** p < 0.001

† Adjusted R-Squared of regression model including control variables

This dissertation's second subset of administrative expenditure was running costs, calculated as the total administrative running costs as a percentage of total administrative *and* programme expenditure *without* administrative staff costs. When the relationship between this and professional concentration ratios accounted for FTE count per cluster and seniority and regional distribution factors affecting median earnings, all trends were positive except Matrix. However, no statistically significant results were found ($p > 0.05$) (see *Table 9* and *Table 10*).

Table 9: Professional Concentrations on Administrative Running Cost Expenditure Intensity*



* Dashed line shows no statistically significant correlation (p>0.05), solid line shows statistically significant correlation (p<0.05) (for dependent variable in regression models which include all control variables) (CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

For example, the single largest increase was found in Unity against finance profession concentrations ($p = 0.2112$). For a 1%pt increase in the ratio of finance staff at Unity's top 25% of departments or higher, administrative running costs proportional to total administrative and programme expenditure increased by 38.09% ($e^{0.32275622} - 1$). Meanwhile, for a similar 1%pt increase in HR staff at Matrix's top 2 departments or higher, the proportion of administrative running costs to total resource costs decreased by 2.36% ($e^{-0.023958441} - 1$).

Table 10: Summary of Administrative Running Cost Intensities

	Dependent variable: Natural logarithm of administrative running cost intensity			
Predictors (at 75th percentile)	*Estimate*	*P-value*	*Adj. R-Squared †*	*N*
Matrix				
HR concentration	-0.023958441	0.232	-0.06163	29
Finance concentration	-0.021033338	0.595	-0.1145	29
Synergy				
HR concentration	0.08522690	0.1877	-0.007805	28
Finance concentration	0.078628236	0.1774	-0.004072	28
Unity				
HR concentration	0.08532889	0.5385	0.5252	29
Finance concentration	0.32275622	0.2112	0.5485	29
Defence				
HR concentration	0.0082713	0.9461	0.09391	26
Finance concentration	0.0709531	0.2326	0.08052	27
Predictors (at 50th percentile)	*Estimate*	*P-value*	*Adj. R-Squared †*	*N*
Overseas				
HR concentration	-0.0783302	0.163	0.3968	29
Finance concentration	-0.03304722	0.213	0.3867	29

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Adjusted R-Squared of regression model including control variables

Although Overseas' estimates decreased, this trend reflected that of other clusters minus Matrix. For a 1%pt increase in HR and finance professional concentration in *half* (Q2) of Overseas departments—which meant back-office professions *dispersed* throughout the Cluster (opposite to Q3 predictors)—, there was a decrease of -7.53% ($e^{-0.0783302} - 1$) and -3.25%

($e^{-0.03304722}$ – 1) of proportional administrative running cost expenditure to total expenditure, respectively. However, neither were statistically significant ($p = 0.163$ and $p = 0.213$).

5. Discussion

The following discussion section aims to summarise findings into 4 main interpretations founded with evidence from the results section. It shall spell out the implications of these findings for Cabinet Office functional alignment strategy and wider scholarly understandings of shared services. The discussion shall be in context of this dissertation's literature review and theoretical framework, and it recommends adaptations or possible alternative explanations for collaborative governance theory. Where possible, significant findings may inform theory-based generalisations about effects of shared services initiatives on policy planning and implementation and efficient bureaucracies.

The first substantial finding concerns this dissertation's predictor variables, the primary professions associated with back-office functions and ERP services, HR and finance. This dissertation found that HR staff *dispersed* across all clusters, even in well-developed ones like Overseas. Conversely, it was reported that finance staff conformed with SSC theory and H_1 by becoming *more concentrated* than their HR counterparts, including in immature clusters like Synergy and Unity. This suggests that, despite SSC developments in a given cluster rarely focusing on finance explicitly, finance functions are more responsive to service alignment initiatives than HR functions. According to Cordelli (2023, p1093), "while human mobility remains widely constrained across the world, free capital mobility is a loose governing norm of the current global economy, which is enshrined in several treaties", which implies that capital resources are more liberalised than human resources, and therefore more transferable by nature of its wider and freer remit. This dissertation's results suggest that the liberty of financial resources vis-à-vis human resources is reflected in their associated domain knowledge flexibility; skills and expertise in finance are *more transferable* than those in human resources. For instance, the lack of professional concentration in Overseas conveys that HR specialisms may experience 'lock in' due to localised domain requirements—not helped by the cluster's inherent decentralised structure. [redacted]

SSC implementation struggles in large organisations are widely documented (Elston and Dixon, 2019; Elston et al., 2023), and results here substantiate this. Not only do large, complex groups of organisations have difficulty in functionally aligning services, they also are more resistant to actualising the benefits of SSCs (ibid). As in the literature review, the muddied scope of and stubborn constituent departments in Matrix have complicated coordination (IPA, 2023); wider literature in other collaborative public realms finds that shared service integration stalls where interdependencies across organisations to not already exist (Elston et al., 2023). As Matrix is the largest and most complex cluster, it has only recently opened tendering for ERPs, and analysis here confirms savings have yet to been made. Furthermore, as large groups of organisations commonly have pre-existing HR and finance arrangements, efficiency savings may have previously exhausted its return on investment, and new, redundant initiatives can increase administration costs through

restructuring-associated costs, expensive implementation and the unlikely exploitation of scale economies due to numerous bespoke adaptations (ibid; Elston, 2021; Cho et al., 2020). Unity, for example, may have further inflated administrative staff costs due to frequent restructuring and rescoping by the Ministry of Housing, Communities and Local Government (Dalton, 2023). Consequently, the extended assumption of H_1 and H_2—that clusters will *not concentrate* staff if they *cannot* successfully establish SSCs, and thus *not* benefit from associated administrative efficiency savings—fit with this dissertation's findings.

Results thus far concerning measures of SSC strategy integration/development do not conform with theoretical expectations of this dissertation. It has been evidenced above that professional concentration ratios alone—especially HR—can appear counterintuitive to true efficiency savings progress. This dissertation's findings provide new insights into measuring shared services strategies; it is demonstrated that nuanced, more qualitative understandings of organisational composition and function are required to contextualise and meaningfully interpret cluster-level SSSfG integration development *and* wider strategy maturity. For instance, in a cluster with mixed professional concentration results like Unity (HR dispersing, finance concentrating), strategy integration development must be framed within grounded literary evidence to make inferences about functional alignment's effects on efficiency savings. Whilst HR and finance profession concentrations do not align with the cluster's relative immaturity, if caveated with details about (i) Unity's external SSSfG exemption until 2027 but (ii) internal incorporation of DfT staff from within the same service provider the cluster aims to transition to (Say, 2024; Arvato, 2024), then concentration ratios can gain plausibility.

Moreover, a service provider lens can expand findings from concentration ratios. For example, the lack of back-office profession concentration progress in Defence suggests that its SSC provider, SSCL, have focused efforts elsewhere. Details from this dissertation's literature review suggest that SSCL bandwidth may have shifted to Synergy, which also has existing agreements with SSCL and thusly saw a concentration of finance staff (Ambasna-Jones, 2023; Trendall, 2023; Davies, 2022).

The fourth finding concerns the suitability of different efficiency saving metrics in capturing trends of shared service strategies. Whilst median changes in total administrative spending as a proportion of total resource spending generally reflected expectation, no significant results were found in relation to professional concentrations. Underdeveloped clusters like Synergy and Matrix are *yet to realise* potential SSC benefits as both are still tendering for service providers, but developed clusters, such as Overseas or Defence, *have reduced* total administrative burdens without significant correlations with back-office profession concentration—a trend that supports H_2 but dispels H_1. A multitude of studies find that high-level expansive benefits from SSCs are often overestimated: little effect on public administration collaboration levels (Elston et al., 2023), local government legitimacy (Elston and Dixon, 2019), asset-related scale economies (Aldag et al., 2020), overall service quality (Meijerink and Bondarouk, 2013), client-provider trust (Minnaar and Vosselman, 2013), improved work experiences (Redman et al., 2007), reduced functional duplication

(Elston and MacCarthaigh, 2016) and, as seen in this dissertation, proportions of overall administrative expenditure (Elston, 2021; Elston and Dixon, 2019; Elston and Bel, 2022; Richter and Brühl, 2017). These studies suggest that reduced total administrative spending intensities found in this dissertation likely results from factors *outside of* professional concentration ratios (SSC strategy related or otherwise). Thus, this dissertation found that subsets of efficiency savings *can be* significantly related to back-office professional concentration, albeit conditionally. The only statistically significant findings in this dissertation came from changes in administrative staff intensities. This indicates that metrics which are *not largely contingent or subordinate to* external factors are preferable for measuring benefits of SSCs (opposed to measures like total administrative spending or administrative running costs [very reliant on programme spending]). Low-level effect variables with limited external influence possess greater *reactivity in capturing trends* than high-level, resistant measures.

Moreover, analysis in this dissertation suggests that low-level *staff cost-related* benefits are more relevant in clusters focused on policy and strategy, like Matrix, and *running cost-related* benefits better suit clusters focused on delivery, like Overseas and Synergy—although no statistically significant results related to professional concentration were found for the latter example. With the literal consideration of these clusters' previous names (Matrix, né *Policy*; Synergy né *Delivery*), this dissertation argues that it is intuitive to capture back-office staff-related costs in organisations with professional compositions skewed towards the back office, and likewise back-office running costs (aka delivery costs) in ones skewed towards majority delivery professions (see profession distribution by type in the civil service in *Bishop (2017)*). For example, this dissertation found a statistically significant explanatory correlation between administrative staff expenditure intensity and finance profession concentration (or lack of) in policy-focused Matrix.

The implications are theoretical and practical. Whilst this analysis did not control for new GPG Design Principles and Authorities, the Civil Service People Plan or centralised efforts to develop the SSSfG, the mixed results between clusters in this dissertation suggest that external factors, such as these managerial and coordination initiatives, may compliment professional concentration metrics significantly in explaining SSC integration. In line with collaborative governance prerequisites for effective shared services, where above initiatives do not exist for immature clusters, implications are that they will struggle to escape the self-fulfilling prophecy of *collaborative failure by lacking shared services* due to *insufficient collaborative foundations*. Furthermore, in light of functional and structural constraints uncovered—such as cluster size, departmental scope, pre-existing arrangements—, structural contingency theory continues to play a key role. Although multinationals and managerial consultants promote universal benefits of shared services, results here further contribute to scholarly findings that SSCs can rarely be replicated verbatim and expect lucrative benefits (Elston, 2021).

Results challenge this dissertation's theoretical framework and hypotheses. Appropriate alterations would emphasise finance profession concentration over HR, to temper expectations of widespread efficiency savings and, to a lesser extent, link specific

expenditure reduction to clusters by function type (i.e. staff costs for policy, running costs for delivery). Although suggestions that shared services save money and reduce bureaucracy, should the theoretical framework be followed, are valid, further research is needed to establish specifics on how this is translated in reality and what low-level benefits can be achieved.

These findings are acknowledged within limitations, however. Generalisability was limited by a small longitudinal sample size, and interpolation did not generate more real data. Whilst the OSCAR dataset was valuable, lacking detailed spending potentially misled results, and exacerbated outlier observations.

6. Conclusion

Public administration in the UK has transformed from super-ministries to business-like institutions. With economic declines and loss of executive control from NPM reforms, smart innovations were required to balance service quality and government spending. Whilst SSCs initially stalled and failed to consolidate functions for administrative coordination and exploitation of scale economies, mainly due to limited direction and assistance from central government, recent efforts focused on organisational design and executive oversight have seen comparative progress.

This dissertation expanded on the use of professional concentration ratios to measure SSC integration and development, and it stresses that such measures require additional context or risk generating misleading findings. Notably, it gives substantial weight to finance profession concentration over similar HR ratios, as financiers benefits from greater universality in transferring across government and thus can better reflect, and generate, SSSfG progress.

Future researchers and strategists should be cautious to ensure relevant measures of SSC success are used [redacted].Similarly, metrics which are largely contingent on other factors—such as administrative running costs with total programme costs—or government-wide benefits like total efficiency savings should be reassessed for measuring effects of government SSCs and balanced with low-level itemised metrics whilst being careful to conserve comparability and longevity.

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8. Appendix

For data analysis source code and access to the datasets used here (as manipulated for this dissertation), please visit: https://github.com/cabridgeman/co-project.

Table 11: Departments by Cluster with Name Changes and Superseding Organisations Included in Administrative Intensities * † ‡

Cluster	**Constituent Departments**	**Superseding Organisation (where applicable)**
Matrix (Policy)	Department for Business, Innovation and Skills (-2016) → Department for Business, Energy, and Industrial Strategy (2016-2023), Department for International Trade (2016-2023) → Department for Energy Security and Net Zero (2023-), Department for Science, Innovation and Technology (2023-), Department for International Trade (2016-2023 ↦)	Department for Business and Trade (2023-)
	Department for Digital, Culture, Media and Sport (2017-2023) ⇒ Department for Culture, Media and Sport (2023-)	
	Department of Health (-2018) ⇒ Department of Health and Social Care (2018-)	
	Attorney General's Office	
	Department for Education	
	HM Treasury	
	Cabinet Office	
Synergy (Delivery)	Department for Environment, Food and Rural Affairs	
	Department for Work and Pensions	
	Home Office	
	Ministry of Justice	
Unity (HMRC-led)	HMRC	
	Department for Transport	
	Department for Communities and Local Government (-2018) ⇒ Ministry of Housing, Communities and Local Government (2018-2021) ⇒ Department for Levelling Up, Housing and Communities (2021-2024) ⇒ Ministry of Housing, Communities and Local Government (2024-)	
Defence	Ministry of Defence	
Overseas (aka Hera)	Foreign and Commonwealth Office (-2020) ⇒ Foreign, Commonwealth and Development Office (2020-)	

* → Merger/Split into, ↦ Superseded to cell to right, ⇒ Name Change

† Rows may not reflect *actual* restructuring of departments (for instance, upon its name change, the Department for (Digital,) Culture, Media and Sport lost some functions to the Department for Science, Innovation and Technology). This table reflects how departments are included and grouped for analysis.

‡ Where a department has no date in brackets, it is measured for the length of the analysis.

Table 12: Departments / Executive Agencies by Cluster with Name Changes and Superseding Organisations Included in HR/Finance Concentration Ratios (FTE) * † ‡

Cluster	**Constituent Departments / Executive Agencies**	**Superseding Organisation(s) (where applicable)**
Matrix (Policy)	Department for Business, Energy, and Industrial Strategy (2016-2023) ↦	Department for Energy Security and Net Zero (2023-), Department for Science, Innovation and Technology (2023-) [c]
	Department for International Trade (2016-2023) ↦	Department for Business and Trade (2023-) [c]
	Department for Digital, Culture, Media and Sport (2017-2023) ⇒ Department for Culture, Media and Sport (2023-)	
	Department of Health (-2018) ⇒ Department of Health and Social Care (2018-)	
	Attorney General's Office	
	Department for Education	
	HM Treasury	
	Cabinet Office	
Synergy (Delivery)	Department for Environment, Food and Rural Affairs	
	The Health and Safety Executive [p]	Department for Work and Pensions (where available) [p]
	Home Office	
	Ministry of Justice	
Unity (HMRC-led)	HMRC	
	Department for Transport	
	Department for Communities and Local Government (-2018) ⇒ Ministry of Housing, Communities and Local Government (2018-2021) ⇒ Department for Levelling Up, Housing and Communities (2021-2024) ⇒ Ministry of Housing, Communities and Local Government (2024-)	
Defence	Ministry of Defence [e]	
	Defence Science and Technology Laboratory	
	Defence Equipment and Support	
	UK Hydrographic Office	
Overseas (aka Hera)	Foreign and Commonwealth Office (-2020) [e] ⇒ Foreign, Commonwealth and Development Office (2020-) [e]	
	FCO Services	
	Wilton Park	

* ↦ Superseded to cell to right, ⇒ Name Change

† Rows may not reflect *actual* restructuring of departments (for instance, upon its name change, the Department for (Digital,) Culture, Media and Sport lost some functions to the Department for Science, Innovation and Technology). This table reflects how departments are included and grouped for analysis.

‡ Where a department has no date in brackets, it is measured for the length of the analysis. Departments' child agencies are always included in analysis unless stated otherwise.

[e] Excluding child agencies

[c] The Department for Business, Energy, and Industrial Strategy split into the Department for Energy Security and Net Zero, the Department for Science, Innovation and Technology and the Department for Business and

Trade (which also partially inherited the Department for International Trade). To ensure Matrix's concentration ratios consistently represent eight constituent departments/groups, after preceding departments dissolved in 2023, succeeding departments were combined by function.

[P] Professional data is not consistently available for the Department for Work and Pensions (DWP), therefore its child agency, the Health and Safety Executive, is included in analysis when DWP data is unavailable. When DWP data is available, it is included in a total sum with the Health and Safety Executive to represent one departmental group professional concentration ratio.

Table 3: Finance Concentration on Total Administrative Intensity in Unity Cluster

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-44.58024609	38.78312142	-1.149	0.26169
Finance concentration ratio (at 75th percentile)	0.39646733	0.19992158	1.983	0.05891
Full-time equivalent staff	0.00019983	0.00007529	2.654	0.01389 *
Natural logarithm of region-weighted median salary	33.92822774	13.94083742	2.434	0.02276 *
Natural logarithm of seniority-weighted median salary	-32.51597039	11.48498843	-2.831	0.00923 **
Adjusted R-Squared	0.6055			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Finance Concentration on Administrative Staff Intensity in Matrix Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	9.92899934	5.26539158	1.886	0.07261
Finance concentration ratio (at 75th percentile)	0.02661350	0.01035000	2.571	0.01741 *
Full-time equivalent staff	0.00001474	0.00000457	3.225	0.00389 **
Natural logarithm of region-weighted median salary	-2.20695825	2.60128825	-0.848	0.40535
Natural logarithm of seniority-weighted median salary	1.22289723	2.75054049	0.445	0.66095
Adjusted R-Squared	0.4035			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 4 (cd = 0.7935) and observation 5 (cd = 0.5130) removed

Table 6: HR Concentration on Administrative Staff Intensity in Unity Cluster

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-11.62207260	13.18488171	-0.881	0.386807
HR concentration ratio (at 75th percentile)	0.17108725	0.04396735	3.891	0.000693 ***
Full-time equivalent staff	-0.00001842	0.00001414	-1.303	0.205014
Natural logarithm of region-weighted median salary	0.32733802	3.63017281	0.090	0.928899
Natural logarithm of seniority-weighted median salary	0.43488936	2.71839156	0.160	0.874235
Adjusted R-Squared	0.5336			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 7: Finance Concentration on Administrative Staff Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-4.12952181	1.17492742	-3.515	0.00195 **
Finance concentration ratio (at 75th percentile)	-0.00867249	0.00310608	-2.792	0.01062 *
Full-time equivalent staff	0.00005384	0.00002035	2.645	0.01479 *
Natural logarithm of region-weighted median salary	1.81101238	0.63322752	2.860	0.00910 **
Natural logarithm of seniority-weighted median salary	-1.41286805	0.58965736	-2.396	0.02551 *
Adjusted R-Squared	0.8579			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 (cd = 1.0697) and observation 5 (cd = 0.8515) removed

Table 13: HR Concentration on Total Administrative Intensity in Matrix Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-10.506154492	10.237102086	-1.026	0.31543
HR concentration ratio (at 75th percentile)	-0.013193417	0.008683053	-1.519	0.14228
Full-time equivalent staff	0.000008611	0.000006632	1.298	0.20699
Natural logarithm of region-weighted median salary	-14.812237469	4.501059790	-3.291	0.00320 **
Natural logarithm of seniority-weighted median salary	15.436095385	4.785738443	3.225	0.00374 **
Adjusted R-Squared	0.2482			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 14 removed (cd = 0.5573)

Table 14: Finance Concentration on Total Administrative Intensity in Matrix Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-13.654252904	10.643150910	-1.283	0.2123
Finance concentration ratio (at 75th percentile)	-0.000379998	0.017621662	-0.022	0.9830
Full-time equivalent staff	0.000006923	0.000008167	0.848	0.4054
Natural logarithm of region-weighted median salary	-13.830979705	5.333413248	-2.593	0.0163 *
Natural logarithm of seniority-weighted median salary	14.766544957	5.684667448	2.598	0.0161 *
Adjusted R-Squared	0.1728			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 14 removed (cd = 0.5213)

Table 15: HR Concentration on Administrative Staff Intensity in Matrix Cluster

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	5.269708832	11.613741018	0.454	0.654
HR concentration ratio (at 75th percentile)	0.002015906	0.010124396	0.199	0.844
Full-time equivalent staff	0.000007974	0.000007820	1.020	0.318
Natural logarithm of region-weighted median salary	-6.159937844	5.063679232	-1.216	0.236
Natural logarithm of seniority-weighted median salary	5.580461509	5.327307384	1.048	0.305
Adjusted R-Squared	-0.05592			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 16: HR Concentration on Administrative Running Cost Intensity in Matrix Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-7.295268030	22.434419016	-0.325	0.748
HR concentration ratio (at 75th percentile)	-0.023958441	0.019557432	-1.225	0.232
Full-time equivalent staff	0.000005248	0.000015106	0.347	0.731
Natural logarithm of region-weighted median salary	-10.342651960	9.781576967	-1.057	0.301
Natural logarithm of seniority-weighted median salary	10.741832295	10.290830999	1.044	0.307
Adjusted R-Squared	-0.06163			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 17: Finance Concentration on Administrative Running Cost Intensity in Matrix Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-13.371333960	22.858260964	-0.585	0.564
Finance concentration ratio (at 75th percentile)	-0.021033338	0.039028159	-0.539	0.595
Full-time equivalent staff	-0.000002794	0.000018132	-0.154	0.879
Natural logarithm of region-weighted median salary	-10.663553699	11.148597446	-0.956	0.348
Natural logarithm of seniority-weighted median salary	11.665086184	11.797677553	0.989	0.333
Adjusted R-Squared	-0.1145			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 18: HR Concentration on Total Administrative Intensity in Synergy Cluster

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-11.814406020	23.826699061	-0.496	0.625
HR concentration ratio (at 75th percentile)	0.023597824	0.038918511	0.606	0.550
Full-time equivalent staff	-0.000008315	0.000008757	-0.950	0.352
Natural logarithm of region-weighted median salary	9.571076327	10.894839712	0.878	0.388
Natural logarithm of seniority-weighted median salary	-8.198837316	10.906775403	-0.752	0.460
Adjusted R-Squared	-0.1034			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 19: Finance Concentration on Total Administrative Intensity in Synergy Cluster

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	15.590028635	32.569865923	0.479	0.637
Finance concentration ratio (at 75th percentile)	0.048360950	0.037884701	1.277	0.215
Full-time equivalent staff	-0.000002993	0.000010367	-0.289	0.775
Natural logarithm of region-weighted median salary	7.414866319	5.521966507	1.343	0.192
Natural logarithm of seniority-weighted median salary	-8.891908422	5.864614975	-1.516	0.143
Adjusted R-Squared	-0.008315			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 29 removed (cd = 0.5269)

Table 20: HR Concentration on Administrative Staff Intensity in Synergy Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-11.042216943	11.914212032	-0.927	0.3636
HR concentration ratio (at 75th percentile)	-0.018604322	0.017872395	-1.041	0.3087
Full-time equivalent staff	-0.000008376	0.000004383	-1.911	0.0685
Natural logarithm of region-weighted median salary	-1.514395722	5.011581919	-0.302	0.7652
Natural logarithm of seniority-weighted median salary	3.091944552	5.006511141	0.618	0.5429
Adjusted R-Squared	0.3454			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 13 removed (cd = 0.5216)

Table 21: Finance Concentration on Administrative Staff Intensity in Synergy Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-16.647545288	15.509480528	-1.073	0.2942
Finance concentration ratio (at 75th percentile)	-0.010367625	0.015853117	-0.654	0.5196
Full-time equivalent staff	-0.000010961	0.000005262	-2.083	0.0486 *
Natural logarithm of region-weighted median salary	3.270326821	2.408528625	1.358	0.1877
Natural logarithm of seniority-weighted median salary	-1.161173879	2.201029920	-0.528	0.6029
Adjusted R-Squared	0.3271			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 13 removed (cd = 0.5181)

Table 22: HR Concentration on Administrative Running Cost Intensity in Synergy Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-3.46724994	34.57727268	-0.100	0.9210
HR concentration ratio (at 75th percentile)	0.08522690	0.06277080	1.358	0.1877
Full-time equivalent staff	-0.00001563	0.00001377	-1.135	0.2681
Natural logarithm of region-weighted median salary	33.63366292	19.25971673	1.746	0.0941
Natural logarithm of seniority-weighted median salary	-33.39830379	19.27098371	-1.733	0.0965
Adjusted R-Squared	-0.007805			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 29 removed (cd = 0.6911)

Table 23: Finance Concentration on Administrative Running Cost Intensity in Synergy Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	42.528501603	48.584468953	0.875	0.3904
Finance concentration ratio (at 75th percentile)	0.078628236	0.056512608	1.391	0.1774
Full-time equivalent staff	0.000001974	0.000015464	0.128	0.8995
Natural logarithm of region-weighted median salary	11.452173469	8.237117431	1.390	0.1777
Natural logarithm of seniority-weighted median salary	-15.851780168	8.748246150	-1.812	0.0831
Adjusted R-Squared	-0.004072			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 29 removed (cd = 0.8082)

Table 24: HR Concentration on Total Administrative Intensity in Unity Cluster

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-2.96271335	33.77968704	-0.088	0.9308
HR concentration ratio (at 75th percentile)	0.09878705	0.11264441	0.877	0.3892
Full-time equivalent staff	0.00006218	0.00003622	1.717	0.0989
Natural logarithm of region-weighted median salary	14.31459412	9.30050827	1.539	0.1369
Natural logarithm of seniority-weighted median salary	-14.68254179	6.96452331	-2.108	0.0456 *
Adjusted R-Squared	0.5551			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 25: Finance Concentration on Administrative Staff Intensity in Unity Cluster

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	34.78968072	20.36077709	1.709	0.100
Finance concentration ratio (at 75th percentile)	-0.06634045	0.10495696	-0.632	0.533
Full-time equivalent staff	-0.00003342	0.00003953	-0.846	0.406
Natural logarithm of region-weighted median salary	-7.88082980	7.31880964	-1.077	0.292
Natural logarithm of seniority-weighted median salary	5.28060748	6.02951183	0.876	0.390
Adjusted R-Squared	0.2517			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 26: HR Concentration on Administrative Running Cost Intensity in Unity Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	6.83961577	41.00117445	0.167	0.8689
HR concentration ratio (at 75th percentile)	0.08532889	0.13672575	0.624	0.5385
Full-time equivalent staff	0.00006531	0.00004396	1.486	0.1504
Natural logarithm of region-weighted median salary	13.72982826	11.28878908	1.216	0.2357
Natural logarithm of seniority-weighted median salary	-15.07370298	8.45341269	-1.783	0.0872
Adjusted R-Squared	0.5252			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 27: Finance Concentration on Administrative Running Cost Intensity in Unity Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-26.00838735	48.74663435	-0.534	0.5986
Finance concentration ratio (at 75th percentile)	0.32275622	0.25128209	1.284	0.2112
Full-time equivalent staff	0.00017757	0.00009464	1.876	0.0728
Natural logarithm of region-weighted median salary	29.56802331	17.52228493	1.687	0.1045
Natural logarithm of seniority-weighted median salary	-29.54284134	14.43552017	-2.047	0.0518
Adjusted R-Squared	0.5485			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 28: HR Concentration on Total Administrative Intensity in Overseas Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	180.8538741	110.2101962	1.641	0.114
HR concentration ratio (at 50th percentile)	-0.0538399	0.0453117	-1.188	0.247
Full-time equivalent staff	0.0002707	0.0003944	0.686	0.499
Natural logarithm of region-weighted median salary	1.8033953	5.1469289	0.350	0.729
Natural logarithm of seniority-weighted median salary	-18.4629985	14.0605237	-1.313	0.202
Adjusted R-Squared	0.549			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 removed (cd = 0.5492)

Table 29: Finance Concentration on Total Administrative Intensity in Overseas Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	232.2282007	155.0980635	1.497	0.148
Finance concentration ratio (at 50th percentile)	-0.0087883	0.0239929	-0.366	0.717
Full-time equivalent staff	0.0001143	0.0003874	0.295	0.771
Natural logarithm of region-weighted median salary	7.3975781	5.5815775	1.325	0.198
Natural logarithm of seniority-weighted median salary	-28.4992398	19.4991622	-1.462	0.157
Adjusted R-Squared	0.5241			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 removed (cd = 0.6429)

Table 30: HR Concentration on Administrative Staff Intensity in Overseas Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	311.1274978	98.6303846	3.154	0.00443 **
HR concentration ratio (at 50th percentile)	0.0253142	0.0405508	0.624	0.53860
Full-time equivalent staff	0.0006316	0.0003530	1.790	0.08671
Natural logarithm of region-weighted median salary	7.5127462	4.6061399	1.631	0.11650
Natural logarithm of seniority-weighted median salary	-36.2771808	12.5831811	-2.883	0.00840 **
Adjusted R-Squared	0.5015			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 removed (cd = 1.0518)

Table 31: Finance Concentration on Administrative Staff Intensity in Overseas Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	209.4712434	133.1184477	1.574	0.1292
Finance concentration ratio (at 50th percentile)	0.0215843	0.0205928	1.048	0.3055
Full-time equivalent staff	0.0006098	0.0003325	1.834	0.0796
Natural logarithm of region-weighted median salary	1.9770007	4.7905881	0.413	0.6837
Natural logarithm of seniority-weighted median salary	-21.5274042	16.7358518	-1.286	0.2111
Adjusted R-Squared	0.5161			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 removed (cd = 1.6998)

Table 32: HR Concentration on Administrative Running Cost Intensity in Overseas Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	56.9313995	125.5601534	0.453	0.654
HR concentration ratio (at 50th percentile)	-0.0783302	0.0544556	-1.438	0.163
Full-time equivalent staff	0.0001399	0.0004745	0.295	0.771
Natural logarithm of region-weighted median salary	-4.1251404	5.6158419	-0.735	0.470
Natural logarithm of seniority-weighted median salary	-1.2000172	15.6385959	-0.077	0.939
Adjusted R-Squared	0.3968			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 33: Finance Concentration on Administrative Running Cost Intensity in Overseas Cluster

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	241.21137580	182.68803040	1.320	0.199
Finance concentration ratio (at 50th percentile)	-0.03304722	0.02580508	-1.281	0.213
Full-time equivalent staff	0.00002558	0.00045373	0.056	0.956
Natural logarithm of region-weighted median salary	8.50822709	6.58656817	1.292	0.209
Natural logarithm of seniority-weighted median salary	-30.33691203	23.00639561	-1.319	0.200
Adjusted R-Squared	0.3867			

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 34: HR Concentration on Total Administrative Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-4.26567127	7.64790646	-0.558	0.5826
HR concentration ratio (at 75th percentile)	0.02747347	0.04814823	0.571	0.5741
Full-time equivalent staff	0.00020820	0.00009952	2.092	0.0482 *
Natural logarithm of region-weighted median salary	3.08088712	3.30721223	0.932	0.3617
Natural logarithm of seniority-weighted median salary	-3.59475391	3.03979577	-1.183	0.2496
Adjusted R-Squared	0.2532			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 (cd = 0.6609) and observation 2 (cd = 1.3541) removed

Table 35: Finance Concentration on Total Administrative Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of total administrative intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-1.99148343	5.18447426	-0.384	0.7046
Finance concentration ratio (at 75th percentile)	0.01399238	0.01639120	0.854	0.4025
Full-time equivalent staff	0.00024785	0.00008868	2.795	0.0106 *
Natural logarithm of region-weighted median salary	1.20989213	3.43899199	0.352	0.7283
Natural logarithm of seniority-weighted median salary	-2.13571871	3.31576096	-0.644	0.5262
Adjusted R-Squared	0.2665			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 (cd = 1.8541) and observation 2 (cd = 1.6003) removed

Table 36: HR Concentration on Administrative Staff Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of administrative staff intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-5.52186643	2.33239379	-2.367	0.02712 *
HR concentration ratio (at 75th percentile)	0.00110595	0.01456461	0.076	0.94016
Full-time equivalent staff	0.00007452	0.00002258	3.301	0.00326 **
Natural logarithm of region-weighted median salary	1.22228775	0.73175839	1.670	0.10902
Natural logarithm of seniority-weighted median salary	-0.83199387	0.57410937	-1.449	0.16139
Adjusted R-Squared	0.847			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 5 (cd = 0.8991) and observation 29 (cd = 0.6466) removed

Table 37: HR Concentration on Administrative Running Cost Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	-3.2938500	17.9979671	-0.183	0.8565
HR concentration ratio (at 75th percentile)	0.0082713	0.1208126	0.068	0.9461
Full-time equivalent staff	0.0004262	0.0002326	1.833	0.0811
Natural logarithm of region-weighted median salary	5.9859673	7.7840900	0.769	0.4505
Natural logarithm of seniority-weighted median salary	-7.7049306	7.1535911	-1.077	0.2937
Adjusted R-Squared	0.09391			

* p < 0.05, ** p < 0.01, *** p < 0.001

† Observation 1 (cd = 0.5033), observation 2 (cd = 0.5122) and observation 24 (cd = 0.5188) removed

Table 38: Finance Concentration on Administrative Running Cost Intensity in Defence Cluster †

	Dependent variable: Natural logarithm of administrative running cost intensity			
	Estimate	*Std. Error*	*T-value*	*P-value*
Intercept	8.7488730	18.2822281	0.479	0.6370
Finance concentration ratio (at 75th percentile)	0.0709531	0.0578010	1.228	0.2326
Full-time equivalent staff	0.0007343	0.0003127	2.348	0.0283 *
Natural logarithm of region-weighted median salary	-0.8152674	12.1270611	-0.067	0.9470
Natural logarithm of seniority-weighted median salary	-3.9024221	11.6925064	-0.334	0.7417
Adjusted R-Squared	0.08052			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Observation 1 (cd = 0.7710) and observation 2 (cd = 0.6432) removed

Table 39: Unity Raw Data*

Date Published	Admin Spend (£k)	Programme Spend (£k)	Admin Staff Spend (£k)	Programme Staff Spend (£k)	Admin Running Cost Spend (£k)	Admin Intensity (ln)	Admin Staff Intensity (ln)	Admin Running Cost Intensity (ln)	HR Concentration (Q3)	Finance Concentration (Q3)	Region-Weighted Average Salary	Seniority-Weighted Average Salary	Full-Time Equivalent	Observation
2017-06-30	498706	5120286	175006	693422	323700	2.183279362	3.003305764	1.75107978	0.487603306	0.446902655	10.18087866	10.23157206	80920	1
2017-09-30	347528	4443993	158015	641098	189513	1.981412247	2.984357789	1.375024633	0.485655112	0.456469037	10.18744991	10.24454579	79841.0887	2
2017-12-31	348687	4141240	170248	674565	178439	2.049753135	3.003311082	1.37982527	0.483453137	0.464899552	10.19405068	10.2565436	78854.7419	3
2018-03-31	376683	4540133	166845	663252	209838	2.036157725	3.000692862	1.451089545	0.480743602	0.471058337	10.20071048	10.26658958	78053.5242	4
2018-06-30	444411	4348472	180331	693875	264080	2.227032608	3.026648191	1.706534885	0.477272727	0.473809524	10.20745881	10.27370781	77530	5
2018-09-30	266482	2763628	118411	612717	148071	2.174122684	2.784743263	1.586507873	0.472962611	0.472523982	10.21434385	10.27748144	77343.5444	6
2018-12-31	320545	2608326	135868	653190	184677	2.392820555	2.846014183	1.841406236	0.468438873	0.468599517	10.22148836	10.27972989	77420.7742	7
2019-03-31	298750	2700241	140622	645129	158128	2.298746111	2.884605677	1.66254384	0.46450301	0.463940669	10.22903376	10.28283163	77655.117	8
2019-06-30	442386	4738400	103674	690167	338712	2.144640929	2.569538357	1.877608314	0.461956522	0.460451977	10.23712149	10.28916515	77940	9
2019-09-30	378775	7637863	199003	1040694	179772	1.552838136	2.775867812	0.807585156	0.461345472	0.459563287	10.245839	10.30040005	78183.3276	10
2019-12-31	384361	6784975	197601	1110829	186760	1.67918408	2.714836808	0.957426235	0.462194192	0.460805663	10.25505801	10.31537042	78350.9112	11
2020-03-31	401489	7576592	210124	1498400	191365	1.615897136	2.5094829	0.8748996	0.463771581	0.463235475	10.26459627	10.33220147	78423.0392	12
2020-06-30	506911	13808019	236418	1344881	270493	1.264447304	2.704769671	0.636358078	0.465346535	0.465909091	10.27427153	10.34901842	78380	13
2020-09-30	398913	14428736	186434	1149370	212479	0.989664641	2.635958838	0.359764453	0.46631635	0.468021994	10.28377697	10.36425909	78241.1141	14
2020-12-31	442124	11424243	218372	1029753	223752	1.315297197	2.861972512	0.634245107	0.46659191	0.469326113	10.2923074	10.37761171	78181.831	15
2021-03-31	483158	11114956	271580	1077282	211578	1.426916131	3.002410388	0.601166133	0.466212497	0.469712489	10.29893307	10.38907713	78416.6324	16
2021-06-30	661597	13732288	224519	1492033	437078	1.525268053	2.571057615	1.110723112	0.465217391	0.469072165	10.30272423	10.39865621	79160	17
2021-09-30	430546	18024469	217054	1287011	213492	0.847132928	2.669389635	0.145678119	0.463720317	0.467402098	10.30325685	10.40648396	80533.7786	18
2021-12-31	435889	12947756	225750	1332527	210139	1.180769092	2.673262376	0.451150684	0.462132761	0.465122915	10.30212982	10.41323202	82289.2649	19
2022-03-31	426454	12635078	216150	1348511	210304	1.183247992	2.625718331	0.476297588	0.460940652	0.462761159	10.30144775	10.41970623	84085.1187	20
2022-06-30	595627	17788621	239403	1443277	356224	1.175535328	2.655175471	0.661480442	0.460629921	0.460843373	10.30331528	10.4267124	85580	21
2022-09-30	478393	12304579	235243	1394564	243150	1.319733505	2.669572327	0.642979471	0.461487081	0.459756596	10.30930134	10.43494238	86511.0373	22
2022-12-31	458830	11630045	238029	1708270	220801	1.33380907	2.503877802	0.602391142	0.463000987	0.459329848	10.31883224	10.44463219	86929.2346	23
2023-03-31	467514	11272287	245582	1753341	221932	1.381859338	2.508437275	0.636801072	0.464461078	0.459252644	10.33079858	10.45590384	86964.0646	24
2023-06-30	609586	12034889	258620	1538230	350966	1.57297459	2.666739578	1.020883904	0.465156794	0.459214502	10.344091	10.46887937	86745	25
2023-09-30	462939	12782295	256404	1469854	206535	1.251372413	2.698213173	0.444247007	0.464557458	0.458967992	10.35777598	10.48358439	86385.1191	26
2023-12-31	513244	11302272	285122	1495085	228122	1.46875269	2.773602416	0.657881898	0.462851919	0.458517915	10.37162347	10.49965884	85931.9218	27
2024-03-31	503483	12032317	287271	1509727	216212	1.390376304	2.771723433	0.545085764	0.460408913	0.457932126	10.38557932	10.51664624	85416.5136	28

2024-06-30	668642	17633529	264894	1649334	403748	1.29564401	2.627430245	0.791186141	0.457597173	0.457278481	10.39958933	10.53409012	84870	29

*(CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Table 40: Synergy Raw Data*

Date Published	Admin Spend (£k)	Programme Spend (£k)	Admin Staff Spend (£k)	Programme Staff Spend (£k)	Admin Running Cost Spend (£k)	Admin Intensity (ln)	Admin Staff Intensity (ln)	Admin Running Cost Intensity (ln)	HR Concentration (Q3)	Finance Concentration (Q3)	Region-Weighted Average Salary	Seniority-Weighted Average Salary	Full-Time Equivalent	Observation
2017-06-30	871777	9781154	381607	1804011	490170	2.102113499	2.859907564	1.526332111	0.342592593	0.289645522	10.17682252	10.11056761	172120	1
2017-09-30	616850	8545877	280668	1799533	336182	1.906896948	2.60212286	1.299923745	0.350525136	0.297431698	10.1825532	10.1155146	173573.558	2
2017-12-31	640999	7563820	295980	1853887	345019	2.055721139	2.622300812	1.43629273	0.356277201	0.303848728	10.18830262	10.12001167	175110.693	3
2018-03-31	680799	9107448	319843	1937764	360956	1.939499635	2.650939755	1.304988594	0.357668311	0.307527465	10.19408951	10.12360892	176814.982	4
2018-06-30	1087966	9437963	359848	1959953	728118	2.335638442	2.741615221	1.934036388	0.352517986	0.307098765	10.19993259	10.12585642	178770	5
2018-09-30	714152	7605230	312643	1900676	401509	2.149922759	2.647983673	1.574056883	0.33980982	0.301993621	10.20587666	10.12663071	180975.904	6
2018-12-31	697800	7510982	315843	1980968	381957	2.140142879	2.621138523	1.537518387	0.323183694	0.294843584	10.21207071	10.12711398	183099.17	7
2019-03-31	792098	10125496	342999	2072917	449099	1.981724412	2.653063927	1.414282644	0.307443558	0.289080344	10.21868975	10.12881489	184722.85	8
2019-06-30	928638	9903385	278441	2102082	650197	2.148627064	2.459300883	1.792183461	0.297393365	0.288135593	10.22590885	10.13324209	185430	9
2019-09-30	789032	7210526	323766	1523972	465266	2.288835495	2.863473751	1.760637902	0.296581569	0.294334487	10.23384208	10.14142575	185019.543	10
2019-12-31	830796	6829224	326745	1562915	504051	2.38378459	2.850198038	1.884077766	0.303534641	0.305576051	10.24235975	10.15248219	184153.878	11
2020-03-31	788903	9026975	327566	1578791	461337	2.084057001	2.843910378	1.547542424	0.315523552	0.318652772	10.2512712	10.16504929	183711.275	12
2020-06-30	1296235	8895177	493197	1644813	803038	2.54308869	3.138448106	2.064271538	0.329819277	0.330357143	10.26038579	10.17776492	184570	13
2020-09-30	711544	8573680	337447	2235173	374097	2.036427844	2.573898533	1.39350571	0.343785582	0.338066555	10.2694342	10.18935886	187335.611	14
2020-12-31	719184	8369883	343989	2212876	375195	2.06845988	2.599242688	1.417788535	0.35515741	0.341498013	10.27783246	10.19892868	191522.817	15
2021-03-31	908321	10888702	403976	2339571	504345	2.041165536	2.689518768	1.452828253	0.361762494	0.340953423	10.28491795	10.20566388	196373.614	16
2021-06-30	1321619	11555963	449142	2863183	872477	2.328539716	2.607103643	1.91326323	0.361428571	0.336734694	10.29002802	10.20875395	201130	17
2021-09-30	839462	11493195	374208	2438542	465254	1.917925333	2.588064047	1.327747615	0.352905134	0.32943571	10.29289064	10.20791786	205166.45	18
2021-12-31	1408084	9473514	400477	2622462	1007607	2.560326995	2.583841707	2.225675293	0.338628706	0.320818271	10.29479621	10.20499254	208387.354	19
2022-03-31	837033	10312984	385790	2564720	451243	2.015837381	2.57073005	1.397979881	0.321957568	0.312936154	10.29742572	10.20234437	210829.581	20
2022-06-30	1440879	13454066	409354	2677984	1031525	2.269401636	2.584685983	1.935186582	0.30625	0.307843137	10.30246015	10.20233976	212530	21
2022-09-30	929943	11923368	396656	2623032	533287	1.978936691	2.575330656	1.422873161	0.294340536	0.306926402	10.31108844	10.20679947	213606.324	22
2022-12-31	871145	10240595	414133	2723186	457013	2.059221326	2.580232837	1.4141235	0.28696872	0.308906749	10.32253126	10.21536183	214499.642	23
2023-03-31	936428	12835940	430041	2738765	506387	1.916823467	2.607940597	1.302052158	0.284350346	0.311838384	10.33551721	10.22711951	215731.889	24
2023-06-30	1568951	13816418	416753	2895693	1152198	2.322160688	2.532221834	2.013424946	0.286701209	0.31377551	10.34877489	10.24116522	217825	25

2023-09-30	993130	13112768	423544	2844328	569585	1.951683292	2.561934237	1.3957306	0.293985097	0.313219146	10.36128645	10.25668534	221156.302	26
2023-12-31	956637	12062101	480369	3340699	476268	1.994448864	2.531439157	1.297005669	0.305157759	0.310457554	10.37304827	10.27324099	225524.703	27
2024-03-31	908358	12539469	449404	3156320	458954	1.91023583	2.522813685	1.227548079	0.318922938	0.306225811	10.38431025	10.29048699	230584.502	28
2024-06-30	1470499	14872155	442654	3263234	1027845	2.196993455	2.480280902	1.838855759	0.333984375	0.301258993	10.39532231	10.30807818	235990	29

*(CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Table 41: Overseas Raw Data*

Date Published	Admin Spend (£k)	Programme Spend (£k)	Admin Staff Spend (£k)	Programme Staff Spend (£k)	Admin Running Cost Spend (£k)	Admin Intensity (ln)	Admin Staff Intensity (ln)	Admin Running Cost Intensity (ln)	HR Concentration (Q3)	Finance Concentration (Q3)	Region-Weighted Average Salary	Seniority-Weighted Average Salary	Full-Time Equivalent	Observation
2017-06-30	96683	536016	22727	84820	73956	2.726612976	3.05079587	2.458645712	0.076923077	0.5	9.967917849	10.59734463	5270	1
2017-09-30	260946	276444	103875	0	157071	3.882759587	4.605170186	3.375144031	0.095819623	0.405355879	9.95127291	10.59988125	5272.81934	2
2017-12-31	288147	343527	107674	0	180473	3.820267514	4.605170186	3.35237793	0.112798576	0.318569406	9.935076863	10.60216982	5292.51095	3
2018-03-31	325737	423431	113229	0	212508	3.772297236	4.605170186	3.345186563	0.125942344	0.24749823	9.9197786	10.60396228	5345.94708	4
2018-06-30	278316	1193760	113764	0	164552	2.939498416	4.605170186	2.413967887	0.133333333	0.2	9.905827016	10.60501057	5450	5
2018-09-30	273485	301310	106728	0	166757	3.862403506	4.605170186	3.367694393	0.134238943	0.180762216	9.893595034	10.6052	5610.91971	6
2018-12-31	300266	371525	111354	0	188912	3.799891654	4.605170186	3.336504204	0.132666542	0.181791783	9.883151714	10.60494936	5792.46715	7
2019-03-31	353637	362684	128453	0	225184	3.899312759	4.605170186	3.447959641	0.133808489	0.191925459	9.874490146	10.60481078	5947.78102	8
2019-06-30	306399	1238887	124751	0	181648	2.987094075	4.605170186	2.464276649	0.142857143	0.2	9.867603423	10.6053364	6030	9
2019-09-30	254877	373002	122382	0	132495	3.703603789	4.605170186	3.049367622	0.162821367	0.197636925	9.86343499	10.60720564	6017.40808	10
2019-12-31	320853	343541	127456	0	193397	3.877277913	4.605170186	3.37103991	0.187976037	0.187596796	9.866729716	10.61160702	5988.87045	11
2020-03-31	376126	525628	145124	0	231002	3.730752624	4.605170186	3.243254799	0.210412529	0.175424936	9.883182824	10.61985631	6048.39759	12
2020-06-30	284024	1301218	137615	0	146409	2.885736572	4.605170186	2.223081905	0.222222222	0.166666667	9.918489537	10.63326931	6300	13
2020-09-30	295076	2274766	153000	35704	142076	2.440803439	4.395428458	1.709932614	0.217918047	0.16566925	9.97511364	10.65231625	6803.04172	14
2020-12-31	328057	1732653	153975	38220	174082	2.767551697	4.383449956	2.133890776	0.201699151	0.171987698	10.04259316	10.67408523	7438.30106	15
2021-03-31	399183	2539650	172869	39360	226314	2.608822302	4.400038388	2.041325759	0.180186235	0.183978965	10.1072347	10.69481881	8041.90986	16
2021-06-30	327588	3192326	169688	43673	157900	2.230735071	4.376146076	1.500940271	0.16	0.2	10.15534483	10.71075954	8450	17
2021-09-30	342037	1254230	153098	33373	188939	3.064666047	4.407972694	2.47117134	0.146262652	0.217716379	10.17741729	10.7192852	8548.86253	18
2021-12-31	387571	1354948	157736	38436	229835	3.101982197	4.38710111	2.5794448	0.138102421	0.232028167	10.18069431	10.72231444	8425.42533	19
2022-03-31	400708	1724963	167186	32074	233522	2.936560372	4.429666646	2.396603681	0.133149045	0.237144054	10.17660527	10.72290114	8216.77546	20
2022-06-30	265383	3434311	160740	35684	104643	1.970338859	4.404682751	1.039719351	0.129032258	0.227272727	10.17657952	10.72409918	8060	21
2022-09-30	714766	1416998	184657	450	530109	3.512420317	4.6027362	3.213547747	0.123969069	0.19919893	10.18923317	10.72831504	8059.7894	22

2022-12-31	533584	1396832	209152	480	324432	3.319295892	4.602877834	2.821755344	0.118525572	0.160011621	10.21192918	10.73536568	8191.24764	23
2023-03-31	534528	3249565	219826	5476	314702	2.647992793	4.580564786	2.118234838	0.113855131	0.119375814	10.23921725	10.74442067	8397.08205	24
2023-06-30	467198	2451655	236210	2389	230988	2.772977327	4.595107107	2.068589937	0.111111111	0.086956522	10.26564708	10.75464958	8620	25
2023-09-30	242011	1116499	62602	212553	179409	2.880009576	3.124632837	2.580694512	0.111126325	0.070062858	10.28693961	10.76534607	8813.93298	26
2023-12-31	196414	1501401	35033	194565	161381	2.448297453	2.725130707	2.251840806	0.113451379	0.06658034	10.30350072	10.77630018	8977.70912	27
2024-03-31	130744	2146204	42359	227963	88385	1.74782017	2.751737258	1.356281229	0.117316326	0.072038585	10.31690757	10.78742603	9121.3807	28
2024-06-30	96652	3217795	33568	196098	63084	1.070241013	2.682117339	0.643591286	0.12195122	0.081967213	10.32873728	10.79863775	9255	29

*(CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Table 42: Matrix Raw Data*

Date Published	Admin Spend (£k)	Programme Spend (£k)	Admin Staff Spend (£k)	Programme Staff Spend (£k)	Admin Running Cost Spend (£k)	Admin Intensity (ln)	Admin Staff Intensity (ln)	Admin Running Cost Intensity (ln)	HR Concentration (Q3)	Finance Concentration (Q3)	Region-Weighted Average Salary	Seniority-Weighted Average Salary	Full-Time Equivalent	Observation
2017-06-30	1403655	58071177	706943	16402897	696712	0.858696503	1.418711211	0.158233801	0.183486239	0.221590909	10.26853671	10.57058351	40790	1
2017-09-30	1196370	61605705	675499	16637451	520871	0.644474044	1.361411808	-0.187070797	0.173516931	0.213883336	10.28100575	10.58338095	41039.9932	2
2017-12-31	1214578	49096229	691139	17059098	523439	0.881346972	1.359357	0.039615502	0.164036347	0.207751876	10.29285626	10.59542113	41304.9891	3
2018-03-31	848789	48848397	438720	16900504	410069	0.535277223	0.928305085	-0.192207967	0.155533209	0.204772639	10.30346975	10.60594678	41599.9904	4
2018-06-30	1763030	81653814	895611	18377154	867419	0.74835385	1.536228115	0.039086787	0.148496241	0.206521739	10.31222769	10.61420063	41940	5
2018-09-30	1127696	58244472	682173	17917809	445523	0.641521235	1.299537585	-0.287161784	0.143368967	0.213698462	10.3187502	10.61978132	42349.7053	6
2018-12-31	1198539	55763281	716761	18748089	481778	0.743892282	1.303547084	-0.167482885	0.140414125	0.22349479	10.32361193	10.62371104	42892.5328	7
2019-03-31	1366981	56440612	790654	17639455	576327	0.860654711	1.456289672	-0.003030019	0.139849254	0.232225883	10.32762615	10.62736788	43641.594	8
2019-06-30	1451299	62102824	793705	18174545	657594	0.82573733	1.431360234	0.034110753	0.141891892	0.236206897	10.33160614	10.63212995	44670	9
2019-09-30	1364593	62540818	819781	18774072	544812	0.758622365	1.431236244	-0.159548349	0.14660123	0.232966854	10.33628537	10.638998	45990.2482	10
2019-12-31	1401922	57343170	837756	19374998	564166	0.869806729	1.421828004	-0.040444168	0.153403061	0.22489024	10.34207799	10.64746336	47372.3796	11
2020-03-31	1499691	63564083	836731	19638173	662960	0.835061346	1.407717599	0.018761636	0.16156483	0.215575402	10.34931836	10.65664003	48525.8212	12
2020-06-30	1697513	65565439	842478	19640393	855035	0.92572483	1.41417348	0.239947716	0.170353982	0.20862069	10.35834082	10.66564201	49160	13
2020-09-30	1293093	90537714	816991	21600096	476102	0.342259379	1.293219505	-0.656900806	0.178970201	0.206544245	10.36913209	10.67369175	49131.4895	14
2020-12-31	1528375	71674680	896591	21948068	631784	0.73613811	1.367297353	-0.147274684	0.186342127	0.207543383	10.38028827	10.68044548	48885.4489	15
2021-03-31	1677310	84604270	897778	22938649	779532	0.664745372	1.326122772	-0.101507487	0.191330637	0.208735212	10.39005783	10.6856679	49014.1839	16
2021-06-30	2108382	94802285	1042492	27010883	1065890	0.777301419	1.312675241	0.095190722	0.19279661	0.207236842	10.39668926	10.68912368	50110	17
2021-09-30	1661835	86232287	991554	23411541	670281	0.636959669	1.401978348	-0.271020997	0.189999596	0.201021695	10.39915029	10.69082484	52530.2	18
2021-12-31	1617552	76271668	1034221	24474640	583331	0.73079652	1.39979279	-0.289117876	0.18379383	0.191488446	10.39928584	10.69177266	55692.0747	19

2022-03-31	1746008	78345816	1013519	24626332	732489	0.779328449	1.374450799	-0.089310546	0.175432218	0.180892086	10.39966006	10.69321574	58777.912	20
2022-06-30	2263938	96586952	1133452	27972132	1130486	0.828663408	1.359507984	0.134205262	0.166167665	0.171487603	10.40283713	10.6964027	60970	21
2022-09-30	1733355	76418121	1024182	24624355	709173	0.796580079	1.384577898	-0.097134534	0.157073699	0.165002432	10.41065749	10.7022674	61692.32	22
2022-12-31	1704759	75353441	1056806	25340745	647953	0.794032957	1.387150097	-0.173327911	0.148506341	0.161053785	10.42206659	10.71048483	61335.6274	23
2023-03-31	1695569	85484318	1072559	25701731	623010	0.665214913	1.387775469	-0.335996174	0.14064223	0.158731316	10.43528615	10.72041524	60532.3711	24
2023-06-30	2010559	102624848	1083818	31614766	926741	0.653100985	1.198328404	-0.121392956	0.133658009	0.157124682	10.44853789	10.73141887	59915	25
2023-09-30	1613347	84238307	952360	27932549	660987	0.630860236	1.193038743	-0.261471774	0.127656856	0.155483367	10.46041266	10.74294453	59976.4576	26
2023-12-31	1881345	81439144	1101190	28363160	780155	0.814462647	1.318380541	-0.06578696	0.122448101	0.153696171	10.47097785	10.75479531	60651.6659	27
2024-03-31	2239864	84478164	1171186	28579983	1068678	0.948923538	1.370318671	0.208930759	0.117767611	0.151811719	10.48066999	10.76686282	61736.0412	28
2024-06-30	2604700	95360851	1155415	30167907	1449285	0.977871795	1.305266841	0.391624621	0.113351254	0.149878641	10.48992561	10.77903869	63025	29

*(CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)

Table 43: Defence Raw Data*

Date Published	Admin Spend (£k)	Programme Spend (£k)	Admin Staff Spend (£k)	Programme Staff Spend (£k)	Admin Running Cost Spend (£k)	Admin Intensity (ln)	Admin Staff Intensity (ln)	Admin Running Cost Intensity (ln)	HR Concentration (Q3)	Finance Concentration (Q3)	Region-Weighted Average Salary	Seniority-Weighted Average Salary	Full-Time Equivalent	Observation
2017-06-30	402809	10716220	251244	2775200	151565	1.287219446	2.116451153	0.309771518	0.292944785	0.431818182	10.129003	10.28645482	50300	1
2017-09-30	350050	55377083	245524	2839676	104526	-0.464976247	2.074193124	-1.673616405	0.290219383	0.412230294	10.13946421	10.28363578	50270.8976	2
2017-12-31	356625	8379142	250230	2874311	106395	1.406673969	2.08050801	0.197147743	0.287633612	0.394241557	10.14942497	10.28114727	50262.4362	3
2018-03-31	342578	9765848	245456	2843469	97122	1.220544943	2.072709478	-0.039986506	0.285327104	0.379451118	10.15838483	10.27931978	50295.2567	4
2018-06-30	500417	10988209	360582	2712907	139835	1.471499155	2.462320901	0.196520561	0.28343949	0.369458128	10.16584334	10.27848384	50390	5
2018-09-30	382439	8142956	280118	2781631	102321	1.500934714	2.213639529	0.182480481	0.282093959	0.365095525	10.17153844	10.27907346	50559.1661	6
2018-12-31	388290	8387104	279035	2859559	109255	1.487215721	2.1849772	0.219147838	0.281347919	0.364131398	10.17616155	10.28193666	50782.6913	7
2019-03-31	439321	9521969	294275	2925403	145046	1.483938679	2.212648257	0.375759259	0.281242338	0.363567628	10.1806425	10.28802496	51032.3708	8
2019-06-30	480256	10379573	302706	2895465	177550	1.486663634	2.247597861	0.491596598	0.281818182	0.360406091	10.18591111	10.29828987	51280	9
2019-09-30	430891	8761702	302169	3045723	128722	1.544872014	2.200070476	0.336671896	0.283046692	0.352772778	10.19269608	10.31310036	51500.5629	10
2019-12-31	448124	8715208	315376	3224608	132748	1.587275019	2.187058277	0.370657633	0.284620219	0.343290114	10.20092165	10.33049525	51681.7986	11
2020-03-31	518851	9398392	325130	3163853	193721	1.654756699	2.23202972	0.669558927	0.286161386	0.335704638	10.21031097	10.3479308	51814.635	12
2020-06-30	574912	10704386	340078	3148886	234834	1.628662883	2.276985066	0.733324778	0.287292818	0.333762887	10.22058716	10.36286326	51890	13
2020-09-30	432952	9418952	332061	3138816	100891	1.480377038	2.258326294	0.023790897	0.287738876	0.339651024	10.23135703	10.37342313	51904.3636	14
2020-12-31	530267	9092466	336949	3253555	193318	1.70666724	2.239053908	0.697623088	0.287630863	0.349313722	10.24176215	10.38043777	51876.3644	15
2021-03-31	492126	9578132	352110	3341888	140016	1.586563361	2.254649193	0.329585282	0.287201819	0.357135281	10.25082775	10.38540874	51830.183	16

2021-06-30	553193	11831847	358102	3438790	195091	1.49663256	2.244049932	0.454391731	0.286684783	0.3575	10.25757908	10.38983765	51790	17
2021-09-30	412881	11426805	333625	3285740	79256	1.249117214	2.221133919	-0.401359082	0.286186317	0.346841263	10.26156045	10.39501226	51774.4825	18
2021-12-31	447711	9403682	348685	3231153	99026	1.513949975	2.276266295	0.005184482	0.285307081	0.329788787	10.26439254	10.4013652	51780.2437	19
2022-03-31	485847	11103806	363152	3305345	122695	1.433195949	2.292454345	0.057003791	0.283521257	0.313021373	10.2682151	10.40911527	51798.383	20
2022-06-30	486944	11834862	362148	3262538	124796	1.374193495	2.301700211	0.012724773	0.28030303	0.303217822	10.27516789	10.4184813	51820	21
2022-09-30	504453	9497098	355761	3273326	148692	1.6181494	2.282692963	0.396551778	0.275478252	0.305090701	10.28675046	10.42959621	51841.0656	22
2022-12-31	552953	10712818	369905	3462177	183048	1.5909189	2.267252864	0.485394307	0.270279456	0.315487643	10.30190158	10.44224937	51877.0358	23
2023-03-31	407399	9985487	385318	3411162	22081	1.366086423	2.317409553	-1.548989116	0.266290844	0.329290047	10.3189198	10.45614424	51948.2381	24
2023-06-30	453969	12185525	355067	3325122	98902	1.278617465	2.266757302	-0.245281988	0.265096618	0.34137931	10.33610368	10.47098431	52075	25
2023-09-30	588523	10845987	385107	3367080	203416	1.63839494	2.328597255	0.576032075	0.267834508	0.347774588	10.35209933	10.48649543	52271.0989	26
2023-12-31	678827	10585060	438606	3756026	240221	1.796179448	2.34721081	0.757372473	0.273856339	0.34904606	10.36694315	10.50249306	52524.1131	27
2024-03-31	720821	10572983	430998	3488742	289823	1.85355149	2.397493032	0.942431042	0.282067466	0.346901662	10.38101908	10.51881501	52815.0707	28
2024-06-30	596718	10817204	393841	3457755	202877	1.654025709	2.324874574	0.575180953	0.291373239	0.343049327	10.39471106	10.53529913	53125	29

*(CSS, 2017; CSS, 2018-2024; OSCAR II, 2017-2024)