

The economic effects of outsourcing administrative services

An examination of the economic effects of outsourcing administrative services in Norwegian central administrative agencies.



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Abstract

The purpose of this master thesis is to examine the economic effects of outsourcing administrative services in Norwegian ministries and directorates. Generally, the private delivery of government-funded services by means of contracting out constitutes an increasingly utilized alternative to public service provision. While popular political dogmas frequently press the advantages of private sector delivery, and economic effects are often assumed or promised, the empirical literature is divided. Consequently, through the application of transaction cost theory, this master thesis attempts to gain greater insight into the cost-saving potential of outsourcing administrative services in Norwegian central administrative agencies. In order to conduct the research, national accounting data from all central administrative agencies (i.e., 69 directorates and 16 ministries) in the time-period 2014-2020 has been gathered. The results from various specifications of fixed effects and dynamic panel models, suggest there is not found any support for the assumption that outsourcing of administrative services generate cost savings. More research is needed, however, before a definite conclusion about the cost-saving effect of outsourcing administrative services can be drawn.

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Any mistakes are solely my own.

R scripts are available on <https://github.com/carolant/STV4992>

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Caroline Raknes Antun

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1. Introduction

Traditionally, modern welfare states have been responsible for the delivery of a wide variety of services to the public (Blom-Hansen, 2003, p. 419). However, in response to continued strains on public finances, it has increasingly been questioned whether citizens receive good enough health care services, schools, roads and other public services for the billions the government disposed of (Busch et al., 2009, p. 18). Essentially, this has laid the foundation for a continued modernisation process of the public sector across the world and given rise to so-called quasi-markets, in which governments increasingly rely on private providers to deliver tax-financed services (Petersen & Houlberg, 2016, p. 206; Jordahl, 2019, p. 343).

The empirical literature in the 1970s, 1980s and early 1990s suggested outsourcing public services to private contractors could have beneficial economic and social consequences for consumers, taxpayers and employees, and outsourcing was considered superior to in-house service provision for many years (Jordahl, 2019, p. 343; Petersen & Houlberg, 2015, p. 209). Nevertheless, despite decades of much-hyped reforms whose professed purpose was to enhance efficiency and make governments work better for citizens and customers (Andrews, 2011, p. 282; Hood & Dixon, 2015, p. 67), the outsourcing debate has gradually intensified as outsourcing has moved from relatively straightforward tasks such as cleaning and garbage collection to more complex tasks such as health and social services (Jensen & Stonecash, 2005, p. 767). While private delivery of government-funded services by means of contracting out still constitutes an increasingly utilized alternative to public provision in developed countries, recent reports have contested the magnitude of previously documented cost savings from contracting out (Petersen et al., 2017, p. 131).

A general pattern is that the cost saving potential of outsourcing is both larger and better documented in technical services such as garbage collection and road maintenance than in social services such as hospitals and education (Petersen et al., 2017, p. 130-132). Minimal empirical research, however, exists in terms of the economic effects of outsourcing administrative services like legal work, accounting, IT-support, and organizational development. This is quite interesting, given that it is inherent to all governments, regardless of the level or task portfolio, to administer services and run the political system (Houlberg & Thau, 2020, p. 4). If the core justification for outsourcing - reductions in government spending - can be gained by outsourcing administrative tasks, this is likely to be a politically

desirable option, particularly in countries with large public bureaucracies, such as Norway (Blom-Hansen, 2003, p. 419). Yet, whether or not this is the case, is not evident in existing research articles (Houlberg & Thau, 2020, p. 4). As such, this master thesis seeks to generate insights into the extent to which administrative services are outsourced and when and whether outsourcing of administrative services generates cost savings.

1.1 Research questions

Theoretical expectations primarily arise from public choice theory, property rights theory and transaction cost theory. While property rights and public choice theory attempt to explain why outsourcing is more cost-effective than in-house production due to greater incentive structures and market mechanisms, transaction cost theory suggests the cost-saving potential of outsourcing largely depends on the type of service outsourced (North, 1990, p. 355). According to transaction cost theory, only services characterised by low asset specificity and high measurability are likely to generate cost savings, because it keeps entrance costs low and monitoring costs at a reasonable level (Petersen & Houlberg, 2016, p. 207; Geyskens et al., 2006, p. 520; Holum, 2018, p. 523). If the transaction is highly specific or it is difficult to examine whether compliance has taken place, however, it becomes disproportionately expensive to gain complete oversight and control, in which in-house service provision is likely to be more cost-efficient. On the basis of these theoretical assumptions, the overall research aims of this master thesis are:

1. *Examine the extent to which administrative services are outsourced in Norwegian state agencies in the time period 2014-2020.*
2. *Investigate whether the main justification for outsourcing - reductions in government spending - could be confirmed empirically.*
3. *Evaluate whether certain administrative functions are more cost-efficient to outsource than others.*

In order to answer these research questions, Norwegian central administrative agencies will be used as the empirical testing bed. In a comparative perspective, Norway has generally been perceived as a reluctant reformer, which has been hesitant to introduce market-oriented reforms such as privatization and outsourcing (Bjurstrøm & Christensen, 2017, p. 162; Christensen & Læg Reid, 1998, p. 465). As a consequence, the empirical literature in Norway has primarily focused on management type reforms, in which little is known about the extent

to which public services are outsourced, how outsourcing policies have impacted public expenditures, or whether and which types of services have been successful in generating cost savings. The few studies that do exist, however, have primarily examined outsourcing policies at the local level (e.g., Bekken et al., 2006). Consequently, this master thesis aims to generate further insights into the economic effects of outsourcing policies in Norwegian central administrative agencies.

In order to conduct the research, data are gathered from the national accounts. The national accounts provide high-quality, detailed panel data on state agencies expenditures in the time period 2014 to 2020. Within the national accounts, I specifically examine different types of outsourcing such as accounting, audits and judicial services, IT-support, IT/software development and organizational development. From a theoretical perspective, these types of services vary in terms of asset specificity and measurability, making it possible to identify the degree to which different types of services are outsourced, and whether there is found any support for the assumption that certain types of services are more cost-efficient to outsource than others. Essentially, this could provide policy-makers with valuable insights into when to outsource and when to rely on internal capabilities.

1.2 Structure of thesis and key findings

Against this backdrop, the structure of this master thesis will now be outlined. First, in order to achieve greater insight into public sector outsourcing, this master thesis will provide a summary of the main arguments in the outsourcing debate, before presenting an overview of the empirical literature and important research gaps. Secondly, the theoretical explanations for why outsourcing may or may not induce cost savings will be presented. This includes a summary of public choice theory, property rights theory and transaction cost theory, which lays the theoretical groundwork for the hypotheses to be tested. In the methodology, Norway as a case will be presented and justified, before outlining how the research was conducted, as well as justify the choice of methods applied, and how unforeseen challenges/limitations were addressed. The findings will consist of three chapters; the first chapter provides an overview of how widespread outsourcing in the state administration is, which types of administrative services are most frequently outsourced and variations between agencies in the time period 2014-2020. The second chapter consists of the main statistical findings. This includes an examination of the economic effects of outsourcing administrative services in general and heterogeneities between different types of services. Last, but not least, the statistical validity

of the findings will be evaluated in the third chapter, before a thorough discussion of the findings will be conducted. Overall, the findings suggest outsourcing of administrative services in Norwegian central administrative agencies does not generate cost savings. While these results challenge prior theoretical assumptions about the virtue of markets and the cost-saving effect of outsourcing, more research is needed before a definite conclusion about the cost-saving potential of outsourcing administrative services can be drawn.

2. Literature review

2.1 The outsourcing debate

The belief that large public bureaucracies are inherently inefficient has been a critical force driving repeated reform efforts to cut the costs of government, while at the same time making it work better for citizens and users (Andrews, 2011, p. 281; Hood & Dixon, 2015, p. 1). As governments cannot simply cut services such as pensions, health care and education, governments are seeking ways to economise (Pollitt et al., 2001, s. 276). In an attempt to reduce costs, governments are increasingly outsourcing the delivery of public services to the private sector (Blom-Hansen, 2003, p. 419; Battaglio & Ledvinka, 2009, p. 295; Domberger & Jensen, 1997, p. 69). Outsourcing is inspired by successful recipes from private-sector businesses and highlights the need for greater incentive structures and market mechanisms in the public sector, as this could, arguably, curb budget-maximization by bureaucrats (Andrews, 2011, p. 284; Afonso et al., 2005, p. 321; Christensen & Læg Reid, 2011, p. 10).

Nevertheless, the millions of dollars spent on outsourcing public services each year have triggered an intensive, ideologically charged debate over the use of private contractors for publicly funded services (Elinder & Jordahl, 2013, p. 43). In Norway, outsourcing policies are at the core of the political cleavage dividing the economic left and right, and is considered a key policy issue for many political parties (Aspøy & Bakke, 2018, p. 2). Consequently, the outsourcing debate is flooded with strong and contradictory beliefs or assumptions, in which research reports may be used (or misused) to provide support for favoured worldviews (Aspøy, 2018, p. 1; Hood & Dixon, 2015, p. 6).

Generally, outsourcing advocates often point to the necessity of outside expertise. The argument is that involving market actors in public service delivery secures access to the most innovative, cutting-edge expertise available in the market at any given point in time that is difficult or disproportionately expensive to build up in-house (Marco-Simo & Pastor-Collado, 2020; p. 36; Riksrevisjonen, 2017, p. 29). Arguably, outsourcing creates a competitive environment, in which agencies will try to optimise its use of raw materials, capital, labour and transport systems to win the bid. This way, competition can encourage innovation and improve service quality, while keeping costs down, which ultimately will contribute to economic growth and improved social welfare (Nærings- og fiskeridepartementet, 2018, p. 20-23; Jensen & Stonecash, 2005, p. 773-774; Alonso et al., 2017, p. 334).

Critics, however, have queried why relevant expertise is not available in-house and highlighted uncertainty around the cost effectiveness of outsourcing, particularly due to high transaction costs (Penno & Gauld, 2017, p. 459). Arguably, any observed expenditure reductions are merely perceived as a reduction in service quality or workers' real wages and conditions of employment (Jensen & Stonecash, 2005, p. 768). The problem, however, is that while costs can be measured relatively easily, administrative quality is difficult to quantify, especially in the public sector (Hood & Dixon, 2015, p. 5). In most public agencies, there is no market that pays for the services provided. As such, considering whether the values created are greater than the resources put in, is challenging (Busch et al., 2009, p. 281). Consequently, while the empirical literature on outsourcing is large, constituting a significant strand within public economics, public policy and public administration, there remains important gaps in our understanding of how much is spent, for what purpose and with what result (Penno & Gauld, 2017, p. 458; Alonso et al., 2017, p. 334).

2.2 Existing research articles

The empirical literature has primarily focused on two main policy-areas; technical and social services (Houlberg & Thau, 2020, p. 7). Traditionally, only technical services have been contracted out, as the outputs are relatively easy to measure (Petersen et al., 2015, p. 561). As such, the most commonly studied policy areas are technical industries such as water treatment, garbage collection, cleaning, transportation services, maintenance of heavy equipment and road maintenance (e.g., Wallis, 2020; Bekken et al., 2006; Domberger et al., 1986; Dijkgraaf & Gradus, 2003; McDavid, 2001; Reeves & Barrow, 2000; Kavanagh & Parker, 2000, Blom-Hansen, 2003; Petersen & Houlberg, 2016; Chong et al., 2009; Rosell, 2017; Benito et al., 2018; Ohlsson, 2003; Bel et al., 2010; Bel & Mur, 2009). Nevertheless, in recent years, a growing number of articles has reached outside the realm of technical services, and addressed the effects of health and human services (e.g., Holum, 2018; Stanley et al., 2013; Laun & Thoursie, 2014; Tiemann & Schreyögg, 2009; Buerger & Harris, 2020). However, 'softer' services like day care, schools, elderly care and hospitals are generally more challenging to contract out, due to conflicting views on what the primary outcome should be and how it can be operationalised in a contract (Petersen et al., 2018, p. 151; Torfing et al, 2017, p. 223). The complex conditions for outsourcing social services have made it more difficult to evaluate efficiency benefits derived from such services (Holum, 2018, p. 524; Jordahl, 2019, p. 345). As such, a general pattern is that cost savings are both

larger and better documented in technical services such as garbage collection and road maintenance than in social services such as hospitals and education (Petersen et al., 2017, p. 130-132).

The economic effects of outsourcing administrative services, however, have largely been neglected. While several studies have examined the role of administrative consultants, how much money is spent on consultants and its growing influence in the public sector (e.g., Riksrevisjonen, 2017, Penno & Gauld, 2017; Radnor & O'Mahoney, 2013; Gunter et al., 2015), few studies have examined the economic effects of outsourcing administrative services (e.g., Chong et al., 2009; Thau & Houlberg, 2020). One important exception is a recent report from Denmark written by Mads Thau and Kurt Houlberg in 2020. They examine the potential cost savings associated with outsourcing back-office functions, like IT-support, wage administration and HR management using panel data from 98 Danish municipalities in the time period 2007-2018. Overall, their findings suggest outsourcing of administrative services could generate cost savings of approximately 0.21 per cent or a total of DKK 0.7 million for an average-sized municipality. Essentially, this suggests there is a notable cost-saving potential related to outsourcing administrative services.

Minimal empirical research exists, however, in terms of the economic effects of outsourcing administrative functions in central administrative agencies (i.e., ministries and directorates). In fact, the public bodies under study are almost exclusively governments at the local level (Boon et al., 2019, p. 230). This is quite interesting given that the use of private sector consultants such as lawyers, accountants, architects, engineers, IT and management consultants has become widespread in central administrative agencies, and state agencies are increasingly operating in an environment defined by marketing principles and business forces (Roodhooft & Van den Abbeele, 2006, p. 490-492). As such, it would be highly interesting to examine whether similar results could be identified in Norwegian central administrative agencies.

3. Theoretical framework

Initially, before providing an overview of the theoretical background, outsourcing as a concept will be defined to clarify its meaning and how it separates from closely related concepts such as privatization. While privatization, contracting out and outsourcing are often used synonymously, they represent distinct phenomenon. Privatization refers to the *transfer of ownership* of physical assets from public to private actors (e.g., the Norwegian state sold its shares in Scandinavian Airlines in 2018) (Domberger & Jensen, 1997, p. 68). Outsourcing or contracting out, on the other hand, refers to a situation in which public tasks are *delegated* to a private organisation (Overman, 2016, p. 1241). Importantly, outsourcing enables the government to retain a fair measure of control over the activities concerned, monitoring performance, imposing financial penalties and replacing the contractor in cases of outright performance failure. This level of control is not afforded by privatization (Domberger & Jensen, 1997, p. 68; Jensen & Stonecash, 2005, p. 769).

Although outsourcing the provision of administrative services is not new, international evidence suggests it is rapidly increasing across the world (Penno & Gauld, 2017, p. 458; Jensen & Stonecash, 2005, p. 767). Contracted on a more or less temporary basis, external consultants such as lawyers, accountants, architects, engineers, IT and management consultants are commonly engaged by public agencies to provide technical, policy or management skills (Penno & Gauld, 2017, p. 458; Roodhooft & Van den Abbeele, 2006, p. 491-492). While governments typically justify outsourcing policies as a means to reduce overall costs to taxpayers (e.g., Nærings- og fiskeridepartementet, 2019, pp. 20-23), there is still no consensus in the academic literature on the magnitude of expected cost savings in the government, nor the sources of such savings (Jensen & Stonecash, 2005, p. 767; Alonso et al., 2017, p. 334). As such, economists, along with public policy and administration scholars, have provided a number of explanations for why government outsourcing may or may not reduce costs, and the conditions for successful outcomes (Alonso et al., 2017, p. 334; Torfing et al., 2017, p. 216).

Generally, arguments about introducing market principles to public service delivery can be divided into a public policy perspective and an economic perspective. The public policy perspective often focuses on the role of the state, problems of accountability when private firms supply public services, and issues concerning citizens' rights in the contracting

framework (Domberger & Jensen, 1997, p. 68). For instance, it is concerned with how transferring responsibilities away from democratically elected bodies to private organisations affect democratic processes, the involvement of interest groups, citizens ability to have oversight and control over how their taxes are spent and other central elements of the public bureaucracy such as political loyalty and professional competence (Busch et al., 2009, p. 12; Eckersley & Ferry, 2020, p. 74; Bjurstrøm & Christensen, 2017, p. 160).

The primary focus in this master thesis, however, will be the economic justifications for outsourcing. Examining the economic justifications for outsourcing are considered important given that private sector consultants form a relatively large component of public sector spending and popular political dogmas frequently press the advantages of private sector delivery, in which economic effects are often assumed and promised (Nevo et al., 2007, p. 6; Alonso et al., 2017, p. 334; Jensen & Stonecash, 2005, p. 767; Penno & Gauld, 2017, p. 294; Battaglio & Ledvinka, 2009, p. 294). While the empirical literature suggests certain types of outsourcing (e.g. technical services) may be cost efficient to outsource, it is problematic to assume this automatically applies to administrative services, as we may come to believe in cost-saving measures that do not exist, and thereby weaken public services in a way that undermines overall welfare goals (Sørensen et al., 1999, p. 155). Given the lack of consensus in the academic literature on the magnitude of expected cost savings and the sources of such savings, the economic effects of outsourcing administrative services need to be examined more closely using theoretically grounded and careful empirical work, as this could provide valuable policy insights into when to outsource and when to rely on internal capabilities (Nevo et al., 2007, p. 6).

In terms of economics, primarily three theories attempt to explain why introducing market principles to public service delivery could incur cost savings for governments; (1) property rights theory, (2) public choice theory and (3) transaction cost theory (Alonso et al., 2017, p. 335; Petersen & Houlberg, 2016, p. 208). While property rights and public choice theory attempt to explain why outsourcing is more cost-effective than in-house production, transaction cost theory offers a modified perspective, and analyses the conditions for successful outsourcing.

3.1 Outsourcing from a property rights and public choice perspective

From the perspective of property rights theory, the private market is considered superior to public production due to ownership. Arguably, the capital market represents high-powered incentives for lowering costs and/or improving the quality of their services, due to ownership, because it confers the right to extract profits (Bel et al., 2010, p. 556; Jensen & Stonecash, 2005, p. 768; Alonso et al., 2017, p. 336; Petersen & Houlberg, 2016, p. 207). The underlying assumption is that if individuals do not have to bear the consequences of the way they deal with scarce resources, they have no direct incentives to use those resources efficiently. If the resources are allocated to individuals, however, they will have stronger incentives to preserve those resources (Picot & Wolf, 1994, p. 217). Moreover, it is argued that while public agencies can go on performing poorly without the fear of going out of business (Blom-Hansen, 2003, p. 419-420; Domberger & Jensen, 1997, p. 75), private companies operate under the fundamental threat of bankruptcy, which limits the leverage for economic inefficiencies and provides private firms with greater incentives to innovate and cut costs (Petersen & Houlberg, 2016, p. 208).

Similarly, drawing on neo-classical economics, the public choice literature assumes that public service providers operate within a monopoly and lack the incentives to perform, which in turn leads to economic inefficiencies (Domberger & Jensen, 1997, p. 75). The solution proposed by public choice advocates consists of forcing previously protected, in-house activities into a competitive market for public service provision (Holum, 2018, p. 521; Rosell, 2017, p. 55). Arguably, public choice theory suggests that in a competitive environment, service providers will have incentives to invest in innovative and/or cost-saving technologies, because it allows them to gain a competitive advantage (Petersen & Houlberg, 2016, p. 208; Jensen & Stonecash, 2005, p. 768). Eventually, the most efficient competitors would end up replacing less efficient units (Holum 2018, p. 524). Competition is, therefore, one of the fundamental ideas justifying the practice of outsourcing public services (Bel et al., 2010, p. 555; Alonso et al., 2017, p. 335-336; Blom-Hansen, 2003, p. 420; Holum, 2018, p. 524).

Nevertheless, while public choice and property rights theory suggest cost savings could be incurred by outsourcing public services due to the pressure of competition and private ownership (Alonso et al., 2017, p. 335), neither of these theories attempt to explain why outsourcing may bring about savings in particular sectors, whereas in-house production is more cost-efficient in others (Alonso et al., 2017, p. 344-345). As such, this has led to the rise

of transaction cost theory, which aims to explain why outsourcing results in reduced costs in some cases, while it increases in others.

3.2 Transaction cost theory

The development of transaction cost theory is largely attributed to Oliver E. Williamson's article *Transaction Cost Economics: The Governance of Contractual Relations* from 1979. According to Williamson (1979, p. 234), transaction costs are central to the study of outsourcing and describe the costs of measuring and enforcing contracts. In response to the growth, complexity and mixed results of contracting out, transaction cost theory focuses on service characteristics that may affect the success of outsourcing policies (Alonso et al., 2017, p. 336). For instance, it is important to take into account transaction costs associated with negotiating and drafting a contract (*ex ante* costs) and monitoring performance and enforcing compliance with contract (*ex post* costs) (Sanderson et al., 2018, p. 1066; Domberger & Jensen, 1997, p. 70; Celtekligil, 2020, p. 142). While there often is an assumption that market governance is more efficient than in-house production, transaction cost theory suggest certain services instead raise costs and create "market failure", in which in-house production becomes more efficient than market governance (Geyskens et al., 2006, p. 520; Williamson, 1975, 1985; Holum, 2018, p. 523). Arguably, outsourcing may generate a fiscal illusion if savings in production costs are not set against cost arising from managing the resulting relationship (Marco-Simo & Pastor-Collado, 2020, p. 41; Alonso et al., 2017, p. 337). If the cost of transaction is large enough, in-house production is more optimal (Domberger & Jensen, 1997, p. 70). More specifically, transaction cost theory suggests indirect costs of production such as asset specificity and measurability need to be factored into the expenditure equation (Jensen & Stonecash, 2005, p. 771).

3.2.1 Asset specificity

Asset specificity refers to the degree to which human or physical products or services require specific skills or knowledge, or whether it can be easily redeployed (Geyskens et al., 2006, p. 520). Arguably, a crucial distinction is to what degree transaction specific (non-marketable) expenses occur. Williamson (1979, p. 247) divides transactions into three broad types: (1) non-transaction-specific, (2) semi-specific and (3) highly specific. Generally, goods or services that are unspecialized pose few hazards, since buyers in these circumstances can easily turn to alternative sources, and suppliers can sell output intended for one buyer to other

buyers without difficulty. In essence, being standardized, both parties can easily turn to alternative purchase and supply arrangements at little transitional expense (Williamson, 1979, p. 248). For mixed or specialised transactions, however, reliance on market governance is more hazardous. Mixed transactions require an intermediate degree of specific skills, suggesting incumbent workers would realize little strategic advantage over otherwise qualified but inexperienced outsiders. Once entered into a contract, there are stronger incentives to see the contract through to completion as specialised investments have been put in place, which cannot be recovered (*ibid.*, p. 249, 256).

Generally, non-marketability problems arise when transactions are highly specialized. When a buyer induces a supplier to invest in transaction-specific physical capital, the value of this capital for other purposes is much smaller than the specialized use for which it has been intended. In other words, the buyer and supplier are effectively 'locked into' the transaction, as neither can turn to alternative sources of supply once investments have been made (Williamson, 1979, p. 239-240). As such, although competition is frequent at the initial reward stage for contracts, the relationship between buyer and supplier is quickly transformed into one of bilateral monopoly in cases of high asset specificity. This transformation may have profound contracting consequences as both buyer and seller are strategically situated to bargain over the disposition of additional profits (*ibid.*, p. 242).

3.2.2 Measurability

Measurability, on the other hand, refers to the specification of the exchange and ability to evaluate performance and examine whether compliance has taken place *ex post* (Geyskens et al., 2006, p. 520-521; Holum, 2018, p. 523). Arguably, an 'ideal' market transaction includes a comprehensive contract whereby all relevant future contingencies pertaining to the supply of a good or service or the performance of agents are described, (i.e., high measurability) (Williamson, 1979, p. 235-236). However, political markets (e.g., where public agencies buy and sell services from each other) are often more prone to inefficiencies than pure economic markets, as it is often difficult to measure what is being exchanged and enforce agreements (North, 1990, p. 362). Consequently, Williamson (1979, p. 235-236) recognized that many contractual relations are not of this well-defined kind and suggested that contracts executed under conditions of uncertainty are ones for which complete oversight/control is going to be prohibitively costly, if not impossible (*ibid.*, p. 237). Generally, low measurability enables the masking and deflecting of information, and could lead to unforeseen behavioural changes that

are not captured by the contractual relations. As such, in-house production is often considered more beneficial in such cases (Celtekligil, 2020, p. 148).

Overall, advocates of transaction cost theory suggest efficiency gains from outsourcing are most likely in service areas characterised by low asset specificity and/or ease of measurability, because it keeps entrance costs low and monitoring costs at a reasonable level (Petersen & Houlberg, 2016, p. 207; Geyskens et al., 2006, p. 520; Holum, 2018, p. 523).

3.3 Hypothesis

Williamson's (1979) transaction cost theory will lay the groundwork for the following hypotheses. A distinction will be made between outsourcing of routine tasks and non-routine/developmental tasks. First of all, in terms of asset specificity, routine tasks like judicial work, accounting, IT support and other ongoing tasks in the agency are considered to represent intermediate forms of asset specificity, as a certain degree of competence is needed. Although routine services may be outsourced to highly skilled individuals, they are not of a particular transaction-specific kind. On the contrary, most of these services could be moved to another organization without significant productivity losses (Williamson, 1979, p. 257). Measurability is also considered to be relatively good given that services such as accounting are concrete, making it possible to examine whether compliance has taken place *ex post*. Consequently, given its standardized nature, the cost-saving potential of outsourcing routine tasks is present.

H1: Outsourcing of routine tasks are likely to be more cost-efficient than in-house production.

Outsourcing of non-routine tasks such as organisational development or the creation of software/IT-solutions, however, often pose greater hazards. Generally, developmental tasks are often of a more transaction specific kind. For instance, if a state agency outsources the development of a particular software to a private contractor, it is likely tailored to fit the needs of the agency. While the specialist nature of the investment generates stronger incentives to see the contract through to completion, the contractual relationship often transforms into a bilateral monopoly, where actors are strategically situated to bargain (Williamson, 1979, p. 242, 249). Moreover, measurability also constitutes a greater challenge compared to routine tasks. While a tangible product will be developed, specifying the work to be conducted is difficult, and the agency's ability to gain complete oversight and/or control is likely to be

costly. In essence, this leaves room for bargaining over unspecified costs and profits. Consequently, my second hypothesis is:

H2: Outsourcing of developmental tasks will most likely not generate cost savings.

4. Methodology

Before moving on to testing the hypotheses, the methods applied will be presented. First of all, outsourcing in a Norwegian context will be introduced, before justifying the selection of ministries and directorates as relevant research objects. Secondly, the justifications for choosing a longitudinal research design will be outlined. The empirical data and sample selection procedures will be described and relevant concepts such as running costs and outsourcing will be operationalised. Finally, the statistical models applied will be presented and potential limitations discussed.

4.1 Norwegian context

In order to investigate the proposed relationship between outsourcing and public spending, a single case-study will be conducted, using Norway as the empirical testing bed. Generally, Norway represents an interesting case for several reasons. First of all, the Norwegian state has traditionally played a large role in the management of the economy. The government has assumed responsibility for both the funding and provision of welfare services, and provided a comprehensive, state-run, cradle-to-grave protection (Arter, 2013, p. 313-314). In short, the Norwegian state has been considered a legitimate problem-solver and a large public sector has been considered a suitable means for promoting the common good (Olsen, 1996, p. 181, 186). As such, while Norway to some degree has implemented efficiency-reforms that are similar to those introduced in other European countries, in a historical-institutional context, Norway is generally perceived as a reluctant reformer which has been hesitant to introduce comprehensive reforms along the lines dominating the international debate in the 1980s and 1990s (Kjekshus & Veggeland, 2011, p. 1568-1569; Olsen, 1996, p. 189). In a comparative perspective, Norway has opted for less radical approaches and preferred the management components of the New Public Management (NPM) movement (e.g., performance management), over the more radical market-oriented reforms such as downsizing, privatization and contracting out - which were popular among the more daring Anglo-Saxon countries (Bjurstrøm & Christensen, 2017, p. 162; Christensen & Lægveid, 1998, p. 465).

Arguably, the low pressure to engage in administrative reforms in Norway, reflects the healthy economic situation and well-functioning public apparatus (Greve & Ejersbo, 2016, p. 48-49). By being a rich oil nation, the Norwegian government has been characterised by a steady growth in resources, allowing it to maintain a large public sector and comprehensive

welfare schemes (Olsen, 1996, p. 211; Kjekshus & Veggeland, 2011, p. 1568-1569). Largely, oil money and expected future revenues has prevented the huge deficits that has propelled public sector reforms across the world. In essence, it gave the Norwegian government a degree of freedom that many other governments did not have, and established a buffer against the international reform environment (Olsen, 1996, p. 188).

Nevertheless, despite a steady increasing surplus in the state budget, and the ability to transfer money from the Government Petroleum Fund, the impact of neo-liberal reforms has gradually gained momentum in Norway too (Bjurstrøm & Christensen, 2017, p. 162, 165; Hernes, 2004, p. 692). In the late 1990s/early 2000s, Norway embarked on a slightly more radical reform path (Bjurstrøm & Christensen, 2017, p. 165). While not pursuing an aggressive, neo-liberal agenda, the emerging consensus seemingly favoured less stateness (Arter, 2013, p. 327). Consequently, this led to a structural devolution of state agencies and a degree of choice and competition was injected into the provision of welfare services (Lægreid & Rykkja, 2016, p. 125; Bjurstrøm & Christensen, 2017, p. 165; Sivesind, 2018, p. 72). Moreover, adherence to the EU's internal market through the EEA agreement gave competition law a more central place than before, increasingly leaving the production of a number of goods and services to the private market. This trend is most clearly evident in the transport sector (NOU, 2019, p. 80). Consequently, areas previously characterised by public monopolies have increasingly opened up to competition and market actors, agencies and publicly owned companies have greater autonomy in terms of how they deliver services, and hence also about choosing to outsource services, which ultimately has led to an increase in the level of outsourcing (Eakin et al., 2011, p. 342; Greve & Ejersbo, 2016, p. 51; Lægreid & Rykkja, 2016, p. 106; Lieberherr & Leiren, 2017, p. 683). In essence, while such reform efforts have not put Norway among the reform front runners, elements of individualism and increased reliance on market solutions have firmly anchored Norway in the reform mainstream (Bjurstrøm & Christensen, 2017, p. 165; Arter, 2013, p. 328).

4.1.1 Least likely case

In many ways, Norway could be considered a typical case, as the principles governing the Norwegian market are relatively similar to other European states (Arter, 2013, p. 328). However, given that Norway also differs in several important aspects, Norway will be considered a *least-likely* case in terms of outsourcing central administrative services. Generally, the inferential logic of a least-likely case design is based on the Sinatra inference

“*If I can make it here, I can make it anywhere*” (Levy, 2009, p. 12), in which Norway is chosen as a case, as it is less likely to be consistent with existing theoretical predictions. If, however, the data supports the notion that certain services are more cost-efficient to outsource than others, the evidence from Norway would strengthen our general confidence in transaction cost theory (ibid.).

First of all, unlike most other European countries where huge deficits have propelled public sector reforms, Norway is characterised by a steady growth in resources, allowing it to maintain a large public sector (Olsen, 1996, p. 211; Kjekshus & Veggeland, 2011, p. 1568-1569). Arguably, it is one thing for governments to ‘talk the talk’ about efficiency and cost containment when the economy is doing well. In those comfortable conditions, governments can readily invest in new facilities, and the cost-efficiency agenda is most likely about getting ‘more for more’, rather than ‘more for less’. However, the situation is quite different for governments who find themselves so strapped for money that they have to aim for cost containment in absolute terms and on a scale that makes other efficiency strategies unaffordable (Hood & Dixon, 2015, p. 3). Consequently, if outsourcing can generate cost savings in countries like Norway, without prominent needs for budget cuts or staff reductions, it is possible to test whether real cost savings has been achieved as a result of outsourcing and not primarily as a result of budget deficits and financial hardship. As such, assuming the hypothesis is true, this would suggest that outsourcing may generate cost savings, regardless of a country’s financial situation.

Furthermore, this study differs from other studies in terms of the type of service outsourced. Generally, when outsourcing public services such as garbage collection, road maintenance or kindergartens, the entire service is often contracted out to a private company, and employees are often transferred over to the contractor. Outsourcing of administrative services to private sector consultants, however, differ in that the service is partly produced and consumed simultaneously in a process where both the service provider and the purchaser are involved. In other words, administrative consultants often represent an *addition*, rather than a *replacement* of public-sector employees (Roodhooft & Van den Abbeele, 2006, p. 492). Consequently, given that one of the main underlying assumptions is that outsourcing will result in fewer public sector employees, it would be highly interesting to investigate whether outsourcing also generates cost-savings when hiring private sector consultants, despite differences in consumption.

Overall, this study represents a relatively unique case due to Norway's financial situation and the type of service outsourced. Consequently, if the data supports the notion that certain administrative services are more cost-efficient to outsource than others, the evidence from Norway is most likely generalizable to other countries too. While this is just a single-case study and one should be careful not to draw too strong generalizations, given that we build upon the work of others, it improves the external validity of the findings.

4.1.2 Ministries and directorates

The public bodies under study will be central administrative agencies (i.e., ministries and directorates). Generally, minimal empirical evidence exists in terms of the economic effects of outsourcing in the state administration, and the public bodies under study are almost exclusively at the local level (Boon et al., 2019, p. 230). This is quite interesting, given the extensive use of external consultants in central administrative agencies. Central administrative agencies are by far the largest users of external consultants, and account for approximately two-thirds of the outsourcing-expenditure in the state administration. Essentially, this indicates that the outsourcing of administrative services largely takes place at the highest levels of government (Riksrevisjonen, 2017, p. 39).

The central government consist of ministries, directorates and other corresponding units with the whole country as their area of activity. The central government is divided into different administrative bodies based on policy areas or tasks, not on geographical criteria (NOU, 2019, p. 81, 91). In total, central administrative agencies consist of 22,969 employees, out of which 4,525 works in ministries and 18,433 works in directorates (DFØ, 2020, p. 16). It is important to note, however, that ministries and directorates have somewhat different functions. Ministries primarily work as secretariats for their respective ministers, and prepare and implement legal bills and adopt regulations for which the minister is responsible. Other tasks concern the implementation of sector policy towards municipalities, enterprises, organizations and citizens, as well as the management and follow-up of subordinate agencies placed outside the ministries (e.g., directorates, state-owned enterprises etc.) (NOU, 2019, p. 91; Greve & Ejersbo, 2016, p. 48). Directorates, on the other hand, perform tasks on behalf of the ministries. Directorates carry out, among other things, regulatory work, individual case processing, assessment, guidance and grant administration, as well as on-site and written inspections. The division into, and area of responsibility for directorates are mainly linked to specific policy areas (NOU, 2019, p. 91-92).

Arguably, ministries represent a more homogenous group in terms of task portfolios as they primarily work as secretariats for their respective ministers. Directorates, on the other hand could be considered more heterogeneous due to greater variations both in terms of policy areas and task portfolios. Nevertheless, given that this master thesis is primarily concerned with administrative services that are found in all government agencies, the cost saving potential should not be affected by agency type. Instead, the cost-savings potential should depend on the characteristics of the service being outsourced, and similar effects are therefore expected in both types of organisations.

4.2 Research design

To examine the proposed relationship between outsourcing and public spending, a longitudinal research design was considered the most suitable approach. Generally, a longitudinal design allows for the exploration of public spending patterns over time, while at the same time modelling heterogeneity (i.e., differences) between government agencies (Smith, 2008, p. 35; Anderson, 2007, p. 23-24). Moreover, longitudinal designs are better able to deal with the ambiguity of the direction of causal influences. By measuring the level of outsourcing at different points in time, the researcher is in a better position to infer whether the proposed effects on public spending occurred after a change (increase/decrease) in outsourcing (Bryman, 2013, p. 63-65). In other words, a longitudinal design allows for better modelling of the assumed relationship between outsourcing and public spending (Smith, 2008, p. 33).

4.3 Data collection

In order to shed light on whether the state administration could save costs by outsourcing administrative services, national accounting data from all central administrative agencies (e.g., 16 ministries and 69 directorates) has been obtained in the time period 2014 to 2020. In 2014, the Norwegian state implemented a new standard chart of accounts, allowing for a more detailed overview of public sector spending. Amongst others, more detailed accounts of purchases from private operators developed (Riksrevisjonen, 2017, p. 32, 38). Consequently, 2014 is considered a natural starting point for this data analysis, due to the availability of more comprehensive and standardized information, allowing for better comparisons of cost structures across agencies.

The national accounts are created on the basis of annual reports from all state agencies, and display a detailed breakdown of public sector revenues and expenditures (DFØ, 2021a). In the Financial Management Regulations of the state (*Reglement for Økonomistyring i Staten*), the Ministry of Finance established a standard chart of accounts which all state agencies are obliged to comply with. The chart of accounts divides expenses, income, assets and liabilities into chapters, and groups them by type, cf. *Rundskriv R-102* (Finansdepartementet, 2019, p. 49). The purpose is to ensure that all state agencies apply budget and accounting principles that are consistent across agencies and time (ibid., p. 45-46, 48). Consequently, the national accounts are considered suitable for both cross-sectional and longitudinal studies, as it provides consistent and comprehensive information about public sector spending (Petersen et al., 2015, p. 561).

While the national accounts cover the entire population of interest, allowing for a relatively complete picture of public sector spending to be obtained (Bryman, 2013, p. 320-321), one potential limitation relates to the regularity of structural changes in the state, as state agencies are frequently closed down, reopened, merged or split. One recent example of this concerns the split of Difi into Digitaliseringsdirektoratet and DFØ. In essence, this raises the problem of sample attrition, in which agencies lack data for one or more years, creating an unbalanced dataset (Frees, 2004, p. 4). One potential solution could be to remove the agencies with missing data, however, given that the agencies lost may differ in some important aspects from those who remain, the latter would no longer form a representative group (Bryman, 2013, p. 65). As such, it was decided to keep all central administrative agencies, resulting in some agencies having a shorter time series.

The reliability of this study is considered to be fairly high, as several measures have been taken to reduce the number of human errors and inaccuracies. In regards to data collection, the state has standardized accounting procedures and control mechanisms in place. First, government accounts are controlled by the Ministry of Finance, before the accounts are examined and discussed in parliament (DFØ, 2021a). In essence, this suggests any significant bookkeeping errors are likely to be discovered and corrected, increasing the reliability of the data. In regards to the coding and analysis of the data, it is impossible to guarantee that human errors have not occurred. However, given that all coding is conducted in R and a script is created, this enables the researcher to review the script and control for errors. Moreover, several functions in R can be applied to confirm that no errors have taken place while coding. Consequently, these steps are likely to reduce potential reliability related issues.

4.4 Operationalisation of key concepts

4.4.1 Running costs

The dependent variable is state agencies' annual running costs per full-time employee measured in Norwegian Kroner (NOK) in 2020-prices. What is commonly referred to as *running costs* (or sometimes the *core budget*) concerns expenditures which are spent directly on the agency's own activities/operations (Dunleavy, 1991, p. 181). Running costs belong to a group of expenses that are found in all public agencies, regardless of the level or task portfolio, making such expenses suitable for comparisons across agencies and time. Generally, there are two types of running costs; (1) variable running costs and (2) fixed running costs. Variable running costs concerns expenditures related to production (e.g., supplies and materials), which increase and decrease in line with the agencies' volume of production. Fixed costs, on the other hand, cover expenses that are unrelated to production levels and remain relatively fixed over time (e.g., electricity, office-buildings etc.) (Visma, 2021). This master thesis, however, will limit its focus to include variable running costs, as any changes in public expenditures due to outsourcing will most likely be reflected in the agency's running costs.

Variable running costs as a concept will be operationalised using an additive index which summarises all operational costs related to production. The index will include items such as salaries, personnel costs, work-related travels, meetings, courses, seminars, equipment and material costs consumed directly in the agency's basic functions (e.g. office equipment or computers)¹. Moreover, resource consumption will be seen in relation to production levels by dividing running costs per full-time employee. In essence, by applying relative, rather than absolute numbers, it allows for comparisons across agencies and time (Busch et al., 2009, p. 154-155). Arguably, while the size of the transaction costs has not been measured directly due to a lack of available data, it is argued that the operationalisation of agencies total running costs implicitly also takes transaction costs into account.

$$\text{Running costs} = \frac{\text{Operational costs related to production}}{\text{Number of employees}}$$

¹ Account group: 50, 51, 52, 59, 64, 65, 68, 71.

4.4.2 Degree of outsourcing

The main independent variable will be the degree to which administrative services are outsourced to private operators. Degree of outsourcing will be operationalised as money spent on purchasing administrative services from external actors as a percentage of the agency's running costs. In the national accounts, administrative services are divided into four separate categories depending on the type of service being outsourced; (1) routine tasks related to accounting, audits and judicial services, (2) IT-support, (3) development of software and IT solutions, and (4) purchasing of services such as organisational restructuring and recruitment² (DFØ, 2021b). Consequently, this division will be applied in this master thesis too. Category 1 and 2 will be considered routine tasks, whereas category 3 and 4 will be considered developmental tasks.

$$\text{Degree of outsourcing} = \frac{\text{Money spent on purchasing administrative services}}{\text{Running costs}} * 100$$

Generally, the measurement validity of both running costs and money spent on purchasing services from private actors are considered valid measures of public spending and outsourcing. However, variable running costs in particular, is a quite vaguely defined concept, and choosing which indicators to include becomes a selective process, in which the researcher actively makes choices about which costs to include and which to discard. As such, the operationalisation could, arguably, be amended to fit the empirical test. Nevertheless, while it could be debated whether the indicators included are the right ones, the costs incorporated to operationalise running costs are the ones that come closest to the notion of running costs as it is defined in the literature.

In regards to internal validity, it is important to note that government agencies' resource consumption cannot be seen in isolation, as public spending's will vary depending on how much money is allocated in the state budget. While both ministries and underlying agencies participate in preparing budget proposals to parliament in accordance with the principles laid down in the appropriation regulations §§ 3-9, the parliament is ultimately responsible for granting/allocating resources and approving the state budget (Finansdepartementet, 2019, p. 15-18). The budgets set a clear framework for the use of resources, and expenditure

² Account group 670, 671, 672, 673, 675. It is important to note, however, that there were some changes in the numbering of outsourcing accounts in 2019, in which the same categories are reported on, however, the numbering changed. See R script for more information.

appropriations may not be exceeded or used for other purposes than those provided by the parliament, cf. Appropriation Regulations §5 (Finansdepartementet, 2019, p. 47; Busch et al., 2009, p. 14). In other words, the room for budget overruns is limited. Essentially, this creates internal validity problems (Bryman, 2013, p. 47) as it is difficult to say for certain whether a change in operating expenditures is a result of outsourcing, or just smaller/larger allocations.

One primary example of this is the 2015 de-bureaucratization and efficiency reform (*ABE-reformen*), which aims to improve public sector efficiency by cutting 0.5 per cent of state agencies annual allocations (Finansdepartementet, 2014, p. 85; Oppegaard & Svalund, 2019, p. 16). Naturally, due to the ABE-reform, agencies' running costs are likely to decrease over time, which could generate a spurious empirical relationship between public spending and outsourcing. In order to account for this, both running costs and degree of outsourcing are operationalised using relative numbers. In the state, cost savings cannot be achieved by firing permanent staff, suggesting a reduction in allocations will most likely lead to a reduction in purchases from private operators too. As such, by measuring running costs per full-time employee and outsourcing as a percentage of public spending, it creates measures that remain relatively stable regardless of the size of budget allocations (Busch et al., 2009, p. 154-155).

4.4.3 Control variables

Public spending patterns are likely to be affected by other factors than just the level of outsourcing. If not taken into account, omitted variable bias can generate a spurious empirical connection between public expenditures and outsourcing. Consequently, in order to ensure a valid estimate of the economic effects of outsourcing, it is necessary to control for variables that could affect both the level of outsourcing and public spending in the state administration (Thau & Houlberg, 2020, p. 18). A number of control variables will therefore be included.

4.4.3.1 Macroeconomic trends

First, to control for underlying economic trends and the general macroeconomic environment, measures of Norway's gross domestic product (GDP) per capita³ and unemployment rates⁴ will be included (Alonso et al., 2017, p. 340). Arguably, unemployment is an important policy issue for many economies, as it may be an indication of inefficiencies in resource allocation.

³ GDP per capita numbers are gathered from SSB. Available at: <https://www.ssb.no/en/statbank/table/09842/tableViewLayout1/>

⁴ Data on unemployment rates are gathered from the World Bank. Available at: <https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS?end=2019&locations=NO&start=2014>

Widespread unemployment may prevent companies and countries from innovating and developing competitive advantages based on human capital investment, thus undermining future prospects (World Bank, 2021). Consequently, unemployment rates could be considered an estimate of the general macroeconomic environment. Moreover, GDP is a standard measure of economic activity and concerns the value added through the production of goods and services in a country during a year. GDP per capita is calculated as the ratio of GDP to the average population in a specific year and figures are presented in Norwegian kroner in 2020-prices (OECD, 2021; Eurostat, 2021).

4.4.3.2 Economies of scale

Secondly, economies of scale will be controlled for through measures of agency size (Alonso et al., 2017, p. 340). Generally, economies of scale benefits are more likely to be found in larger agencies. If the in-house production of quantities is large enough, the need for external expertise is reduced. In other words, the size of the agency could impact the economic effects of outsourcing (Lyons, 1995, p. 433-434). Agency size will be operationalised as the number of full-time employees in the agency⁵. Moreover, a dummy variable will be included for small agencies to capture potential disadvantages of being a small agency (Thau & Houlberg, 2020, p. 18).

4.4.3.3 Political environment

Third, the political ideology of the ruling party may affect public spending patterns (Alonso et al., 2017, p. 340). Political ideology can have an impact on both the size of the public sector, and policy prioritization of expenditures (Thau & Houlberg, 2020, p. 18). Generally, the economic right-wing often prefer market mechanisms and the use of private actors in allocating goods and services, whereas left-wing actors favour government intervention in the economy and society (Boon et al., 2019, p. 233; Alonso et al., 2017, p. 340). Consequently, similar to Thau and Houlberg (2020, p. 19), political ideology will be operationalised as the number of seats held by right-winged parties (e.g. *Høyre* and *Fremskrittspartiet*) as a proportion of the total number of parliamentary seats⁶.

⁵ Number of full-time employees are gathered from <https://statsregnskapet.dfo.no/sammenligning-nokkeltall>

⁶ Proportion of parliamentary seats held by right-winged parties are calculated using the following numbers: <https://www.stortinget.no/no/Representanter-og-komiteer/Partiene/Partioversikt/>

4.5 Statistical modelling

As data are pooled both across time and space, the national accounts have a panel data structure (Worall, 2010, p. 182). Generally, three problems often arise when applying data with a panel structure; (1) autocorrelation, (2) heteroscedasticity and (3) heterogeneity concerns. Autocorrelation normally arise as the key characteristics of government agencies (e.g., size or number of employees) are likely to remain relatively constant over time, leading to serial correlation of the same variables at different time intervals. Moreover, as government agencies could be considered a somewhat heterogeneous group, this could lead to a systematic difference in the spread of residuals over the range of measured values (e.g., heteroskedasticity problems). Finally, heterogeneity problems refer to events that affect all units during the same time period, and thereby artificially cause variation in public spending (Worall, 2010, p. 183). One such event could, for instance, be the 2008 financial crisis or the covid-19 pandemic, as this has most likely affected the spending patterns of all state agencies to some extent.

Given that ordinary least square (OLS) regressions are not equipped to deal with repeated observations of the same units of analysis, four statistical models will be applied to address these challenges:

1. Pooled OLS model with cluster-adjusted standard errors
2. Fixed effects model with cluster-adjusted standard errors
3. Time fixed effects model with cluster-adjusted standard errors
4. Dynamic panel model with cluster-adjusted standard errors

4.5.1 Pooled OLS-model

The first model will be a pooled OLS-regression with cluster-adjusted standard errors. Generally, when working with cross-sectional units, observations are likely to be clustered/grouped. Cluster-correlated data means that observations within a government agency (i.e., cluster) are correlated while observations between agencies are uncorrelated/independent. Given that OLS-regression assumes independent observations, intracluster-correlation could create major statistical problems, as it will underestimate the true variance and potentially lead to type 1 errors (e.g., false positives) (Williams, 2000, p.

645). A pooled OLS-model with cluster adjusted standard errors for different government agencies, however, takes into account that observations from the same agencies, but different years, are not independent (Thau & Houlberg, 2020, p. 20). This way, a pooled OLS-model allows for an examination of the assumed relationship between public spending and public sector outsourcing.

Nevertheless, the OLS model does not provide a solid basis for drawing causal interpretations. First of all, there may be unobserved differences that have not been accounted for (i.e., heterogeneity). Often, it is not possible to account for all differences between agencies because they are unobserved (i.e., lack data), which gives rise to omitted variable bias. For instance, unobserved conditions may relate to work culture, capacity problems, market conditions or previous experiences with private operators. Such unobserved conditions may also change over time and affect both exposure to competition and expenditures (Thau & Houlberg, 2020, p. 20). Secondly, the assignment of the treatment variable (i.e., degree of outsourcing) is not randomly assigned, which generates selection bias concerns. For instance, if resource constrained government agencies are more likely to outsource its services, this may generate a negative selection bias. If the bias is large enough, it may completely mask a positive treatment effect (Angrist & Pischke, 2008, p. 14). Finally, this also raises the question of endogeneity. For instance, perhaps public expenses affect the degree of outsourcing and not the other way around. Such endogeneity issues are not possible to overcome with non-experimental data (Thau & Houlberg, 2020, p. 21).

4.5.2 Fixed effect model

The key to causal inference is to control for confounding factors. Generally, this can be dealt with using a fixed effects analysis. Unlike a pooled OLS-model, a fixed effects model treats unobserved variation between agencies as a parameter to be estimated. Unobserved agency heterogeneity is controlled for with dummy coefficients per agency (Angrist & Pischke, 2008, p. 221-222; Christophersen, 2018, p. 171). In other words, a fixed effects model controls for agency-to-agency variation you cannot observe or which are difficult to operationalize. Such variation could for instance be related to culture, tradition, history, policies, regulations etc. (Christophersen, 2018, p. 171; Worall, 2010, p. 185). Government agencies are thus compared to itself, and it is possible to test whether variations in the level of outsourcing within an individual agency leads to changes in public spending in the same agency over time (Thau & Houlberg, 2020, p. 21). Consequently, unlike a pooled OLS-model, a fixed effect model

largely accounts for both agency heterogeneity and endogeneity issues. The key insight is that if the unobserved variable does not change over time, then any changes in the dependent variable must be due to influences other than these fixed characteristics (Angrist & Pischke, 2008).

Similar to the pooled OLS-model, the standard errors will be clustered by agencies to account for autocorrelation in the data. It is important to note, however, that while fixed effects estimations remove any of the agency-to-agency variation from the analysis and effectively deals with omitted variable bias, it potentially also removes useful information about the variable of interest (Angrist & Pischke, 2008, p. 224). In other words, fixed effects estimations ignore the possibility that agency-to-agency variations shed light on the relationship between outsourcing and public spending (Worall, 2010, p. 185). Moreover, predictor variables that change slowly over time are problematic. Although we can estimate a model with slowly changing independent variables, the fixed effect will soak up most of the explanatory power of these slowly changing variables. Thus, if a variable change over time, but slowly, the fixed effects will make it hard for such variables to appear either substantively or statistically significant (Worall, 2010, p. 186).

4.5.3 Time fixed effect model

The third model will be a time fixed effect model. Similar to the fixed effects model, the strength of the time fixed effects model is that it cancels out unmeasured and unchanging unit-level effects influencing the outcome variable, reducing the problem of unobserved heterogeneity. However, unlike a regular fixed effects model, it also controls for changes in the effect of outsourcing on public spending from one year to the next (Liker et al., 1986; Angrist & Pischke, 2008, p. 112). In other words, the time fixed effects model includes dummy variables for the individual years to control for variations (2014 is the reference year). The annual dummies will capture the cost effects of changes in, for example tasks, production, technology, market conditions and legal regulation over time, which apply to all agencies (Thau & Houlberg, 2020, p. 19). Consequently, the time fixed effect model is often considered more conservative than a regular fixed effects model. Given that residuals may be serially correlated in a time fixed effects model too, standard errors will be clustered by agencies.

4.5.4 Dynamic panel model

The final model will be a dynamic panel model with panel-corrected standard errors. A dynamic (or sometimes autoregressive) model means adding a time-shifted (lagged) dependent variable as an independent variable (Christophersen, 2018, p. 169-170). The purpose of a dynamic model is, similar to the fixed effects model, to control for omitted variable bias, however, the logic differs (Thau & Houlberg, 2020, p. 22). When controlling for a lagged version of the dependent variable, the resulting standard errors should be serially independent (Beck & Katz, 2011, p. 341). In other words, the dynamic panel model effectively deals with autocorrelation concerns by adding past expenditures as a time-varying confounding variable (Angrist & Pischke, 2008, p. 243). For instance, when government agencies do not spend their budgetary allotments in a particular year, their budgets may be reduced in subsequent years (Worall, 2010, p. 188). Given that panel data are rarely independent across the time dimension, the dynamic panel model controls for past expenditures directly (Angrist & Pischke, 2008, p. 243).

While one could add agency fixed effects to deal with heterogeneity concerns, this is problematic in dynamic models as it often leads to biased parameter estimates. When eliminating heterogeneity from the constant, it induces a correlation between the lagged variable and the error term. The bias is particularly severe for small panels, suggesting a dynamic model with fixed effect would be inappropriate in this particular case (Beck & Katz, 2011, p. 342). As such, heterogeneity concerns will be dealt with using cluster-adjusted standard errors instead, as this is known to produce consistent estimates.

Overall, to summarise, these four models all have different strengths and weaknesses. While the pooled OLS model most likely will capture the effect of slowly changing variables, it could potentially generate spurious results as it does not take into account potential unobserved heterogeneity. The two fixed effects models, however, successfully deal with omitted variable bias, however, they risk soaking up much of the explanatory power of slowly changing variables. The dynamic model also controls for systematic differences between agencies by taking into account past expenditures, however, it reduces the sample size due to lagging the dependent variable. As such, four relevant estimates of the economic effects of outsourcing are provided. While the models have different strengths and weaknesses, the models complement each other. Consequently, if all models point to similar conclusions, it would suggest the findings are relatively robust.

5. Data analysis

In this chapter, the economic effects of outsourcing administrative services in the Norwegian state administration will be presented. The data analysis will be divided into three chapters. The first chapter provides an overview of agencies' spending patterns and trends over time. This includes an overview of agencies average running costs in the time period 2014-2020, the extent to which state agencies outsource its services, which types of administrative services are most frequently outsourced and variations between agencies. In the second chapter, the economic effects of outsourcing administrative services will be examined. The results from the statistical models described in chapter 4.5 will be presented. This includes both an examination of the economic effects of outsourcing administrative services in general, before looking more closely at different types of services. Finally, in chapter three, the statistical validity of the models will be discussed and a number of robustness tests will be reviewed.

5.1 Trends over time

Initially, agencies running costs (figure 1) and agencies' running costs per full-time employee (figure 2) will be compared in order to provide insights into how agencies actual spending's differs from the productivity measure applied in the analysis. Generally, if examining the time period 2014-2020 as a whole, agencies average running costs has decreased from approximately 703 million in 2014 to 680 million in 2020 (i.e., a 23 million reduction in 6 years). Essentially, this suggests central administrative agencies has succeeded in containing costs the last 7 years. If examining the time-series more carefully, it is evident that there is a minor increase in agencies running costs from 2014 to 2016, and a gradual decrease from 2016 to 2020, in which 2020 represents an all-time low. This is not surprising given that the ABE-reform has decreased public agencies budget allocations by 0.5 per cent annually since 2015. As such, a reduction has been anticipated.

If measuring running costs using relative numbers, however, figure 2 suggests there has been a gradual decrease in agencies' average running costs per full-time employee from 2014 to 2016, and a gradual increase from 2016 to 2019. The year 2020, however, deviates somewhat from previous years. In 2020 there is a significant fall in agencies running costs relative to the number of employees. This reduction could most likely be explained by the covid-19 pandemic. The covid-19 pandemic has generated some of the most far-reaching measures

experienced in peacetime, and led to severe economic decline and substantial uncertainty regarding future economic developments (Regjeringen, 2020). If excluding the year 2020, however, there has seemingly been a gradual increase in agencies’ running costs relative to the number of employees. This is quite interesting given that there has also been a reduction in the number of full-time employees (see figure 4), suggesting what drove the relative running costs up is either wage costs or other operational costs related to production.

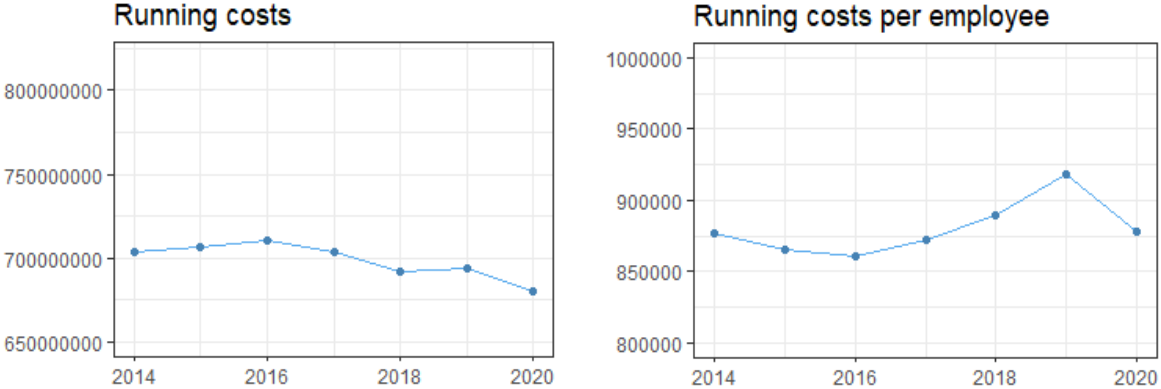


Figure 1: Agencies average running costs (2014-2020) Figure 2: Agencies average running costs per employee (2014-2020)

In order to generate greater insights into public sector outsourcing in central administrative agencies, and its effect on public sector employees over time, the degree of outsourcing relative to the number of public sector employees over time will be examined. Seemingly, outsourcing as a percentage of agency running costs has ranged from approximately 9-19 per cent, on average (see figure 3). Despite some volatility, agencies average level of outsourcing has remained relatively stable at around 13 to 15 per cent in the time period from 2014-2019. From 2019 to 2020, however, the average level of outsourcing increased from 14 to 19 per cent. Similar to the findings displayed above, this suggests the year 2020 somewhat deviates from previous years. Again, this could most likely be explained by the extraordinary situation with the covid-19 pandemic, however, it is worth noting when analyzing the results. In regards to the number of full-time employees, however, there has seemingly been a reduction from approximately 970 to 870 employees in the time period 2014 to 2020 (see figure 4). While there are most likely individual differences between agencies, the overall picture suggests there has been a reduction in the number of public sector employees in central administrative agencies. Generally, this is quite interesting given that one of the main underlying assumptions of outsourcing is that it will result in fewer public sector employees. In other words, this could potentially indicate that state agencies are gradually transferring administrative tasks over to private providers.

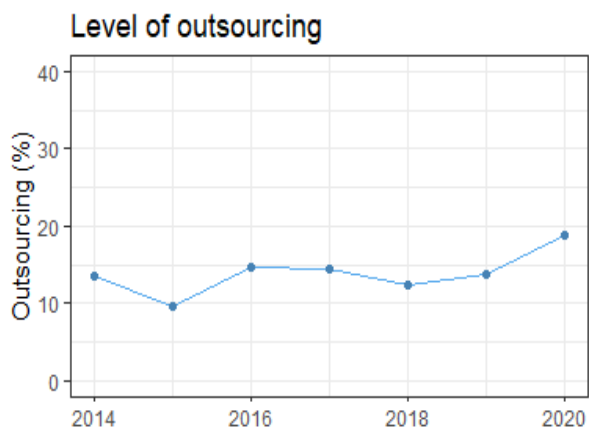


Figure 3: Agencies average level of outsourcing (2014-2020)

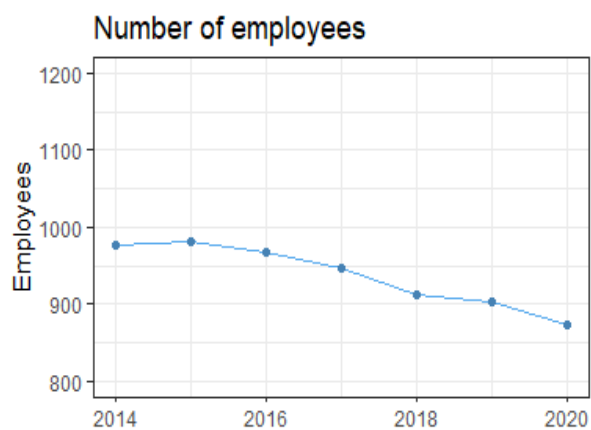


Figure 4: Agencies average number of employees (2014-2020)

5.1.1 Outsourcing by type of agency

In order to provide insights into which agencies outsource its services the most, figure 5 illustrates outsourcing by type of central administrative organizations (i.e., ministry or directorate). The point estimates represent one or more observation(s) with similar levels of outsourcing. Overall, the data suggests there are greater variations in the level of outsourcing within directorates compared to ministries. Despite a few outliers, the majority of ministries outsource between 0-12 per cent of its services. Directorates' level of outsourcing, on the other hand, varies from approximately 0-60 per cent. Both agency types, however, have extreme observations that spend more than 100 per cent of its running costs on purchasing services from private providers. The three extreme observations in the case of ministries are the Ministry of Justice, whereas the outliers in the case of directorates are the Directorate of eHealth in 2018, 2019, 2020, and the Directorate of Election in 2016. Overall, however, this indicates there are important variations in the use of outsourcing both within the group of directorates and between ministries and directorates.

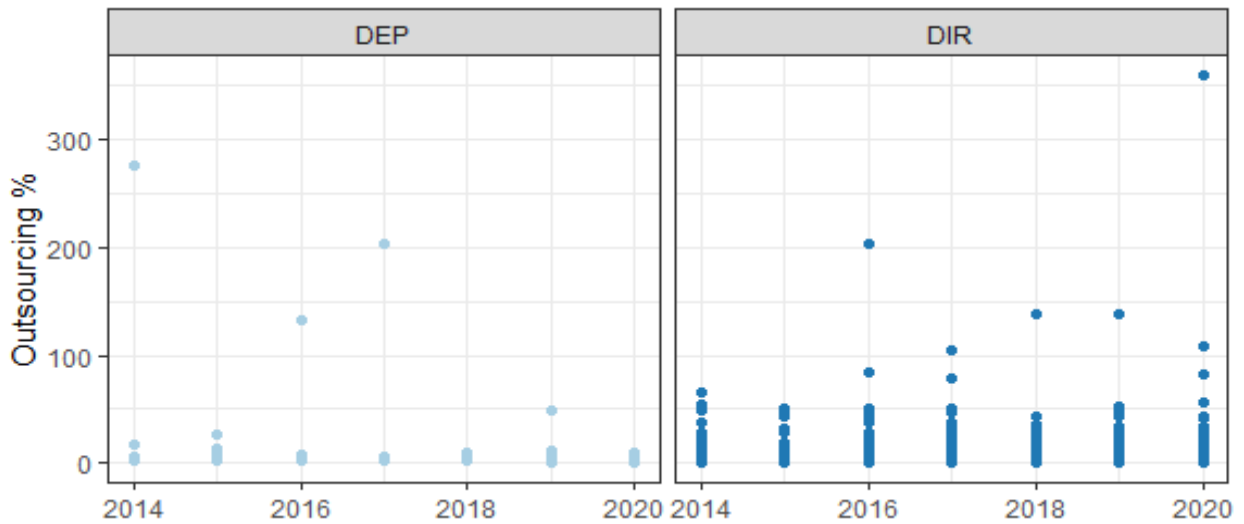


Figure 5: Degree of outsourcing in ministries (left) and directorates (right).

In order to examine which sector outsource its services the most, agencies have been grouped by ministries (see figure 6). The point estimates represent extreme observations (i.e., outliers), the boxes illustrate the upper and lower quantiles and the horizontal line within the boxes represent the median. Generally, the median suggests the Ministry of Finance (FIN), Ministry of Health (HOD), Ministry of Education and Research (KD) and Ministry of Local Government and Modernization (KMD) and its underlying agencies outsource its services the most (i.e., above 10 per cent). However, these ministries, along with the Ministry of Agriculture and Food (LMD) also have the largest quantiles, suggesting there is some intra-ministry variation. Nevertheless, several ministries (e.g., Ministry of Culture (KUD), Ministry of Fishery (NFD) and Ministry of Justice (JD)) also have outliers which outsource a larger proportion of their administrative services than the group median. In contrast, the sectors which outsource its services the least (i.e., less than 10 per cent) are the Office of the Prime Minister (SMK), Ministry of Children and Families (BFD), the Ministry of Foreign Affairs (UD), the Ministry of Culture (KUD), the Ministry of Petroleum and Energy (OED), the Ministry of Labour and Social Affairs (ASD), the Ministry of Defense (FD) and the Ministry of Transport (SD).

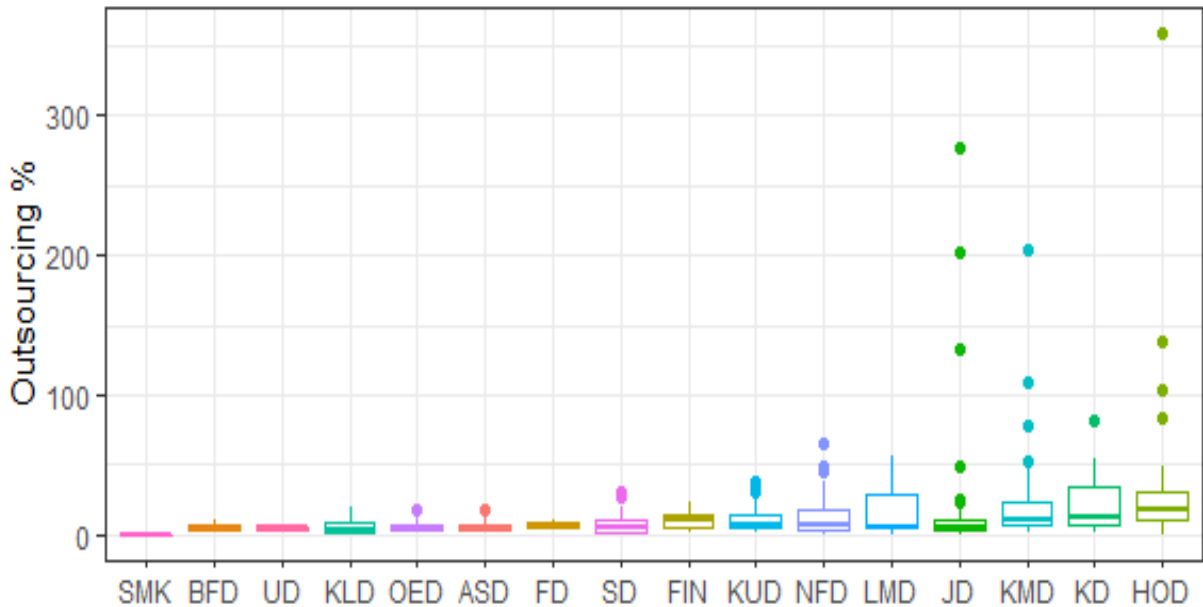


Figure 6: Degree of outsourcing by Ministry

In order to take a closer look at the outliers and intra-ministry variation identified in figure 5 and 6, figure 7 provides an overview of the agencies outsourcing 20 per cent or more of its administrative services, on average. More specifically, agencies like *Direktoratet for E-helse* (the Directorate of eHealth), *Digitaliseringsdirektoratet* (the Digitalization agency), *Justis- og Beredskapsdepartementet* (the Ministry of Justice), *Valgdirektoratet* (the Directorate of Election) and *Utdanningsdirektoratet* (the Directorate for Training and Education) stand out as the agencies with the highest levels of outsourcing. On average, they spend between 50 to 160 per cent of their running costs on purchasing services from private providers. The types of services outsourced, however, is primarily different types of IT-services. This is somewhat surprising, given that one would expect the Digitalization agency and the Directorate of eHealth to have relevant IT-expertise in-house. What's particularly interesting, however, is that except for the Ministry of Justice, only directorates are represented in the group with the highest levels of outsourcing. Essentially, this confirms the patterns identified in figure 5 which suggested that ministries traditionally outsource a lower proportion of their services. This could potentially be explained by differences in task portfolios. Generally, while ministries primarily functions as secretariats for the ministers, directorates are often responsible for the execution of a wide range of politically set goals, and the area of responsibility are linked more directly to specific policy areas (NOU, 2019, p. 91-92). In

essence, the need for specialized expertise about the topic in question is most likely higher in directorates.

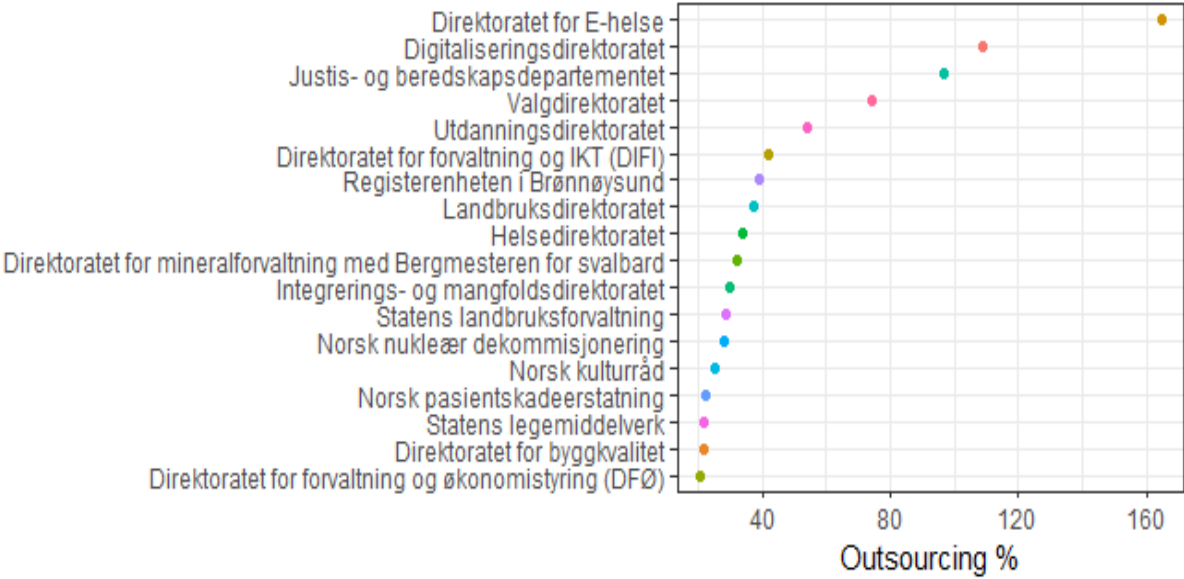


Figure 7: Agencies with the highest level of outsourcing

5.1.2 Outsourcing by type of service

The services most frequently outsourced in central administrative agencies are different types of IT-services. On average, 5-11 per cent of IT/software development have been outsourced to private operators. Figure 8 illustrate that outsourcing of IT/software development has remained relatively stable at between 5-7 per cent in the time period 2014-2019, before it increases to 11 per cent in 2020. Again, this suggests the year 2020 deviates somewhat from previous years. This is not surprising given that digital solutions, as a result of the covid-19 pandemic represented the only communication channel for long periods of time, forcing public agencies to digitalize their services (IKT-Norge, 2020). Outsourcing of IT-support services are also relatively frequently outsourced (see figure 9). While there are yearly fluctuations in its use, on average, between 4-8 per cent of agencies running costs are spent on outsourcing IT-support services annually. In contrast to IT/software development, the use of IT-support has decreased somewhat over time if comparing 2014 with 2020. However, due to yearly volatility in outsourcing of routine IT services, it is difficult to say for certain whether this represents a *de facto* reduction, or whether it is just a part of the yearly fluctuations. Overall, however, the fact that IT-support and IT/software development services are the services most frequently outsourced in central administrative agencies is not surprising. According to the report *A digital public sector* (En digital offentlig sektor) published by the

Ministry of Local Government and Modernization in 2019, managers and employees in public agencies lack the necessary competence to utilize the opportunities offered by technology. Consequently, it is only natural that IT services are outsourced to private sector companies specializing in IT.

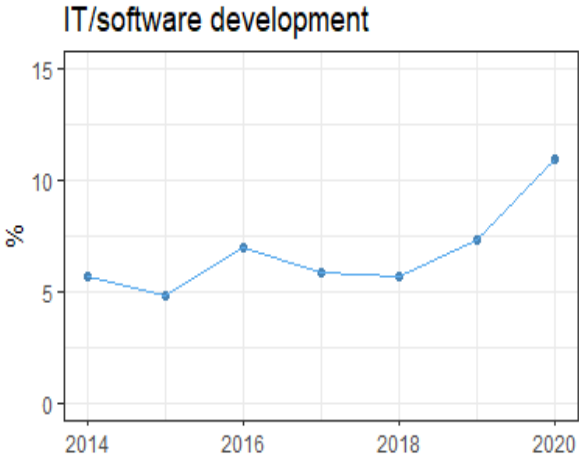


Figure 8: Outsourcing of IT/software development

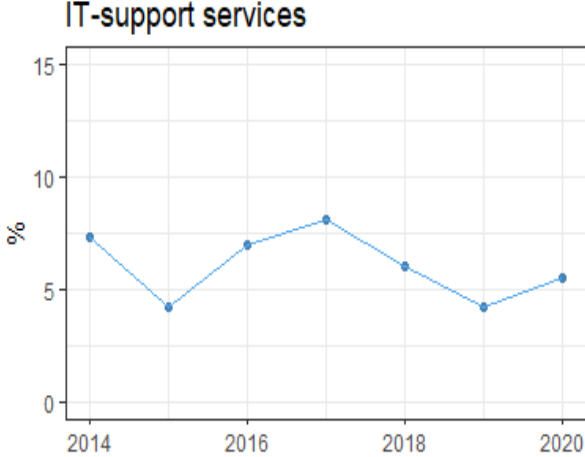


Figure 9: Outsourcing of IT-support services

Generally, routine tasks such as accounting, audits and judicial services are not frequently outsourced (see figure 11). In 2014, only 0.1 per cent of routine tasks in central administrative agencies were outsourced. The 2020 equivalent is 0.8 per cent, suggesting it has increased somewhat over time. This pattern is not surprising given that the majority of employees in central administrative agencies are, in fact, lawyers, economists and political scientists (Mangset, 2020, p. 575). Similar trends are also evident in the outsourcing of organizational services (see figure 10). In the period 2014-2018, outsourcing of organizational services ranged from 0.4 per cent (2014) to 0.5 per cent (2018). In 2019 and 2020, however, outsourcing of organizational services increased to 1.7 and 1.6 per cent of agencies running costs. Generally, the notable increase in 2019 and 2020 is largely driven by an influential observation (i.e., the Norwegian Nuclear Decommissioning) which was established in 2018 and outsourced 40 per cent of its organizational services in 2019 and 17 per cent in 2020, thereby increasing the agency mean. However, despite this outlier, the overall picture suggests there has been an increase across agencies in regards to outsourcing of organizational services over time.

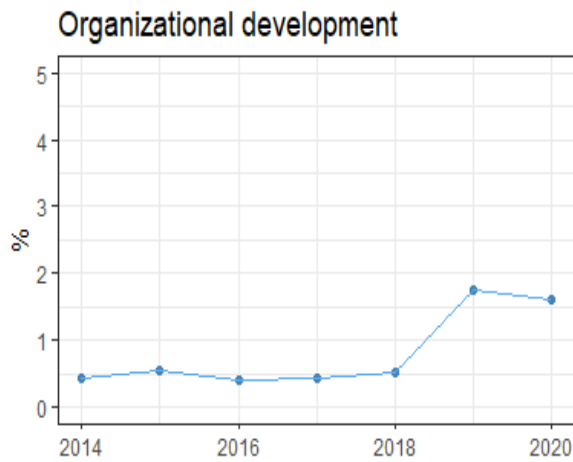


Figure 10: Outsourcing of organizational development

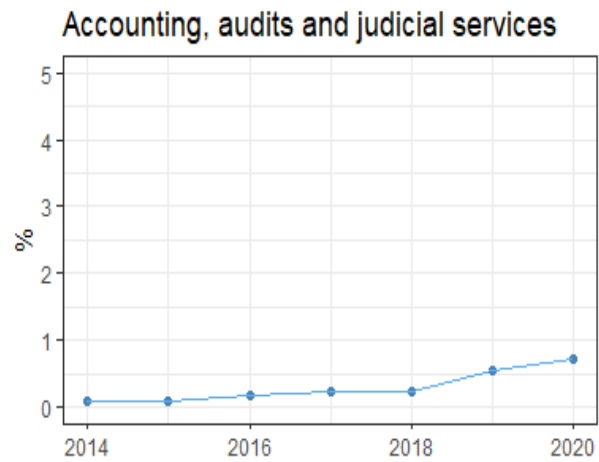


Figure 11: Outsourcing of accounting, audits and judicial services

It is worth noting, however, that the level of outsourcing has remained relatively stable over time. This could potentially be problematic in terms of the fixed effects analysis, as the fixed effect will soak up much of the explanatory power of slowly changing variables, making it hard for such variables to appear either substantively or statistically significant (Worall, 2010, p. 186). Nevertheless, given that the figures presented here merely represent agencies' average use of outsourcing, these figures may conceal agency-to-agency variations that may appear when agencies use of outsourcing are compared to itself over time in the analysis.

5.2 Main findings

5.2.1 The economic effects of outsourcing

The main results concerning the economic effects of outsourcing public services are shown in table 1 and 2. The models presented correspond to the statistical models introduced in section 4.5, however a brief introduction will be provided here too. The first model is a pooled OLS model. Unlike the other models, the pooled OLS does not take into account potential unobserved heterogeneity between agencies. As such, while a pooled OLS could provide some insight into the economic effects of outsourcing, due to unobserved heterogeneity and selection bias concerns, it is primarily included to evaluate the robustness of the results. The second model is a fixed effects model. In the fixed effects model, state agencies are compared to itself, making it possible to test whether variations in outsourcing within an individual agency leads to changes in public spendings in the same agency over time. The third model is a time fixed effects model. Generally, a time fixed effects model applies the same logic as the generic fixed effects model, however, it also includes year dummies to account for yearly

changes that apply to all agencies. The final model is a dynamic panel model. The dynamic panel model takes agencies' past expenditures into account as a time-varying confounding factor by including a lagged dependent variable in the model.

Table 1 illustrates the economic effects of outsourcing all types of administrative services. Generally, when looking at outsourcing as a whole and not discriminating between different types of services, there is no evidence of a statistical relationship between public spending and outsourcing. The estimated effect of agency size, however, is statistically significant in all models except for the dynamic panel model. This suggests that larger agencies, generally have lower running costs per employee than smaller agencies. Essentially, this provides some support for the economies of scale assumption, that agency size could impact public spendings (Lyons, 1995, p. 433-434). While the dynamic model provides somewhat different estimates, this is most likely explained by the loss of 84 observations due to the lagged variable, reducing the sample size to 480.

Overall, the explanatory power of the dynamic panel model and the two fixed effects models are relatively high (i.e., between 0.7 and 0.8). However, the size of the standard errors suggests none of the models are able to differentiate between agencies' experiencing cost savings from those who do not. Given the theoretical assumption that different types of outsourcing are likely to affect public spending differently, this is to some degree expected. For instance, if outsourcing one type of service increases public spendings, whereas another decreases public spendings, the effect will most likely be cancelled out. Consequently, the effect of different types of outsourcing will be explored to evaluate whether there are individual differences in the economic effects of outsourcing administrative services.

Table 1: The economic effects of outsourcing administrative services

	<i>Dependent variable:</i>			
	Pooled OLS	Variable running costs		
		Dynamic panel model	Fixed effects	Time fixed effects
	(1)	(2)	(3)	(4)
Outsourcing	106.9 (370.7)	43.4 (157.1)	-606.9 (667.6)	-573.9 (671.5)
Size dummy	-37,924.2 (27,730.4)	-7,346.0 (8,852.3)	-56,369.4 (35,545.6)	-57,276.2 (35,056.8)
Size	-16.9*** (6.5)	-2.3 (1.5)	-104.9* (61.1)	-107.3* (61.7)
GDP per capita	0.2 (0.2)	0.7*** (0.2)	0.2 (0.1)	
Unemployment rate	-13,700.8* (7,660.4)	5,897.4 (9,006.9)	-15,602.1* (8,634.6)	
Parliamentary seats	-490,281.4 (369,387.5)	-299,906.4 (258,975.8)	-225,340.1 (257,799.1)	
Lag		0.8*** (0.1)		
Constant	1,032,496.0*** (178,388.7)	-185,709.1 (145,745.9)	1,052,791.0*** (177,809.4)	1,037,079.0*** (42,872.3)
Observations	564	480	564	564
R ²	0.1	0.7	0.8	0.8
Adjusted R ²	0.1	0.7	0.8	0.8
Residual Std. Error	141,713.9 (df = 557)	80,211.6 (df = 472)	67,854.1 (df = 474)	67,009.8 (df = 471)
F Statistic	13.7*** (df = 6; 557)	172.5*** (df = 7; 472)	26.0*** (df = 89; 474)	26.0*** (df = 92; 471)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 2 illustrates the economic effects of outsourcing different types of administrative services; (1) Routine tasks such as accounting, audits and judicial services, (2) IT-support, (3) IT/software-development and (4) organizational development. Similar to table 1 agency size is statistically significant in the pooled OLS, fixed effects and time fixed effects models, suggesting there is a relationship between agency size and running costs. However, in contrast to the theoretical assumption that efficiency gains from outsourcing are likely in service areas characterized by low asset specificity and/or ease of measurability, none of the models presented identify a systematic relationship between cost-savings and outsourcing of different types of administrative service. While it is somewhat expected that outsourcing of developmental tasks such as IT/software development and organizational development does not generate cost savings, due to its transaction specific nature, it is not obvious why routine tasks such as IT-support and accounting, audits and judicial services does not generate cost savings. As such, potential explanations for this will be examined further. Overall, however, table 2 suggests there is not found any support for the assumption that outsourcing of administrative services are superior to in-house production in terms of costs.

In regards to model fit, the explanatory power of the two models (i.e., adjusted R²) remains at similar levels in table 2, suggesting the models distinguishing between different types of outsourcing does not increase the models' ability to explain variations in agencies' running costs. While the size of the coefficients varies somewhat, the two fixed effects models provide the most robust findings and have the greatest explanatory power. The fixed effects model, however, provides the estimates with the least statistical uncertainty. Consequently, the fixed effects model will be applied when illustrating heterogeneities between agencies.

Table 2: The economic effect of outsourcing administrative services

	Dependent variable: Running costs			
	Pooled OLS (1)	Dynamic (2)	Fixed effects (3)	Time fixed effects (4)
Accounting, auditing and law	-4,538.2 (8,681.0)	501.0 (2,800.7)	-8,777.1 (6,474.1)	-9,539.4 (6,447.3)
IT-support	-71.9 (372.0)	-211.8 (181.1)	-423.4 (494.9)	-354.5 (466.5)
IT development	274.1 (554.8)	160.7 (261.7)	-715.3 (1,009.3)	-686.8 (1,017.6)
Organizational development	1,840.9 (3,349.4)	698.3 (1,808.1)	1,027.8 (1,676.4)	163.8 (1,683.3)
Size	-17.0*** (6.6)	-2.3 (1.6)	-110.3* (62.1)	-113.0* (62.6)
Size dummy	-37,053.8 (28,309.7)	-6,459.0 (9,049.0)	-59,864.9 (38,240.3)	-61,896.6 (37,700.7)
Parliamentary seats	-507,271.2 (377,376.2)	-348,968.0 (260,826.5)	-241,030.6 (259,577.1)	
GDP per capita	0.2 (0.2)	0.7*** (0.2)	0.2 (0.1)	
Unemployment rate	-12,872.5 (8,326.0)	8,515.6 (8,696.1)	-17,212.2* (9,576.1)	
Lag		0.8*** (0.1)		
Constant	1,032,780.0*** (200,417.1)	-179,589.9 (147,350.1)	1,096,238.0*** (194,801.0)	1,041,519.0*** (46,499.8)
Observations	564	480	564	564
R ²	0.1	0.7	0.8	0.8
Adjusted R ²	0.1	0.7	0.8	0.8
Residual Std. Error	141,959.5 (df = 554)	80,360.4 (df = 469)	67,657.4 (df = 471)	66,763.8 (df = 468)
F Statistic	9.2*** (df = 9; 554)	120.4*** (df = 10; 469)	25.4*** (df = 92; 471)	25.4*** (df = 95; 468)

Note:

*p<0.1; **p<0.05; ***p<0.01

5.2.2 Heterogeneities

The findings presented so far have primarily focused on the average effect of outsourcing different types of administrative services and public spendings. Generally, the linear models assume outsourcing have the same effect on agencies' running costs, regardless of the values of the other variables in the model. This is the assumption of the "additive" effect

(Hermansen, 2019, p. 150-151). It is important to note, however, that the main results may conceal important heterogeneous effects across agencies. Arguably, the economic effect of outsourcing administrative services may vary depending on the size of the agency, due to differences in economies of scale (Thau & Houlberg, 2020, p. 31). Consequently, there is reason to believe that smaller agencies are likely to benefit more from outsourcing its services than larger agencies, due to lower capacity. As such, given that there is an assumption that economic effects of outsourcing vary depending on the size of the agency, an interaction effect between degree of outsourcing and agency size will be added to account for this, in which agency size acts as a moderator variable.

Overall, there were no evidence of an interaction effect between agency size and outsourcing of services such as IT/software development, IT-support and organizational development. However, there is evidence of an interaction effect between agency size and outsourcing of accounting, auditing and law. In essence, the interaction effect suggests agencies that are smaller than the median (i.e., 220 full-time employees or less) experienced cost-savings when outsourcing accounting, audits and judicial services to private actors. This includes agencies such as the Ombudsperson for Children, the Directorate of Elections, the Cultural Schoolbag, the Metrology Service and the Accident Investigation Board. In order to provide a clearer picture of this finding, figure 11 illustrates the predicted effect of outsourcing accounting, auditing and law for agencies with less than 220 employees. The shaded area around the prediction line represents 95 per cent confidence intervals. The narrower the confidence interval, the more certain is the estimate (Ward & Ahlquist, 2018, p. 62). Figure 11 suggests that outsourcing of accounting, audits and judicial services in small agencies could generate cost savings when other covariates are held at its central tendencies. However, while the size of the confidence bands is relatively precise for small agencies with low to medium levels of outsourcing (i.e., 0-5 per cent), the further one moves towards the high levels of outsourcing, the wider the interval becomes, suggesting the estimated relationship becomes more uncertain. However, it is important to note, that small agencies, on average, only outsource 0.3 per cent of its accounting, audits and judicial services. As such, given the low levels of outsourcing, little is known about the *de facto* cost saving potential of outsourcing such services.

Figure 12 illustrates the predicted effect of outsourcing accounting, auditing and law for agencies that are larger than the median. Large agencies include directorates such as Statistics Norway, the Digitalization Agency, the Norwegian Customs Agency and the Norwegian

Labour Inspection Authority, and ministries like the Ministry of Defence, the Ministry of Education and the Ministry of Foreign Affairs to mention a few. If examining figure 12, however, it is evident that the prediction line remains relatively constant, which, in line with the interaction effect, indicates a null finding. What’s particularly interesting, however, is that the largest agencies generally have lower running costs to begin with. Essentially, this indicate that the agencies experiencing cost-savings related to outsourcing accounting, audits and judicial services are small agencies with comparatively large running costs per employee. Overall, this provides some support for Thau and Houlberg’s (2020) assumption of economies of scale.

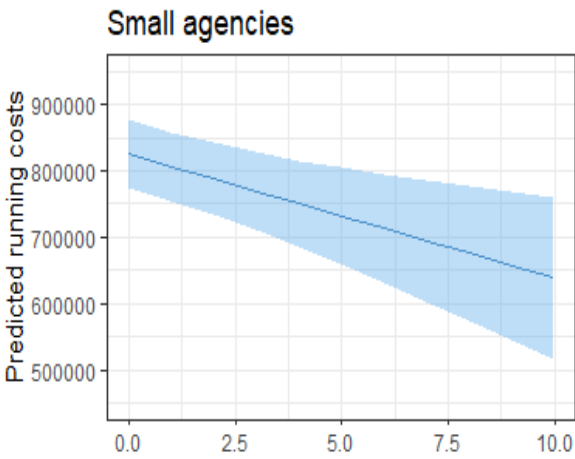


Figure 12: Predicted running costs for small agencies.

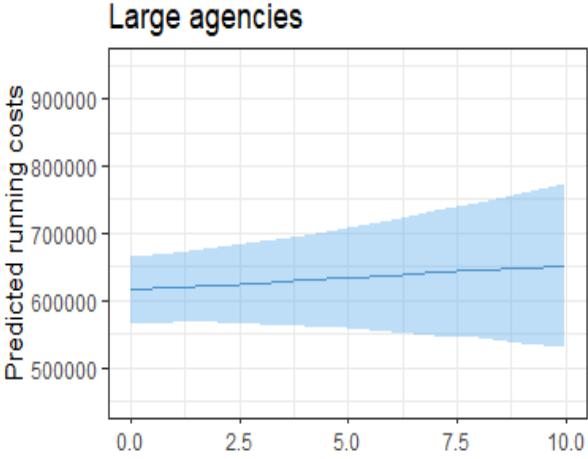


Figure 13: Predicted running costs for large agencies.

5.3 Statistical validity

In order to evaluate the robustness of these findings, a number of robustness tests will be applied. First of all, the model fit will be evaluated for the main effects, before the robustness of the statistical models are evaluated by checking for non-linearity and time delayed effects, and after removing potential influential outliers. Overall, the main results are found to be rather robust as none of the tests reviewed, led to significant changes in the results or the conclusions drawn.

5.3.1 Model fit

In order to get a first impression of the model fit, the distribution of the predicted values will be compared to the distribution of the dependent variable to explore how well they correspond (Hermansen, 2018, p. 169). The histogram to the left illustrates the distribution of observed

running costs, whereas the histogram to the right displays the distribution of the predicted running costs. For comparative purposes, the graphs are created using the same number of columns and dimensions on the x- and y-axis. The plots demonstrate that both variables have the same shape, and the range of variation in the predicted running costs are relatively similar to the actual range. The observed running costs covers the entire range of costs from 450,000 kroner to 1.9 million kroner (i.e., a variation of 1.45 million), the predicted costs vary from approximately 530,000 kroner to 1.32 million kroner (i.e., a variation of 790,000). In other words, the predicted model is not able to account for the full range of variation in running costs and particularly the higher running costs are somewhat underpredicted. This is also confirmed using a correlation between the predicted and observed running costs ($r^2 = 0.8$) which suggests the predicted model only explains 80 per cent of the variation in the observed running costs.

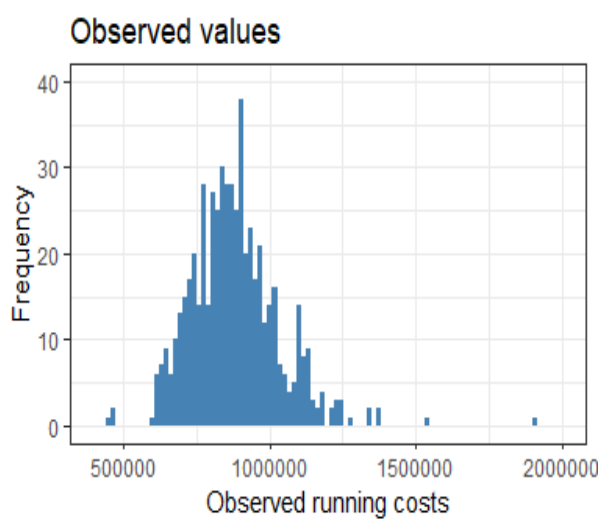


Figure 15: Observed running costs per employee.

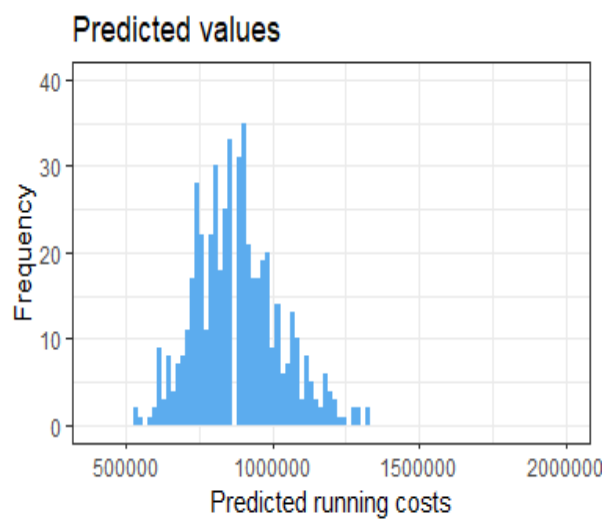


Figure 16: Predicted running costs per employee.

In addition, the residuals distribution across the dependent variable will be evaluated. In short, residuals represent the difference between what we predict and what we observe. In order for the standard errors to be calculated correctly, the residuals should be homoscedastic (i.e., be evenly distributed across the predicted values of the dependent variable). In other words, the model should predict equally well when the predicted running costs are high, as when the predicted running costs are low (Hermansen, 2019, p. 177). The homoscedasticity of the residuals will be illustrated through a scatterplot between the predicted running costs and the residuals. The horizontal line at $y = 0$ illustrates the predicted running costs, whereas the point estimates represent the residuals. Overall, the residuals plot suggests the fixed effects model predicts running costs relatively precisely for the majority of agencies, however, running costs

are not predicted equally well for all agencies, particularly not agencies with very large running costs per employee (e.g., the Directorate of Elections, the Norwegian Railway Directorate, the National Coastal Administration). The number of agencies with very high running costs are somewhat underrepresented, which reduces the model’s ability to predict the highest running costs. Overall, however, figure 15 indicates relatively equal distributions of the covariates, suggesting empirical results should not be dependent on functional form.

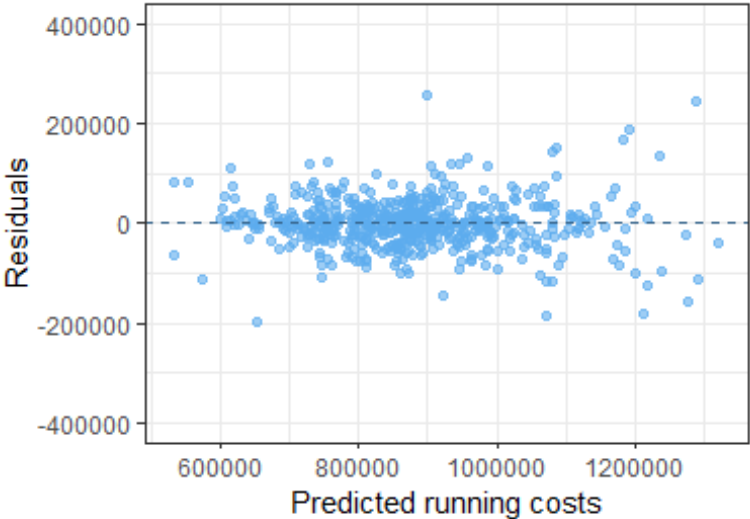


Figure 17: Distribution of residuals around the predicted values.

5.3.2 Time delayed effect

In order to evaluate the robustness of the effects, a time delayed model is added to evaluate how it affects the results. Generally, by lagging the independent variables by one year, it is possible to evaluate whether the economic effects of outsourcing administrative tasks take time to unfold. For instance, it is not unlikely that outsourcing of organizational or IT/software development projects in one year, may affect agencies running costs the following year. Reductions in the number of full-time employees, organizational or task changes could potentially be a lengthy process, suggesting the cost saving potential of outsourcing administrative services may only show up in subsequent years. As such, the statistical models will be re-run with time-shifted independent variables.

Overall, the results in the time delayed model point to the same pattern as the main analysis, suggesting the results are relatively robust. Ideally, the time delayed model would be lagged by two or more years, as organizational changes may take time to unfold, however, due to the limited number of observations, the sample size would become too small. Overall, this

suggest there is no signs of a delay in the economic effects of outsourcing, and the findings are not particularly model dependent.

5.3.3 Curvilinearity

In addition, the potential for curvilinearity in the outsourcing effect will be examined. According to Thau and Houlberg's (2020, p. 36) research article on outsourcing administrative services in Danish municipalities, one must above a certain degree of outsourcing, before a cost-saving effect appears. As such, it will be examined whether a change in outsourcing always generates the same effect on public spendings, or whether the cost saving potential of outsourcing also depends on the degree to which administrative services are outsourced. In order to examine non-linearity, a squared term is added to the different types of outsourcing (i.e., accounting, auditing and law, IT-support, IT/software development and organizational development), in order to investigate the effect at different degrees of outsourcing.

Overall, however, there is not identified any curvilinearity in the relationship between outsourcing of different types of administrative services and public spendings either. As such, this suggests there is no support for the assumption that one must reach a certain degree of outsourcing, before a cost-saving effect appears. However, it is important to note that the level of outsourcing in Norwegian central administrative agencies, are, on average, lower than in the Danish municipalities studied in Thau and Houlberg's (2020) article. In the Danish study, the cost-saving effect primarily applied to municipalities outsourcing above 19 per cent of its administrative services. Given that the outsourcing average in Norwegian central administrative agencies ranges between 13-15 per cent in the time period 2014-2020, this could potentially explain the effect or lack of effect.

5.3.4 Sensitivity towards outliers

In order to identify influential outliers, a Bonferroni t-test has been conducted. The Bonferroni t-test uses the observation with the most extreme residuals to check whether it is significantly different from the rest of the sample. The Bonferroni t-test suggests there are five influential outliers that may generate skewed results; The Norwegian Communications Authority in 2019 and 2020, the Norwegian Media Authority in 2020, the Ministry of Climate and Environment in 2016 and the Ministry of Foreign Affairs in 2014. Removing anyone or all of these outliers,

does not impact the estimates provided or explanatory power of the model, suggesting the results are robust to the influence of outliers.

Overall, the findings suggest there is not found any sign of a systematic relationship between agencies' running costs and outsourcing of services such as IT-support, IT/software development and organizational development. While a statistical relationship between public spendings and outsourcing of accounting, audits and judicial services is identified, the effect only applies to small state agencies with less than 220 full-time employees. Consequently, in contrast to the hypotheses presented in section 2.2.3, there is not identified a relationship between public spendings and outsourcing of administrative services. Instead, the findings seem to suggest that agency size matters more than outsourcing type.

6. Discussion

6.1 The extent to which administrative services are outsourced

Overall, in regards to the degree to which administrative services are outsourced, the findings suggest expenditures related to private sector consultants makes up about 13-15 per cent of central administrative agencies running costs. A significant part of the services outsourced are related to modernization processes such as software development and/or follow up of ongoing IT-operations. More “traditional” types of back-office functions like accounting, audits, judicial services and organizational development, however, are rarely outsourced. While there has been an increase in outsourcing of such services since 2018, the average levels of outsourcing remain at around 1 per cent of central administrative agencies running costs. This is not particularly surprising given that the majority of employees recruited for central administrative agencies are graduates at Master’s or PhD level who have specialised in economics, law or political science (Mangset, 2020, p. 575), suggesting the in-house capacity is high in terms of solving such tasks in-house. In contrast, the primary justification for the use of IT-services, however, are capacity concerns (Riksrevisjonen, 2017, p. 70). Essentially, this could potentially indicate that the degree to which central administrative agencies outsource its services, is not primarily motivated by cost-savings, but also in-house competence concerns.

There are, however, notable differences between agencies in the degree to which they outsource their services. While some central administrative agencies barely outsourcing any of its services (e.g., the Office of the Prime Minister, the Norwegian Directorate of Correctional Services, the Norwegian Polar Institute, the Ministry of Agriculture and Food etc.), some agencies spend more on outsourcing than on in-house service provision, in which particularly many directorates outsource up to 50 per cent of its services (e.g., the Directorate of Digitalization, the Directorate of eHealth, the Directorate of Education etc.). As such, given that many central administrative agencies outsource a large proportion of its services, a cost saving effect should be evident if outsourcing is, in fact, more cost-efficient than in-house service provision.

6.2 Lower running costs?

In regards to whether the main justification for outsourcing – reductions in government spending – can be confirmed empirically, the findings suggest that outsourcing of

developmental tasks such as IT/software development and organizational development does not generate cost savings. According to transaction cost theory, this is most likely explained by the fact that developmental tasks are characterised by high asset specificity and low measurability. Compared to routine tasks, outsourcing of developmental tasks are less tangible, and thus difficult for the seller to communicate and for the buyer to test before buying. Essentially, the complexity of large developmental projects, makes it disproportionately expensive to gain complete oversight and control, which is considered a primary reason as to why developmental tasks ends up costing more than initially intended (Nærings- og fiskeridepartementet, 2019, p. 11; Nevo et al., 2007, p. 6; Roodhooft & Van den Abbeele, 2006, p. 492; Williamson, 1979, p. 242).

In regards to routine tasks, the findings suggest that outsourcing of IT-support does not generate cost savings, whereas accounting, audits and judicial services only generates cost savings for agencies with less than 220 employees. What's particularly interesting, however, is that the predicted running costs for larger government agencies were lower to begin with (see figure 12). In fact, agency size was statistically significant and negative in all models, suggesting larger agencies are associated with lower running costs relative to the number of employees. If not taking agency size into account, however, the findings suggest neither outsourcing of routine services such as IT-support nor accounting, audits and judicial services generates cost savings. Consequently, in contrast to the hypotheses presented in section 3.3, there is not identified a relationship between cost savings and outsourcing of administrative services. Instead, the findings seem to suggest that agency size matters more than outsourcing type in terms of cost savings.

The lack of cost-savings is somewhat surprising given that Thau and Houlberg's (2020) study of Danish municipalities derived at opposite conclusions and suggested outsourcing of administrative services could generate notable cost savings. However, size was also identified as an important confounding variable, in which cost savings related to outsourcing administrative services were largely driven by the smallest municipalities. Essentially, the cost-savings experienced in small municipalities could most likely be explained by differences in in-house capacity. For instance, it is not uncommon that small municipalities experience challenges in terms of recruiting a sufficiently competent workforce, as the professional environment in many cases is small at the local level (Askim et al., 2017, p. 11; Klausen et al., 2014, p. 114).

From a conventional economies of scale theory, the impact of agency size could be explained by the fact that smaller municipalities perform administrative tasks such as IT-support or accounting, audits and judicial services less frequently, which could have cost implications. When activities only occur infrequently, the potential for internal knowledge building is limited and it may therefore be more cost-efficient to rely on outside expertise, whose primary focus is to deliver the service in question. Larger organizations, however, allow for more fine-grained division of labour, yielding the associated benefits of specialization and remove any functional or jurisdictional duplication (Boon et al., 2019, p. 231; Blom-Hansen et al., 2016, p. 813-814). Given that central administrative agencies generally are larger than the typical municipality, and often consist of highly educated people with specialized expertise about the area of interest, this could potentially explain why outsourcing generates cost savings at the local level and not at the state level.

Nevertheless, while agency size could be considered an important confounding variable, other potential explanations could be related to methodological differences and/or weaknesses. For instance, given that the level of outsourcing has remained relatively stable the past 7 years, it is not unlikely that measuring changes in outsourcing over a longer period of time (e.g., a 15-year period), could generate other results. Moreover, the lack of findings could also be related to differences in the operationalisation of costs. Arguably, many former studies only compare the price of the service before and after it has been outsourced, whereas the transaction costs related to managing the contractual relationship is not included (Petersen et al., 2017, p. 147; Aspøy & Bakke, 2018, p. 4). This is problematic as only comparing the price of the service itself before and after it has been outsourced to private actors might overestimate the cost-saving potential related to outsourcing. While the size of the transaction costs has not been measured directly in this study either due to a lack of available data, it is argued that the operationalisation of agencies running costs implicitly also takes transaction costs into account.

Last but not least, another thing worth mentioning is that outsourcing of administrative services differs somewhat from traditional types of outsourcing. For instance, while outsourcing of technical services such as road maintenance and garbage collection often are transferred over to a private firm, administrative services are outsourced to private sector consultants, in which the service is partly produced and consumed simultaneously, and the purchaser is often directly involved in the production process (Roodhooft & Van den Abbeele, 2006, p. 492). As such, it in many ways resembles hiring ordinary public sector

employees, except for the fact that private sector consultants are temporary. Consequently, the blurred relationship between public and private employees might make follow-up of the contracts more demanding, in which complete oversight over the consultants' activities will require a great deal of resources.

6.3 What are the implications of these findings?

By and large, while it is possible that certain central administrative agencies deviate from the general trend depicted here, the overall picture suggests the 'mainstream' perception of outsourcing policies as a means to cut costs is not supported by these findings. This is quite interesting as these results challenge the strong beliefs and prior theoretical assumptions about the virtue of markets and the cost-saving effect of outsourcing (Hood & Dixon, 2015, p. 6). On the one hand, it could be considered highly problematic that central administrative agencies spend billions of kroners annually on private sector consultants, under the assumption that it generates cost savings, while the reality is that it does not (e.g., Nærings- og fiskeridepartementet, 2019, p. 20-23). On the other hand, while outsourcing is not found to generate cost-savings in this particular context, that does not necessarily mean that outsourcing cannot generate cost savings in other countries, sectors and administrative levels. For instance, if seeing these findings in light of existing empirical research, there is little doubt that outsourcing may generate cost savings in technical industries such as garbage collection and road maintenance.

Overall, it is hard to say unequivocally what the economic effects of outsourcing are. However, given the mixed results, further care should be exercised when justifying outsourcing policies on the basis of cost savings. While transaction cost theory had limited explanatory power in terms of which types of administrative services generates cost savings in Norwegian central administrative agencies, the theory cannot be completely disregarded on the basis of one research article. Existing empirical research clearly finds support for the assumption that differences in asset specificity and measurability generates smaller and more diverse cost effects in social than in technical services (Petersen et al., 2017, p. 148). One important limitation with transaction cost theory, however, is that it largely neglects the potential impact agency size and in-house capacity might have on the cost-saving potential of outsourcing. Consequently, the connection between agency size and the cost-saving potential of outsourcing needs to be examined further, as this could provide valuable insights into the

preconditions necessary for outsourcing to generate cost-savings, and indeed, when public agencies should rely on internal capabilities.

7. Conclusion

Overall, the aim of this master thesis has been to examine whether the main justification for public sector outsourcing – reductions in government spending – could be confirmed empirically. Existing empirical research is contested in terms of the cost-saving potential of outsourcing, and the bottom-line question of when and whether outsourcing is cheaper than in-house production has not been clearly answered. As such, through a careful and balanced analysis of the national accounts, this master thesis has attempted to fill the gap and seek greater insight into the cost saving potential of outsourcing different types of administrative services in Norwegian central administrative agencies.

In conclusion, the findings suggest there is no significant cost saving potential related to outsourcing services in Norwegian central administrative agencies. Consistent with the assumptions derived from transaction cost theory, outsourcing of developmental tasks such as IT/software development and organizational development did not generate cost-savings. In contrast, while it was assumed that outsourcing of routine tasks such as IT-support and accounting, audits and judicial services could generate cost savings, this was not supported by the main findings. There was, however, identified an interaction effect between agency size and outsourcing of accounting, audits and judicial services, in which agencies with less than 220 employees experienced cost savings. However, given the low levels of outsourcing, the *de facto* cost saving potential of outsourcing such services were minimal.

If these findings are seen in light of existing empirical literature, however, there is little doubt that outsourcing certain types of public services may generate cost-savings at the local level. Outsourcing of administrative services, for instance, have been found to generate cost-savings in small municipalities at the local level. Consequently, while it is difficult to say for certain why outsourcing of administrative services at the state level did not generate similar results, agency size has been identified as an important confounding variable. However, more empirical research is needed into the impact size has on the economic effects of public sector outsourcing, before a definite conclusion can be made.

Nevertheless, as with all types of research, this master thesis has its limitations. First of all, in order to gain greater insights into how outsourcing has impacted public expenditures over time, a longer time series should, ideally, be applied. However, due to the frequent organizational changes and variations in how public expenditures are reported in the national accounts, putting together consistent data-series and comparing like with like over time

proves difficult (Hood & Dixon, 2015, p. 179). Moreover, a significant area of concern often mentioned when outsourcing public services is the impact outsourcing has on administrative quality, wages, terms and conditions of employment and unemployment. These are clearly important aspects that should be taken into account when public agencies decide whether a service should be outsourced or not. However, providing valid measures of administrative quality and terms and conditions of employment would most likely be time consuming. It was therefore considered beyond the scope of this master thesis. As a result, an important limitation with this master thesis is that it only suggests whether outsourcing has generated *cost-savings*, and not whether central administrative agencies has become more *cost-efficient*.

For further research, it is recommended to do a closer examination of the impact agency size might have on the cost-saving potential of outsourcing. Arguably, this could provide valuable information about when and which types of agencies could benefit economically from outsourcing its services. Furthermore, there appears to be limited empirical insight into the transaction costs related to outsourcing public services. Without a good understanding of how much time and resources are spent on managing and following-up the contractual relationship, it is not really possible to say for certain that outsourcing is more cost-efficient, than in-house service provision.

In conclusion, there is not found any support for the theoretical assumption that outsourcing generates cost-savings, or that certain services are more cost-effective to outsource than others. While these results challenge prior theoretical assumptions about the virtue of markets and the cost-saving effect of outsourcing, more research is needed before a definite conclusion about the cost-saving potential of outsourcing administrative services can be drawn.

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Appendix

Sample overview:

Table A.1 provides an overview of the central administrative agencies included in the sample. This sample is created on the basis of NSDs public administration database (*Forvaltningsdatabasen*) as of 1st of January 2020. For more information about the directorates and ministries included see:

<https://www.nsd.no/polsys/data/forvaltning/forvaltningsenhetsliste?y=2020&m=1&d=1&t=20>

Table A.1: Overview of the central administrative agencies included in the sample:

Direktorat m.m.	Departement
Arbeids- og velferdsdirektoratet	Arbeids- og sosialdepartementet
Direktoratet for arbeidstilsynet	Arbeids- og sosialdepartementet
Pensjonstrygden for sjømenn	Arbeids- og sosialdepartementet
Petroleumstilsynet	Arbeids- og sosialdepartementet
Barne-, ungdoms- og familiedirektoratet	Barne- og familiedepartementet
Barneombudet	Barne- og familiedepartementet
Forbrukertilsynet	Barne- og familiedepartementet
Direktoratet for forvaltning og økonomistyring	Finansdepartementet
Finanstilsynet	Finansdepartementet
Skattedirektoratet	Finansdepartementet
Statistisk sentralbyrå	Finansdepartementet
Tolldirektoratet	Finansdepartementet
Direktoratet for e-helse	Helse- og omsorgsdepartementet
Direktoratet for strålevern og atomsikkerhet	Helse- og omsorgsdepartementet
Folkehelseinstituttet	Helse- og omsorgsdepartementet
Helsedirektoratet sentralt	Helse- og omsorgsdepartementet
Norsk pasientskadeerstatning	Helse- og omsorgsdepartementet
Statens helsetilsyn	Helse- og omsorgsdepartementet

Direktorat m.m.	Departement
Statens legemiddelverk	Helse- og omsorgsdepartementet
Direktoratet for samfunnssikkerhet og beredskap	Justis- og beredskapsdepartementet
Kriminalomsorgsdirektoratet	Justis- og beredskapsdepartementet
Nasjonal sikkerhetsmyndighet	Justis- og beredskapsdepartementet
Politidirektoratet	Justis- og beredskapsdepartementet
Sekretariatet for konfliktrådene	Justis- og beredskapsdepartementet
Sivil klareringsmyndighet	Justis- og beredskapsdepartementet
Utlendingsdirektoratet	Justis- og beredskapsdepartementet
Miljødirektoratet	Klima- og miljødepartementet
Norsk Polarinstitut	Klima- og miljødepartementet
Riksantikvaren - direktoratet for kulturminneforvaltning	Klima- og miljødepartementet
Datatilsynet	Kommunal- og moderniseringsdepartementet
Departementenes sikkerhets- og serviceorganisasjon	Kommunal- og moderniseringsdepartementet
Digitaliseringsdirektoratet	Kommunal- og moderniseringsdepartementet
Direktoratet for byggkvalitet	Kommunal- og moderniseringsdepartementet
Husbanken - hovedkontoret	Kommunal- og moderniseringsdepartementet
Nasjonal kommunikasjonsmyndighet	Kommunal- og moderniseringsdepartementet
Statens kartverk	Kommunal- og moderniseringsdepartementet
Valgdirektoratet	Kommunal- og moderniseringsdepartementet
Kulturtanken - Den kulturelle skolesekken Norge	Kulturdepartementet
Kunst i offentlige rom	Kulturdepartementet
Lotteri- og stiftelsestilsynet	Kulturdepartementet
Medietilsynet	Kulturdepartementet
Norsk filminstitut	Kulturdepartementet
Norsk kulturråd	Kulturdepartementet

Direktorat m.m.	Departement
Riksarkivet	Kulturdepartementet
Integrerings- og mangfoldsdirektoratet	Kunnskapsdepartementet
Kompetanse Norge, direktoratet for kompetansepolitikk	Kunnskapsdepartementet
Nasjonalt organ for kvalitet i utdanningen	Kunnskapsdepartementet
Utdanningsdirektoratet – direktoratet for barnehage, grunnsopplæring og IKT	Kunnskapsdepartementet
Landbruksdirektoratet	Landbruks- og matdepartementet
Mattilsynet - hovedkontoret	Landbruks- og matdepartementet
Det norske justervesen	Nærings- og fiskeridepartementet
Direktoratet for mineralforvaltning med Bergmesteren for Svalbard.	Nærings- og fiskeridepartementet
Fiskeridirektoratet	Nærings- og fiskeridepartementet
Konkurransetilsynet	Nærings- og fiskeridepartementet
Norsk akkreditering	Nærings- og fiskeridepartementet
Norsk nukleær dekommisjonering - statlig etat for avvikling av nasjonale atomanlegg og håndtering av atomavfall	Nærings- og fiskeridepartementet
Patentstyret (Styret for det industrielle rettsvern)	Nærings- og fiskeridepartementet
Registerenheten i Brønnøysund	Nærings- og fiskeridepartementet
Sjøfartsdirektoratet	Nærings- og fiskeridepartementet
Norges vassdrags- og energidirektorat	Olje- og energidepartementet
Oljedirektoratet	Olje- og energidepartementet
Jernbanedirektoratet	Samferdselsdepartementet
Kystverket hovedkontoret	Samferdselsdepartementet
Luftfartstilsynet	Samferdselsdepartementet
Statens havarikommisjon for transport	Samferdselsdepartementet
Statens jernbanetilsyn	Samferdselsdepartementet

Direktorat m.m.	Departement
Vegdirektoratet	Samferdselsdepartementet
Vegtilsynet	Samferdselsdepartementet
Direktoratet for utviklingssamarbeid	Utenriksdepartementet