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THE ROLE OF ACCOUNTING IN GOVERNING PUBLIC ORGANIZATIONS

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THOMAS HOLDE SKINNERUP

THE ROLE OF ACCOUNTING IN GOVERNING PUBLIC ORGANIZATIONS

The Case of the Danish University Sector



The Role of Accounting in Governing Public Organizations:

The Case of the Danish University Sector

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Writing a PhD often feels like a lonely experience but as Bruno Latour, Michel Callon and John Law would emphasize nothing is accomplished by oneself - it is an effect of both human and non-human actors. However, my laptop and coffee struggle to comprehend these words, so instead I dedicate them to all the people who have in one way, or another been part of my PhD.

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Thomas Holde Skinnerup

ABSTRACT

The purpose of this dissertation is to analyse how accounting is used in governing public organizations. The dissertation explores the design, implementation, and use of accounting through three empirical case studies from the Danish university sector. Although the use of accounting in the governance of public organisations is well-researched, the current literature traditionally focuses on how accounting is used in the governing *of* (an inter-organizational focus) or *at* (an intra-organizational focus) public organizations; however, in doing so, we overlook the dynamics and effects that come from the interaction between different accounting technologies, their effects on public organizations, and the practice of governing them. Additionally, the literature has predominately paid attention to broader paradigms or ideas, such as New Public Management or corporatization, at the expense of detailed studies on how specific concepts are used in governing public organizations. This dissertation addresses these two concerns by investigating the roles of accounting in governing public organizations by looking across organizational boundaries and following accounting as it is designed, implemented, and used. The individual papers in the dissertation have their own distinct foci that contribute to the broader critical accounting literature and to the public sector accounting research specifically.

Paper 1 examines the relationship between economics and accounting by showing the conflicts that arise from the process of operationalizing public sector productivity through accounting. This is achieved via a longitudinal case study of the design and implementation of standardized bookkeeping and cost allocation regulations for Danish universities called the common chart of accounts. The purpose of this standardization is to calculate the units of all university programs in Denmark to enable comparison of the productivity between institutions. The paper traces the ongoing trials of multiple working groups about how to design and use accounting, with one group wanting to perform accounting according to the economic concept of public sector productivity in opposition to the universities' wish to maintain their current accounting practice. Drawing on the concepts of *performative struggles* and *trials of strengths* from actor-network theory we contribute to the performativity literature in accounting by investigating the role of accounting in performing economics. Furthermore, we illustrate how the relationship between accounting and economics can become conflictful as economics attempts to shape accounting after its image.

Paper 2 more closely engages with the public sector accounting literature by showing how public organizations use their budget systems to implement performance funding reforms. Empirically the paper traces the development and implementation of a new university performance funding system that rewards quality at a case university. Using the notion of *translation* and *counter-translation* from actor-network theory, the paper shows the active role of the organizational budget in implementing performance funding systems. While the top management of the university initially rejects the new performance funding systems

through the university's budget model, the case shows how the ministry's performance funding model is later on reintroduced into the university by one of the faculties. The paper highlights the agency of the budget in modifying and maintaining the performance funding system. It contributes to the literature on performance funding by revealing the role of the organizational budget in implementing performance funding systems. It also finds that multiple formal budget systems can exist simultaneously within the organization, which demonstrates a rare case of multiple formal accounting systems.

Lastly, paper 3 explores how accounting can create blurred, nebulous, and distorted forms of visibility, contributing to the literature on the limits of accounting visibility. Based on the ontological and epistemological perspective of actor-network theory, we developed the concept of *accounting opacities* to describe cases of blurred and distorted visibility that are hard to comprehend. We developed the concept by relating it to the accounting research on: invisibility, non-transparency and incompleteness, the broader social science research, and empirically through cases of how accounting is used in universities. The paper conceptualizes how accounting opacities are produced through methodological opacity in the creation of accounting numbers, competing forms of accounting visibility, and visibility management. We furthermore show the importance of actors' positions in the network to understand their ability to influence the production of accounting opacities, and how they are affected by it. We find that accounting opacities have both enabling and restraining effects, stressing their involvement in constituting and reproducing power relations.

Relating to the overarching focus of the PhD, the dissertation finds that accounting is used to govern and resist, and contributes with new insights into the reciprocal relationship in the roles of accounting. Accounting is mobilized and used in governing public organizations, redirecting their attention and shaping their behaviour toward concepts such as productivity and quality. However, public organizations are not passive recipients of new reforms, and the thesis finds that they actively use their organizational accounting systems to influence new accounting technologies as they are designed and developed, or when implementing them. The thesis shows that in practice organizational boundaries are permeated and crossed as accounting is used to govern, which demonstrates how former research on either the use of accounting in the governing of or at public organizations underestimates the dynamics processes and effects of accounting. At the same time, the explicit focus on the concepts of productivity and quality provides new insights into the challenges and struggles around performing and translating them into the calculative practices of governing. The concepts are modified, resisted, and adopted in the ongoing processes of changing accounting, which reveals the unstable and fragile nature of accounting in governing public organizations.

DANSK RESUMÉ

Formålet med denne afhandling er at analysere, hvordan økonomistyring anvendes i styringen af offentlige organisationer. Afhandlingen udforsker designet, implementeringen og brugen af økonomistyring gennem tre empiriske casestudier fra den danske universitetssektor. Selvom brugen af økonomistyring i styringen af offentlige organisationer har været undersøgt grundigt, fokuserer den nuværende litteratur traditionelt på, hvordan økonomistyring anvendes i styringen *af* (et interorganisatorisk fokus) eller *i* (et intraorganisatorisk fokus) offentlige organisationer. Denne tilgang gør, at man overser de dynamikker og effekter, der opstår fra interaktionen mellem forskellige regnskabsteknologier og deres indflydelse på offentlige organisationer og praksis med at styre dem. Samtidig har den tidligere litteratur primært fokuseret på bredere paradigmer eller ideer, såsom New Public Management eller virksomhedsliggørelse, på bekostning af detaljerede studier af, hvordan specifikke begreber anvendes i styringen af offentlige organisationer. Denne afhandling adresserer disse to bekymringer ved at undersøge økonomistyringens roller i styringen af offentlige organisationer, på tværs af organisatoriske grænser, og følger økonomistyringsteknologier mens de bliver designet, implementeret og brugt. De individuelle artikler i afhandlingen har hver deres eget særlige fokus og bidrager både til den bredere kritiske regnskabslitteratur og mere specifikt til forskningen inden for økonomistyring i den offentlige sektor.

Den første artikel bidrager til vores forståelse af forholdet mellem økonomi som disciplin og økonomistyring som praksis, ved at vise de konflikter, der opstår i processen med at operationalisere det økonomiske begreb om produktivitet i den offentlige sektor gennem økonomistyring. Artiklen undersøger dette gennem et længerevarende casestudie af designet og implementeringen af en standardiseret regulering af bogføring og omkostningsallokering for de danske universiteter, kaldet den fælles kontoplan. Formålet med standardiseringen er at beregne enhedsomkostningerne for alle universitetsuddannelser i Danmark, hvilket muliggør sammenligning af institutionernes produktivitet. Artiklen følger de løbende kampe mellem forskellige grupper om, hvordan man designer og bruger økonomistyring og regnskabet. Den ene gruppe ønsker at performe regnskabet i overensstemmelse med de økonomiske begreber om produktivitet i den offentlige sektor, mens den anden gruppe ønsker at opretholde deres nuværende regnskabspraksis. Ved at trække på begreberne om *performative struggles* og *trials of strength* fra aktør-netværksteori bidrager vi til litteraturen om performativitet inden for regnskab ved at undersøge regnskabets rolle i at udføre økonomi. Desuden illustrerer vi, hvordan forholdet mellem regnskab og økonomi kan blive konfliktfyldt, når økonomi forsøger at forme regnskab efter sit eget billede.

Den anden artikel dykker dybere ned i litteraturen om offentlig sektor økonomistyring og viser, hvordan offentlige organisationer bruger deres budgetsystemer til at implementere et nyt taxametersystem. Empirisk følger artiklen udviklingen og implementeringen af et nyt

taxametersystem for universitetsuddannelser der belønner kvalitet, på et caseuniversitet. Ved hjælp af begreberne *translation* og *counter-translation* fra aktør-netværksteori viser artiklen den aktive rolle, som organisationens budget spiller i implementeringen af taxametersystemet. Selvom universitetets øverste ledelse oprindeligt afviser de nye incitamenter i taxametersystemet gennem universitetets budgetmodel, viser casen, hvordan ministeriets finansieringsmodel senere bliver genindført på universitetet af én af fakulteterne. Artiklen fremhæver budgettets rolle i at ændre og opretholde taxametersystemet. Den bidrager til litteraturen om performance-finansiering ved at vise, hvordan organisationens budget spiller en afgørende rolle i implementeringen af performance-finansieringssystemer. Desuden konkluderer artiklen, at flere formelle budgetsystemer kan eksistere samtidigt inden for organisationen, hvilket demonstrerer et sjældent tilfælde af flere formelle regnskabssystemer

Til sidst udforsker den tredje artikel hvordan regnskab kan skabe slørede, tågede og forvrængede former for synlighed, hvilket bidrager til litteraturen om regnskabssynlighedens begrænsninger. Baseret på det ontologiske og epistemologiske perspektiv fra aktør-netværksteorien, udviklede vi konceptet *accounting opacities* til at beskrive tilfælde af sløret og forvrænget synlighed, som er svær at forstå. Vi udviklede konceptet ved at relatere det til regnskabsforskning om usynlighed, manglende gennemsigtighed og ufuldstændighed, den bredere samfundsvidenskabelige forskning og gennem empiriske cases af, hvordan regnskab anvendes på universiteter. Artiklen konceptualiserer, hvordan *accounting opacities* produceres gennem metodologisk opacitet i skabelsen af regnskabstal, konkurrerende former for regnskabssynlighed og bevidst synglighedsledelse. Vi viser desuden vigtigheden af aktørernes positioner i netværket for at forstå deres evne til at påvirke produktionen af *accounting opacities* og hvordan de påvirkes af det. Vi finder, at *accounting opacities* både muliggør og begrænser aktørernes handlinger og understreger deres rolle i at konstituere og reproducere magtforhold

I forhold til det overordnede fokus for ph.d.-afhandlingen konkluderes det, at økonomistyring anvendes til både at styre og modstå, og det bidrager med nye indsigter i den gensidige relation mellem regnskabets multiple roller. Økonomistyring mobiliseres og bruges til at styre offentlige organisationer, rette deres opmærksomhed og forme deres adfærd mod begreber som produktivitet og kvalitet. Dog er offentlige organisationer ikke passive modtagere af nye reformer, og afhandlingen viser, at de aktivt bruger deres organisatoriske regnskabssystemer til at påvirke nye regnskabsteknologier, når de designes og udvikles, eller når de implementeres. Afhandlingen viser, at organisatoriske grænser i praksis gennemsyres og overskrides, når regnskab bruges til at styre, hvilket demonstrerer, hvordan tidligere forskning enten om brugen af regnskab i styringen af eller i offentlige organisationer undervurderer regnskabets dynamiske processer og virkninger. Samtidig giver det eksplicite fokus på produktivitets- og kvalitetsbegreberne nye indsigter i udfordringerne og kampene om at udføre og oversætte begreberne til de beregningspraksisser, der anvendes i styringen. Begreberne ændres, modstås og adopteres

i de løbende processer med at ændre regnskab, hvilket afslører regnskabets ustabile og skrøbelige karakter i styringen af offentlige organisationer

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1. Introduction

1.1 The purpose of the dissertation and its research question

The purpose of this dissertation is to investigate the role of accounting (Burchell et al., 1980) in governing public universities, exploring how accounting is designed, implemented, and used and with what effects.

Since the 1980s the public sector underwent massive and continuous change to its form and functions as new modes of organizing, funding, and reporting were introduced to change and modernize public sector organizations and services (Broadbent & Guthrie, 2008; Lapsley & Miller, 2019). The public sector can be characterized as having high-minded goals, such as enhancing the public good, creating welfare, and servicing its citizens' needs (Dooren et al., 2015; Lapsley, 1988) in contrast to private organisations' focus on shareholder value. Public organizations experienced a series of new accounting tools and techniques meant to increase the economy, efficiency, and effectiveness of their activities and outcomes, such as accrual accounting, financial reporting, risk management, performance-based budgeting, accreditation, and performance auditing (Broadbent & Guthrie, 1992, 2008). Accounting change appears to be the most constant feature as new goals and accounting devices are constantly introduced to achieve new outcomes and to fix the perceived failure of former initiatives. As Mouritsen & Bekke (1997, p. 165) put it "the problem of accounting is solved by more accounting", highlighting the shifting roles of accounting and the fragility of accounting.

Accounting scholars have long been interested in how accounting is mobilized in ways to govern and change the public sector covering a broad set of issues and sub-sectors. This includes healthcare (Chua, 1995; Llewellyn & Northcott, 2005), social care (Firtin, 2023; Schrøder, 2019), local government (Bleyen et al., 2017; Budding et al., 2022) and central government (Grossi et al., 2018; Mauro et al., 2021), creative arts (Christiansen & Skærbæk, 1997; Trevisan & Mouritsen, 2023) and the educational sector (Grossi et al., 2019; Modell, 2003; Parker, 2013; Poulsen et al., 2022). However, despite the large body of work on accounting in the public sector, scholars still note how there "is a real gap to fill in the considerations of matters of governance" (Broadbent & Guthrie, 2008, p. 156). More recently Steccolini et al. (2020, p. 9) call for future research into "the multiplicity of roles and uses of accounting and performance management systems in the public" with special attention to exploring the constraints and possibilities created by accounting in its different roles. The gap in our knowledge of governance has two aspects to it where exploration of the multiple roles of accounting and their effects is lacking.

The first aspect concerns what governance is and the relationships between the governed and those who govern. The accounting literature tends to perceive public organizations as

bounded organizations that are governed by an external body. Lapsley et al. (2020, p. 1, my emphasis) state the need to understand “the roles of accounting practices in the context of reforms *to* and *within* public sector organizations”, demonstrating the bounded view. Likewise, Anessi-Pessina et al. (2016), in their review of public budgeting literature, find that the literature views the external governance of public organisations from two perspectives: the inter-organizational (between tiers of government) and intra-organizational (across organizational units) but highlights that there is little research looking at both perspectives in parallel. This conception of governing as something that happens *to* and *within* public sector organizations is valuable, as it hints at the interconnectedness between the accounting technologies and practices imposed on public organizations and the organizational practices. However, the lack of studies looking across both forms of organizational relations is problematic, as it potentially limits our understanding of how accounting functions to govern public organizations. A too-strong focus on only the governing can overemphasize the effect of the accounting technologies and regulations imposed upon public organizations, neglecting the role of the organizational accounting practices in doing so. Likewise, if the attention is solely on the use of accounting internally in public organizations then we overlook the influence and effects of the technologies employed to govern the organization is a pitfall.

Therefore in this thesis, I wish to problematize the underlying assumptions of the organizational boundaries in the conceptualization of accounting *to* and *within* public organizations. Relying on Actor-Network Theory (ANT) I follow the accounting technologies (Czarniawska, 2004, 2007; Latour, 2005) where they are developed and used, letting go of prior assumptions about organizational boundaries and the roles of accounting. Exploring how accounting technologies are mobilized in governing public organizations and how organizations interact with their accounting technologies; understanding the multiple roles accounting is intended to fulfil, and investigating the roles accounting has in practice can help to broaden our knowledge of how public organizations are governed.

The second aspect is the focus on broader concepts, such as New Public Management (NPM) (Hood, 1991, 1995; Lapsley, 2009) or neoliberalism (Lapsley & Miller, 2019), at the expense of investigating how specific concepts are defined, mobilized, and used. Recently research has begun to analyze the use of concepts such as economic failure (Kurunmäki et al., 2019), productivity (Kork et al., 2015), and quality (Malmrose & Skjøtt Linneberg, 2024; Pflueger, 2020; Pflueger & Pedersen, 2022) in a more detailed manner, demonstrating the need to follow the development, use, and effects of specific concepts in governing public organizations and the role of accounting in the process. Although accounting is entrenched in the public sector, new reforms are constantly introduced to further change the nature and content of public services and organizations (Broadbent & Guthrie, 2008; Mouritsen & Bekke, 1997). However, while accounting is used with success to change the public sector, concepts are never simply implemented or diffused but require the active work of translations, associating things, concepts, and interests to make accounting work in public organizations (Arnaboldi & Palermo, 2011; Christensen et al., 2019; Chua, 1995; Firtin &

Kastberg, 2020; Lowe, 1997; Pipan & Czarniawska, 2010). Implementing and using accounting is a matter of trials, struggles, and translations with uncertain outcomes and effects, stressing the mass of agencies that have to align to make accounting work as a tool of governing. Therefore, following how specific concepts are used in governing public organizations requires following the translation of those concepts into specific technologies and networks of actors. As the outcome of accounting change is uncertain, it is of interest to study how power relations between actors influence the design, implementation, and use of accounting, identifying the controversies, collaborations, and compromises made during the process.

Lastly, the dissertation empirically investigates universities, which are a unique type of public sector organization given their status as “knowledge-intensive public organizations” that rely on specialized, expert staff to deliver complex services to the public (Grossi et al., 2019) and engage in national and international competition (Musselin, 2018; Parker, 2011). These characteristics make governing universities a distinct and relevant field of research within the broader public sector literature (Argento et al., 2020; Hyndman et al., 2024). Research into the corporatization of universities shows how they are transformed from collegial, public organizations to business-like entities operating under national and international competition for funds, staff, and students (Christopher, 2012; Gebreiter, 2022; Parker, 2011; Yamamoto, 2004). The majority of research on universities accepts the corporatization as a condition for their studies, tending to the many negative effects the transformation has on universities and staff (Agyemang & Broadbent, 2015; Du & Lapsley, 2019; Gebreiter, 2022; Kallio et al., 2016).

While this has yielded much insight into the negative consequences of using accounting to govern universities it narrows the potential roles and effects of accounting, overemphasizing its controlling role and negative effects. At the same time, the corporatization and governing universities have local variety as reform intentions are translated into constellations of actors in countries and sectors (Kurunma ki et al., 2011). In Denmark, the state has maintained a strong influence in governing universities, which has rendered market mechanisms and competitions less important (Degn & Sørensen, 2015; Ejersbo et al., 2018; Madsen, 2022a). The presence of an active state using central control combined with aspects of corporatization makes the Danish university sector a relevant field to explore how universities are governed by other means than the market-based corporatization seen in Anglo-Saxon countries (Du & Lapsley, 2019; Narayan & Stittle, 2018; Parker, 2011; Parker et al., 2023). This dissertation answers recent calls for more in-depth investigations of the various roles accounting has as a calculative practice in universities and getting closer to the actual usages of accounting (Grossi et al., 2019; Hyndman et al., 2024).

The dissertation aims to follow how accounting, as a calculative practice, is developed, implemented, and used in public organizations. It is my ambition to look across the boundaries of public organizations, by simultaneously analysing the roles of accounting in the governing of public organizations and the governing within the organizations and their

interaction. I was led by questions such as, how are the organizational accounting systems and practices used to engage with reforms attempting to govern public organizations? If reforms of public organizations happen through organizational accounting systems, what is the role of these in developing and implementing the reforms? When reforms happen to public organizations, how do they translate the reforms into their calculative practices? How does the role and effect of accounting change according to who uses them and to what end?

With these questions in mind, and relating to the literature, this dissertation asks the following overall research question:

How is accounting used in governing public organizations, how do different accounting technologies interact in governing, and with what effects?

This thesis approaches the overall research question of the roles of accounting in governing public organizations through a qualitative case study of the Danish university sector. A caveat is required before reading the three articles of the thesis. The individual articles engage limitedly with the literature on public sector accounting. Instead, each of them tells a self-containing story about accounting that contributes to different strands of the literature and may appear disconnected from the overall theme of the thesis, with an exception for article 2. However, my vision with the common introduction, literature review, and concluding discussion is to offer an alternative reading of the three articles, retelling them in light of the overall research question, with all of them providing part of the answer to it. So, while the immediate reading of the articles is about the conflict-filled relationship between accounting and economics (1st article), the multiplicity of budgets in the translation of performance funding into public organizations (2nd article), and the production and effect of accounting opacities (3rd article), the common theme of the articles is the role of accounting in public organizations. I will therefore use the common sections of the PhD to introduce and discuss all articles in relation to the overall research question, while each article can be read as an independent piece of work with distinctive findings and contributions to different literatures than the one discussed here. In this way, the thesis is an attempt to hear the suggestion from Steccolini (2019, p. 262) to move beyond the traditional focus of public sector accounting research on NPM by reframing each article, “casting them in a wider perspective” thereby contributing to the public sector accounting literature.

1.2 Research approach and empirical cases

The thesis draws on Actor-Network Theory (ANT) as a common theoretical perspective used in this thesis and the individual articles to better understand accounting as a calculative practice. I draw inspiration from ANT’s anti-essential approach to reality as performed through the collaborative effort of both human and non-human actors (Callon, 1986, 1998a, 2007; Latour, 1987, 1999b, 2005; Law, 2002, 2008a; Mol, 2002). In ANT actors, agency and

action are all outcomes of the composition and movement of the associations between actors, human and non-human, and the materials they mobilize (Latour, 1999b, 2005; Law, 1992). The understanding of agency and actor makes ANT a relevant way to study the socio-material aspects of accounting as a calculative practice. ANT offers a way of approaching accounting as a practice, involving both human and non-human actors, such as accounting systems, budgets, and bookkeeping guidelines. With its methodological principle of “following the actors” (Latour, 2005), ANT allows me to trace accounting to where it happens across organizational and physical boundaries and focus on the agency and effects of the practices. Apart from providing me with an overall theoretical framework, which is described more in detail in section 4, I also draw on insights from the accounting literature on ANT in my dissertation.

The empirical setting of the dissertation is the Danish public university sector. Like other Western countries, Denmark has reformed its public sector according to many of the principles of NPM since the 1980s (Ejersbo & Greve, 2014; Greve, 2006; Mouritsen & Bekke, 1997). The Danish implementation of NPM involves less use of marketization than other Western countries, instead prioritizing more active political involvement with minimal use of privatization and market competition (Pedersen et al., 2012). The same is true for the Danish university sector, where marketization through competition has been superseded by a combination of political steering and financial incentives (Degn & Sørensen, 2015; Pedersen, 2020). This makes the Danish public sector, and especially the university sector, an interesting setting for exploring the different roles of accounting.

In this empirical context, the dissertation analyses three cases of accounting in the Danish university sector. Article 1 is a longitudinal case study spanning from 2009 to 2023 that follows the design, implementation, and use of a standardized bookkeeping and cost allocation framework for the universities called the Common Chart of Accounts (CCA). The purpose of introducing the CCA was to measure the unit costs for the university programs, allowing for the measurement of public sector productivity among the institutions. The CCA introduces 7 “purpose” dimensions in the bookkeeping of the universities, meaning all costs must be allocated to one of the dimensions in the accounts. Through interviews, document studies, and observations, the case starts by initially problematizing the lack of insight into the productivity of the universities, the year-long process of designing the CCA, and the challenges associated with its implementation and use. Empirically the case study traces the actors involved using interviews, documents, and observations as empirical material.

Article 2 shifts the focus from the costs of university programs to their funding. It traces the implementation of a new performance funding model at Absalon University. The case study starts in 2013 with the process of creating a new performance funding model that rewards the quality of university programs rather than quantity. This new model was introduced in 2017 by the Danish Parliament and developed from a pure activity-based funding model towards a more outcome-based model introducing quality indicators and basic funding. The focus of the case is on how Absalon University changed its budgeting process as a reaction

to the funding model. The article is based on interviews and documents and focuses on the university-wide budget model, the implementation at two faculties, and the implementation at four departments at those faculties.

Finally, Article 3 investigates how accounting is used in management at universities. It consists of data from nine different departments at three different universities and empirical material from my PhD. and my co-author, which uses interviews and documents as the two data sources. Where the first two articles center around a single accounting technology the last article explores how various accounting technologies influence the practices of university management. Through the cases we study how accounting practices produce visibility in the organizations, the managerial effects created by the practices, and how power relations influence and are influenced by the practices.

1.3 Overviews of the PhD dissertation

Section 2 reviews the literature on public organizations, focusing on how accounting is influenced by and also used in the management and governance of public organizations. In Section 3 I describe the empirical context of the dissertation, focusing on introducing the Danish public sector. The section has a more detailed introduction to the university sector and the current use of accounting. Section 4 presents ANT as the theoretical foundation for my dissertation. The section does not go into the specific concepts from ANT I have used in the individual papers as they have dedicated sections for this, but it provides a more general introduction to key ideas and concepts from ANT. Section 5 describes my methodological considerations for doing an ANT-inspired project, my overall research approach, the different types of empirical material I collected, and my analysis of them.

Sections 6, 7, and 8 are the individual articles I have produced as part of my PhD.

Section 6: The first paper of the dissertation is titled “The Trials of Strength between Economics and Accounting - Making the Danish Universities' Productivity Measurable”. It is a co-authored work with my supervisors Peter Skærbæk and Kjell Tryggestad and is currently under review at *Accounting, Organization and Society*. The article investigates the design and introduction of a standardized booking and cost allocation framework for Danish universities. The purpose of the standardization is to measure the productivity of the public organizations. In relation to the overall research question, the focus is on how accounting is mobilized in governing public organizations. It details the interaction between organizational accounting practices and the new reform, demonstrating how accounting acts as both a means of control and resistance.

Section 7 is my second article “The translation and counter-translation of performance funding into public organizations' budgeting”. It is a solo-authored work. In it, I follow the implementation of a national performance funding model in a case university and review

the role of the organization in the implementation. The article highlights the fluid roles of accounting in governing public organizations as the organizational budget systems reject and re-introduce the incentives in the national performance funding model during its implementation.

Section 8 contains my final article named: “The production of accounting opacities and its organizational effects “, written with Miriam Maden from Aarhus University. The article is currently under revision at European Accounting Review. By studying the accounting practices of university managers, we explore the visibility accounting creates and how it affects the different actors. We develop the concept of “accounting opacities” as a form of accounting non-visibility and identify its production and effects. We show how accounting opacities enable and restrain actors’ space of actions depending on their relative positions to one other.

In Section 9 I discuss the findings in the individual papers in relation to the PhD’s overall question, demonstrating the dissertation’s contribution to the literature, its implications for practice and future directions for research. Finally, Section 10 concludes the PhD.

2. Literature review

This section relates the dissertation to the literature. It summarises what we know and highlights the gaps in the current body of studies. The first sub-section concerns the more general public sector accounting literature by focusing on the two sub-themes of how accounting is used in the governing *of* public organizations; how accounting is used in the governing *at* public organizations; and accounting change in the public sector. The second part reviews the research on universities and the role of accounting in universities, reflecting the empirical domain of this dissertation. The literature on accounting in the public sector is broad but given the dissertation's fundamental acknowledgement of accounting as a technology for controlling and governing others (Chapman et al., 2009; Miller & Power, 2013) my attention is on the interpretive and critical public accounting literature. The work reviewed includes works explicitly relating to the sub-field of public sector accounting and work from the broader interpretive accounting literature using public sector organizations as empirical cases.

2.1 Public sector accounting research

Public sector accounting has a long history connected to the role and function of the public sector and larger social concerns. Shifting paradigms for organizing the public sector (Torfing et al., 2020) call for different forms of accounting. Earlier 20th-century reforms implemented accounting to enhance the efficiency and performance of public organizations (Dooren et al., 2015; Moynihan, 2008) but the reforms and modernization programs initiated under the banner of New Public Management from the 1980s and onwards were a drastic shift towards using accounting and management technologies to govern and manage the public sector. (Hood, 1991, 1995).

NPM marked a distinct change in public administration and accounting by replacing ideas about state control and ownership with market-based competition and business-inspired management practices (Hood, 1991, 1995). NPM was first used as a common term to cover the string of reforms of Anglo-Saxon public sectors, such as the UK, Australia, and New Zealand, in the 1980s, which aimed to achieve increased efficiency and quality of public services. These reforms challenged the public sector's *raison d'être* (Lapsley 1988, p. 21, italics in original) as the borders between the public and private sectors were blurred, as private sector management styles and organizations were invited into the public sector. NPM has been a focus of public sector research, both as an empirical phenomenon and as a conceptual framework for understanding reforms and initiatives (Anessi-Pessina et al., 2016; Hyndman & Lapsley, 2016; Lapsley & Miller, 2019; Steccolini, 2019). NPM has been connected with the "accountingzitation" (Kurunmaki et al., 2003; Power & Laughlin, 1992) of public sectors, the rise of the audit society (Power, 1999), and broader neo-liberal

tendencies in policy reforms (Lapsley & Miller, 2019). While NPM has brought about a “golden age” of public sector accounting research some argue it has also become a strait jacket for researchers (Steccolini, 2019) that limits the attention to alternative forms of theorizing about the public sector (Anessi-Pessina et al., 2016; Broadbent & Guthrie, 2008; Jacobs, 2012). In this dissertation, I recognize the lack of theorization and the isolation of public sector accounting research from the broader accounting research environment (Goddard, 2010; Steccolini, 2019). My attempt to overcome these challenges is to use ANT to theorize my findings and explicitly engage with the broader interpretive accounting literature both in the literature review and in the individual articles. My aim is to connect the broader interpretive accounting literature and the public sector accounting literature by casting my three articles and this dissertation “in a wider perspective” (Steccolini, 2019, p. 262) to benefit the wider public accounting scholarly community.

2.1.1 Accounting and the governing of public organizations

Accounting is a central part of the modern state for accounting operationalizes governing rationales and ambitions of the state into practice (Miller, 1990; Muniesa & Linhardt, 2011). As the development of the complexity and diversity of tasks in the public sector expands accounting is increasingly relied upon to control and govern the various units, actors, and processes involved in delivering public services (Broadbent & Guthrie, 2008). Governments employ a series of accounting technologies and techniques to make organizations, processes, and people calculable and, therefore, governable (Miller, 1990; Power, 1999; Robson, 1992). These technologies and techniques include accrual accounting (Bruno & Lapsley, 2018; Polzer et al., 2022), performance-based budget and performance funding (Anessi-Pessina et al., 2016; Poulsen et al., 2022; Ter Bogt et al., 2015), performance audits (Power, 1999; Rana et al., 2022; Skærbæk, 2009), performance measurement and management (Arnaboldi et al., 2015; Arnaboldi & Azzone, 2010; Dooren et al., 2015), outsourcing (Christensen et al., 2019), use of management consultants (Christensen & Skærbæk, 2010; Lapsley & Oldfield, 2001), and costing of services (Chua, 1995; Llewellyn & Northcott, 2005).

Accounting is used to govern public organizations by introducing new goals, values and visibilities, therefore directing managers and professionals to act in a certain way. Accounting acts directly upon public organizations by setting goals for public organizations, creating new visibility about financial and non-financial performance. It also acts more indirectly by changing professional norms, values cultures changing the type of expertise and knowledge which is more broadly used in making decisions in the public sector. Governments introduce new accounting technologies to achieve this form of governing to transform the public sector and make it more flexible (Kurunmaki & Miller, 2006), efficient (Skærbæk, 2009), increase quality (Pflueger, 2020), introduce new governance and ownership forms (Ahmad et al., 2021; Mennicken, 2013). However, translating reform

ambitions into specific technologies often prove difficult (Arnaboldi & Palermo, 2011; Pipan & Czarniawska, 2010; Preston et al., 1992), as accounting begins to interact with local concerns, values, goals and identifies. Despite the challenges of operationalizing the ambitions of the reforms (Kurunmaki & Miller, 2006) accounting also governs more indirectly by changing the knowledge, values and ideas which matter most in public organizations. It acts upon the professional values, norms, and priorities, which becomes challenged by the calculative rationale of accounting, resulting in cultural change (Dent, 1991) and the hybridization of public sector professionals (Kurunmaki, 2004; Skærbæk & Thorbjørnsen, 2007).

Changing values and norms of the public sector are a central part of changing its governance structure with accounting being central to doing so (Conrath-Hargreaves & Wu stemann, 2019; Ezzamel et al., 2007; Jacobs, 1995; Modell, 2005). However, foregrounding the values and meanings attached to accounting, and the rationales behind accounting pushes the practices of accounting into the background (Ahrens & Chapman, 2007). This can result in overemphasizing discursive and institutional rationales at the expense of studying the practices of governing, where power is an outcome of the actors and their relations (Latour, 1986a, 2005). In this dissertation, I aim to open up part of the black-box of governing by investigating governing as a practical activity (Ahrens & Chapman, 2007; Baxter & Chua, 2009) involving human and non-human actors. I attempt to answer some of the questions the accounting literature has not considered in depth. How does governing happen when actors agree on the rationales but conflict stems from the practices of accounting? Which devices, resources and strategies do actors mobilize in practice to govern? Does the translation of accounting into public organizations lead to singularity or multiplicity in practices?

A first area of interest is the duality between control and resistance in governing public organizations, as it opens up questions of the effects of accounting in governing, the agency of public organizations, and the divergence between practice and ambition. Studies find that public organizations do not simply adopt or translate new reforms and accounting technologies. Instead, they actively resist their use and effects (Broadbent & Laughlin, 1998; Nyland et al., 2020; Perray-Redslob & Morales, 2023; Soin & Huber, 2023). Perray-Redslob & Morales (2023) show how military personnel actively tried to undermine and resist new cost accounting and performance management reform in the French Military by actively subverting and even sabotaging the accounting practices. Broadbent & Laughlin (1998) found similar reactions among UK health care and educational professionals who “absorb” the external demands into specialist groups and act as a buffer between the core activities and the external demands. Decoupling the external demands and internal operations of public organizations is a known strategy for public organizations responding to demands from their environment (Brunsson, 2019; Edwards et al., 2000; Meyer & Rowan, 1977). However, the notion of decoupling is problematic, as it assumes that organizations can successfully disconnect the links and associations between themselves and the external environment and ensure that little or no influence from accounting on the operations of the

organization. It also holds a unitary view of the organizations as acting in unison and devoid of internal conflicts and struggles (Kaufman & Covaleski, 2019) when various groups of actors might react differently to accounting. However, what happens when only certain groups resist the governing while others welcome it? Currently, studies focus on how actors resist the complete accounting technology when it is implemented and used (Broadbent & Laughlin, 1998; Perray-Redslob & Morales, 2023), but we know little of how actors exercise resistance during the formulation and design of accounting. At the same time, the reciprocal relationship between resistance and control beckons a closer investigation of how means of control might be turned around and become means of resistance and vice versa. To understand how accounting affects public organizations, we should examine the work of actors across organizational boundaries, as governing and resistance are collaborative endeavours not contained within pre-defined boundaries.

Accounting reforms in the public sector do not happen in a vacuum but draw on concepts and ideas. Llewellyn & Northcott (2005) study the introduction of benchmarking between UK hospitals, where the idea of the “Average Hospital” was mobilized as the governing ideal and installed into the costing accounting practices calculating the costs of hospitals. As hospitals wanted neither to be seen as over nor underperforming the benchmarking, their costs began to converge making them all average hospitals (Llewellyn & Northcott, 2005). Accounting becomes a commensuration technology that creates a common metric across organizations meant to enable “comparability, visibility and control” (Llewellyn & Northcott, 2005, p. 572). Kurunma ki et al. (2019) trace the concept of “economic failure” in the UK healthcare sector. Hospital foundations would operate on market conditions and make poor-performing hospitals able to “fail” in the competition and weed out non-performers. The authors show how the “failure regime” for UK hospitals draws inspiration from economics in an attempt to constitute the public sector according to economic theories; however, the economic definition of failure did not materialize in practice; instead, a regulative definition of failure materialized. This illustrates the practical problems associated with economization. The paper demonstrates the challenges of reforming the public sector, via the reform of hospitals, to improve efficiency and quality. It entailed sanctioning “failing” hospitals but defining failed proved too difficult; however, “the failure to devices a failure regime” (Kurunma ki et al., 2019, p. 36) for hospitals has not prevented the continuous use of failure in the UK public sector. This case reveals the encompassing power of economization (Çalışkan & Callon, 2009; Miller & Power, 2013) but also reveal the differences between practices and discourses, as accounting failed to operationalize the idea of economic failure. Accounting is therefore not only a powerful force transforming the public sector but also an unstable and fragile practice where the intended outcome is not guaranteed as the effects depend on the usage and practices of the actors involved (Christensen et al., 2019; Lapsley et al., 2020). As Mennicken (2013, p. 222-223) notes, studies of accounting in the public sector must “attend[] to the different modalities and operations of accounting technologies, and their ability (or inability) to reform practices, reconfigure interest and redefine possibilities for action”. The economization of the public

sector has been acknowledged (Lapsley & Miller, 2019) but the literature lacks detailed studies of how specific ideas and concepts are mobilized and incorporated into practice.

The role of specific concepts and how they are mobilized in the governing of public organizations is relevant for understanding the “modalities and operations” (Mennicken, 2013, p. 222) of accounting. A recent development is a changing focus in public sector governing, from a narrower on productivity towards quality of services and outcomes. Productivity and efficiency are central themes to NPM reforms (Hood, 1991; Mouritsen & Bekke, 1997), with some noting that “the use of productivity as a magic concept in the public sector” (Kork et al., 2015, p. 411). However, measuring and improving productivity in the public sector is by no means an easy feat (Skærbæk & Thisted, 2004), with differing conceptualizations of productivity and measurement devices, such as accounting, creating tensions (Kork et al., 2015). The ambiguity around what productivity is, and how to measure it, means it is “important to study concepts as the principles of productivity policies” (Kork et al., 2015, p. 412). Given the ubiquity of productivity and efficiency in public sector reforms it is surprising that so few studies have explored how they are defined, measured and used in practice.

At the same time, due to the dissatisfaction with a singular productivity focus, public sector reforms are increasingly centred around the quality of the services offered (Malmose & Kure, 2021; Malmose & Skjøtt Linneberg, 2024; Pflueger, 2020; Pflueger & Pedersen, 2022). Malmose & Linneberg (2024) show how quality concerns are increasingly replacing productivity measurement in the Danish hospital sector, with Pflueger (2020) identifying a similar development in the UK healthcare sector. Pflueger & Pedersen (2022) coin the term “accountable quality” as the new way of thinking about public reforms. They stress how quality is not an unproblematic governing ideal either, as “accounting itself (...) may be a new space or opportunity for resistance to attempts to govern” (Pflueger & Pedersen, 2022, p. 23). The literature thus reveals tensions by both claiming the ubiquity of productivity while noting its replacement by quality as the natural development from one phase to another in public sector governing. The studies on quality are all within the healthcare sector and expanding the empirical focus on productivity and quality to the other public sector is relevant; especially as it might reveal other trajectories and interactions between productivity and quality as governing concepts and, importantly, how they are developed, implemented, and used in public organizations, as most current studies primarily analyse the discourses rather than the practices around quality (Malmose & Skjøtt Linneberg, 2024; Pflueger, 2020; Pflueger & Pedersen, 2022). Focusing on specific concepts, such as productivity and quality, and their specific operationalization through accounting is a new avenue of research, as it goes beyond the broader and unspecific claims about efficiency and effectiveness (Hood, 1991).

2.1.2 Accounting and the governing *at* public organizations

The above review of the roles of accounting in the public sector demonstrates how accounting provides specific visibility on what matters and directs action through incentives and accountability. As the review above pointed to, the ambition and effects of the reform aimed at the governing of public organizations face issues in the interaction with the organizational use of accounting in managerial decisions. It is therefore important to also look at how accounting is used within public organizations, exploring the “versatile role” of accounting in organizational practices (Christensen et al., 2019, p. 12).

One role of accounting is as a rationalization device (Burchell et al, 1980), where actors use accounting systems and calculations to justify and legitimize their actions and decisions (Arnaboldi & Lapsley, 2004). The design and use of accounting within the organizations are not only driven by rational and economic reasoning but happen through interaction with the institutional environment of the public organizations (Abernethy & Chua, 1996; Arnaboldi & Lapsley, 2004; Ezzamel et al., 2012). While the section above stressed how public organizations might decouple their operation from the externally imposed accounting technologies, public organizations might themselves initiate change in the design and use of accounting to appear legitimate to the external environment. Arnaboldi & Lapsley (2004, p. 17) conclude that the introduction of activity-based costing in a UK healthcare organization management implemented the new costing system “to project itself as modern, as legitimate – as a ‘complete organization’ (...). At best ABC is part of an exercise in legitimacy”. External pressure might also be leveraged by organizational groups and members to strengthen their position in the organization, as in Abernethy & Chua (1996) where professional members are weakened through governance and accounting reforms initiated by the hospital management. Rather than merely responding to the external environment by complying with the expected demands, groups within public organizations might also mobilize external pressure for their own strategic agendas.

Accounting therefore also becomes part of power struggles (Burchell et al., 1980) between groups in public organizations, with the conflicts being predominately between managers and accounting and the professional members involved in the operation of the organization. Such conflicts between managers and professionals have been observed in healthcare (Abernethy & Chua, 1996; Conceição et al., 2023; Nyland & Pettersen, 2004), the armed forces (Ansari & Euske, 1987; Perray-Redslob & Morales, 2023; Skærbæk & Thorbjørnsen, 2007), creative and artistic organizations (Christiansen & Skærbæk, 1997; Trevisan & Mouritsen, 2023), and the educational sector (Agyemang & Broadbent, 2015; Dobija et al., 2019; Lepori & Montauti, 2020; Poulsen et al., 2022). Accounting is used in the power struggles between different groups to define what is important, how to measure and define worth and reward it (Kaufman & Covalesski, 2019; Trevisan & Mouritsen, 2023), thereby influencing the power relationships between groups of actors (Abernethy & Chua, 1996; Dent, 1991; Skærbæk & Melander, 2004). Dent (1991) shows how the cultural change

brought about by accounting and business practices, promoted managers and business analysts at the expense of the engineering and rail staff, thereby changing the organizational power dynamics. Christiansen & Skærbæk (1997) tell a similar story about the “budget games” between artistic staff and managers in the Danish Royal Theatre while stressing how pressure from external actors can impact the positions and interests of the actors inside the organization, revealing the interaction between the governing of and at public organizations.

Power struggles between organizational groups do not only result in winners and losers. Compromises can be reached by blending together competing demands between professional groups and accountants (Trevisan & Mouritsen, 2023), or by supplementing the formal accounting systems with informal practices favouring certain groups (Kaufman & Covaleski, 2019). Another interesting aspect is what is compromised and how. Chenhall et al. (2013) find that actors can more easily find compromises on the purpose of accounting by combining and laying competing purposes into an accounting technology; however, reaching compromises on the technical and practical doing of accounting proved harder. It led to “‘endless’ debate and discussion over technicalities and the mechanics of the account” (Chenhall et al., 2013, p. 283). Understanding how actors can reach compromises over both the purpose of accounting and the technical practices of accounting is therefore important to better understand how accounting works in the public sector. How compromises might be found in the design and development of accounting technologies is less investigated, and especially processes of how conflicts between different groups within the organization are mediated and stabilized through compromises are relevant areas to investigate. In some cases, it is not possible to find a compromise between competing decisions as the competing choices are incompatible (Christensen et al., 2019; Laguecir et al., 2020). In Christensen et al. (2019) the authors find that calculations do not always faithfully act in accordance with the intentions of the actors who produce them. The role of accounting changes as the calculations performed several functions in different events during the study depending on who used them and how. However, by attending to the unfaithful role of accounting and its versatile roles, decisions that are presented as mutually exclusive might not turn out to be so in practice, and new forms of compromises might be reached between groups of actors we focus on the creation of multiple rather than accounting systems. As underscored in the section above, public organizations are not unitary entities. They consist of various groups, which makes it relevant to examine how different groups promote their own agendas through the promotion of specific accounting technologies and practices.

Lastly, while the literature provides insights into how competing values and norms interaction often clash in public organizations, revealing the conflicts between accounting’s mode of knowing and governing and professional concerns, it is problematic to presuppose the interests of the actors (Conceição et al., 2023) and incompatibility between accounting and professional values (Schrøder, 2019). Conceição et al. (2023) found that healthcare professionals were in fact positive towards a new costing system, while managers showed reservations about the accounting system and its usefulness, showing how actors’ interests

are not given in advance. Schrøder (2019) goes even further in her study of social workers' use of accounting, moving beyond the idea of a conflict between caring and accounting: "Instead of assuming a distinction between the two [caring and accounting] I analysed *how, when and where the distinctions are drawn*" (Schrøder, 2019, p. 332, italics in original). The lesson from Schrøder (2019) is that by abandoning prior ideas about the interests and practices of how actors use accounting in public organizations, we can more fully grasp how accounting creates certain distinctions and categories in practices, allowing for a more detailed understanding of the multiple roles and effects of using accounting. New forms of interactions and conflicts can then be examined, for example how managers use accounting internally to promote their own agendas vis-a-vis other managers, or how different practices among public sector accountants (Christensen et al., 2018) interact and become part of the internal governing of public organizations. By focusing on the calculative practices of actors and accounting technologies, it is possible to map and explore where and how conflicts and tensions arise between groups of actors within public organizations and the creative and surprising uses of accounting.

2.1.3 Summarizing the public sector accounting literature

The review of the research on the governing *of* and *at* public sector organizations revealed several gaps in the literature, echoing Broadbent & Guthrie's (2008, p. 156) point about there being "a real gap to fill in the considerations of matters of governance". The first gap is in looking across the governing of and at public organizations, following accounting as it is developed to govern through its implementation and use at public organizations. Accounting serves as the infrastructure (Kurunmäki et al., 2019; Power, 2015) through which specific ideals and ambitions are carried down to the organizational level and how such infrastructures are created and used can help us understand the governing in public organizations. Secondly, the different ways in which accounting is used in power struggles within public organizations can be expanded by not assuming specific interests or values attached to different groups. While accounting might be used to exploit people and create inequalities it can simultaneously enable action and flexibility. Likewise the role of accounting in reaching compromises is an under-investigated area of research (Casarin, 2023; Trevisan & Mouritsen, 2023). There is a need to better understand the processes through which compromises are made, how accounting facilitates compromises, and move beyond the idea of the compromise as a single accounting technology (Chenhall et al., 2013; Kaufman & Covalesski, 2019), instead attending to cases of multiple accounting systems. Lastly, it is important to attend to how specific concepts and ideas are mobilized and operationalized in the public sector, specifically in relation to the economization of the public sector (Kurunmäki et al., 2019). Concepts such as quality and productivity are mobilized in reforms of public sector organizations but we still lack accounts of where such concepts originate from, how accounting is used to operationalize them, and the difficulties

and challenges with integrating them into practice. A promising way to conduct such an investigation is by focusing on the performativity of economic concepts and the role of accounting in performing them (Boedker et al., 2020; Skærbæk & Tryggestad, 2010).

2.2 The roles of accounting in universities

The second part of the literature review zooms in on what we know and do not know about how accounting is used around and at universities. A growing number of studies investigate the role and effect of accounting on universities, and other higher education institutions, in the fields of accounting, public administration and educational science (Argento et al., 2020; Grossi et al., 2019; Guthrie et al., 2024; Lapsley & Miller, 2019). However, universities are a distinct type of public organization characterized by offering knowledge-intensive services based on highly specialized professionals (Grossi et al., 2019). Universities are characterized by a loose coupling of means and ends as well as featuring loose couplings between units within the organization (Seeber et al., 2015; Weick, 1976). They also have multifaceted goals and purposes that are difficult to concretize and quantify (Craig et al., 2014; Parker, 2011). Even among other knowledge-intensive public organizations “universities present a special case” (Kallio et al., 2017, p. 29), as their activities and performance are difficult to evaluate in comparison to other higher education institutions, making the governing of universities a central theme in the literature. Using accounting to govern universities and in the internal management of universities presents a special case, as their unique organizational characteristics make them different from other public organizations. Unlike other public sector organizations, universities have become important parts of the national economy of Anglo-Saxon countries (Guthrie & Neumann, 2007; Parker et al., 2023; Parker, 2013) and engage in both national and international competition for funding, staff and students (Olssen, 2016; Olssen & Peters, 2005; Parker, 2011) adding to the complexity around them.

2.2.1 Accounting and the governing of universities

The literature contains a critical theme concerning the governing of universities: the concerted shift in strategic direction, a shift in governance structures, as well as a shift of purpose towards national and international markets. (Argento et al., 2020; Grossi et al., 2019; Parker, 2011). This shift has been termed corporatization (Gebreiter, 2022; Neumann & Guthrie, 2002; Parker, 2011; Yamamoto, 2004), marketization (Czarniawska & Genell, 2002), managerialism (Deem, 2004; Du & Lapsley, 2019; Roberts, 2004), commercialization (Narayan et al., 2017; Parker et al., 2023), and neoliberalism (Lapsley & Miller, 2019; Olssen, 2016; Olssen & Peters, 2005). Despite the differences in terming the phenomena, the underlying analysis is the same: universities are being changed towards competition in the market, and the market is both the means to and the end of the transformation.

Corporatization is a global phenomenon (Olssen & Peters, 2005; Parker, 2011) but the literature show how the ideas of the market and corporations are translated into specific national contexts such as France (Boitier & Riviere, 2013), New Zealand (Narayan & Stittle, 2018), Australia (Parker et al., 2023), Sweden (Czarniawska & Genell, 2002), Germany (Conrath-Hargreaves & Westermann, 2019), Iran (Aliabadi et al., 2021), Japan (Yamamoto, 2004) and the UK (Du & Lapsley, 2019). Despite this, there is a tendency to perceive corporatization as an inevitable path leading to similar outcomes across contexts (Parker, 2011, 2013) with the market becoming the major mechanism for governing universities. This has consequences for the universities, namely an increased requirement for control and performance. Parker (2011, p. 447) notes that “governments have released a degree of direct control over university (...) while at the same time demanding greater accountability and hence effective controls over university performance KPIs and outputs”.

Perhaps due to this shift, recent trends in accounting literature examine the role of accounting in corporatizing universities, with the aim of creating efficient controls of performance. Accounting technologies and practices, such as performance measurement and management, performance funding, performance audits, accountability, and reporting systems, are seen as the devices through which corporatization is introduced into university sectors (Habersam et al., 2013, 2020; Lawrence & Sharma, 2002; Modell, 2005; Narayan & Stittle, 2018). In their study of the transformation of the New Zealand university sector Narayan & Stittle (2018, p. 521) find that the government “relied on accounting technologies to visualize, construct and make its tertiary sector reform programmes operable (...) embedding a dominant business logic that has shifted the idea of tertiary education as a commodity bought and sold in the open market”. However, there are few studies that seriously engage with alternative perspectives on how corporatization is translated into local settings, how the specificities of accounting challenges, modify or aid corporatization during the translations, and how different configurations and use of accounting results in different effects than what have been observed so far in the literature.

One of the most central devices for transforming universities and governing them is performance measurement and management (PMM). PMM is perhaps the most researched topic within the literature, reflecting its ubiquity in university sectors, covering most topics and areas related to their activities (Argento et al., 2020; Grossi et al., 2019; Guthrie et al., 2024). PMM is concerned with the use of quantitative and qualitative measurements for directing and evaluating the activities and results of universities (Kallio et al., 2017; ter Bogt & Scapens, 2012), and reflects a larger movement in public sector management towards management through performance (Dooren et al., 2015; Moynihan, 2008). The content of PMM in universities is broad, reflecting the complex range of activities and purposes of the institutions (Grossi et al., 2019). This includes teaching, research, knowledge transfer, financial performance, and other political targets (ter Bogt & Scapens, 2012). PMM is not only used by governments to govern universities but is also employed by non-governmental actors in national and international competition between universities (Espeland & Sauder, 2007; Musselin, 2018). PMM sets out targets and goals for universities to achieve, and

“various research and teaching performance measurement systems continue to be developed and applied to assess productivity and quality” (Argento et al., 2020, p. 1-2). The attention to productivity and quality mirrors the priorities in the governing of public organizations with the caveat that Argento et al. (2020) limit their focus to the quality and productivity of teaching and research. Concerns about the financial performance of universities and the connection between financial performance and quality are underexplored in the university literature. There have been a few studies on the standardization of costing and reporting, which allow for the valuation of financial performance and emphasise the challenges of designing and implementing such systems (Modell, 2006; Venieris & Cohen, 2004). Modell (2006) for example, traces the difficulties of standardizing cost allocation practices across Swedish universities, in particular the political and institutional struggles over defining accurate and acceptable costing models resulting in several failed attempts at reforming the sector. However, while identifying the political struggles and negotiations over changing cost allocation practices on a sectoral level, Modell (2006) does not go into the use of accounting information in this dynamic. Apart from being unique public organisations, universities also have many shared resources, such as faculty, making it relevant to ask how costing is done in practice, and how attempts at standardized costing across institutions unfold.

While the experiences from Anglo-Saxon countries demonstrate a ubiquitous and strong use of PMM (Du & Lapsley, 2019; Narayan & Stittle, 2018; Parker et al., 2023; Roberts, 2004), other studies find that the introduction and use of PMM in universities sectors has issues (Kure et al., 2020; Modell, 2003, 2005). In his study of designing and using PMM in the Swedish university sector, Modell (2003, 2005) found the process to involve power struggles between multiple stakeholders all promoting competing perspectives on what PMM should be and how it should be used. The two studies demonstrate the challenges in changing the institutional environment around universities when introducing PMM, and the agency of many stakeholders, universities, governmental agencies, and students, in affecting the final outcome. The study points to the limiting corporatization in Sweden, instead identifying the “difficulties of translating the merging public sector consumerism into unequivocal and consistent PM practices” (Modell, 2005, p. 553), pointing to variation in the form and intensity of corporatization. Rather than focusing on the development of a PMM system, Kure et al. (2020) investigate the conceptual relevance and coherence of a PMM system in Denmark. Testing the relevance and impact of performance contracts between Danish universities and the state, Kure et al. (2020) stress the lack of quality in the design of PMMs which undermines their usefulness as a management tool. They find that the low quality of the goals, purpose, and content within the performance contracts means that “it is not clear what is being measured, and therefore it becomes doubtful whether the contracts bring the universities closer towards the objective” (Kure et al., 2020, p. 20). The study points to the problems associated with conceptually defining meaningful, coherent, and effective goals and targets, illustrating the difficulties of using performance as a control mechanism in universities. The differences between the Anglo-Saxon and Scandinavian studies are

interesting, as they challenge the international and common characteristics of corporatization, revealing local variation.

Apart from costing and PMM, the funding mechanisms are central to the governing of universities. Governments have internationally lowered the public financial support for universities, resulting in tuition fees and private research funding (Parker, 2011, 2013) while using performance criteria to allocate the public funds that still exist (Jongbloed & Vossensteyn, 2016; Mauro et al., 2017; Teixeira et al., 2022). Performance funding concerns the connection between pre-defined results-based performance criteria and funding for public organizations. For universities, performance criteria are used for both research and educational activities, with examples being the number of credits of students (student FTEs), number of PhD graduates, level of third-party funding, number of publications, and peer-review assessments (Teixeira et al., 2022). By connecting funding and performance, governments attempt to incentivize the institutions towards increasing the quantity and quality of their activities, which makes them accountable for achieving the results wanted by society (Pinheiro et al., 2019). While the proponents of performance funding emphasize the positive effects on effectiveness, accountability, and efficiency (Curristine et al., 2007; Jagalla et al., 2011), the effects of using performance funding in universities are less consistent and apparent (Dougherty et al., 2016; Jongbloed & Vossensteyn, 2016; Teixeira et al., 2022). Despite the lack of clear evidence of its effectiveness (Frølich, 2011), using performance funding is becoming more common. However, we know very little about how such performance funding schemes are actually implemented, the challenges during implementation and the organizational impact of performance funding on the quality and productivity of universities' activities (Aliabadi et al., 2021; Teixeira et al., 2022).

Despite the lack of empirical studies on the implementation of performance funding, authors still comment on the effects of the changing funding landscape on the strategic directions of universities. Reflecting mainly on the Anglo-Saxon experience Parker (2013) concludes that cuts in public funds and the increased demands for more outputs instil a "financial imperative" into universities and elevate the importance of funding for managers. Managerial autonomy thus becomes restricted by the funding scheme for the university (Boitier & Rivière, 2013; Parker, 2013). In a Scandinavian setting, Kallio et al. (2021) stress the connection between political steering mechanisms, with funding being the main one, and perceived autonomy, for they found that the most impactful funding schemes are seen as the least relevant by managers. An interesting insight is how the move towards corporatization of universities has not necessarily resulted in more free and autonomous institutions, as the market mechanism restrains and directs the actions of universities by demanding accountability. The connection between autonomy and control is central to understanding how universities are governed and imagining alternative forms of governing. While the literature is clear in criticising the market-based corporatization observed in Anglo-Saxon countries (Agyemang & Broadbent, 2015; Du & Lapsley, 2019; Gebreiter, 2022; Neumann & Guthrie, 2002; Parker, 2011) it is unclear what can replace this system, how

alternative modes and forms of governing work in practices, and what their positive and negative consequences are.

2.2.2 Accounting and the governing *at* universities

Corporatization and the increasing use of accounting in the governing of universities impact the organizational activities, roles, and use of accounting. An important aspect of corporatization is the changes in the management structure of the universities, chiefly the strengthening of professional managers' power within an organisation and the weakening of academics' power (Agyemang & Broadbent, 2015; Craig et al., 2014; Deem, 2004; Hardy, 1991). Some state that the academic culture of universities, with collegial governance, has been replaced with a "perverse audit culture" (Craig et al., 2014). According to Craig et al. (2014, p. 2) the audit culture stems from a constant evaluation of performance that "systematically facilitate[s] several dysfunctional outcomes, including the loss of academic freedom". The limitation of academic freedom and the transformation of the academic into "performers" (Gendron, 2008) is an outcome of the constant evaluation of faculty having to consider external demands for demonstrating value, quality, and worth from the universities. The implementation and use of accounting technologies to transform universities cause the change in academic identity (Agyemang & Broadbent, 2015; Kallio et al., 2020). At the same time, corporatization also redefines the role of academic managers by shifting them from a collegial governance structure towards a professional and hierarchical structure (Craig et al., 2014; Deem, 2004; Hardy, 1991). This enhances the effect of corporatization on the internal structure and academics (Agyemang & Broadbent, 2015).

The literature stresses the conflicts increasing professionalism brings to the university, as the new managerial approach clashes with the academic, collegial governance structure that used to be common in universities (Christopher, 2012; Deem, 2004; Hardy, 1991). The shift towards professional management has strengthened the positions of managers against common faculty (Craig et al., 2014) and, as Agyemang & Broadbent (2015, p. 1038) find, academic managers might even implement external reforms in a way "that make some internal controls unnecessarily tighter than the external regulatory controls necessitate". Managers might become comfortable in their new positions and use the accounting tools required of them (Du & Lapsley, 2019), leading to tensions between collegial and professional forms of governance (Christopher, 2012). Managerial power is, however, also restricted by the demands for accountability and change, at times limiting the freedom of managers in a corporatized university environment (Boitier & Riviere, 2013; Kallio et al., 2021). The conflict and tensions between managers and academics are well researched but we know much less about the relationship between managers inside the university and how different academic disciplines or types of managers engage with each other (see Moll & Hoque, 2011 for an exception). Managers do not always agree on what the most appropriate forms of accounting are and, given their strengthened position within the university,

exploring how managers interact reveals a more dynamic view of how accounting is used within universities.

Another important difference between administrative and academic managers is in how they use accounting information. The more functionalistic literature underscores accounting as a central part of the management of universities and proposes how to best use accounting for strategic purposes and to create public value (Agasisti et al., 2008; Arnaboldi & Azzone, 2004; Groves et al., 1997; Salemans & Budding, 2024). While the literature stresses accounting as useful and essential to the management of universities studies show that administrative and academic managers use accounting information differently. Accounting information is predominately used by administrative managers (Pettersen & Solstad, 2007) in universities or used differently by academic and administrative managers (Heinicke & Guenther, 2020). However, the relationship between using accounting for legitimizing or decision-making is not simple, given that both administrative and academic managers often require accounting information in their daily practices. (Łada et al., 2020). Investigating the role of cost calculations for programs in a Polish university Łada et al. (2020) reveals that the formal costing system serves a legitimizing role towards the external environment at the expense of managerial relevance and decision-making. This leads some managers to develop and use informal costing systems for their own needs, an example of “shadow management accounting” (Łada et al., 2020, p. 815), to achieve efficiency potential. Accounting can therefore serve multiple roles simultaneously and impacts different managers in varying ways. This forces researchers to study accounting’s use and effects across groups rather than assuming similar usage between groups. For example, academic managers might have adopted accounting in their daily practices to achieve efficiency (Du & Lapsley, 2019; Łada et al., 2020) but we know less about how both academic and administrative managers use accounting for other purposes, such as creating flexibility, as resistance or to achieve more traditional academic goals such as quality in teaching and research.

The transformation of universities through accounting affects the universities as organizations and the individuals within it (Dobija et al., 2019; Guarini et al., 2020; Hyndman & Liguori, 2022; Kallio et al., 2016, 2021; Lawrence & Sharma, 2002; ter Bogt & Scapens, 2012). ter Bogt & Scapens (2012, p. 486) show how, regardless of being qualitative or quantitative, the use of PMM systems contains “subjectivity and uncertainty” and makes it unclear to faculty staff what the expectations for performance are while also strengthening the managers' positions. An effect of this uncertainty was that academics attempted to game the systems by focusing on the quantity rather than the quality of research to perform under the system. The use of PMM systems and their intended and unintended consequences impact individual academics by challenging the academic ethos and professional values of researchers, thus making them more strategic and instrumental in their behaviour. Kallio et al. (2021) track the reactions from academics to PMM, finding that they become more aligned with the business-oriented view of the university, which demonstrates the adaptation and internalization of PMM by academics. According to Gendron (2008) the use

of journal rankings in business schools transforms faculty into “academic performers” who change their research and publishing practices to fit with the evaluation of the ranking “promoting and stimulating superficiality” in research (Gendron, 2008, p. 100). The effects on individual scholars are mostly negative, as the increasing use of accounting in evaluating academics induces stress and anxiety in them, which also challenges the individual's academic ethos by demanding performance (Agyemang & Broadbent, 2015; Kallio et al., 2016). Accounting can “change the ethos of what it means to be an academic” (Kallio et al., 2016, p. 702), exemplifying how accounting elevates and entrenches the positions of managers at the expense of the academics (Agyemang & Broadbent, 2015; Du & Lapsley, 2019). Although the negative effects it is unclear if, and how, accounting can also be used to support or protect individuals and groups at the universities. How does accounting enable managers to shield and exploit academics? How do managers change accounting to support more traditional academic values and focuses, such as quality in research and education? Are all groups, both academic and administrative, affected identically by accounting technologies or how are differences created between actors?

Despite the calls for closer investigation of the role of organizational budgets in implementing performance funding schemes (Aliabadi et al., 2021; Frølich, 2011; Teixeira et al., 2022), the accounting literature has instead tended to focus more exclusively on organizational budgets (Covaleski & Dirsmith, 1988a; Kaufman & Covaleski, 2019; Lepori & Montauti, 2020; Moll & Hoque, 2011; Ozdil & Hoque, 2017). Some attempts have been made to connect the two streams, for example, the work investigating the symbolic role of accounting in political struggles (Covaleski & Dirsmith, 1988a, 1988b; Moll & Hoque, 2011). The classical studies by Covaleski & Dirsmith (1988a, 1988b) illuminate how societal and institutional expectations about public organizations are effectively conveyed through budgetary allocations, which shows budgets to be pivotal in both integrating and signalling values to the external environment. Budgets are part of the means by which organizations signal legitimate behaviour to the external environment, and in this case, also a means for the external environment to impose its values upon the organization. Building upon these insights, Moll & Hoque (2011) emphasize that budgetary changes must not only address external legitimacy concerns but must also be perceived as legitimate within the organization itself. Their examination of a new budget model implemented in an Australian university challenges the notion of organizational unity by revealing a multitude of contrasting viewpoints and disagreements surrounding the new budget. Ultimately the disagreement results in undermining the budget's intended impact and purpose. This shows how legitimacy towards the external environment is not enough for it to function as prescribed, as actors inside the organization must also support and use the budget to achieve the desired function.

Budgets are central to political discussions and struggles between the university and its funding environment, at least in the design phase of the performance funding system. The budget itself is not only a means for signalling internal and external legitimacy. As shown by Kaufman & Covaleski (2019) the budget can become a compromise between competing

values and demands by different stakeholders. By introducing a formal activity-based budget process and an informal incremental budget process the budget became a tool to create “a common understanding of organizational problems but also a forum for coalition building around the possible solutions” (Kaufman & Covaleski, 2019, p. 52). Lepori & Montauti, (2020) adds to the role of the budget as a means for handling conflicting views and values. They highlight organizational strategies used by managers to handle conflicts, which minimizes the effect of conflicts surrounding the budget. Both studies highlight the central role of the budget in reaching compromises between competing demands and values, emphasizing different processes and strategies that aid in reaching an acceptable situation.

2.2.3 Summarizing the literature on universities and accounting

The research on universities and the role of accounting is growing but there are still gaps in our knowledge of the role of accounting in the governing of the institutions of higher learning. As Hyndman et al. (2024, p. 9) note “the rationale and influences of calculative practices (...) is an area where future research would be valuable”. The literature review points to several areas specific to universities that warrant future investigations. There is a need to study the local adoption and enactment of the corporatization of universities, especially in empirical settings where the state, rather than the market, is the central control mechanism. How are universities governed in such environments, what is the role of accounting in such environments, and how is accounting used to compare universities’ performance and activities? Building on these questions is the need to investigate the processes through which new accounting concepts are designed and implemented in practices, especially the concepts of productivity and quality in teaching and research (Argento et al., 2020) and more broadly. Connecting the role of accounting at and at universities also means investigating how university actors engage with ministries and agencies in the processes of change, considering the how ideas of the university are mobilized in affecting new reforms. Turning to how accounting impacts universities, the role of the budget in implementing performance funding beckons more attention, given its mediating ability to translate the reforms of the university into its control systems. The implementation and use of accounting by managers, both administrative and academic, is a last area of interest. Prior studies call for getting closer to the practical use of accounting technologies in universities (Grossi et al., 2019; Parker, 2013), stressing the need for further explorations of the various ways in which accounting is used by managers. Some of the questions of interest are how accounting enables and restricts actions, how accounting constitutes and enhances power relations within the university, and how accounting makes conflicts between managers evident and participants in reaching compromises.

3. Research Context

The following section outlines the empirical setting of the study. First, it briefly details the reformation and modernization of the Danish public sector from the introduction of New Public Management-inspired reforms in the 1980s to the present day. It then provides a more detailed description of the Danish university sector with a specific focus on the changes in governance structure, funding methods, ministerial oversight, and the use of quality assurance for teaching and research.

Denmark has a large, tax-financed public sector covering many areas such as health care, social care, and education. Like most other Western countries (Hood, 1991; Pollitt & Bouckaert, 2017), Denmark has continuously attempted to modernize its public sector (Ejersbo & Greve, 2014). While NPM has served as an inspiration for many public reforms in Denmark (Greve, 2006), marketization has been less central to those reforms as politicians and officials have retained control over both public services, tasks, and organizations (Degn & Sørensen, 2015; Pedersen et al., 2012).

Since the 1980s several reforms have introduced a variety of known accounting technologies into the Danish public sector (Ejersbo & Greve, 2014; Mouritsen & Bekke, 1997). The 1990s saw the starting point for using performance measurement and management in the form of performance contracts between ministries and the various agencies and organizations under their resort (Ejersbo & Greve, 2014). Activity-based funding was also introduced in the educational area in the 1990s (Ministry of Education, 2001), and DRG reforms were introduced in the hospital sector in the same period (Malmose & Skjøtt Linneberg, 2024). The 1990s also saw the use of annual reports for public organizations with an increased focus on reporting productivity and effects to the public through financial reporting (Skærbæk, 1995, 1998). In the 2000s accrual accounting was introduced in the central government and the associated organizations (Ministry of Finance, 2003). The Ministry of Finance (MOF) has traditionally been the most central actor in the modernization of the Danish public sector (Ejersbo & Greve, 2014). Reforms of accounting and funding normally involve the MOF, making the cross-ministerial, often involving several agencies as well.

The Danish public sector has undergone continuous modernization but the reforms have contained little marketization in favour of maintaining a large degree of political control and management. The next sections provide an in-depth introduction to the Danish university sector, and the most central accounting devices used in the steering of the sector.

3.1 The Danish university sector

The central government in Denmark is organized around a series of resort ministries with a responsible minister for each ministry. Most ministries are organized with a political department developing policies and advising the minister, and one or more agencies responsible for implementing and administrating the political reforms and regulations (Ministry of Finance, 2010; Mortensen, 2019). Part of the ministry resort can also be delegated to the decentralized public organizations, which are not formally part of the ministry's hierarchy but still answer politically to the minister (Blom-Hansen, 2019). This is the case for the universities, which are autonomous self-owning public organizations with their own board and management being granted legal autonomy through the University Act of 2003. However, as Blom-Hansen (2019) notes, autonomy is a relative and not an absolute term, and the Danish universities are still part of the resort of the MOES, meaning they are still politically managed by the minister. The MOES oversees the formulation of the specific laws and regulations for the universities, pays out the funds to the institutions, and is in the end financially and politically accountable for the universities despite their status as self-owning institutions. However, given they are not directly part of the state's hierarchy the universities do have more autonomy than an agency, and the MOES cannot simply dictate the internal organization of the universities (Blom-Hansen, 2019).

The Danish university sector consists of eight public institutions geographically spread across the country. The sector has experienced a massive development since the late 1990s, moving from a small, niche part of the public sector to one of the largest measured on the level of public funding, and made central to developing a 21st century knowledge economy (Aagaard et al., 2012). This change has been achieved through a long series of reforms of the sector, from changes in governance and funding, mergers, and changes in programs, and gives cause for Pinheiro & Stensaker, (2014, p. 498) to note that "Denmark is a highly interesting case since few European, let alone Nordic, university systems have undergone such abrupt changes in the last decade" (Pinheiro & Stensaker, 2014, p. 498). The development of the Danish universities reflects international trends in transforming universities by introducing more competition, less public funding, and strengthening the organizational and strategic capabilities of the universities (Parker, 2011, 2013; Pinheiro et al., 2019; Seeber et al., 2015). At the same time, the development in the Danish university sector follows many of the broader trends in the Danish public sector with the introduction of performance management and contracts, performance funding, and quality assurance and evaluation (Ejersbo et al., 2018; Ejersbo & Greve, 2014).

3.1.1 Governance reforms

Post-1990s reforms to reshape and change Danish universities introduced new modes of governance to increase professionalism (Degn & Sørensen, 2015). In 2003 the universities were made into self-owning public organizations that separated them from the state hierarchy and implemented a professional board. The boards had a majority of external members and were in charge of hiring the president of the university. While the reform can be seen as a continuation of earlier governance reforms in the 1990s, it marked a drastic change in the governance of the university due to its move away from a collegial governance structure to a professional one (Degn & Sørensen, 2015). This is exemplified by the shift from an elected president to a hired president and the internal members becoming a minority in the highest governing body (Ejersbo et al., 2018). The governance reform of 2003 began more than two decades of constant university reform that aimed to transform universities from collegially governed institutions to professional organizations engaged in national and international competition for funds, human resources, and recognition (Brøgger et al., 2023; Ejersbo et al., 2018; Pinheiro et al., 2019). Examples of reform include standardization of the PhD-educations, mergers between universities, strengthening strategic research councils, innovation and tech-transfer initiatives, accreditation schemes, central dimensioning of programs, and increasing use of performance contracts (Brøgger et al., 2023; Ejersbo et al., 2018).

While the impact of new public management, and marketization has been a dominant feature, especially in Anglo-Saxon countries (Du & Lapsley, 2019; Neumann & Guthrie, 2002; Parker et al., 2023; Roberts, 2004), the Danish reformation has instead maintained a strong involvement from the state and politicians, alongside a small number of market mechanisms (Brøgger et al., 2023; Degn & Sørensen, 2015). The combination of market mechanisms and state control has meant that universities are governed indirectly by incentives, such as performance funding, and politicians directly interfere if they feel the universities are not able to solve an issue themselves or if universities are reorientating to new political agendas too slowly. As Degn and Sørensen (2015, p. 941) state:

“On the one hand, one can describe Danish universities as having been set free in the new millennium, while on the other hand one can tell an equally true story about increasing state control and a growing tendency to steer universities in a specific direction”

The autonomy and independence built into the 2003 governance reform have constantly been challenged and remodelled through political intervention and it is important to understand that Danish universities experience a stronger state involvement than many other university sectors (Wright & Ørberg, 2015). An example showing both aspects of this management approach is the increased focus on graduate employability. In 2014 the Danish government began to centrally dimension the number of study seats at programs with continuous low graduate employment figures. This directly interfered with the universities' autonomy to decide on the size of their programs. Rather than being solely in competition

with each other, universities also use the governing instruments to position themselves towards the ministry and politicians by using good performance as a sign of legitimate behaviour (Madsen, 2022a, 2022b). The MOES has also introduced minimum standards for the number of teaching hours offered (Triantafillou, 2015), politically limited the number of international students (Wright, 2022), forced universities to regionalize their programs by moving study seats away from the main campuses (Brøgger et al., 2023), and most recently changing the length of the Danish master program and dimensioning university intake based on the demographic development.

The state's governing of the universities is therefore interesting in a Danish context as it combines central control and incentivizing. Similarly, the introduction of new steering mechanisms, such as performance contracts or performance funding, does not exclude the future possibility of political intervention and central control and vice versa. This also impacts the university managers as they experience a limit to their work, primarily because political intervention is seen as a strong and detailed interference with their scope for action (Ejersbo et al., 2018).

3.1.2 University funding

3.1.2.1 Funding of research

Similar to the rest of the Western world, the Danish funding system for university research is increasingly tied up to performance criteria, aiming at increasing the quality and quantity of research (Aagaard, 2017; Teixeira et al., 2022). Performance funding for research was introduced in Denmark in 2010, marking a drastic shift in the method of funding that coincided with a political decision to increase public spending on research activities. From the 1970s to 2011, research funding for universities, and other public research institutions, rose from around 0,5% to 1% of GDP, increasing the universities' share of the public finances (Aagaard, 2017). From 2007 to 2011 funding increased from 0,8% to 1% as the result of Denmark signing up for the European Union's goal of using 1% of GDP in research expenditures at public institutions.

Historically the funding of research has developed towards more use of performance indicators and allocating funds through competitive calls from research councils rather than allocating them directly to the universities. From the 1950s to the early 1970s, research funding was primarily tied to student intake, but this was abandoned in 1982 when activity-based funding was introduced for educational activities but a similar model could not be politically agreed upon for the universities (Aagaard, 2011, 2017). As a result, the basic funding for university research was allocated based on former years' funding level, maintaining the difference in funding between universities from 1982 till the introduction of performance criteria in 2010. In 1982 the three oldest and most research-intensive

universities received a higher proportion of funding compared to the newly established universities in the post-war period, which was maintained in the research funding system. In 2010 the government introduced four performance criteria: the university's level of educational funding, level of external funding (all other research funds than the public basic funding), universities' publication production, and the number of Ph.D. degrees awarded (The Government, 2009). The new performance funding model did not reallocate all existing funds from 2010 onwards. Instead, new basic funds were allocated between the universities using the new performance criteria. Each year from 2010 onwards 2% of the existing basic research funds were reallocated using the new performance criteria, ensuring a gradual shift from the historical model towards a performance-based model (Aagaard, 2017; So derlind et al., 2019). In 2019 19% of all basic research funds were allocated through the performance criteria and 81% based on prior funding levels.

It is worth noting that simultaneous with the increasing investments in publicly funded research, competitive funding programs were more prevalent to create competition among research environments and institutions. More public funds were placed in strategic research councils, offering calls for funding where universities would compete for the grants. At the same time, funding from private and EU sources also increase from the 1990s and onwards, with large, private foundations playing a big role. Today the basic majority of the universities' research funds come from either public or private competitive sources, and not the basic funding.

3.1.2.2 Funding of programs

Funding of university programs has since 1982 been tied to the educational activities of universities. Before 1982 programs were financed based on the number of students admitted, input-based, but in 1982 the system changed towards an output-based methodology using forecasts of the number of students who graduated (Aagaard, 2017). In 1994 the funding system changed from using forecasts to being based on the actual numbers of student graduates, making it a fully performance-based system. The system called the taxameter system, used differentiated funding levels between the various programs, which acknowledged that especially technical and science programs were more costly than social science and humanistic programs (Ministry of Education, 2001).

From 1994 till 2017 the funding system went through several smaller changes towards a simpler funding system (DEA, 2011). From 1997 to 2007 dedicated funds for teaching, administration, and building were given but in 2007 the system was simplified so that universities received collective funding to cover all costs related to teaching activities. At the same time, there was a reduction in the number of funding tier programs, going from nine to three tiers of funding. Tier 1 for humanistic and social science programs (like History, Language programs, Law and Business Administration); tier 2 is for programs with some

use of information technology and more theoretical natural science programs (Math, Physical Education, IT and Economics); and tier 3 for technical and natural science programs with laboratory heavy teaching (Engineering, Computer Science, Medicine). Although some reports point towards the initial funding level of the different tiers being estimated through a calculation of the associated costs of the programs (Ministry of Education, 2001) the funding level is meant to be seen as the expected cost of programs and not the actual cost (DEA, 2011). From 1994 to 2017 several different performance schemes were introduced on top of the regular output-based funding system, awarding internationalization, competition time, and elite education (DEA, 2011).

In 2017 the most recent change to the taxameter system occurred with the introduction of outcome-based parameters in the model, introducing broader performance criteria than just the number of graduates (see article 2 for a more detailed analysis of the process behind the new taxameter system). The new taxameter system introduced basic funding for programs, and two performance criteria meant to reward institutions achieving educational quality (The Government, 2017). The new composition of the performance funding schemes is the follows. First is a basis grant of 25% providing a stable income element, making universities less reliant on producing more and more graduates. 5% of the basic funding (1,15% of total funding) is reevaluated every 4th year based on two quality dimensions: a national student survey and the universities' fulfilment of their performance contracts with the ministry. Secondly, 7,5% of the new model is based on two "quality parameters": graduate employability and completion time. Lastly, 67,5% of the funding comes from the production of student FTE, retaining it as the major focus on quantity.

Performance funding is central to the financing of Danish universities, making it one of the most performance-centered funding systems in Europe for both research and program funding (Jongbloed & Vossensteyn, 2016; Pinheiro et al., 2019; Teixeira et al., 2022). Although funding is well-developed in the Danish system,, the use of cost data is less developed. Despite earlier attempts at calculating the unit costs of university programs (Skærbæk, 1999; Skærbæk & Thisted, 2004) there has been little attention to using cost data in the governing of universities until recently (Banghøj et al., 2021). It is worth noting that the universities can freely use the basic research funds and the taxameter funds at their disposal, making it possible to subsidise research activities with educational funds and vice versa. As the finances for research and programs are not earmarked, the income for the two areas cannot be used as an indicator of the resource usage for the university's activities.

In 2018 the Ministry of Education and Science decided on a new common chart of accounts (CCA), essentially a standardized way of registering and allocating costs to calculate unit costs of programs (this is the focus of the first article). The CCA likewise changes the registration from the nature of the cost, salary, building, and operation, to the function of the cost, research, education, and dissemination. The standardization of bookkeeping and cost allocation signalled a shift from mainly regulating universities through finances and controlling the legality of their financial statements, towards interfering with the internal

accounting organization and practices. Although the performance funding model included a focus on productivity and efficient resource usage, as funding levels were politically determined instead of being based on actual costs, it was still decided to introduce a new accounting scheme to calculate unit costs and benchmark costs.

3.1.3 Performance contracts and ministerial oversight

Performance contracts between the individual universities and the ministry were introduced in 1999 as one of the first places in the Danish public sector (Ejersbo & Greve, 2014). The performance contracts were seen as central to the agenda of having autonomous universities accountable to the state but have also been highlighted as more closely tying universities to the official state hierarchy (Wright, 2012; Wright & Ørberg, 2015).

The performance contracts have developed from being standardized across all universities to being more individually tailored to each institution. In 2018 a larger shift happened when the performance contracts were formally replaced by a “strategic frame contract” after criticism of the lack of effects of the old contract on the strategic direction of the universities. The strategic frame contracts also tied a very small part of the universities’ finances to their performance, which had not existed in the old contracts, showing an increasing overlap and entanglement of different accounting technologies in the governing of universities.

The strategic frame contracts consist of four to eight overall strategic goals where a few common goals are mandated by the ministry for all institutions, but the rest are negotiated between the universities and the ministry. The strategic goals cover topics such as the impact and quality of research, its relevance, the quality of programs, student well-being, and collaboration with society. Each strategic goal has several measurements and targets while also specifying which activities the universities will initiate to reach the target. Universities report annually to the MOES on their progress of the strategic framework and are part of the ministerial oversight done by the MOES.

The MOES conducts three types of oversight with the universities. The first type of oversight concerns the academic and strategic development of the universities centred around the annual reporting on the strategic frame contracts. The second type is an ongoing oversight of the legality of the universities’ activities, based on ad hoc cases or investigations initiated by the MOES. The last form of oversight is financial oversight in connection to the universities’ annual reports. The purpose of the financial oversight is mainly a rule-based oversight, checking whether the universities are following the state’s accounting standards, and following up on comments from the auditor’s records. As self-owning public institutions, universities have independent income statements and balances. And they acquire their own auditors instead of being audited by the National Audit Office as state institutions are. Their financial oversight focuses on the financial stability of the institutions, and if the MOES

deems the financial situation unsustainable they can place the universities under sharper financial oversight with more frequent reporting and meetings.

The introduction of the CCA and the calculation of unit costs signals a change in the financial oversight of the universities, as they enable the possibility of comparing the financial performance of the universities, going beyond the current focus of compliance with accounting regulations. Where the strategic and financial oversight is handled separately in the current oversight structure by two different units in the MOES, the calculation of unit costs also allows for a stronger connection between the two. It would be possible to compare the cost of programs with other performance elements, such as completion time, grades or graduate employability.

4. Actor-Network Theory

The purpose of this section is to give an introduction to the central aspects of ANT: the actors, the networks and the theory. It describes ANT's relational and anti-essential ontology, detailing how it impacts the understanding of what actors and agency are. It then discusses how to use ANT as a theory, specifically reflecting on how to contribute to existing bodies of knowledge with ANT. The section ends with describing how ANT has been used in the accounting literature and briefly introduces how ANT will be used in the three articles. Given the articles each present how they use ANT, the section will not go in-depth with the specific terms and concepts used, instead prioritizing a more general presentation of ANT.

4.1 The actors in ANT

ANT's central feature is its insistence on expanding the notion of action and actors to include both human and non-humans, investigating the associations between human and non-human actors, and on defining the specific forms of actions human and non-human actors enable and restrict (Latour, 2005). Coming out of the sciences and technology studies, ANT began with an interest in understanding how scientific knowledge was created by focusing on the mundane and actual practices of scientists (Law, 2008b; Michael, 2017). The particular focus on practice resulted in a need to acknowledge the central role of the laboratory, its instruments, the materials used, and the inscriptions produced in the process of doing science. According to Latour (2005, p. 12), the expansion of the notion of agency and what constitutes an actor is the hallmark of ANT and the first pieces of work in ANT are the first to give a voice to the role of non-human actors, be it ships, scallops, or microbes (Callon, 1986; Latour, 1988; Law, 1986). Law (1986, p. 234) talks about the importance of "a network of passive agents (both human and non-human)" in understanding long-distance control. Callon (1986, p. 201) describes his case of French fishermen in St. Brieuc Bay as one where "the capacity of certain actors to get other actors – whether they be human beings, institutions or natural entities – to comply with them depends upon a complex web of interrelations in which Society and Nature are intertwined".

What constitutes an actor then depends on the empirical case in question but according to ANT, we cannot *a priori* decide the form or shape of the relevant actors present in our case. The researcher should not decide up front which actors are important, which are powerful, which do not matter, nor privilege human actors over non-human (Callon, 1986; Latour, 2005). This is reflected in Callon's (1986, p. 200-201) methodological principle of free associations, which holds that the researcher cannot beforehand decide upon which actors and relationships between actors are relevant, refraining from "imposing a pre-established grid upon these [actors]." (Callon, 1986, p. 201). Including non-humans in the definition of

an actor does not mean that ANT research must include all physical and technical objects in their analysis, nor that ANT claims that chairs, dogs, and machines act by themselves. Latour (2005, p. 72) stresses that “ANT is not the empty claim that objects do things ‘instead’ of human actors”. Rather ANT mobilizes a collective notion of action and agency where different assemblages of both human and non-human actors accomplish action together (Latour, 1999b; 2005). The specific configuration of the assemblage modifies the intentions, identities, and agency of the actors making it necessary to trace and describe the different parts of the assemblage to understand the actors and their agency. The composition of the assemblages matters because “action is a property of associated entities. Agent 1 is allowed, authorized, enables, afforded by the others” (Latour, 1999b, p. 182). The analytical task for ANT-inspired research is to trace and describe the actors involved in doing the action and understand how action is enabled, restrained, and modified by the composition of the actors and their relations, and how changing the composition affects the actors and their ability for action.

From an ANT perspective, an accounting calculation or system in itself does not have agency, but instead, it does something to other actors (e.g. propelling, luring, tempting, directing, disrupting, enabling, and restraining action.) Agency is an accomplishment of the associations of actors. Accounting calculations, for example on the cost of a university program, do something to the actions that other actors can take. Knowing that the Law program at University X is more expensive than the Law program at University Y can create a variety of actions depending on the compositions of the other actors that associated themselves with it. It might encourage a change in resource allocation at University X when the study leader at the Law program argues that they cannot fall behind University Y. The cost calculation can be picked up by other actors to benchmark universities the cost information can have no effect if other actors do not engage with it.

Concerning the first point on the composition of actors and their relations, ANT emphasizes that actors leave behind traces of their existence and actions (Latour, 2005). To leave behind a trace, to make an impression on the world and other actors, therefore means that actors have to do something. As Mol (2010, p. 255) clearly states “An actor acts. It he, she does something, makes a difference. If the actor were eliminated from its setting, it would take others a lot of work to replace these actions.”. The quote by Mol is central to the way ANT perceives actors and the notion of agency, as it draws attention to the effects of actors on other actors. Actors do something, leaving behind traces or effects of their actions. In this way, actors are not stable categories or identities but are situated in time and space. Something might be an actor in one network while not being an actor in another network. Likewise, actors can emerge and disappear in empirical studies as their traces are only related to specific events in time.

It also means that ANT researchers cannot insert hidden forces, social factors, or grey eminences into their empirical stories if there is no trace of the actions of these actors (Latour, 2005). If an actor behaves in a certain way, the researcher should not try to explain

the action by referring to certain social factors, such as late-stage capitalism, the idea of new public management, or social class, without demonstrating the presence of these forces in action in the empirical study. This also means that ANT refrains from claiming that actors are inherently different in size by mobilizing social categories, structures, or theories since the difference in size, and thereby power, between actors does not reside within them but is the result of the associations they establish with other actors (Callon & Latour, 1981; Latour, 1986a, 1986b, 1987). For Callon & Latour (1981, p. 286) the difference between micro and macro actors is that “macro actors are micro-actors seated on top of many (leaky) black boxes”, where black boxes refer to claims that are stable enough to acknowledge as indisputable facts. In cases where actors support and associate themselves with facts (e.g. that humans are rational actors or that the public sector is less productive than the private sector) and these claims remain unchallenged, these facts become more powerful and are capable of associating with more actors, often developing one from a micro- to a macro-actor. Another important aspect of the power relations between actors is the amount and type of non-human actors that can be mobilized and brought in association with an actor, In other words: the size of the actors also depends on the technologies, tools, and inscriptions they have available. As Latour (1986b, p. 26) phrases it, “The “great man” is a little man looking at a good map”. ANT has a distinct focus on power, what grants one power, and the effects of power in its understanding of actors (Latour, 1986a, 2005). According to Latour (1986a, p. 264) “power is not something one can possess – indeed it must be treated as a consequence rather than a cause of action”, meaning that “The amount of power exercised varies not according to the power someone has, but to the number of other people who enter into the composition (p. 265). Actors can exercise more power, having bigger effects, ensuring their interests are the interests of the network, through their associations with other actors and materials (Law, 1992).

4.2 The network in ANT

The second central concept in ANT is that of the network. In ANT the network is directly related to the concept of actors, as the two stand in a reciprocal relationship where one determines the other. The separation of the two is an analytical move rather than something that can reflect a messy reality where the actor-network dynamic cannot be separated in practice. The relationship between actors and networks is one where the actors’ identity, interest, and purpose is an outcome of the actors’ associations with other members of the network and the network is the outcome of the relationships between the actors. The network is a way of describing the messy, strong, long, short, emerging, and capillary associations between actors. As mentioned above, ANT is a “semiotics of materiality” (Law, 1999, p. 4) meaning that actors “have no inherent qualities” (Law, 1999, p. 3) but are the outcome of their relationships and associations with other actors and things in the network.

Law (1992, p. 383-384) exemplifies the mutual relationship between an actor's identity and their relation to other actors and material when reflecting on his identity as a sociologist:

"If you took away my computer, my colleagues, my office, my books, my desk, my telephone I wouldn't be a sociologist writing papers, delivering lectures and producing "knowledge". I'd be something quite other – and the same is true for all of us"

In practice the actor and the network are "two sides of the same coin" (Callon, 1998, p. 8). To trace, describe, and analyse the actors one has to approach the network that performs them by identifying their relationships to other actors. To get an overview and understanding of the network you have to study the actors making up the network. Callon (1998, p. 8-9) provides a precise description when writing that:

"Either one enters the network through the agents and one is immediately tempted to characterize them by the shape of their relationships; or one focuses on the network itself, in which case one uses the associations of its constitutive agents to describe it."

Networks are not static systems containing, structuring, and institutionalizing actors, and networks do "not serve as a context" (Callon, 1998, p. 8) for actors. Networks should not be thought of as stable or fixed structures within which actors are active and do things and they do not "play the role of society" (Latour, 1999a, p. 20). The network is not a social or cultural frame that conditions and affects the actors within making it possible to explain the actors' doing by referring to the network. Networks do not exist as an external reality but are the fabric of reality in ANT as all there is are actor-networks. As networks are constantly being performed by the associations between actors and their actions, they are not stable or permanent but malleable and changeable, meaning that alternative networks and realities can exist, depending on the compositions and activities of the networks (Callon, 2007; Latour, 2005; Law, 1992). Networks represent the flat ontology of ANT (Latour, 2005) meaning that there is nothing behind, beyond, or before the networks: "there is nothing but networks, there is nothing in between them (...) there is no aether in which the networks should be immersed" (Latour, 1996).

Rather than conceptualizing networks as things or objects, Latour (2005) explains, instead, how networks become methods through which we record and order the traces left by the actors. As such the "[n]etwork is a concept, not a thing out there" (Latour, 2005, p. 131). It is a means of capturing and describing the movement, actions, and effects of actors in the textual account by a researcher. The account of the actors becomes the network as associations, traces, and effects are described by the researcher. To describe the actor-networks is to describe reality. It marks ANT's scepticism towards epistemological questions (e.g. how do we know reality) at the expense of ontological questions (e.g. what is reality and how is it made) (Latour, 1999b, 2005; Mol, 1999). Networks formations, movements and effects are not neutral, as the performance of specific realities is political as well (Mol, 1999, 2002).

Therefore, although Latour (2005) stresses the conceptual element of the network, the concept is central to understanding differences in power and effect between entities, stressing that such observable differences are a matter of scale (Callon & Latour, 1981; Latour, 1988; Law, 1986, 1999). Linking to the section above on actors and power, we need to both take into consideration the actors and the network to understand the power they exercise and its effects. Callon & Latour (1981) claim that networks and actors vary in size and power due to the number of associations and actors they are capable of enrolling into their network. Networks are not small or large by definition but become so as an effect of the association and actors:

“There are of course macro-actors and micro-actors but the difference between them is brought about by power relations and the constructions of networks that will elude analysis if we presume a prior that macro-actors are bigger than or superior to micro-actors” (Callon & Latour, 1981, p. 280, *italics in original*).

The concept of the network is closely tied to the notion of actors in ANT, therefore we should think of them as “heterogeneous networks” where “society, organizations, agents, and machines are all *effects* generated in patterned networks of diverse (not simply human) materials” (Law, 1992, p. 380). As Law (1992) notes, networks tend to resemble a single point, or a single actor, when they start to act in practice, which shows how some actors might become spokespersons for other actors in an attempt to represent the entire network, and its associations, as a single force (Callon, 1986; Latour, 1987). This happens through processes of translation where actors attempt to align the identity, interests, and goals of other actors in pursuing a common goal (Callon, 1986; Latour, 1999b). By defining and creating the process and technology enabling the achievement of the common goal, known as the obligatory passage point, actors are aligned in the translation and, if successful, eventually become visible as a single network as they are black-boxed and their complexity is hidden and taken for granted (Latour, 1999b; Law, 1992). When complex networks are perceived as a single point they are punctuated, appearing as a single object or organization (e.g the OECD, a university, or an accounting technology.) In order to study these networks and their effects, it is, therefore, necessary to enter the field before the controversies around them stop (Latour, 1987) or use the concept of the network (Latour, 2005) to retrace and open the network (Latour, 1999).

4.3 The theory in ANT

Given its inclusion in the name of Actor-Network Theory, one would assume that ANT authors described it as a theory; however, this is rarely the case. Many ANT authors have gone to great lengths to claim that ANT is not a theory, at least not in the traditional understanding among social scientists (Latour, 1999a; Law, 2008a; Mol, 2010). ANT should not be perceived as a theory of the social that attempts to explain how society affects actors

but rather as a “method, and not a theory” (Latour, 1999a, p. 20). Considering ANT as a method, or a method-theory (Lukka & Vinnari, 2014), means adhering to the ideas and vocabulary of ANT to travel to interesting events and identify the stories and theories of the actors as they go about their reality construction. In this way, ANT is not a theory, as theories are predominately seen as offering explanations for why something happens, and as (Law, 2008a) points out ANT “is descriptive rather than foundational in explanatory terms”. ANT does not allow researchers to provide strong explanations for why some things happened in a certain way, as the focus is on how events occur, how they are arranged, how different materials are associated, and what the effects of these associations are (Latour, 2005; Law, 2008b, p. 632). To answer these questions ANT provides researchers with a toolkit and vocabulary about agency, ontology, epistemology, method, ordering, and effects (Latour, 2005; Law, 1999; Mol, 2010) combined with a sensitivity to actors’ ability to describe their own reality and practices (Latour, 1999a, 2005; Mol, 2002).

In practice, an ANT study will be one that describes the actors, their associations, their practices, and the effects actors have. The role of the researcher is to narrate and textualize the description, initially refraining from providing their own explanations and theories about what is going on and how. ANT prioritizes description over explanation. Latour (2005, p. 137) notes that “if a description remains in need of an explanation, it means it is a bad description”, emphasizing that a good description is its own explanation. In Callon’s (1986, p. 196) classic study of the fishermen at St Brieuc Bay his ambition was to “describe[] a scientific and economic controversy” using the vocabulary of translation to narrate and structure his descriptions. The emphasis on description, rather than explanation supports the initial claim that ANT is not a theory.

To understand the “theory” in “actor-network theory” we need to reconsider what a theory is and does. Mol (2010, p. 261) argues that “ANT is not a theory. It offers no causal explanations and no consistent method” but she still maintains that by redefining theory to mean something else, ANT is in fact still a theory. Rather than offer explanations, ANT is a theory in the sense that it “offers a repository of terms and modes of engaging with the world” (Mol, 2010, p. 262) to help researchers find new stories to tell and new approaches to understanding the practices of actors.

In the above section, one might get the impression that ANT naively reduces the role of the researcher to a scribe, faithfully noting down what goes on around them. Such a conceptualization perceives the researcher as a neutral and undisturbing force in the network, which does not align with how ANT authors image the researcher. Latour (2005, p. 128) states that a good ANT study is a “good text” where all actors do something. The role of the researcher is to construct such a “good text”, acting as the author who filters, selects, and reflects upon which part of the network observed they can bring into the textual account. The researcher is not simply a tape recorder but an active actor in the network, who through the work of writing the descriptions of other actors in the network becomes a mediator themselves. ANT’s insistence on letting the actors define their own world does not exclude

the researcher from the process of theorizing. As Stoclova (2013, p. 91) writes, in ANT the theory “does not stand in contraposition to description and actors’ accounts but is coextensive with them and not exclusively in the hands of the social scientist”. The researcher is part of the network both in data collection and in writing up the accounts of what actors do and how they do it. However, this is not in contradiction to the ANT approach, as long as the researcher follows the principles and vocabulary of ANT in writing up the accounting allowing the writer to produce a good account.

A point of critique directed at ANT is that its conception of theory prevents it from making a “theoretical contribution to prior research that characterizes the normal science tradition” (Lukka et al., 2022, p. 137). The critique from Lukka et al. (2022), based on the use of ANT in accounting research, is quite substantial, as it claims that theory development and theoretical contributions using ANT inherently contradict the ontological and epistemological position of ANT. According to the authors, contributing to theory development using ANT is in fact against what ANT is, leaving the researcher with the choice between doing ‘proper’ ANT research or contributing to theory development. Lukka et al. (2022) argue that ANT is an a-theoretical approach to research, disregarding existing knowledge and theories when forming research questions, analysing cases, and making contributions to the research field (see Table 1 in Lukka et al. 2022, p 141). The authors contrast this with a “normal science” approach to research, where theory and existing knowledge play a large role in the entire research process, from formulating the research question to making a theoretical contribution. I agree with Lukka et al. (2022) that ANT rejects theories and the role they play in the normal science tradition. Given ANT’s founding ambition of moving away from what they saw as traditional social science explanations and theories it does, however, seem inappropriate to evaluate ANT’s view on theory against the normal science tradition. As written above, ANT accepts it is not itself a theory in the traditional sense but advocates a new perspective on theory as a set of sensitizing terms and toolkits for telling interesting stories (Latour, 2005; Mol, 2010).

The second point of critique from Lukka et al. (2022) is whether ANT’s epistemological stance allows it to contribute with knowledge to existing bodies of knowledge, and what the role of existing knowledge and theories is in ANT research. A central claim is that classic ANT refrains from using existing knowledge and theories in their work and insists that all insights generated by ANT are situated and local, prohibiting generalization to other empirical settings or theoretical knowledge. They write, that in ANT “there is no place for theory, other than the basic conceptual building blocks provided by ANT” and that “theory is viewed as one of the essential structures to be avoided” (Lukka et al., 2022, p. 141). Such an argument requires an extremely literal and un-ironic reading of the ANT literature, ignoring much of the theoretical discussion happening in both the classic and newer works. As several overviews of ANT point to, the authors drew inspiration from social studies of science, Michel Foucault, sociology of knowledge, Michel Serres, and ethnomethodology (Law, 2008b, 2008a; Michael, 2017). The origin of ANT was a reaction to existing theories on the construction of knowledge, the practices of scientists, and understandings of power,

and actors. At the same time, stating that the initial ANT works were not interested in contributing to existing knowledge and theories is a stretch. Law (1986, p. 235-236), in his paper on long-distance control, explicitly talks about the three contributions his paper makes to the literature on the sociology of technology and knowledge, to the sociological understanding of artefacts and non-humans, and to historical work on imperialism. The starting point of Callon's (1986, p. 197-199) article on the four moments of translation is a discussion of the current sociological perspective on science and technology, outlining three difficulties found in the existing literature. He continues to propose how to overcome these difficulties by introducing three methodological principles and a vocabulary of translation as organized in four moments. Latour (1986b) engages even more extensively with existing literature in his article on visualization and cognition. He uses theories and knowledge as resources to organize his own argument on the role of inscriptions and visualization as central to understanding, and to some extent explaining, how science and knowledge develop and make some actors powerful. More recent ANT work also engages extensively with theories and existing knowledge (Callon, 2021; Latour, 2005; Mol, 2002), showing that ANT does not refrain from engaging with and contributing to existing bodies of knowledge.

To me, the argument that ANT research faced a challenge in contributing with new theories and new theoretical insights is not fully supported in the original ANT works, nor in practices within the accounting literature (see section 4.4 below). In ANT existing knowledge and theories serve as one among many resources that can be mobilized to tell an interesting story (Hansen, 2011), and theories themselves might become the object of study (Callon, 1998, 2007) (see also paper 1). A worthwhile point from Lukka et al. (2022) is that mixing different theoretical perspectives and epistemological stands can be problematic as it might crowd out the valuable parts of what makes a good ANT study. They write that such a mix-up might "lead ANT-inspired researchers to privilege conceptual sophistication and concerns with the development of a generalizable conclusion over the in-depth engagement with context-specific practices and complex processes that arguably constitute "'good' ANT research" (Lukka et al., 2022, p. 158). This is a real danger, as it might result in a poorly conducted ANT study at the expense of theoretical generalization but unlike Lukka et al. (2022) I do not see it as an inherent problem of all ANT research that attempts to make theoretical contributions. Rather, it is possible to write a compelling, interesting description of actors in a network, what their actions are, how they do things, and from there tell a story about that story to the existing literature and make a contribution to it. As Law (2008b, p. 630) writes "abstraction is only possible by working through the concrete (...) theory is done in the form of case studies". ANT does not reject theorization but rather does it through the empirical cases they study and describe rather than as an abstract exercise detached from the concrete cases.

4.4 ANT in the accounting literature

Within the accounting literature, ANT has been one of many approaches to understanding how accounting works as a social practice (Baxter & Chua, 2003; Justesen & Mouritsen, 2011; Robson & Bottausci, 2018). The research builds on the interpretative tradition within accounting of studying the social and institutional aspects of accounting, and the specific practices and context in which accounting is done (Burchell et al., 1980; Hopwood, 1983). This section will first review the early usage of ANT in accounting, from there moving onto some of the current trends and usage of ANT in the accounting literature.

In the late 1980s and early 1990s accounting studies began to mobilize various terms from ANT in qualitative studies, often combining them with other theoretical concepts, like governmentality. Miller (1990) used the notion of “centers of calculation” from Latour (1987) together with the idea of programs and technologies from the governmentality literature, to theorize on the relationship between the state and accounting and how accounting enables the state to intervene. Adhering more closely to ANT, Preston et al. (1992) follow the process through which management budgets are introduced or attempted to, in the British health care sector, perceiving the budget as a technology that is fabricated. Relying primarily on documents the authors trace the processes of designing, fabricating and using the new budgets and contribute the failure of the process to the fact that “the management budgeting initiative is failing to develop a network and the process of fabrication is collapsing” (Preston et al., 1992, p. 585). Chua (1995) follows a similar process of fabrication but does it through an ethnographic study of the design and implementation of case-mix accounting in three hospitals, inspired by international trends in hospital management. Using the notion of translation (Callon, 1986; Latour, 1987), Chua traces the network generation done by experts, and the use of inscriptions, showing how accounting is the result of tying together actors and interests, rather than due to its technical and economic superiority. Lastly, Robson (1992) contributes by conceptualizing the role and effect of accounting as a form of inscription, fleshing out the ANT term in an accounting setting.

These studies highlight several important topics that have inspired ANT scholars in accounting: the role of accounting in controlling and governing actors, the creation, or fabrication, of new accounting technologies and innovations, and the travelling of ideas and concepts. Later studies also include how accounting structures time and space, and coordinate action and its performative role (Justesen & Mouritsen, 2011). The following short review focuses on three themes in the ANT-inspired accounting literature: The role of accounting in controlling and governing, the translation of ideas into practice and the performative effects of accounting.

The first theme is the role of accounting in controlling and governing others, especially how accounting creates financial visibility, enabling control, and how accounting is mobilized in conflicts between actors. As mentioned above some of the initial accounting studies using

ANT focused on how accounting created a new form of visibility, and the qualities of accounting inscriptions controlling others at a distance (Miller, 1990; Robson, 1992). Accounting inscriptions, cost accounts, budgets, reports on performance, can be circulated while maintaining their stability, making the inscriptions mobile and stable, while being combinable with other inscriptions (Robson, 1992). While the work of Miller (1990) investigates the state as the center of calculation, later research also focused on centers of calculation and action at a distance within organizations. In his study of the introduction of case-mix costing at a New Zealand hospital Lowe (1997) finds that the new accounting technology “enables ‘action at a distance’, administration at the center can view through the technology the cost of a blood transfusion (...) (Lowe, 1997, p. 447). The new accounting calculations allowed the administrative center to use the new visibility to control the individual healthcare professionals, through the accounting inscription sent to the administrative center. Accounting inscriptions not only allow for control at a distance activity, it is also central to organizational power struggles concerning organizational decisions or what accounting should be. In Mouritsen (1999) different internal groupings struggle over defining the strategic direction of the case company and what it means to be flexible. Each group promotes a different form of management accounting, outsourcing fixed costs or making them direct through ABC, to support their version of flexibility, showing how conflicts over accounting are not only technical issues but tied to broader organizational concerns and questions of control. Christensen et al. (2019) show how accounting calculations are mobilized in trials of strength between actors about questions on whether to outsource facility management or not. The accounting calculations about the cost and quality of the proposed solutions are central in the trials, as they become part of the resource the different networks can mobilize for their solution and against the others. Laguecir et al. (2020) likewise use the concept of trials of strengths in their work on costing in a social housing project, showing the strength of established networks in resisting changes.

How ideas travel and are translated locally is another central topic for the ANT-inspired accounting research. Mennicken (2008) identifies the local translations involved in implementing and using global auditing standards in post-soviet Russia. She shows both the intricate and local work needed to make international standards work in a local Russian audit firm, but also how the local becomes connected to global networks and ideas. To make the global local, there was also a move to make the local global through the translations, which also opened up for local variation in how the standards were practiced in the audit firm. Briers & Chua (2001) find similar results in their case on the local implementation of ABC in an Australian aluminium company. In the study global experts promote ABC as a superior management idea, tracing the attempts of a local accounting group to translate ABC into the management system at the company. The global idea of ABC was never successfully translated into the company as it was abandoned after a yearlong process, and despite the strength of its global network ABC did not manage to find support among human and non-human actors in the case company. In both cases, experts were central actors who carried

the ideas around in the global networks attempting to translate them into local practice. The works of experts in carrying ideas and building and promoting “facts” are also a key issue in the literature (M. Christensen & Skærbæk, 2010; Chua, 1995; Qu & Cooper, 2011). The travelling of ideas does not also have to be from global to local but can also be how common ideas are translated into differing practices in specific settings. Pipan & Czarniawska (2010) find that the common idea of “management accounting” is translated differently into different areas of the Italian public sector, underscoring the work and resources needed for successful translation and the potential of failure. Accordingly, common ideas depend on the local users, which challenges the diffusion of management practices and their effects in the public sector (Arnaboldi & Palermo, 2011).

One of the central effects of ANT is that it has “brought back the role of calculations as central objects in the study of accounting phenomena” (Justesen & Mouritsen, 2011). Accounting systems and calculations are not only tools in the hands of other actors but themselves instigators of change and action. Accounting calculations are seen as having performative effects (see paper 1 for a more thorough review of the performativity literature) as they drive forth change by visualizing and enabling new paths of actions (Revellino & Mouritsen, 2015; Skærbæk & Tryggestad, 2010). In this way they “perform” reality in a certain way, acting as “models that would influence the world because they would lure people into action” (Revellino & Mouritsen, 2015, p. 32). As Skærbæk & Tryggestad (2010) show in one of the first accounting papers on performativity, accounting technologies themselves have agency in changing reality. They underscore this when writing that “the question of ‘who’ is the strategic actor, can be extended to mean ‘who or *what*’” (Skærbæk & Tryggestad, 2021, p. 109, italics in original), centering the agency of accounting technologies and calculations. Accounting technologies and calculations frame reality in a certain way, performing a space of acceptable and possible action (Mouritsen et al., 2022; Skærbæk & Tryggestad, 2010) making accounting a strategic and central actor. Such framings are not stable nor permanent, and framing reality in a specific way opens up cases of overflows (Themsen & Skærbæk, 2018) or counter-performative effects (Boedker et al., 2020). Both the ANT versions and other perspective on performativity are gaining more and more use in the accounting literature (Vosselman, 2022; Yu & Huber, 2023), but so far the role of accounting in performing economics has gained less attention (although see Pucci & Skærbæk (2020) and Christner & Sjögren (2023) for expectations) despite it being a central part of the original ANT focus on performativity (Callon, 1998, 2007).

In this dissertation, ANT is used to analyse and understand the role of accounting in the governing of and at public organizations. With its understanding of actors and networks, ANT allows me to follow accounting technologies as they are developed, implemented, and used going across organizational and national boundaries in tracing the translation and performance of specific ideas and accounting technologies. ANT allows me to focus on the dynamic changes involved in governing, focusing on both human and non-human actors as accomplishing governing and control as a collective accomplishment. In paper 1 I specifically draw on Callon’s (1998, 2007) concept of the performativity of economics in

tracing the struggles involved in measuring public sector productivity, studying how public sector productivity as an economic concept is performed through accounting. The second paper follows the implementation of a new performance funding model into a case university through the dual notion of translation and counter-translation (Callon et al., 1983) and problematization (Callon, 1980, 1986), showing how different groups of actors implement the funding systems into their local budget models. The last paper more broadly relies on the ontological and epistemological ideas from ANT to analyse the production of “accounting opacities” and their organizational effects. While not using a specific concept from ANT, the paper perceives the identity of actors as outcomes of their positions to each other in the network, and accounting practices as capable of creating new organizational realities through the forms of visibility they create.

5. Methodology

5.1 The research principles of ANT

Given its ontological and epistemological assumptions and tenets, using ANT in research projects has clear implications for the research approach and the methodological considerations that follow. ANT's understanding of actors, networks, the dynamic and performative ontology, its methodological principles, and dictums all informed and influenced my approach, acting as "sensitizing terms" (Mol, 2010, p. 261) to assist me in researching the role of accounting governing at and of universities. ANT also has a series of methodological guidelines and principles (Callon, 1986) that help make vague ideas about "following the actors" or "tracing the associates" (Latour, 2005) more tangible and workable in practice. This helps structure the interesting storytelling that Law (2008a) suggests is the strength of ANT.

Callon (1986) presents three methodological principles for ANT, which have assisted and guided me in my methodological work during the thesis: agnosticism, general symmetry, and free associations. *Agnosticism* concerns the attitude of the researcher toward the empirical phenomena researched, avoiding fixing and censoring the actors' explanations or the issues or topics they wish to discuss and comment on. This means that "[n]o point of view is privileged and no interpretation is censored" (Callon, 1986, p. 200), and that the researcher cannot in advance decide what the relevant or interesting aspects of the study will be. At the same time, actors are allowed to comment on the topics they see as relevant, and no topic, comment, or event should be censored due to assumptions about what the actor is and should refrain from talking about. The second principle is that of *general symmetry*, meaning that the researcher must "use a single repertoire" (Callon, 1986, 200) of terms and concepts to all empirical material and situations, and the researcher cannot change vocabulary depending on the topic at hand or the actors investigated. The researcher must use the same analytical vocabulary when describing political and technical processes and the same for both human actors and non-human actors. The last principle is that of *free associations* which specifies that there are no inherent or prior distinctions and differences between human and non-human actors, and any differences "are the result of analysis rather than its point of departure" (Callon, 1986, p. 201). In practice, we will observe differences between actors (both human and non-human) but according to the principle, we must describe and investigate how and why these differences exist rather than assuming them. In continuation of this, the use of [explanatory] theory to explain the activities, identities and interests of the actors is not appropriate, as Callon (1986, p. 201) explains:

"Instead of imposing a pre-established grid upon these [the actors], the observer follows the actors in order to identify the manner in which these define and associate the different elements by which they build and explain their world, whether it be social or natural"

The principle of free associations sets out the analytical strategy of ANT, which is rooted in the ability to describe the practices, associations, and effects of actors, meaning that description is given precedence over explanation in the analysis of the empirical material. This reflects ANT's view on theory, prioritizing description and telling a story rather than using prescription and explanatory theory to analyze the empirical material, as mentioned above in section 4.3.

A last principle from ANT that I have found inspiring is Latour's (1987) insistence on focusing on controversies in order to understand what is going on and what is at stake. Controversies stand out as empirical events and processes. Controversies show how the identity of actors and their interests and not settled or black-boxed, meaning that is possible to describe and follow the processes of reality creation as they happen. This is Latour's (1987, p. 258) first rule of the method and the point of his phrase about studying "*science in action*" (italics in original), instead of entering when the facts and disputes are closed down. Through ANT we can follow the processes through which reality is performed in a specific way (Latour, 1986a; Law, 1999; Mol, 2002), and by investigating controversies we highlight the events and processes where different performances clash and struggle to exist (Callon, 2007). The principle states that we should either enter the field when the controversies are still happening and as they unfold (as Callon (1986) does in his paper on the scallops in St. Brieuc Bay), or retrace and reopen the controversies to describe what happened (as Latour (1988) does in following Pasteur or Law (2002) in his retelling of the stories around the TSR aircraft).

5.2 The research process and engaging with the field

5.2.1 Engaging with the field

My own engagement with my empirical field (Ahrens & Chapman, 2006) started before my Ph.D., as I had several encounters with the field and its participants before officially starting my research position. The first encounter was in 2018 during my master's studies, where I wrote an assignment on the then recently published report on a new common chart of accounts (CCA) for Danish universities using ANT as a theoretical lens to understand how a new accounting technology was designed. After the assignment, I worked as a student assistant at the Department of Accounting at CBS on a research project with my current Ph.D. supervisor. The purpose of the research project was to investigate Danish universities' resource usage and it ended up focusing on the CCA, allowing me to further investigate and engage with the actors involved in the design and implementation of the CCA. My pre-Ph.D. journey ended with my master's thesis, which expanded upon the two first projects by including a broader focus on the different ministries and agencies involved in the work around the CCA. My prior encounters with the field, the CCA, and the actors involved gave

me a strong insight into the Danish university sector, the process of designing and implementing the CCA, and more general knowledge about the use of accounting at the universities. When starting my Ph.D. I knew a lot about the CCA and other issues around the use of accounting in the management of universities, such as performance funding, quality assurance, and ministerial financial supervision. My preliminary insight into the empirical field shaped my research interest and focus and provided a strong foundation for exploring these topics more in-depth.

Initially, I planned to do most of my PhD. around the CCA, continuing to follow it during its implementation and use. I started by contacting two former interviewees from our research project on the CCA (Banghøj et al., 2021). They were both administrative heads of their university (university director), and therefore capable of granting me further access to how the universities worked with the CCA. I was allowed to follow both universities' processes of implementing and using the CCA and I gained access to the local accounting units responsible for the CCA at both universities. My original plan was to follow both universities and examine how their practices might differ as the CCA would have to interact with the existing accounting practices and technologies. After a period of following both universities, I decided to focus my efforts on Absalon University stopping my process at Einstein University. At Einstein University there were relatively few people were involved in the process and, at the time of my first interviews, the university seemed to have done much of the work in implementing the CCA. At the same time, the small size of the group involved in the process meant they had less time for me and continuous access began to become harder to uphold. Due to the lack of controversies at the time, as they seemed to have been settled, and increasing challenges with access I focused entirely on Absalon University.

I started my field research at Absalon University during the Covid-19 pandemic in 2021, which meant that for the first year and half, all my contact was via email or through videocalls. I was directed to the relevant subunit within the finance unit at the university and from there I was attached to an accountant in charge of the CCA project. I had several interviews with my contact person and I was invited to follow a coordination group on the CCA with representatives from different sub-units in the finance department. On a more or less continuous basis, I followed this group from 2021 till 2024, although the meeting frequency, the purpose, and the members of the groups have changed during the period. I experienced a great willingness from my contact person and their manager to assist my project, helping me to get access to relevant actors within the university. A large part of the willingness came from the finance unit's values. Being part of the university, the finance unit continuously stressed that they wanted to contribute to research, seeing it as a part of the values of the entire university. It surprised me how easy it was to gain access across the entire university and I believe a large part of this ease stemmed from a sincere wish to contribute to research from both managers, administrative staff, and faculty. I also sensed a political agenda in having me attached as an "expert" to help them promote the university's view on the CCA, making sure that someone observed and reported on the challenges around

the CCA. In this way, I felt that I was perceived to help the university challenge the CCA and act as a messenger of their thought to the rest of the network.

I soon began to experience that most of the interviewees outside of Absalon University also viewed me as an expert messenger of their messages and I started to use it as an active resource during interviews and contact with other actors. In contacting the ministries and agencies involved I was explicit in my engagement with the universities, meaning that often actors would want to talk to me to ensure that I got their version of the story. Eventually actors gained an understanding of my research as a slow process where what they told me would not be in the newspapers the next day. Therefore, my role as a neutral expert passing judgment and as a political advocator became less present during my time in the field.

In 2022 the CCA had been delayed by a few years, and my initial plan of investigating how the unit costs produced by the CCA would be used became more unrealistic. Much of the delay was due to the universities having trouble with implementing the CCA, resulting in the local process at Absalon becoming very repetitive, technical, and slow. In 2022 I made a choice about how best to follow the actors and chose to broaden my attention to other accounting practices at the university. Reading the interviews I had conducted so far there were two other empirical issues that stood out. The first was a broader issue of how actors used accounting in the management of universities, especially teaching activities. Actors had an abundance of devices and information available to them but their usage of them varied a lot and many different practices were initially evident. The second issue was more specific to the budgeting at Absalon University, where a new budget model had recently been introduced as a reaction to a new ministerial performance funding model for university programs. I therefore decided to follow the actors in these new directions, while maintaining an engagement with the actors working on the CCA. The new direction led me more broadly across the university as I moved from the central finance unit out to faculties and departments where I interviewed more academic managers and decentral administrative staff at Absalon University. I also returned to Einstein University as the topics of university management had also been a theme in my interview with actors there and my ambition was to follow the different practices across universities in this topic.

In parallel to my engagement with Einstein and Absalon University, I engaged with the various ministries and agencies involved in accounting and the universities. Similar to the universities, I experienced an initial openness to my project, reflecting the values of Danish officials as being open to the public and willing to assist research and knowledge production. While this gained me initial access to the ministries and agencies, the value of the officials also became a point of contention in my project. My interviewees often stressed that they could not speak about politics and the goals of the politicians. Officials without managerial responsibility were especially reluctant to go beyond technical and official explanations. At the same time, my interviewees demanded much more rigid processes for using their interviews and quoting them, all of them wanting to approve the final quotes being used. I agreed to this for purposes of accessibility but also saw it as a sign of awareness on their

side towards me, suspecting or fearing that I would disclose sensitive information or use the interview in works outside of my PhD and potentially harm them. This tension became less prevalent during my thesis but as recently as 2023 I received a phone call from an official informing me that I would be allowed to follow an internal meeting at the ministry but that the officials had been reluctant to admit me due to my critical positions. This made me reflect upon whether I had been too critical in voicing my opinions during my interviews but I also perceived it as a broader reflection of officials fearing they would end up on the front cover of newspapers or be publicly criticized somehow. In regard to my critical position during data collection, this was a deliberate interview approach, as explained in section 5.3.2 below. It did, however, clash with the practice of the officials as they were restrained by political decisions and bureaucratic decision procedures. The restraint on them by others meant that they could recognize issues and controversies but expressed frustration about their lack of ability to change anything, meaning that my critical approach became a source of frustration rather than a way for actors to reflect on their actions (Kreiner & Mouritsen, 2005).

5.2.2 The research process in a performative case study

The research approach in the thesis is a qualitative case study approach that aims to gain deep insights into specific topics, phenomena, and issues through an empirical investigation of the actors involved. According to Law (2008a, p. 141) ANT is a practical approach to studying actors and relations and should not be discussed in the abstract as it “is always grounded in empirical case studies”. The variety in qualitative research approaches (Bartlett & Vavrus, 2017; Hansen, 2011; Langley & Abdallah, 2011; Welch et al., 2011) requires reflections on ontological and epistemological issues. To ensure a strong method-theory fit (Gehman et al., 2018) researchers should critically consider how they view and approach case studies. The role of paradigms is recognized as having an impact on the topics, methods, and results of the research conducted (Baxter & Chua, 2003; Chua, 1986; Covaleski et al., 1996; Lukka, 2010). As Lukka (2010, p. 111) notes, “[b]eing knowledgeable about the assumptions and values we mobilise in our own research should be recognised as one of the virtues of true scholarship.”, and I have strived to be consistent and reflective about how ANT as a research paradigm has impacted my work.

Hansen (2011) outlines two positions on case studies; the ostensive and the performative, each with its own set of epistemological and ontological assumptions underpinning them. The ostensive position reflects a realistic epistemology and ontology, where reality exists externally and independently from the researcher and where careful use of methods can help reveal this external reality, thereby contributing to theoretical explanations for the observable empirical phenomena. In Hansen (2011) this position is represented by Yin’s (1984) early work on case studies and could also include the work of Eisenhardt (1989). On the other hand, the performative position reflects the methodological principles of ANT, exemplified by the work of Latour, Callon, and others. There are several differences between

the two positions across several different ontological and epistemological issues. In the dissertation, I follow the performative position, where the properties and nature of reality cannot *a priori* be defined. They must be investigated and described through empirical investigations (Latour, 1986a), which also means that the researchers themselves become part of creating reality, or at least one version of it, through their practices. There is no separation between the researcher and the empirical case studied, making the researcher an actor in the actor-network, changing their own and others' identities (Law, 2004).

In accounting, case studies are widely used to create both practical and theoretical knowledge and new insights as they get closer to the practical reality of the people doing accounting (Cooper & Morgan, 2008; Parker, 2012) and reflect the ambition for qualitative accounting research to study the practices of accounting (Hopwood, 1983; Hopwood & Miller, 1994). Case studies are becoming more influential in qualitative research in the social sciences and accounting, which reflects a broader recognition of their value in producing scientific knowledge (Flyvbjerg, 2006) and specifically within accounting (Cooper & Morgan, 2008). Qualitative accounting researchers actively engage with the actors and their practices, making it possible to go beyond prescriptions or normative ideas of accounting practices and critically reflect on what is going on (Vaivio, 2008). The qualitative approach in case studies “allows for the development of theory where there was [no theory previously], the challenge to existing unsatisfactory theorizations, the critique of policy and practice, the rewriting of conventional wisdom, and the reconstruction of taken-for-granted histories” (Parker, 2012, p. 56).

The performative case study approach formed the overall approach to my empirical field. In the concrete planning, I aimed to balance a more structured approach, continuously relating the research question with specific theories and methods (Maxwell, 2014; Silverman, 2020), and the feeling of being “*in medias res*” (Latour, 2005, p. 123). My approach towards doing a qualitative field study is the ongoing reflection on the relationship between different aspects of the research process. These aspects are the research question, the appropriateness of my methodology, the methods used, and the empirical domain I investigate. Lastly there was the ongoing reflection on how to make a “fit” between these elements resulting in a coherent and consistent methodology (Ahrens & Chapman, 2006; Maxwell, 2014). Underpinning all these elements was a strong ambition and goal of theorizing from my empirical material to make sense of the field through a deliberate choice of theoretical terms and vocabulary which have informed the entire thesis. My engagement with the field has been informed by ANT, where I drew on the vocabulary of ANT to inform my interaction with the field and inform my ongoing theorizing of the accounting practices I observed. I have attempted to follow the process expressed by Ahrens & Chapman (2006) & Chua & Mahama (2012) to approach and engage with the field and my empirical material with theory and theorizing in mind and avoid seeing and using theory as an “afterthought” (Chua & Mahama, 2012, p. 81) after the engagement with the field is done.

For my research, this meant an ongoing orientation and interaction between three different elements in my engagement with the field; the ANT literature used as a method theory (Lukka & Vinnari, 2014) to understand the field through the accounting literature; the different domains and discussions in the literature that I wish to participate and contribute to; and lastly, reflecting on the different methods used in the field and the practical, political and ethical limitations I encountered. Engaging with one's empirical field is not simply a matter of recounting or retelling the practices through a form of naïve empiricism, as the fields "can only be made sense of if it is defined with reference to theories that can illuminate its activities" (Ahrens & Chapman, 2006, p. 827). In this thesis, the vocabulary of ANT assisted me with theoretical concepts that structured the empirical material collected, the types of questions asked of the material, the analysis of the material, and linking the practice of the actors to the accounting literature.

In practice my strategy was to "follow the actors" (Latour, 2005) and "shadow[] the technologies" (Czarniawska, 2007), resulting in me following accounting technologies to where they were designed, implemented, and used, which often meant crossing organizational boundaries. In the case of the CCA, I started from the official report on the CCA, published in 2018, to the specific members of the committee, the documents referenced and used in the committee, to the universities implementing and using the CCA, to the Ministry of Education and Science in charge of designing the CCA, to the Ministry of Finance and the Agency of Public Finance and Management, and eventually to the EU and OECD. As part of the tracing of the actors, many non-human actors also emerged. These include the state's accounting system, the state's chart of accounts, local accounting guidelines, consultancy reports, facility management systems, spreadsheets, and many others. The ANT-inspired approach resulted in me going beyond formal organizational boundaries and allowed me to view organizations, technologies, and actors as the outcome of their relations. This made it necessary to follow these actors wherever they went (Czarniawska, 2004, 2007). The vocabulary of ANT not only assisted and informed my data collection but it also informed the structuring, interpreting, analysing, and understanding of my empirical field.

An example of this is from my second article on the use of internal budget models to implement governmental performance funding for university programs. Initially, I encountered the budget model as part of following the CCA, where actors would mention their budgets and budget process as the most important accounting tools they used in their practice. After a few more interviews it became apparent to me that when actors spoke about the budget models they were not talking about the same thing and, as I started to read through the interview transcription, several different budget models were seemingly working simultaneously. To understand this I visited my known ANT vocabulary considering whether it could be understood as a case of multiplicity similar to Mol's (2002) study of healthcare practices around atherosclerosis, resulting in multiple versions of the seemingly same disease being performed through different practices, technologies and tools. Although there were similarities between my case and Mol's notion of multiplicity I did not see a strong fit, as the actors in my case seemed to try knowingly and intentionally to

problematize, modify, and change the budget models as they have to implement and use them. From there I considered using Callon's (1986) four moments of translation to understand the process, allowing me to consider the processes through which actors' interests are connected and brought together in forming a new actor-network and also when introducing and stabilizing new technologies. While the moments of translation fitted well with the problematization and the ongoing attempts at creating and using a new accounting technology, I struggled with how to analyse the multiple accounting technologies I empirically observed. This finally led me to Callon et al. (1983) who talk about both translations and counter-translations, which to me made sense in relation to understanding how a single technology might develop into multiple versions through ongoing problematization resulting in translation or counter-translations. My initial aim at approaching the field with a strong focus on theorization required a flexible and explorative engagement with both my empirical material while using theory as a resource to understand and challenge the observed practice (Hansen, 2011). ANT assisted my approach on how to follow the actors by sensitizing myself to the empirical material and on how to theorize the accounting practices I observed.

The flexible approach to my research design reflects Latour's (2005, p. 123) observation that in adhering to the ANT approach the researchers always find themselves "*in medias res*" trying to make sense of the empirical world around them, finding the relevant actors, identifying the important events and issues, and looking at the relations between actors. To follow the actors in this messy situation, therefore requires a willingness to be flexible, adjust course, and change focus during the study, as was the case when I changed my focus from the CCA towards budgeting change at one university. More broadly qualitative researchers are often left with no other choice than to be flexible and prepare to adjust their methods and research approach when their plans make contact with the field. This is critical as over-adherence to preformulated plans and theories restrains the possibility of identifying interesting topics and situations. Reflecting on this situation Covalleski & Dirsmith, (1990, p. 544) state that: "The questions asked, and methods used in observing behaviour are largely invented *in media res*, at the research site, rather than developed a priori, for the social context to drive the research rather than a preformulated theory". Flexibility in the research approach and an open mind towards how the empirical field behaves, acting as a valuable resource in my dissertation.

5.3 Collecting the traces

5.3.1 Observations

Observations is the first method I used to gather empirical material. I chose to do observation as I found it to be a very concrete translation of "following the actors" (Latour,

2005). During my engagement with the field, I ended up doing two types of observations. First, I continuously followed the group at Absalon University working on the CCA from 2021 to 2024. Secondly, I participated in several ad hoc meetings at Absalon University, Einstein University, and the MOES as an observant, often attending a single, independent meeting. In total I observed 51 hours of meetings during my engagement with the field. See appendix 1 for an overview of observation activities.

One of the strengths of observations is that rather than getting a retelling of what people have done (Mik-Meyer & Justesen, 2012) when doing an observation, it “asks us to look at what people are *doing*” (Silverman, 2020). I initially considered the possibility of doing a full ethnographic study by embedding myself with an organization for an extended period of time (Silverman, 2020) but soon found this to be too difficult to do in practice and of less value to my dissertation. A major obstacle was the COVID-19 pandemic, which occurred during the first year of PhD in 2020 and made physical access to any organization, university, or ministry, not possible. This exceptionally limited my ability to gain access to an organization apart from following specific meetings. At the same time I realized that the process of “shadowing” a technology (Czarniawska, 2007), such as the CCA, was extremely difficult for two reasons. The first was that the people at Absalon working on the CCA did a lot of other things than working on and with the CCA, making it hard to anticipate and arrange when to observe actors working on the CCA. COVID-19 provided additional complexity to this situation as people were sitting at home and working odd hours, which made it hard to observe them working on a computer as I could only observe them through the computer screen. Secondly, much of the work on the CCA was disturbed across a large number of people. Often times 5 to 10 people were working on different aspects of the CCA simultaneously. In that sense there was always a feeling of the action happening elsewhere. For these reasons, I decided to observe the working group at Absalon University working on the CCA, aiming to make “focused observations” (Spradley, 1980) about how they made the CCA work. Inspired by Mol’s (2002) notion of “praxiology” the purpose was to observe and understand the practices of the people involved with the CCA, which technologies they used and how, the coordination and interaction among each other, and the relationship between the local work at Absalon University and the MOES.

5.3.1.1 Doing Observations

During all observation, I used a physical notebook to take notes on what was happening. I experimented with different observation schemes, for example identifying certain categories in advance and labelling all notes with these, such as “technical issues” or “relationship with MOES”; however, I found it to be rather hard to mentally label statements and practices during the observations and therefore abandoned the scheme after a few weeks. My notes focused on writing down as much information as possible, as there were a lot of technical discussions that were important to properly detail and note down. As the

meetings were well structured, and I could sit with a notebook at a table, I prioritized writing as detailed notes as possible, attempting to transcribe sentences fully. This also made the notes read more like the conversations at the meetings, which I discovered helped me a lot when writing up my notes on the computer, as it made me recollect the conversations very clearly. I used a system with different coloured pens, with one colour for taking notes of what happened and one colour for my own reflections and considerations during the observations.

When doing field work and observations an important consideration is the role of the researchers in relation to the field and the people they engage with (Gold, 1958; Parker, 2017). During my observations at Absalon University, my role as an observer slowly developed from non-participant to being observer-as-participant (Gold, 1958). Initially, I attempted to disturb and affect the people I observed as little as possible to minimize my influence on the network and attempt to let the observations occur as naturalistic as possible (Gubrium & Holstein, 1997). This approach was also most suitable for the initial observation done online as informal small talk was not possible during the meetings. Thus it was easier to become “a fly on the wall” when just sitting muted in front of one's computer. I had never met any of the participants in real life and could not establish any relationships with them during the meetings apart from my contact person who I had spoken with while gaining access.

The first half year of observing the meetings was characterized by a lot of perplexity and a general lack of understanding about the CCA project at Absalon University as it proved immensely complex to understand what went on at the meeting. Participants were using a lot of local language and terminology, referring to people, processes, and accounting and computer programs I had never seen, heard of, or used before. At a meeting in May 2021, I noted down in my observation notes: “A lot of talk about debit/credit here. Don't quite understand a lot of discussion about many of things. Very technical walkthrough”. And given the abrupt ending of all online meetings, and my lack of possibilities to simply recount the meetings and ask my questions immediately, it took a long time for me to grasp many of the technical details. As I had set about looking for the controversies around the CCA I found my observations lacking as the internal CCA group at Absalon agreed on most things or tended to quickly find solutions rather than dwell on problems. In June 2021 I wrote that:

“the meetings are still very technical. There is very little ‘conflict’ about the purposes, as the work is many focused on getting the technical solutions up and running (...) The technical must be solved and the coordination in the group is based on this. Is it because no decisions are made that there is so little conflict? Did I assume conflict?”

As my notes show, I had to reevaluate what I was looking for as I had assumed a certain element of conflict from my interviews around the CCA, and as members of the finance unit at Absalon University had also expressed a lot of criticism around the CCA. My ANT inspired approach also had me looking for conflicts to explore the controversies and what went on but, as the notes show, I sometime struggled to find them. Alternatively, I could not get close

enough to the practice of the participants as a non-participant. I also began to realize that the members of the group were constantly meeting outside of the meetings I participated in, giving me the feeling that all the actions and conflicts happened somewhere else, and that I often only saw the outcome of it. To some extent this reflects Gold's (1958, p. 222) comments about the complete observer, being a non-participant, as one who "remains entirely outside the observed interaction, [and therefore] he faces the greatest danger of misunderstanding the observed". While I would not go as far as to say I misunderstood the observed entirely, the first period of observations was characterized by a more superficial engagement with the practices of the participants as I was always "at a distance" from what they were doing. I did, however, experience a lot of willingness from my contact person to include me in the talks, and I had several long interviews with them allowing me to get a better understanding of what I had observed. It is also worth noting, that the initial period in the field observing the practice of others focused on understanding the "functional details" (Parker, 2017, p. 345), that is the basic tasks, terminology, and practices before becoming accustomed to the more complex patterns of practices and behaviours.

When COVID-19 restrictions ended in Denmark I got the possibility to participate physically in the meetings of the group, which had been reduced in size to four members. The physical observations allowed me to build up much closer relations with the members of the group, allowing me to ask questions before, during, and after meetings, and embedded myself into the work and practices of the group. This change in observation format allowed me to engage in a different way with my field and I came to recognize the value of building closer relationships with actors and the increased understanding gained from my participation. My role changed from a complete observation without any participation to being an observer-as-participant (Gold, 1958), with a more active role during the meetings. My participation consisted of more actively asking questions and clarifications during meetings to get a better understanding of what was going on while also prompting participants to reflect on their practices during the meetings. Before meetings we would often chat about what I knew more broadly about the CCA practices at other universities and the MOES while also hearing what the group at Absalon was hearing more informally. My closer engagement with the actors I observed made it possible to identify some of the controversies I had been missing before. During the informal conversations we would often talk about how the group worked together with the Ministry of Education and Science and what the conflicts and issues in the collaboration were. A reoccurring issue was the lack of clear regulations from the ministry on how to book and register specific costs, creating a lot of frustration for the groups since they potentially had to guess how to follow the instructions from the ministry.

The ongoing interaction with the group at Absalon led to reflections about whether I was getting too familiar and close to the people, processes, and practices involved. In my research journal from April 2023 I noted down that "[I] was included a lot by [member of the group]. Tried to stay curious and understand the considerations the methodological steps and procedures. It feels both recognizable and new. Enough distance to stay open and curious? Too involved? Perhaps.". The note was a reaction to an increasing feeling of being included in

the work of the group, with them asking technical questions or wanting to hear my opinion at times. To begin with this put me in a difficult position as I attempted to limit my impact on the network and the CCA itself but I also felt obliged to reciprocate the group's generosity as I had been observing on and off for two years at this point. By answering questions or providing considerations about cost allocation methods and procedures I confirmed my role as "an accounting researcher", which demonstrated to the group that my main focus was accounting. My attention to being as unintrusive as possible changed as I began to read more ANT literature, which gave me a understanding of the researcher as embedded in the case they study making it a condition of doing research rather than an issue to be part of the network.

At a meeting later in April 2023 the group discussed how to allocate costs using student full-time equivalents (60 ECTS points) to generate cost pools for educational costs at departments. At the meeting, one member of the group, Michael, opened Excel on his computer and brought up a spreadsheet with the current method. They discussed if it is better to only use student FTEs as a cost driver, as it focuses on the output of students, or whether student FTEs should be weighed with the number of students enrolled.

Sara: "Maybe it is actually good to use student FTE data to allocate the costs with because we do it in all the other cases"

Michael: "I actually don't know how good our data is for the student population either. I don't know what's behind the numbers"

John: "We have to use only student FTEs to allocate the cost. Maybe I am a bit cynical but then we will show if there is a difference in productivity if some departments are not good at making student pass their exams. It is just like the textbooks"

I interrupt the conversation to correct John and the others and direct their attention to the fact that if they want to include the productivity aspect then they have to include the enrolment numbers to calculate the unit costs.

Everybody: "Ahh okay. Thanks for that input, Thomas!"

In the section above, I directly interfered with the working of the group to inform them about their mistake in only using student FTEs if they wanted to reflect productivity concerns. This is an example of how I chose to engage with and interfere in the working of the group, thereby affecting the CCA and the network. I deemed it more relevant to strengthen my role as the "accounting researcher" towards the group and make me an actor in my own project.

5.3.1.2 Analysing and using observations

A major contribution of my observations was to contextualize my study of the CCA, and how accounting worked inside Absalon University. Through the observations I was able to get much closer to some of the actors involved in the process and tracing the development of the CCA over time. The knowledge I gained from the observations assisted me to prepare and conduct interviews, and placed many of the documents around the CCA in a larger institutional context. The knowledge of some of the very practical issues around cost allocation at Absalon University helped me to do interviews with actors from the MOES, for example on their model for calculating unit costs. The ongoing interaction with the group at Absalon also became a way for me to get new knowledge about the CCA in ways that would not have been possible without it. I constantly got updates from the group on what the MOES were communicating about the CCA, if they proposed new models or regulations, and what some of the ongoing concerns and tensions were. My relationships with the CCA group at Absalon compensated for my challenges with getting close to the MOES, as the group could give me updates on what happened in the network. At the same time, the observations gave me a view into the technical aspects of the CCA in a way that was not possible only through interviews. I got to see the group at Absalon discuss and construct their internal cost allocations model and hear their methodological considerations and tensions, which enabled me to take the abstract descriptions of the CCA in interviews and documents and see it in practice. It also allowed me to read the outcomes of the CCA in a new way, since I was able to simultaneously perceive what the CCA produced while knowing how it was created.

However, in late 2022 I decided to change my focus in my thesis away from the CCA to other accounting issues. The reason was that, at the time the work on the CCA was progressing slowly at Absalon University and the MOES, which made me concerned about whether I would have the empirical material needed to write three independent articles for my thesis. I discussed my concern about the slow pace of the CCA with my contact person at Absalon University where we reviewed how they could help me reach out to the organization and investigate other topics. While I chose to change my focus I still continued observing the CCA group at Absalon as I saw it as a unique possibility to keep following the work and what happened with the calculations of unit costs. In the thesis, there is relatively little material from my observations, as they only contributed to the empirical material for my first article. The observations also contributed to the second article as my engagement with the finance unit at Absalon University made it much easier to gain access to other parts of the organization. Through my observations I got a much broader insight into other aspects of how the university used accounting, for example, its budgets, meaning that I was able to change focus partially due to the knowledge I had gotten through my observations.

5.3.2 Interviews

Semi-structured interviews with relevant actors are a main part of the empirical material for my PhD, as they allow for creating a local and situational form of knowledge about the practices, meanings, and theories of actors (Brinkmann & Kvale, 2018; Holstein & Gubrium, 2004; Qu & Dumay, 2011). In total, I have carried out 41 semi-structured interviews during my PhD. and have been able to use 10 relevant interviews from former projects during my master's studies as part of my empirical material. This following sections reflect on the 41 interviews carried out during my PhD studies. See appendix 2 for an overview of the interview conducted during and prior to the PhD.

5.3.2.1 Approaches to interviews

As a method, the research interview is not conducted independently from broader theoretical and philosophical considerations about epistemology and ontology (Alvesson, 2003; Brinkmann, 2018; Brinkmann & Kvale, 2018; Mik-Meyer & Justesen, 2012). I have therefore reflected on how to plan, conduct, and analyse interviews in a manner that is consistent with my ANT-inspired research approach. Alvesson (2003) presents three broad positions on qualitative interviewing: neopositivism, romanticism and localism. Neopositivism is similar to the ostensive position presented by Hansen (2011) in section 5.2.2, and therefore not relevant to the thesis. The romantic position resembles the ideals behind both phenomenological (Brinkmann, 2018; Mik-Meyer & Justesen, 2012) and naturalistic (Gubrium & Holstein, 1997) research traditions. The romantic position centers human experience and meaning and is therefore not aligned with ANT's notion of agency. Alvesson (2003) introduces the local position as an alternative to the two others, emphasizing the relevance of perceiving the interview as constituting and being constituted by the local practice and context of the interviewee rather than a tool for collecting data. According to Alvesson (2003, p. 16), this means that the researcher does not:

“ascribe to the interview an ontological status different from other events and situations. People talk with their bosses, they serve customers, they drive trucks. They also participate in interviews. Behaviour in interview situations can be studied in ways similar to those used for these other phenomena.”

In the thesis, I align myself with the local positions as described by Alvesson (2003) by perceiving the interviews as local and situated events where interactions between interviewer and interviewee produce knowledge (Alvesson, 2003; Holstein & Gubrium, 2004; Kreiner & Mouritsen, 2005; Qu & Dumay, 2011). Alvesson (2003) uses several different metaphors to understand how a localist position influences preparing, conducting, and analysing the interview. In my project, Alvesson's (2003) metaphors on the interview as

identity work, political action, and arena for construction work were relevant and aligned with my broader inspiration from ANT.

The first metaphor sees the interview as an event for “identity work”, as actors construct their identities and roles through the interview (Alvesson, 2003, p. 20). In ANT this is aligned with the notion of identity, as constructed in relations between actors, and as such the identity of the interviewees was constructed through the interview. Even though the official roles of the interviewees were part of the choice to interview with them the interview itself provided an arena for the interviewees to challenge, expand, and modify their identities and roles. For example, I interviewed an academic manager with both personnel and budgetary responsibility assuming that the person would use accounting information and technologies actively in their practice and identity as managers. However, during the interview, the interviewee constantly challenged this assumption. Instead, they emphasised how few accounting tools they used, seeking to be a good manager and this did not require the aid of the tools. The interviews were also arenas for constructing the identity of other actors in the network, as I actively asked interviewees about other actors in their network in attempting to grasp the constitutive effect of the network in the construction of actors’ identities (Callon, 1986; Latour, 2005). I experienced several times in doing interviews with actors from the MOES and the universities that there was an active attempt to create a certain identity of the other actors and themselves during the interviews. Representatives from the universities regularly expressed a willingness to work together with the ministry to ensure better accounting information and engage constructively in finding the right technical solutions while simultaneously criticizing the ministry for its lack of technical knowledge and hidden agendas for governing the universities in unwanted directions. Meanwhile, representatives from the ministry focused on their identity as collaborators with the universities and saw the universities as overly paranoid and critical towards the common chart of accounts. As such, interviews became sites for the ongoing identity construction of actors themselves, and their ongoing shaping of other actors' identities through their relationship.

Interviews are places for power relations and political action, as interviewees are “politically aware and politically motivated actors” (Alvesson, 2003, p. 22). During almost all my interviews, actors attempted to promote their agendas, problematize current affairs, and reflect on the political motivations of other actors. In ANT power is relational and an effect of actors’ ability to influence others and mobilize other actors in the process (Callon & Latour, 1981; Latour, 1986a), which makes the interview act as an arena for the ongoing power struggles in the actor-networks. Similarly, interviews became spaces through which actors could formulate their own theories about the intentions and actions of other actors in the political struggles over the accounting technologies and events in my project. It reflects Callon’s (1986) principle of free associations as the research refrains from “imposing a pre-established grid of analysis” upon the empirical material but instead observes and describes what the actors are doing, how they are doing it, and what their reason for doing it are. During interviews with academic managers at one university about how they used accounting in the management of their educational activities a recurring theme was how the

budgeting system allocated funds for the different departments and the actors' political views on why the system was inappropriate or appropriate. In the following interview extract one academic manager reflects on the university's top management's lack of insight into the cost structure of the teaching activities and why the manager thinks it's a good idea to use cost data in resource allocation rather than the numbers of graduates (measured in full time equivalent (FTE) or 60 ECTS points)

Interviewee: I think it more the other way around because when I represent my department and look at the teaching we offer and talk with top management then every year I have to explain that laboratory teaching cannot be scaled as easily as auditorium teaching. (...). So it is things like these I think are important because top management does not have an overview of it. They don't know that different programs at the university have different costs because they don't have time to think about it. They just think that we have 30 programs and a graduate costs this much, and that a FTE is a FTE. But I just have to say that an auditorium FTE and a laboratory FTE they have very different costs"

In the interview quote, the interviewee actively promotes their own political agenda but points towards costs as the most relevant accounting information, since their programs are all laboratory-heavy. The interviewee's view on top management is clear and the interview acts as a basis for criticizing the political agenda of top management while simultaneously promoting the interviewee's own agenda. Here the technical and social are not separate but entangled and it is not possible to separate technical aspects of resource allocation from political discussions about which programs and departments should have more funds.

Lastly, the interviews acted as arenas for construction work, reflecting how the narratives and stories told by the interviewees are part of the "construction of the world" (Alvesson, 2003, p. 22) within and beyond the interview. While Alvesson (2003) perceives the interview and the world-building as entirely language-based activities, ANT instead directs our attention to the inability of language alone in constructing reality and stresses the importance of materiality in understanding the construction of reality (Callon, 1986; Latour, 2005; Mol, 2002). In practice, this meant that I approached the interviews as events where actors could tell me about their socio-material practices, the details of how they used accounting, the decisions they made, their relationships with other actors, the important events and issues in a process, and so forth. This approach to interviewing is inspired by Mol's (Heuts & Mol, 2013; Mol, 2002) concept of praxiography where the specific aspects, elements, and steps in the practices of the actors are the focus. The practice of actors and the devices and tools they used as part of their practice is seen as a reality-constructing activity that expands beyond language. Heuts & Mol (2013, p. 128) note how the approach is relevant in interviewing by "persistently ask[ing] questions about the specificities of activities that informants tend to take for granted." The approach meant that the interviews acted as an arena for world-building but in the way that actors would communicate about their daily

practices around accounting and university management, thereby recounting the practical processes of their world-building.

5.3.1.2 Preparing the Interviews

Interviewees were selected based on their involvement with the relevant research question(s) of the overall PhD thesis and the individual papers. My starting point was to focus on the actors that had left a trace (Latour, 2005) in the processes and events studied. The first actor I consulted was the 2018 ministerial report on the common chart of accounts, which listed the different actors involved in producing the report. From there I decided to contact spokespersons from the different actors involved in the project, such as the universities, the MOES, the Ministry of Finance, and the Agency of Public Finances and Management, leading to interviews with representatives from all groups involved in the project. After each of the initial interviews, interviewees were asked to recommend other relevant actors involved in the CCA project, allowing me to slowly map all of the actors involved in the project.

In preparation for the interviews, specific interview guides were developed depending on the purpose of the interview, the research question it related to, the position and role of the interviewee, and the time allowed for the interview. See appendix 3 for an example of an interview guide for the second article on implementing performance funding. Although the interview itself is often referred to as a craft or a skill developed in practice, a strong preparation before the interview itself is necessary to help improve the quality of the interview situation, and the knowledge produced. The purpose of my interviews was to produce knowledge about specific accounting processes and practices, and the thematization of the interviews (Kvale & Brinkmann, 2018) had a strong focus on understanding the relevant actors and events in the processes, and the different accounting technologies and practices involved. My ANT approach informed my choice of how to thematize the interview guides by actively focusing on mapping the actors, their relations, relevant events, and the different accounting technologies and other non-human actors involved. The selection of my interviewees reflected my flexible approach in “following the actors” (Latour, 2005), which can be said to be a variant of purposeful sampling (Silverman, 2020) as interviewees were selected with a specific research question and purpose in mind while also purposefully adhering to the methodological principles of ANT.

Another source of inspiration was former accounting studies using ANT and reading how they reflect on the use of interviewing in their method sections. Lowe (2001), for example, details how he, during studies of a new case-mix system in New Zealand hospitals, encountered the accounting technologies and inscriptions during his interviews with actors at the hospitals. The interviews became a way to explore what actors experienced as the relevant technologies, understand their relationships with them, and hear their reactions and theories about the use and implementation of the new accounting technologies. In this

way, the knowledge produced in the interview came to shape the focus of the research project, and “[i]ncreasingly the spread of this technology through the organization and the role of inscriptions came to the dominant themes of the research” (Lowe, 2001, p. 339). Interviews can therefore be used to gain insight into what accounting technologies and inscriptions actors deem relevant and explore the practices, concerns, and theories of the interviewees about the accounting technologies. This was important in my more open and exploratory interviews aimed at understanding how actors used accounting in their management practices of university education, which form the empirical material in the third article. Skærbæk & Tryggestad (2010) use interviews in their longitudinal study of how accounting and strategy interact in practice, noting how the interviews were used “to get close to the people concerned and to understand their views and actions in the situation under study” (p. 112). The interviews were also part of the authors’ goal of “reconstruct[ing] a chain of related events by following the interaction between humans and non-humans such as accounting devices” (p. 111). This inspired me to thematize the interview guides in a fashion that helped the actors and myself to retell and reconstruct the story and the different events involved in the processes I studied, such as the CCA and the implementation of performance funding at a case university.

Each interview guide was structured around a set of themes relevant to the research question the interview was aimed at forming the empirical material for. The three overall research questions used during the gathering of the empirical material were: 1) the design, implementation and use of the CCA, 2) the implementation of the new performance funding scheme at a case university, and the implementation and effects of the new budgets, and 3) the use of accounting in the management of university programs and role of visibility in the practice. In practice, the three research questions were not so sharply separated during the interviews, as there were overlaps in the topics. Interviews on the CCA often led to discussions on how to use cost data in managing university programs, and interviews on the use of accounting all talked about the budget and how funds were allocated. The arrangement of the interview guides along the relevant themes and reflecting the roles of the actors provided the structure in the “semi-structured” interviews used while the flexibility and open-ended nature of the questions asked made it possible to explore the specific topics, events, and issues as the interview developed.

The interview guides likewise took into account the roles of the interviewees and their relationships with other actors, meaning that a local accountant at a university got asked slightly different questions than the permanent secretary of a ministry about the CCA, although the questions were also open-ended and centered around the interviewee’s own practices. Therefore, interviews often ended up touching upon similar topics and similar issues around accounting practices, even though the roles and identities of the actors varied. This meant that I also asked the permanent secretary questions about the technical aspects of cost allocation, and likewise, the local accountants were also asked about what they thought the political purpose was behind implementing the CCA.

Before the interviews, I provided all interviewees with a short introduction to my project, its aim, and why I thought they were relevant to talk to, which was repeated at the start of the interview. All interviews, apart from one, were recorded and interviewees were informed on how I expected to analyse and use the interviews in my PhD. and in published articles. As a basis, all interviewees were offered to read the full interview transcript comment on the content and state if there were parts they would not allow to be quoted. If interviewees requested to see and approve any quotes used in the project I agreed to this to be allowed to use the interview but stressed that the analytical points made from the quotes were my own responsibility and could not be changed. Interviewees were also told that they could always stop the interview and state when topics were only for background information and not to be quoted.

5.3.1.3 Conducting the interviews

Recognizing the interviews as an active situation of knowledge production (Brinkmann & Kvale, 2018; Holstein & Gubrium, 2004), I chose to engage with the interviewees in an analytical dialogue about their practices (Kreiner & Mouritsen, 2005). Kreiner & Mouritsen (2005) introduces the notion of an analytical interview approach, which focuses on the “[c]onstructing and exploring dilemmas” (p. 154) and discussing the “conflicting and competing concerns” (p. 156) of the interviewees. This approach is well aligned with the methodological principles of exploring controversies over facts and issues in the actor-network (Latour, 1987; Lowe, 2001).

The first way in which I followed this analytical approach to interviewing was by challenging the practices and reasoning of the respondents when they made claims in the interviews to test the claims and to explore whether there might be alternative explanations or practices that were important to explore. The interview extract is from an interview with a university CFO about the challenges of calculating unit costs in the CCA without introducing time registration, which the interviewee saw as the main obstacle on the practical side in implementing and using the CCA.

Interviewee: *“But if we look at it from a management point of view then we can say that, for the most part,, a large group of employees don’t register their time as 37 hours a week. They register a great deal more than 37 hours a week if they actually were to start registering their hours. (...) If you’re working, as a PhD, or in general work 50 hours a week, is it then your hourly price your monthly pay divided by 50 a week or is it divided by 37, or....*

Interviewer: *“But wouldn’t it be quite easy to just divide it with 37? Isn’t it pretty easy to overcome that part? Say to faculty, you work too much, we respect that, but convert your week into a standard 37-hour week, and then what is the split [between purposes?]”*

Interviewee: *"Yes, you could do that but ehmmm... but then the question is again still, about... does it then give a correct picture of it? Does it become more precise in relation to... it is [allocated] back to a purpose but is it what you wish to have? And if you want to go down and compare law programs at other universities are you getting the real picture? And then also, when is it actually you [as a researcher] sit and do research and when are you preparing for teaching activities?"*

Initially interviewee presented a clear and precise reasoning for why a practice would not work, specifically the lack of time registration and the issue of whether to use standard or actual hours worked. After being confronted with how challenging this practice would be and exploring a situation where it was not an obstacle, the interviewee started to present new obstacles and continued to mix practical challenges in how to book and allocate costs with the purpose of calculating unit costs and the political intentions of benchmarking university programs. In this example, the removal of one dilemma (time registration) and the discussion of a new situation where it was not an issue, meant the conversation developed into other technical issues not represented before (is benchmarking using cost allocation appropriate?), considerations about what makes universities unique (how to define when something is research and something is teaching), and challenging the political intentions of the CCA (what is the purpose of benchmarking universities?).

Another important part of the interviews was opening up a dialogue about the socio-material practice of my interviewees. As more traditional approaches towards interviewing foreground human experiences, feelings, and meaning, ANT researchers should reflect on how to include materiality and the non-human into the interview situation (Demant & Ravn, 2020). The inclusion of materiality into the interview was done in three ways. First, when wanting to talk about a specific report or document, I would bring this to the interview, put it on the table, and ask interviewees to reflect on their accounts of the document, how they used it, and what they think of its effects and usage by other actors. This was done with most of my interviews on the CCA, where I would bring a ministerial report from 2018 on the CCA often interviewing actors who were directly involved in writing, approving, discussing, or using it. A second way to include materiality in the interviews was to ask directly if interviewees could show me the accounting technologies they were talking about in the interview. During an interview on budgeting at Absalon University, the interviewee started a power-point slide show to describe their budget model and budgeting process. Another interviewee started the computer program where all performance indicators were stored and visualized. They then walked me through how they used them in budgeting and budget control, enabling me to use the computer program to investigate the concrete practice of how the performance indicators were used. I also have actors pull out spreadsheets, walking me through their calculations and showing how the data was presented and visualized, transforming the interview from a purely language-based conversation into a socio-material talk about the practice of the interviewees. Lastly, actors would often visualize accounting practices and technologies in addition to their oral descriptions of them. Actors have drawn

bookkeeping schemes and principles, allocation mechanisms, organizational diagrams, reporting flows, cost allocation procedures, timelines of events, and so forth. The original drawings or pictures of them were taken back and stored alongside the interview transcriptions as part of the empirical material of the thesis and used together with transcription in analysing the data.

In total the 41 new interviews conducted and the 10 from prior projects form a large part of the empirical material for this thesis. While the above section describes my reflections on how I approached, prepared for and conducted the interviews, in practice the process was often messier as I was also learning the craft of interviewing (Brinkmann & Kvale, 2018) as the PhD progressed. I have experienced interviewees simply not understanding my questions on a multitude of occasions. I have left interviewees frustrated, feeling like I both managed to anger the interviewee and do a poor interview. I have also tried to have one interviewee ask for the interview guide in advance, which resulted in them typing all their answers down in advance, at times reading directly from their laptop during the interview when asked the questions. Preparing properly for the interviews therefore only got me so far, and the more intricate, tacit knowledge and skills of interview only slowly developed during the PhD. This is not to claim that the first interviews done were poor, untrue, or invalid but rather that a lot of potential for doing even better interviews was foregone and missed in the first interviews highlighting the Ph.D. as a learning process for the researcher.

All interviews were transcribed and analysed for the different articles. As I selected my interviewees based on the different research questions for my three articles, and thematized the interviews in relation to the research questions not all interviews were used in all articles. Some very specifically concern the CCA, some are about the implementation of performance funding at Absalon University, and some are about the calculative practices involved in managing universities; however, most interviews covered several themes and research questions, meaning that I read most of my interviews several times with different research questions and concepts in mind (see section 5.4 for more on my data analysis).

5.3.3. Documents

The final form of empirical material in the thesis is documents. Although the social sciences have tended to perceive documents as secondary sources of data or acting only as background information (Prior, 2020; Silverman, 2020), they have formed a central part of ANT research (Callon et al., 1983; Latour, 1987, 1988; Law, 1986, 2002). A central reason is that documents are inscriptions and therefore possess a materiality that spoken words do not, and the production, use, and circulation of inscriptions formed a key topic in the early ANT studies (Latour, 1987). This section presents how I collected and analysed documents in my dissertation.

5.3.3.2 Collecting documents

The collection of documents in my thesis has happened in a variety of ways depending on the type of document collected and the purpose of the document. Appendix 4 provides an overview of the type of documents collected PhD. In total I have gathered more than 300 documents ranging from 1 page meeting minutes to governmental reports of more than 200 pages., with a total of more than 5.000 pages. Not all documents are explicitly used or referenced in the thesis but all were read and reflected upon.

The first process of document collection was official, public reports and notes on the accounting phenomenon in the thesis. These documents were mainly used for the first paper on the CCA and the second paper on performance funding. As a first approach, I would search the internet for relevant documents on my topics. Sometimes a simple Google search yielded results and at other times I used dedicated databases, such as the OECD library or the MOF's homepage, to focus my search. When searching for how unit costs and public sector productivity are used by international organizations those documents were queried for relevant keywords and references were checked to see if they related to other known documents or actors. Another approach was to search for different actors related to an accounting technology to see if those actors have any relationship with an accounting technology and what such accounting technology would be. This was done for the second paper on the performance funding reform where Google searches were used to see if the Ministry of Finance, the Danish University Association, or one of my case universities had any public comments or reports. The aim was to find relevant documents and identity traces left by actors, organizations, and documents in the networks. I paid extra attention if a paper referenced other actors, seeing it as a visible trace left behind if they did, and used it to help conceptually map the network.

The second process consisted of asking my interviewees for relevant documents they would mention during interviews. This might include PowerPoint slides on budget models, appendixes and minutes from meetings, spreadsheets with calculations, and formal accounting procedures. As these documents were less public than the documents described above, actors were sometimes reluctant to hand them over as they might not be in a position to share the document. Other times they would share it but request that I could not cite it in my work. This of course meant that I knew of some documents that existed that I could not access or use, which meant that some traces and actors were part of the network in action but left out of my textualization of the network. This is not to say that I have empirical holes or gaps in my project, as most actors were also willing to share documents. It is important to remember that my description of the network itself performs it in a certain way (Latour, 2005), making myself and my methods actors in the network as well (Law, 2004). Relationship with the interviewees was also a central way of gaining access to internal documents, and I experienced that I could ask for more from people I had an ongoing and continuous relationship. This also means that I have more documents from certain parts of

the case organizations involved in the project, such as the finance unit at Absalon University, compared to the Ministry of Finance for example.

The last approach consisted of using the right of access (aktindsigt). This is where I would formally apply to public organizations so that they should hand over any documents they have in relation to a specific topic. I chose only to do this if I felt that I could not gain access to documents by asking for them via email as the right of access enacts a formal procedure whereby public institutions have to initiate a search process and decide on whether they can hand over the documents. This is a time-consuming and costly procedure and I felt that I would also be seen as an aggressive move from my side if I started to simply gain access only through this procedure. It would most likely be the people I interviewed that would have to find the documents and so as to not negatively affect my relationship with them I kept this to a minimum, performing it only twice during the PhD. The process was very efficient though and it did get my access to other types of documents that had been kept from me before, such as draft versions of documents with comments by officials and email correspondence between ministries.

5.3.3.3 Analysing and using documents

Prior (2020) presents four perspectives on how documents are perceived and used in the social sciences, and how the different perspectives shape and influence the analysis of documents. The four perspectives shown in table 1 differ in their view on whether documents are seen as resources for the researcher to use in their study if they are seen as the topic of the study itself and if the focus of the analysis is on the content of the document or its use and function.

Table 1. Four approaches to the study of documents		
Focus of Re- search Ap- proach	Document as Resource	Document as Topic
Content is prime	(1) Document as archive. Approaches that focus al- most entirely on what is "in" the document	(2) "Archaeological" approaches that focus on how document con- tent comes into being
Use and func- tion are prime	(3) Approaches that focus on how documents are used as a resource by human actors for purposeful ends	(4) Approaches that focus on how documents function in, and im- pact on, schemes of social interaction, and social organization

FIGURE 1 APPROACHES TO DOCUMENTS IN PRIOR (2020) p.7

The first perspective, perceiving the documents as archives, views the document as an informant with relevant information about a given phenomenon of interest and the documents are seen as containers of information that can be analysed (Prior, 2020). Documents are seen as resources for the researcher and given the attention on the content of the documents, the perspective is less concerned with the social context of the documents nor its production or circulation. The second perspective still primarily focuses on the content of the document but is interested in how the content of documents developed over time to become what it is presently, thereby introducing a Foucauldian-inspired “archaeological” approach. The actual content of the document is less important, as it is not taken for data in itself. Instead, the approach “ask fundamental questions about how the content emerged in the first place” (Prior, 2020), and how the concepts described in the documents are employed and change over time.

Shifting the attention towards the use and function of documents, the third perspective’s interest lies with how documents act as resources, not for the researcher, but for the actors in the study, and how they mobilize them towards purposeful ends. This last perspective recognizes that documents are not only passive artifacts produced or used but can be active in shaping and affecting the actions of other actors. The focus is therefore not on what documents are, or how they are produced or used, but instead on what they make others do and how this enables organizing action, and power. Prior (2020) notes that this approach is strongly inspired by ANT and the idea of non-human actors and their ability to influence the agency of other actors.

In my dissertation, I approach documents using the second, third, and fourth perspectives as I describe below. Prior (2020) notes how the approaches are not mutually exclusive and stresses that studies can combine several approaches in analysing documents.

In my first article on the CCA and public sector productivity, I combined several of the approaches described above. First, I approached the research question in an archaeological way, tracing how the concept of public sector productivity was conceptualized, used, and developed over an extended time period. Using a multitude of documents (economic literature, public reports from governmental and internal bodies, consultancy reports, accounting instructions, and the material on the common chart of accounts) I traced how public sector productivity developed over time, focusing on the connection between accounting and economics, and how it was integrated into technologies and measurement infrastructure. The reading of the Danish reports on public sector productivity used by the Ministry of Finance showed a gradual development of the term as more and more accounting technologies were added to calculate the unit costs and benchmark organizations. While the term public sector productivity remained similar in the abstract the archaeological reading showed the increasing mobilization of different accounting technologies, annual reports, accrual accounting, and performance contracts, to operationalize productivity. A second approach was used when analysing the bookkeeping instruction (in Danish *konteringsvejledning*) for the CCA. These guidelines were seen as having “textual agency”

(Cooren, 2004) as they demanded certain actions from other actors, participating in performing the CCA and focusing on the functions of the documents (Prior, 2020). The bookkeeping instruction, for example, demands that “all revenues and costs concerning the following educational activities must be booked on purpose 1, Education” (UFM, 2022, p. 12), instructing the universities to act in a certain way and defining what educational activities are. Lastly, I focused on how actors used documents and attempted to change them during the process. Even though documents had textual agency their effects were co-determined by other actors who had to engage with and use the documents. The bookkeeping instructions were, for example, interpreted and used quite differently in the MOES and the universities and, despite being revised annually, new interpretations and uncertainty emerged as the instructions were used.

In my second article documents were used in a similar way to understand how performance funding was translated into Absalon University. In reconstructing the controversies around the performance funding system I focused on the intertextuality of the documents and how they were circulated in the network. I, therefore, paid special attention to when and how documents referenced each other as they circulated in the network. For example, I traced how the claim “the old performance funding system focuses on quantity rather than quality” became the established fact in the network by identifying the series of reports lying behind the claim and the process of selecting certain elements of documents to create the fact that the old funding model focused on quantity and not quality. This showed a chain of reports from 2013 to 2016 that, in different ways, problematized the old funding systems’ focus on the quantity of students produced. One report suggested using graduate employability in the funding model to reflect quality and job market relevance (Productivity Commission, 2013) and another proposed the introduction of basic funding to minimize the marginal contribution of admitting new students (Commission of Quality and Relevance for the Further Educations, 2014). Both of these reports were referenced by the Ministry of Education and Science as well as its minister as part of the process of designing the new performance funding system and became part of the final system (The Government, 2017). The analysis combined the archaeological approach with the functions of documents, as the circulation of documents in a network and the creation of facts (Mik-Meyer & Justesen, 2012).

In the final article on accounting opacities the focus was on the use and function of documents as my attention was on how documents were involved in the creation of a specific type of visibility. Here my co-author and I gathered a wide range of documents used internally at two case universities, such as work hour descriptions, resource allocations framework, performance measurements, budgeting notes, and cost registration. We analysed how actors used the different documents to create distorted forms of visibility by, for example, inscribing calculations and rules into documents to support their allocations of resources. In this manner, documents also functioned by dictating and forming the appropriate courses of action for some actors, while also limiting and restraining other actors. Documents come to have agency (Cooren, 2004) in practice, as they afford, motivate,

prescribe, and condition what other actors do, and in this article, we used the documents to understand the socio-material practices around the production of accounting opacities.

5.4 Data analysis and theorizing

In this section, I will reflect on my general approach to analysing the empirical material of the dissertation. In ANT the main aim is to describe the networks, the actors in it, the actions they take, and the effects of the actors (see section 4 for more on this), using the vocabulary of ANT to sensitize myself to the empirical material (Mol, 2010). Analytically my goal was to both analyse the reality-constructing processes of the actors and study the effects and outcomes of these processes. To do so I relied on “analytical bracketing” (Gubrium & Holstein, 1997) - essentially moving between what was created, and how it was done. Gubrium & Holstein (1997, p. 115) advocate the idea of analytical bracketing, where one moves between the processes of reality construction and the outcome of these processes, as the “*hows* of reality construction are enduringly linked with *what* is under construction”. For me, this was a helpful way of approaching my data, as the analytical separation and treatment of the *how* and *what* ensured that I did not only analyse how accounting was created or used but also what the specificities of the accounting technologies were. The analytical approach aligns with ANT’s focus on both the actors and their actions, as the analytical bracketing moves between the how and what but simultaneously recognizes the importance of both.

To help me create an overview of my empirical material I used several techniques to assist me in visualizing the actors, their relations, and effects. Inspired by process researchers (Langley, 1999; Langley et al., 2013) and accounting scholars working with ANT (Revellino & Mouritsen, 2015; Skærbæk & Tryggestad, 2010) I made several different visualizations of my cases with the empirical material. Such “visual mapping” techniques are well suited for analysing processes as they can represent actors, events, and effects and the passage of time (Langley, 1999). For articles one and two, which follow accounting technologies over time, I started my analysis with a mapping of the actors in the network and then began to draw on pieces of paper what they were doing at different periods in the processes. Figure 2 is an example of how I visualized the development of the taxameter system in article 2 by linking different reports, actors, and actions to each other, visualizing their relationships, and noting down their effects on each other. Hand drawing the processes helped to gain an initial overview of the processes as I could more freely play around with the events and processes, allowing me to visualize the network in different ways.

Another technique to visualize the networks was to simply write down all the actors involved that had left traces behind (Latour, 2005) and begin to draw their relationships with each other. For the third article on accounting opacities, I wrote lists of all the accounting technologies we found in our empirical material, identifying more than 15

different technologies such as budgets, work norms, annual reports, KPIs, and registration systems. The list was then used later on to map the different effects of the accounting technologies on the visibility created their relationship with each other, and how they were used.

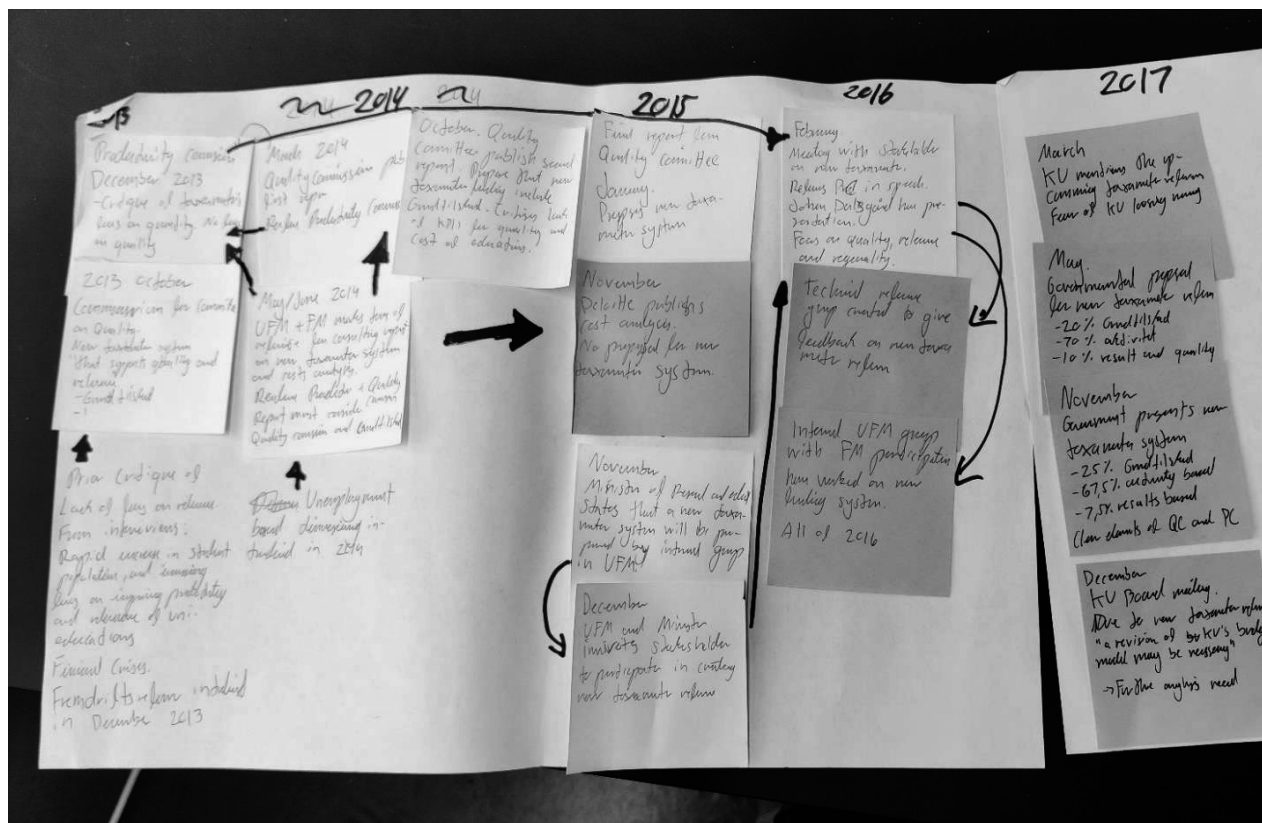


FIGURE 2 TIME LINE FOR ARTICLE 2

Visualizing the processes and actors involved were central steps to my data analysis but not enough on their own. The next form of data analysis was the categorization and coding (Grodal et al., 2020; Linneberg & Korsgaard, 2019) of my material, using the qualitative research tool NVIVO. I used coding to structure and sort my empirical material (Skjøtt Linneberg & Korsgaard, 2019), making it possible to use the codes to “look across” my material to identify analytical themes. In my first article on the performative struggles between economics and accounting I coded my material to understand both the *whats* and the *hows* of the case. Examples of the *whats* in the case were actors’ definitions of unit costs, specifications of allocation keys used in creating cost pools, and the purpose of the CCA. The coding enables the cross-reading of the empirical material, so I could use a code like “purpose of CCA” to analyse how different actors defined the purpose of the CCA, analysing similarities and differences in actors’ definitions. In coding my material for the *hows* of my case I turned to my ANT vocabulary, which, in the first article, are the concepts of trials of strength and performative struggles. Through my visual mapping, I found several phases in the case, which I analyse as trials of strength. I coded my material according to the different trials I had found in my visual mapping. After the initial coding of material to my three trials

around the CCA I began to use sub-codes on the strategies used by actors, the technologies and devices they used, the point of conflict in the trials, and the outcomes of the trials. The sub-codes reflected the *hows* of my case, understanding how the CCA was designed through the processes in the trials and how the competing definitions of unit costs, and how to calculate them, were central to the conflicts and controversies in the case. Rather than limiting or restricting the voices of the actors in my case, the codes acted as a practical tool to structure my large amount of empirical material, allowing me to analyse themes and processes across my material.

The different techniques used in my data analysis, visual mapping, and coding, were the first step in writing up the stories (Langley, 1999) of the articles and theorizing (Klag & Langley, 2013; Swedberg, 2016) from the data to make contributions to the literature. As mentioned above I entered my empirical field with a strong focus on theorizing (Ahrens & Chapman, 2006; Chua & Mahama, 2012) but the complexity of doing so meant I used different strategies to “make the conceptual leap” (Klag & Langley, 2013). A theorizing strategy I used frequently was to look for mysteries and puzzlements in my cases (Alvesson & Kärreman, 2007) to explore how to best understand the mysteries using my ANT vocabulary while contrasting the empirical puzzlement with the literature (Klag & Langley, 2013). In my second paper on the implementation of performance funding, I was genuinely surprised when I realized that different faculties and departments used different budget models. As mentioned in section 5.2, this surprise led me to consider different ANT concepts to help me understand the case, but at the same time, I read the literature on public budgeting and budgeting change extensively to see if others had found something similar. Reading the literature acted to distance myself from my case so I could reflect on the theoretical insight I thought to have identified. My review of the literature confirmed the novelty of my initial empirical findings. It expanded it by providing theoretical attention to conflicts and compromises in the budgeting literature. This engagement and detachment (Klag & Langley, 2013) from my empirical material allowed me to theorize about the multiplicity of budgets as a form of compromise and the role of multiplicity in creating stability in an actor-network.

Another example of a theorizing strategy is from the third article on accounting opacities where my co-author and I more focused began to play around with developing new words and concepts (Swedberg, 2016) on visibility and accounting. Our theorizing began from our empirical material, where actors would talk about the lack of insight they had into decisions, or the opaque processes and calculations conducted around them. From there we started to ask what kind of visibility accounting created. Then, after reading up on the literature, we developed an initial idea about the relevance of theorizing on specific types of distorted visibility. Given the use of visual metaphors in the accounting literature, for example the “accounting eye” (Hopwood, 1987) or “accounting gaze” (Hines, 1992), we started to discuss different visual metaphors for accounting and how we could understand our distorted form of visibility. We talked about accounting as a lamp making objects cast a shadow and about accounting as a pair of glasses providing a very specific clarity in sight or hindering clear sight if people lacked glasses. These processes of using metaphors (Klag & Langley, 2013)

and developing new words (Swedberg, 2016) led us to conceptualize the distorted forms of visibility we saw as “accounting opacities”, and from there we continued to theorize on how best to understand its production and effects.

Article 1

The Trials of Strength between Economics and Accounting – Making the Danish Universities' Productivity Measurable

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Abstract

In accounting research, there is a long-standing debate about the relationship between economics and accounting, yet few empirical studies have inquired into this relationship. This paper explores the roles and relationship between accounting and economics by addressing the question of how they interact during a process of accounting change in Danish public universities. For economics, it is a long-standing problem to measure public sector productivity and the accounting change was initiated to address that problem. Our inquiry adopts a qualitative longitudinal case study and shows how the economics concept of unit cost as a measure of productivity is sought implemented in the university accounts during a 15-year period. Furthermore, the case analysis shows how two opposed groups emerge around different accounting concerns in what we theorize as trials of strength between an economics agencement and a university accounting agencement. In conclusion, the study contributes to management accounting research on performativity by showing how economics and accounting perform competing economic worlds, and more specifically, how accounting performs a complex role as a mediator that is unfaithful to economics. By emphasizing trials of strength and performative struggles as key notions our contribution can also provide a more profound understanding of the unexpected and (counter-) performative roles of economics and accounting in shaping organizations and our world.

1. Introduction

“On the one hand, economics provides a way of conveying a wider functionality to accounting. Emphasis can be placed on its wider contribution to processes of economic decision making and control. On the other hand, however, economics claims to provide a way of gauging the adequacy of accounting for such ends. And almost invariably, accounting, as it is, is found to be inadequate to what it could and possibly should be.” (Hopwood, 1992, p. 129).

Hopwood (1992) points to the tension between economics and accounting, as the former considers the latter inadequate. Accounting and economics have developed alongside each other with the mutual influence of concepts and frameworks (Hopwood, 1992; Klammer & McCloskey, 1992; Miller, 1998). The relationship between the two disciplines and how they interact has been investigated before, pointing toward the dominating role of economics in informing and developing new accounting concepts and practices (Hopwood, 1992; Miller, 1998). Economics in turn makes accounting “purposeful” and “influential” (Hopwood, 1992). Such a framing of the relationship implies not only a mutual but also a beneficial relationship between accounting and economics, where each obtains something in the interaction: economics is operationalized and can economize persons and organizations, and accounting, in turn, becomes an influential and purposeful practice.

Accounting research with an interest in design has also noted how economics’ assumptions about rational decision-making can influence the design of accounting systems (March, 1987) with less desirable consequences for organizational decision-making. Accounting is a central part of the economization of various social spheres (Çalışkan & Callon, 2009; Mennicken & Miller, 2012) the transformation of the public sector (Hood, 1995; Hyndman & Lapsley, 2016; Parker, 2011). This research suggests that accounting plays an important role in “mobilizing and directing economic action” (Hopwood, 1992, p. 128) while being highly permeable to economic ideas. Accounting “operationalize economics” (Hopwood, 1992, p. 128) and appears to play a subordinate role vis-à-vis economics. Yet, the accounting literature also recognizes a potential conflictual relationship between accounting and economics, for example, when economic concepts such as efficiency are mobilized in organizational change processes (see Hopwood, 1987, 1992; Miller, 1998; Pucci & Skærbæk, 2020; Thomsen & Skærbæk, 2018).

Yet, few accounting studies have traced the empirical connections between core concepts within economics, such as productivity, to the practical level of design and implementation of new accounting systems. Furthering this kind of empirical inquiry into the relationship between economics and accounting requires a theoretical-methodological approach that focuses on how economic concepts such as productivity are formulated, circulated, and eventually translated into accounting system design and practices. We draw upon Actor-Network Theory (ANT), and the concept of performativity to address such empirical and analytical tasks. The performative role of economics (Callon, 1998; MacKenzie, 2006) has gained a prevalent voice in the literature on accounting change reflecting both an increasing

economization of various parts of society and the broadness of the term economic (Çalışkan & Callon, 2009). As Callon (2007, p. 332) notes,

“The performativity approach makes it possible to exhibit the struggle between worlds that are trying to prevail; it makes the struggle for life between states visible. (...) this struggle between statements is a struggle between sociotechnical agencements.”

In our paper, we build upon this research to flesh out the empirical specificities, nuances, and dynamics of these tensions and conflicts in a case of accounting change involving economics and economists’ attempts to measure productivity in the public sector. We pose the following research question: **How do accounting and economics interact and struggle to perform the measurement of public sector productivity and with what consequences?**

By exploring this question through an empirical case, we aim to contribute to the extant literature on the understanding concerning the relationship between accounting and economics, their interactions, and effects. First, we show how conflicts and tensions arise in the attempt to change accounting systems design and practices according to the economic concept of public sector productivity. These conflicts center around issues of the technical elements of the Common Chart of Accounts (CCA) rather than its use, or what Hopwood (1992) terms the background rather than the foreground of accounting. The conflicts unfold between two opposing agencements attempting to promote their own theory of what accounting should be and do, resulting in a “hybridisation of economics and management accounting” Mueller & Carter (2007, p. 187) stabilizing the accounting change in a compromise. Accounting comes to act as a “mediator” (Latour, 2005) for economics, as it transforms, distorts and modifies the key elements of economics’ concept of public sector productivity. Secondly, we contribute to the literature on performativity and accounting by providing an empirical case of how accounting is involved in performing economics, and how economics in turn attempts to perform accounting in a specific way. We find that the performance of the economics’ concept of public sector productivity unfolds as a series of performative struggles (Callon, 2007; D’Adderio et al., 2019; D’Adderio & Pollock, 2014), between socio-technical agencements proposing competing theories of what accounting is, should be and do. Unlike former studies on performativity that trace the processes of how a single theory is performed successfully or not, we acknowledge the existence of multiple, competing theories about the world and focus on their interaction as they are attempted performed. Like Faulconbridge & Muzio (2021) we are interested in the performative effects of accounting devices. Rather than placing legitimacy and acceptance in the external environment, the institutions, around the accounting device, we instead explore how accounting devices and institutions are all built through trials of strengths (Latour, 1988) between socio-technical agencements (Callon, 2007). In our case the trials of strength between socio-technical agencements concerns economics and accounting. We show how the lack of interest and acceptance of economics’ public sector productivity measurements emerge among universities. In doing so, we contribute to the emerging literature on performativity and the performative effects of economics. We have an explicit focus on the

performative effect of economic theories and the related trials of strength vis-à-vis university accounting practices.

Our case follows the process of designing and implementing a new accounting framework for registering and allocating costs in the Danish university sector, called the Common Chart of Accounts (CCA). We trace the interactions between two socio-technical agencement promoting each their version of the CCA. The first socio-technical agencement in our case consists of the Ministry of Finance (MOF), inspired by OECD's emphasis on productivity, the Ministry of Education and Science (MOES), and the concept of public sector productivity in economics, the reason we define it as an economics agencement. The second agencement consists of the Danish universities, their accounting systems, and their concept and practice of what constitutes proper management accounting, we label the university accounting agencement. The CCA accounting reform is a project initiated by the first agencement to standardize bookkeeping practices to enable the calculation of unit costs and productivity benchmarking among Danish public universities. In their various attempts to perform different versions of reality concerning the measurement of productivity at Danish universities, the two agencements engaged in trials of strengths. We follow how the classification and registration of the costs of public universities unfold as a performative struggle between the two agencements over competing claims about the nature and reality of the universities' accounting practices. We draw upon a longitudinal and empirically rich ethnographic case study of the introduction of the CCA.

The paper has the following structure. Section 2 reviews the literature on the relationship between accounting and economics and how that relationship is usually understood. Section 3 outlines the theoretical framework to study the performative struggles between accounting and economics. In section 4 the paper's methods are presented. Section 5 presents the results of our case analysis. Then comes the discussion in section 6 before concluding the article in section 7.

2. The Relationship between Accounting and Economics

In this section, we first review the literature on the relationship between accounting and economics. Secondly, we review the accounting literature interested in performativity to show that there might be more to accounting than playing a faithful role vis-à-vis economics and organizational reform programs.

2.1 Disciplinary relationships between accounting and economics

As disciplines and practices accounting and economics have not developed independently of each other, and much of early economics drew on accounting to formulate their concepts

and theories (Klamer & McCloskey, 1992). Similarly, accounting has also been shaped by the concepts of economics, such as cost (Hopwood, 1992, Miller, 1998). The interest in the intersection between accounting, economics, and the economy emerged alongside sociological concern with the rise of capitalism as an economic system. Marx, Sombart, and Weber investigated the involvement and effect of accounting, especially double-entry bookkeeping, on the emergence and development of capitalism (Bryer, 1993; Carruthers & Espeland, 1991; Chiapello, 2007). The focus of this line of research is to establish the connection between accounting, as double-entry bookkeeping, and the emergence of capitalism (Chiapello, 2007; Miller & Napier, 1993), rather than to discuss the connection between the two. There is, however, a more general discussion of the relationship between accounting and economics and their mutual influence and effect (Hopwood, 1992; Klamer & McCloskey, 1992; Miller, 1998; Thompson, 1998; Zambon, 1996). The relationship is predominately perceived as a reciprocal one where economics infuses accounting with a purpose (Hopwood, 1992), expands accounting to new areas (Miller, 1998), and evaluates the potential of what accounting can become (Hopwood, 1987, 1992). Accounting in turn operationalizes economics and brings the abstract body of knowledge into the societal, organizational, and individual realm of the economy, and drives forth the continuous economization of the social sphere (Mennicken & Miller, 2012; Miller & Power, 2013). This mutually beneficial relationship between accounting and economics reflects a perception of accounting as being permeable to other bodies of knowledge (Hopwood, 1992; Miller, 1998), and the strength economics has in changing accounting into something new. Hopwood (1992, p. 129) acknowledges a tension in the relationship when arguing that economics “also claims to provide a way of gauging the adequacy of accounting (...) “

In a series of works in the 1980s and 1990s Hopwood (1983, 1987, 1992) conducted a more systematic and coherent investigation into the relationship between economics and accounting as disciplines and practices. According to Hopwood (1992, p. 128) there is a reciprocal relationship between economics and accounting, where:

“The abstract generality of economic discourse can provide a context for accounting elaboration and change, and how, in turn, accounting can itself provide a specificity to conceptions of economics which enable it to infuse and change organizational and social affairs”

Economics infuses accounting with a purpose and elevates it to be an important organizational practice involved with the economic management of social life, expanding the functions and use of accounting in the process. Miller (1998) demonstrates the process by which economic notions of costs expanded accounting as a practice and how they moved from the margin to the centre of management accounting. Through a continuous critique of former notions of costs, economists such as J.M. Clark and Ronald Coase argued for a more systematic and theoretical treatment of different types of costs, like variable and fixed, and how cost accounting from there would be linked to the decisions of organizations. Miller (1998) describes both how economic concepts of costs informed accounting theory and practices, and how it helped elevate accounting by connecting it directly to the issues of

decision and control in organizations (see also Hopwood, 1987, 1992). Similarly, economics influences many accounting terms such as income, capital, and costs acting as a way to provide a more theoretical foundation of accounting, lending it legitimacy through the reference to more general economic concepts and laws rather than concrete business practices (Chiapello, 2008).

In discussing how economics have affected accounting and instilling a sense of purpose in accounting, Hopwood (1992) distinguishes between the background and foreground functions of accounting. The background is the technical procedures and practices associated with bookkeeping, constructing what is the “taken-for-granted world of accounting” (Hopwood, 1992, p. 125), and most often this is not the aspect of accounting that is criticized through economics. The problematization of accounting, and the instilling of purpose, happens via the accounting foreground which is how accounting contributes to decision-making, monitoring, and control of organizational and social life. When economics problematizes accounting and provides it with a purpose it starts with accounting being “interrogated in the name of its roles and functions rather than the internal consistency of its technical procedures” (Hopwood, 1992, p. 130).

When accounting functions according to economics, it operationalizes economic concepts, allowing notions such as costs and profit to move from the conceptual realm of economics into the economy. However, Hopwood (1987, 1992) also shows an active and independent role of accounting in developing the concept of “cost”, which is a central concept in both economics and accounting. In Hopwood’s analysis of the English potter Wedgwood and his effort to develop the notion of “cost” from an idea to a fact through experimentation with his accounting system. Wedgwood succeeded in constructing an accounting system capable of showing the costs of his production, transporting the notion of costs into the organization, in effect creating an “organizational economy ground in a domain of accounting facts” (Hopwood, 1992, p. 134). Suzuki (2003) illustrates another and more dependent role in which accounting concretizes and operationalizes abstract economics concepts in the study of how macroeconomics and business statistics develop. Accounting acts as an intermediary of economics theory into practice and provides vague macroeconomic concepts with form and structure:

“Only with accounting (...) have economic concepts become coherent, comprehensive, axiomatic, codified, comparable, reportable, demonstrable, controllable and altogether accountable to the extent that we now know them” (Suzuki, 2003, p. 69).

The abstract notion of the “macroeconomy” was not readily accessible for economists to act upon, needing to be constructed and expressed through the procedure and formalities of accounting. In this case, accounting becomes the predominant language and instrument for economics as it functions in the economy. It is not only through an operationalization of economics, that accounting affects economics. In general terms, accounting practices and notions have also influenced the early formulation of economics (Klamer & McCloskey, 1992; Morgan, 2012).

Whereas there has been a tendency to emphasize accounting's role in constituting economic abstractions into the economy, some studies have instead found a more complex and, oftentimes, conflicting association between the two (Hopwood, 1992). The relationship between economics and accounting has "been subject to relatively little examination" (Hopwood, 1992, p. 131) and recent research shows the connection between economics and accounting might be weaker in practice than first imagined (Du Rietz, 2023). While prior research has investigated the role of economics in influencing and changing accounting standards for financial accounting and external reporting (Chahed, 2021; Himick & Brivot, 2018; Pucci & Skærbæk, 2020), few studies have so far investigated the relationship between economics and management accounting in-depth. Some exceptions include Jordan and Messner (2012) who show how an economic concept such as productivity is mobilized in the design of the performance measurement system and shows a conflictual relationship between the company CFO and factory management. Another line of enquiry has focused on the role of accounting in the financialization of organizations by enabling the pursuit of shareholder value, an economic concept from the neo-classical tradition (Christner & Sjögren, 2022; Cushen, 2013; Ezzamel et al., 2008). Christner & Sjögren, (2022) demonstrate the success of the economic value-added calculations which transform a Swedish manufacturing company's financial strategy from an "industrial" to a "shareholder value" one. Similarly, Cushen (2013, p. 327) finds that the more general economic notion of financialization "is a performative phenomenon and accounting targets are the starting point, the vehicle, and the destination.", underscoring the role of accounting in driving forth financialization. Likewise, Ezzamel et al. (2008, p. 136) identify accounting as having an identical role of "translating the aspiration of maximizing shareholder value into practice" by acting as the "media and outcome of this drive". The studies emphasize the potential for conflicts among different groups within the organizations due to the shift towards shareholder value but do not identify conflicts between accounting and economics.

Themsen and Skærbæk (2018) add nuance to this, in their inquiry into the mediating role of accounting in transporting the economics concept of risk into the organization by exploring how risk management technologies not only register risks but are actively involved in defining the risks to be accounted for. The authors find that the supposedly pure risks accounted for were a fragile construct that eventually broke down in practice. Their study shows that the operationalization of abstract economics concepts such as risk into the actual practice of risk management requires costly investments, yet the outcomes are always uncertain, and that accounting does not also faithfully transport or support economic concepts.

While we fully acknowledge the mutual influence between accounting and economics (Hopwood, 1992; Klamer & McCloskey, 1992; Zambon, 1996) we find it worth inquiring further into whether the "permeability of accounting to the concepts and calculations of economics" (Miller, 1998, p. 182), is as strong as first envisioned. Related to this the question of what happens when accounting's background with its technical procedures, rather than its foreground with its usefulness, is challenged by economics.

2.2 Accounting's role in performing economics

Accounting studies of performativity are interested in how accounting devices equip actors with calculative power and how current and new forms of calculations perform new types of realities and identities. In their study of how accounting performs innovation Revellino & Mouritsen (2015) show how innovative activities unfold in a “dynamic relationship between calculative practices and innovation. Calculative practices are understood as engines that help to shape innovation” (p. 46). These studies understand accounting as providing the calculative power for actors to change the reality around them making accounting an “engine” of change (Revellino & Mouritsen, 2015) but do not engage with accounting's role in performing economics (Faulconbridge and Muzio, 2021).

One view is that accounting faithfully takes upon this role, and as Boedker et al. (2020, p. 2) note, the performativity of accounting assumes “a high degree of certainty [in] that accounting will achieve its stated aim” and that “once the economic model of calculation is in place, proposed effects will follow.” The quote highlights the performative role of accounting as a powerful and the perception of it as a faithful vehicle for transporting economic concepts and models into the economy and organizations. Another view suggests an unfaithful role. According to this view, accounting can be performative or counter-performative (Boedker et al., 2020), as it expands the roles and functions that accounting can potentially play when performing reality and identities. While the above research focuses on the performativity of accounting as calculative practices there has been less attention to how accounting is involved in performing economics concepts, such as productivity. While some of the studies exploring the relationship between accounting and economics do it through a performativity lens (Christner & Sjögren, 2022; Cushen, 2013; Thomsen & Skærbæk, 2018), the processes and mechanisms through which accounting performs economic concepts are still underdeveloped. The economic value-added calculation (Christner & Sjögren, 2022), budgets (Cushen, 2013), and discounted cash flow model (Warren & Seal, 2018) all contribute to performing certain economic realities, as the accounting tools act as vehicles for the economics concepts. However, as other performativity studies show, accounting might not faithfully perform economics (Pucci & Skærbæk, 2020; Thomsen & Skærbæk, 2018), and instead undermine the performance of the economic concepts themselves. In this sense, accounting becomes part of the negotiation around what to perform and how (Warren & Seal, 2018), and the dilemmas arising when economic concepts are delegitimized by accounting and the (counter) performative effects from the negotiations and conflicts. Faulconbridge & Muzio (2021) demonstrate the dynamic relationship between performativity and legitimacy, and the paradox of how devices must become legitimate to have a performative effect but that the same legitimacy opens up for counter-performative effects. While the authors mainly focus on the changing logics in the institutional environment as the cause of changing perceptions of legitimacy, they do not put equal emphasis on the role the accounting device can play in challenging and

changing what is legitimate and acceptable by the actors. The accounting device can both challenge and change to become acceptable (Pucci & Skærbæk, 2020).

In the following section, we unfold ANT and more specifically Callon's performativity thesis, the notion of performative struggles, and Latour's trials of strength. This ANT approach provides us with an analytical lens that is developed for exploring the socio-technical details and processes of the relationship between accounting and economics.

3. Callon's performativity thesis at the intersection between accounting research and economics

Our study draws upon two Actor-Network Theory (ANT) concepts: performative struggles and trials of strength. Callon (1998, p. 2) formulated his performativity thesis, by claiming that economic theory "performs, shapes and formats the economy, rather than observe how it functions." The economy is not an external objective reality but an accomplishment and effect of the continuous performance of socio-technical networks using economic theories, measurements, infrastructure, skills, and calculations (Callon, 1998, 2007; MacKenzie, 2006; MacKenzie et al., 2007). The thesis claims that reality is realized and performed through the actions of people, and things. What appears to be stable and natural objects and positions are performed in a certain way that makes them so (Muniesa, 2014). Performativity stems from the work of Austin (1962) who first noted how statements perform reality instead of merely describing it. Rather than utilizing some of the other approaches to performativity, with their stronger linguistic or social constructionist foundations, such as Butler (1988) or Austin (1962), the paper follows the performative program of Callon, MacKenzie, and others, and positions itself as part of ANT. This means acknowledging the role of both human and non-human actors such as economic concepts and accounting devices in the continuous process of construction and performing organizations, identities, and reality (Callon, 1986; Latour, 2005). The ANT approach positions the materiality of performativity as a central piece of understanding how economic theories are implicated in problematizing (Callon, 1986) and translating them into reality.

Latour (2005, p. 39) distinguishes between an intermediary, which "transports meaning or force without transformation" and mediators which "transform, translate, distort and modify the meaning or the elements they are supposed to carry". We argue that the prior literature on the performativity of accounting tends to understand accounting mainly as an intermediary, operationalizing economics theories without modifying them. (Christner & Sjögren, 2022; Cushen, 2013; Warren & Seal, 2018). We wish to expand the view of how accounting is implicated in the performance of economics and to explore what happens when accounting acts as a mediator in the process of performing economics.

Although economics theory needs accounting to act on the economy, understanding accounting as a mediator (in the Latourian and Callonian sense) vis-a-vis economics directs our attention to the potentially unexpected and conflicting ways that accounting performs, or does not perform, economics. In line with the work by Callon (1998, 2007), MacKenzie (2006), and MacKenzie et al. (2007) we keep it an open empirical question of whether accounting becomes a faithful extension of economics that simply acts as an intermediary in operationalizing economics theories, concepts, and models or if accounting instead acts as an unfaithful mediator. That would for instance be the case when the effects are the opposite of economics' theoretical predictions.

3.1 Performative struggles and trials of strength

We connect the mediator role of accounting to the concepts of performative struggles between socio-technical agencements (Callon, 2007). Socio-technical agencements are assemblages of heterogeneous elements, both humans and non-humans, with their agency. Claims about how the world should be are performed through the combined efforts of different socio-technical agencements (Callon, 2007). Socio-technical agencements engage with each other in attempts to perform the world according to their claims, and as D'Adderio (2008, p. 785) puts it, performativity becomes a process where:

“various organizational actors attempt to construct the world (or socio-technical agencement) they believe to resemble their assumptions, views and aims. Confrontation, therefore, takes place not simply between different agencies but different worlds that are struggling to exist, one at the expense of the other.”

Socio-technical agencements are engaged in performative struggles with each other in an attempt to perform different versions of reality. This view emphasizes that the reality performed is an effect of the actions of agencements and that accounting change can be seen as the effect of various agencements struggling to perform different types of accounting reality. The performative strength of different socio-technical agencements is not given in advance and emerges through a “long sequence of trial and error, reconfiguration and reformulation.” (Callon, 2007, p. 320). To understand how a given statement, for example, the economic notion of public sector productivity, is performed we need to study the “tests and trials that will determine its realization or de-realization” (Callon, 2007, p. 330). We study the performative struggles among socio-technical agencements by using a related ANT concept, that of trials of strength, which allows us to focus on the moments where different statements interact and attempt to persuade, neglect, or overcome each other, and how such trials unfold. Latour (1988) stresses that “there are only trials of strength, of weakness. Or more simply, there are only trials” (p. 158), and that trials “de-forms, transforms or per-forms” (p. 159). Linking the concept of trials with the performative struggle (Callon, 2007) among socio-technical agencements (D'Adderio, 2008; D'Adderio & Pollock, 2014), it is possible to explore the events, interactions, and fights through which the

different agencements seek to perform their reality. Theories are not external or distinct from the context they perform in, rather they are relationships, emergent features of the agencements being intertwined and connected to the other elements (D'Adderio et al., 2019; D'Adderio & Pollock, 2014). Adhering to a relational view of (economic) theories also allows us to “study the effect of competing theories” (D'Adderio et al., 2019, p. 677) as non-linear dynamic processes.

The focus on struggles strengthens a view that considers performativity as a processual and continuous effort, where the results are only provisionally stabilized until the next trial emerges. The focus on performative struggles is also an approach to illuminate how accounting becomes performative or not (Callon, 2007; MacKenzie, 2006). In the current case, this means understanding the ways the economics theory of public sector productivity interacts with accounting and the trials between the economics agencement and the university accounting agencement in performing public sector productivity.

4. Methods

The overall research design is a qualitative processual case study, using several data sources to reconstruct the related chain of actions and events. The empirical material has been collected by “following the actors” (Latour, 2005) or what Czarniawska (2007, p. 92) suggests for the case of accounting studies, to ‘shadowing objects’, attempting to trace the concept of public sector productivity and the CCA through both time and space. Following the actors around the CCA means going both back in time to trace the origins of the ideas behind it and across the multiple sites where it is being performed. Regarding the historical background of the CCA, the paper acknowledges that current practices and reforms are often products of historical processes, meaning that studying the performative effect of economics or accounting technologies benefits from a historical view of the case (Callon, 2007; Mackenzie & Millo, 2003). In 2018 the commission under MOES published their report on the new CCA for all institutions of higher education in Denmark. Using the 2018 report, talking to the members of the commission, and tracing its past and the work before it, led us into the network around the design and implementation of CCA. References to other actors, specific persons, other organizations, ideas, concepts, and devices, were followed to better understand the material of the semiotic network that not only tried to perform the CCA but also the social and historical context in which it is embedded (Czarniawska, 2004).

4.1 Data collection

The data for the article consists of document studies, interviews, and observational studies. The first source of data is documents relating to public sector productivity and the CCA. The documents both acted as traces left by actors in assembling the network but also as actors in their own right imbued with agency through their relationship with other actors (Cooren,

2004). The collection of documents happened first through a mapping of the network around the CCA, which identified the initial actors involved and mentioned in the process. From the first list of actors, we searched web pages and libraries for relevant documents using keywords about unit costs, productivity, effectiveness, public sector management, and so on. The retrieved documents were then used to further identify relevant actors through references to specific documents, events, or concepts. These associations were then added to the relevant actors in the network, and from there emerged a temporal order and identifications of key events and documents. The public documents found here include ministerial reports, budgetary, guidelines, laws and legal announcements, annual reports, etc. For the part of the CCA, interviewees were also asked to provide relevant documents concerning the process, which resulted in a large number of non-public documents, such as meeting appendixes, emails, draft versions of documents, process notes, and descriptions, etc. In total, we collected more than 150 documents containing several thousand pages relating to the CCA and public sector productivity. Referenced documents are shown in the bibliography but many more were used in the analytical work.

The second source is interviews. We have conducted 28 semi-structured interviews from 2018 to 2023, see Table 1 for an overview of the interviews conducted. The semi-structured interviews allowed for conversations to develop freely during the interviews but at the same time, the prepared questions guided the conversations about the central topics of the study (Brinkmann & Kvale, 2018). The interview guides focused on the specific events, persons, and activities involved in the process of the CCA, aiming at getting as rich of a description of how the process(es) unfolded. As the interview process developed certain controversies became more and more evident and following (Latour, 2005) these controversies were investigated more in-depth, investigating the details of what the content and processes of the controversies were. These controversies were investigated by exploring the dilemmas in the process (Kreiner & Mouritsen, 2005). Exploring these dilemmas meant focusing on “conflicting and competing concerns” (Kreiner & Mouritsen, 2005, p. 154) among the actors, their practices, and the potential alternative practices that were suppressed, ignored, or avoided. The initial interviewees were selected on the basis of personal contacts to one key contact at a university who introduced other relevant actors. From there on, each interviewee was asked who they thought would be relevant to further talk to, and based on this more interviews were conducted. Currently, in 2024, the suggested contacts have often been interviewed already and the selection strategy now also focuses on interviewing people with knowledge of the historical process and from organizations that appear in the case but that have not had representatives interviewed.

Interview number	Title	Affiliation	Year	Length
1	University Director	University A	2018	54 min
2	Head of Budgets	University B	2018	43 min
3	University Director	University B	2018	45 min
4	University Director (a)	University C	2018	56 min

5	CCA project leader	Agency of Higher Education and Research	2018	61 min
6	University Director	University D	2019	97 min
7	University Director (b)	University C	2019	88 min
8	Official	Ministry of Finance (MOF)	2020	58 min
9	Head of Agency and CCA committee chair	Agency of Institutions and Educational Funding	2020	63 min
10	Deputy Director	Danish Economic Council	2020	69 min
11	Former Permanent Secretary and Member of Productivity Commission	Ministry of Education and Research (MOES) and Productivity Commission	2020	70 min
12	Manager	Agency of Education and Sciences (MOES agency)	2020	91 min
13	Official	Ministry of Finance (MOF)	2020	71 min
14	CCA Project Leader (b)	Agency of Education and Sciences (MOES agency)	2021	56 min
15	High ranking official & head of section	Agency for Public Finance and Management (MOF agency)	2021	90 min
16	Accountant and head of local CCA implementation (a)	University D	2021	58 min
17	Division head and head of local CCA implementation (a)	University C	2021	111 min
18	Division head and head of local CCA implementation (b)	University C	2021	109 min
19	Head of Division	Agency for Public Finance and Management (MOF agency)	2021	26 min
20	Accountant and head of local CCA implementation (b)	University D	2021	101 min
21	Head of section (b)	Agency for Public Finances and Management (MOF agency)	2021	73 min
22	Head of Budgets	University D	2021	54 min
23	Deputy Director of Finances	University D	2021	71 min
24	Head of Budget (b)	University D	2021	83 min
25	CFO	University C	2021	57 min
26	CFO	University E	2021	51 min
27	Official	Agency of Education and Sciences (MOES agency)	2021	72 min
28	Official	Agency of Education and Sciences (MOES agency)	2022	72 min

Table 1: Interviews conducted

Lastly, the first author did observational studies of the implementation of the CCA at one case university. The author followed the local implementation group and their efforts to understand the design criteria of the CCA, communicate with the MOES about concrete technical issues, and change the accounting registrations and allocations to adhere to the demands of the CCA. The group was followed from 2021 till 2023, with more than 80 hours of observations conducted. Detailed notes were taken during the meetings with special

attention on how the group interpreted, implemented, and attempted to change the regulations of the CCA to fit the accounting reality of the university.

4.2 Data analysis

The data analysis consisted of several phases. The initial phase consisted of drawing and visualizing the network around the CCA in different ways while establishing a temporal order of the events, documents, and decisions in the process. The structuring of the story through the events and the actors formed the basis for a content-specific analysis of the interviews, and documents. The content analysis focused on three themes: the challenges in measuring the economic concept of public sector productivity. The story also includes the dynamics of the actor's understanding, interests, and tools used by different agencements about the controversies around the design and implementation of the CCA; and lastly, the outcomes of the trials. The content analysis pointed us towards the conflicts around very technical aspects of bookkeeping, cost allocation and production of accounting numbers, and the potential conflict between these and the CCA's overall purpose of benchmarking and productivity calculations. Often actors would show support and agreeance on the project's overall principles, such as good and cost-efficient management of public funds, and instead, describe the controversies as to a lack of understanding of the complexity of the accounting practices and operations of the universities. From here, we developed the notions about the relationship between economics and accounting and how this relates to the literature on the performativity of economics. The content analysis revealed that controversies were ongoing, despite and perhaps even because of, the persistency in implementing the CCA, which led us to emphasize the performative struggle between agencements over what the CCA and the Danish universities, should become. We connected the interests and tools of the various agencements to concepts of accounting practices and economics of productivity, linking the trials between agencements to their affiliation and usage of the two disciplines.

5. Economics' struggle to make public sector productivity measurable

In the subsequent sections, we unfold our analysis of how economics is working to make public sector productivity measurable by mobilizing accounting. We first provide a background description of economics' struggle to measure public sector productivity and how that struggle is supported not just by economics at universities but also by OECD and the EU. Next, we show how in Denmark the MoF established a productivity commission that initiated several committees and projects, and how the MoF problematized public sector productivity and issued several reports and suggestions that led up to the establishment of a project to measure university productivity through the implementation of a common chart

of account (CCA) across the eight Danish universities. We then analyse the three major trials of strength during the development and implementation of the CCA.

5.1 Background: Economics, OECD and the EU's interest in productivity and their goal to measure it in the public sector

For centuries productivity has been a key concept of economics and defining what constitutes the productive part of the economy was central to economists such as Adam Smith (Mazzucato, 2018). Yet, as this section also will show, the important concept of productivity also poses fundamental theoretical and methodological challenges to professional economists when trying to calculate productivity for the national economy, and in particular for a public sector characterized by the absence of prices determined by a perfectly competitive market. Looking back to the origins of economics and its productivity theory, the 20th century brought with it developments of both the theoretical aspect of productivity and how to measure it (Caves et al., 1982; Hulten, 2001; Solow, 1957). In its most basic form, productivity, from an economic perspective, describes how much output is produced from a given set of inputs (Syverson, 2011) and is a central concept for economics and economists. As Nobel laureate Paul Krugman (1994, p. 11) states: “Productivity isn’t everything, but, in the long run, it is almost everything”. The interest from economists and economics in productivity is directly aimed at explaining the factors affecting productivity, to make visible what Abramovitz (1956, p. 11) called a “measure of our ignorance”, which in turn will make it possible to reconfigure the economy by the theory.

Mathematically productivity can be expressed as

where Y_t is the number of outputs produced, $F(\cdot)$ is a function of inputs, including capital, K_t , labor, L_t , and intermediate material, M_t . Lastly A_t represents productivity, which “captures variations in output not explained by a shift in the observable inputs that act through $F(\cdot)$ ” (Syverson, 2011, p. 330). A key challenge in economics work on productivity is how to measure it. It requires a coupling between inputs and outputs, making the change in outputs calculable to distinguish between an increase in inputs and an increase in productivity. Despite being a “relatively straightforward in concept” (Syverson, 2011, p. 330), measuring and determining the causes and drivers of productivity are the main concerns for most economists working with productivity (Caves et al., 1982; Diewert, 1992; Syverson, 2011). The standard approach for measuring outputs is to use revenues instead of concrete products or services, reflecting the mainstream economics assumption that market prices (under the related assumption of perfect competition) are the most reliable representations of the actual value of goods and services and therefore can act as a common measurement for output.

However, public sector productivity poses a conceptual challenge for economics and for the economists who strive to measure it. The goods and services produced are seldom sold in a market, and therefore the measurement of outputs cannot be done by aggregating revenues

and by assuming that competitive market forces will ensure that these revenues represent the value of the output (Simpson, 2009). Given that “public sector productivity is notoriously difficult to measure” (Boyle, 2008, p. 101), economists have tried to construct different measurements to assess and measure productivity in the public sector. Due to the lack of a competitive market and output prices for public services and goods, economists have instead turned towards defining public sector productivity by measuring costs. In practice, public sector productivity is measured using data from national accounts, but due to a lack of proper market-based output data, it has been a common assumption that public sector output is equal to its input. This approach to the measurement problem has resulted in the effect that public sector productivity cannot increase, and that output growth can only come from a growth in inputs. However, this has been criticized by academic economists (Diewert, 2011, 2012, 2018) who claim it is unrealistic and against economic-theoretical reasoning and instead propose that, given the lack of market prices, the most theoretically precise approach is “valuation at producer’s unit costs of production” (Diewert, 2018, p. 242). The argument is based on core assumptions from neoclassical economics theory about the firm’s production function under competitive market conditions, where marginal unit cost equals marginal revenue at the point of market equilibrium. For economists equipped with this economics-theoretical approach to productivity, the significance of unit costs for public sector organizations is grounded in its ability to mimic market prices, reflecting the “true” economic value of the output. By imputing such a theoretically pure unit cost concept, this approach finally allows economists to calculate public sector productivity. Eventually, measuring public sector productivity will require dedicated unit cost calculations, which also creates a direct link to our case about the CCA. Simpson (2009) stresses that improving the quality and cost-effectiveness of public services “requires an objective measure of productivity and cost-effectiveness” (p. 250). The purpose of productivity measurement and calculations is therefore to transform organizations and economies to make them more productive according to the theoretical conceptualization of productivity. To do so requires precise and adequate data, and while the national accounts system is continuously modified to reflect productivity theory (Lynch & Thage, 2017), conducting sector or organizational-specific productivity analysis demands more and more accurate data (Syverson, 2011). Economics, therefore, relies on accounting data to conduct productivity analysis not only accounting data but comparable accounting data capable of producing adequate data for calculating unit costs by productivity theory.

Productivity has been pursued endlessly in the public sector, and “[p]roductivity appears to be the panacea for dealing with difficult challenges within the public service system” (Kork, Mänttari, & Vakkuri, 2015, p. 395). Despite the importance of productivity in economics, how to define and measure it has gone by “largely unnoticed by accounting professionals” (Banker et al., 1989, p. 528). Accounting data has been criticized for being inadequate in productivity calculations, and since accounts “contain no direct productivity information, economists are unable to extract productivity information from them” (Grifell-Tatjé & Lovell, 2015, p. 1). Another challenge is that within economic models and concepts, unit

costs become abstractions of costs not necessarily connected to actual cost pools or objects, but existing as clean, independent categories in the theoretical models used to theorize productivity. As Skærbæk & Thisted (2004) note economics theory uses unit costs as a future-orientated concept, more concerned with producing an average cost of products or services in the short or long run, in contrast to the accounting field, which relies on historical data to construct their cost categories. Yet, the economics-theoretical approach to unit costs must still rely on accounting data, either from national or organizational accounts, to enable the calculation of actual unit costs, echoing Hopwood's (1992) point that accounting makes economics operational.

The OECD and EU share and support the academic economists' interest in measuring productivity and improving the public sector. The OECD hails productivity as "the ultimate engine of growth in the global economy" (OECD, 2015, p. 3). The EU underscores how "[e]conomic growth will ultimately depend on increasing productivity" (The Council of The European Union, 2016, p. 1) and has likewise: "made productivity the focal point of the economic policies of its Member States" (European Commission, 2009, p. 85). Reflecting the standard economics approach to productivity, both the EU and OECD calculate productivity as the ratios between volume and outputs and volume of inputs focusing on how efficiently inputs are used to produce outputs in an economy (Eurostat, 2001, 2016; OECD, 2001, 2019). Both actors incorporate economic theories of productivity into the formal statistics and measurement tools to diffuse the methods into the administration and statistical bureaus of the individual countries. Apart from its status as the means to achieving economic success, the systematic benchmarking of nations, industries, and organizations integrates productivity through the statistical material used for the benchmark calculations. The transnational interest in productivity as a "focal point" for public policy transforms public sector productivity into an economic cornerstone of public sector reform. Through The European Union's Growth and Stability Pact and OECD's public sector reform processes, the reforms in the Danish public sector closely connect them to the transnational activity described above. For example, since 1972 the Danish State, through the economists at the MOF, pursued productivity measurements in the public sector (Ministry of Finance, 1972, 1983, 1995). MOF (1972) calls for better accounts in public organizations in order to measure and benchmark productivity/unit costs. MOF (1983) calls for unit cost accounting (p. 149) to measure productivity for public organizations. As further explained by MOF (1995), although productivity measures in the public sector have been established since 1983, they do not appear to be used by public sector agencies. A new and more dedicated effort is called for. MOF (1995, pp. 35-36) asks for:

"Information about resource consumption in financial terms, unit costs, etc., in fixed annualized prices over 5 years, including information about [...] A. Main purpose. B Activity. C. Productivity/unit costs.

Through ongoing development of accounting systems and regulations, such as the introduction of accrual accounting, annual reports for public sector organizations, and performance management systems, the MOF continuously aims at more accurately defining

the input and output of the public sector (Ministry of Finance, 1983, 2003, 2005). The MOF draws on both international experience from the OECD (Ministry of Finance, 1995), and productivity theories within economics (Ministry of Finance, 2005), and becomes a central link in the economics agencement by mobilizing different actors to its agenda of measuring and increasing public sector productivity. As the following sections of this paper show, the process of producing these numbers results in trials of strengths between economics and accounting, as economics' unit cost approach challenges accepted accounting practices and the socio-technical agencements around these practices.

5.2. Economics Productivity Problematising the Danish University Sector

The Danish university sector consists of eight universities spread geographically around the four largest cities but with minor campuses in smaller towns. The 2000s marked a change in the governance of universities, making them self-owning independent public organizations outside the state hierarchy with financial autonomy and independent boards of directors. The 2000s were also marked by several fusions and mergers of universities, reducing the number from 12 to eight, while the university sector as a whole experienced a large increase in funding and activity.

In 2005 politicians agreed to invest 1% of GDP in research, up from 0,75%, the annual intake of bachelor students rose from 15.000 in 2000 to over 30.000 in 2015, and the amount of external funding for research doubled from 2007 to 2015. Despite a drop in per-student funding from the state, the increase in student intake and research funding resulted in the universities being one of the biggest single expenses in the public accounts only surpassed by the healthcare and social sector. The transformation of universities into self-owning institutes signalled a stronger commitment to a decentralized university sector with a high amount of autonomy. However, the Danish university sector is characterized by strong governmental control rather than the introduction of a market-based system (Degn & Sørensen, 2015).

In this context of financial growth and autonomy-control governing, a growing interest in the universities' productivity manifested itself.

"The universities become a large animal on the savannah. And when that happens there is more attention to what you are spending your money on. The universities became more interesting both for us as a resort ministry and also for other ministries and especially the Ministry of Finance. They all asked, "We wonder what we are getting for all the money we are sending over there" (High ranking official, Agency of Education and Research).

The growing interest in the universities and their productivity resulted in the first wave of attempts from various actors to calculate and determine the actual cost of the various outputs of the universities with no one succeeding due to the lack of accurate and correct

data. A high ranking official from the Agency of Education and Research further explains that the background for the CCA was that there was “of course also conspicuous frustration at times because it was so damn hard to measure [unit costs]”.

From 2009 till 2015 a series of ministerial and consultancy reports are produced, which problematize the ability to measure and calculate the unit costs at the Danish Universities. Through the ongoing problematization several actors become linked together in their attempt to calculate the productivity, therefore forming what we coin the Economics agencement. A MOF (2009) report identify a overreliance on regulating the inputs of public institutions, recommend to focus on “the institutions’ output and the feedback the state can receive concerning the institutions’ activities and effectiveness” (p. 17). The lack of “continuous, systematic control of the institutions’ effectiveness and resource usage across institutions and sectors” (Ministry of Finance, 2009, p. 39) is due to the absence of common systems for control and differentiated accounting and auditing rules and practices across the sector and recommends implementing common accounting rules and systems for all educational institutions. At the same time, a McKinsey & Co. (2009) report analysing the resource usage of the universities and specifically the cost of the educational activities at the universities support the problematization of the accounting systems at the universities. The report expressed the inadequacy of the available accounting data, writing that these could not be used due to “different practice and degrees of estimation in the calculation of costs” (McKinsey & Co., 2009, p. 12) for the various activities of the institutions such as research and education.

Following up on the McKinsey & Co. report, in 2011 the MOES commissioned PwC to redo part of the calculations, and their report repeats the issues identified by McKinsey & Co., and concludes that universities’ reporting suffered from the fact that “[t]he universities chart of accounts are currently not structured in a way that can generate purpose allocation accounts and the universities use different charts of accounts” (PriceWaterhouseCoopers, 2011, p. 4). The year after in 2012, the National Audit Office was connected to the emerging economics agencement when they continued the problematization by investigating the effects of an increase in educational funding on educational quality. The audit concluded that only a minority of the universities investigated “have knowledge of the cost of their educations” (National Audit Office, 2012, p. 30). The audit prompted the Minister of Education and Science to take action making it clear that he “made it a demand that the universities transition to a common chart of accounts” (Lidegaard, 2013, p. 2-3).

The stream of reports problematizing the university accounting practices became part of the economics agencement. In addition to the instigator MoF, it eventually also includes the MoES, two consultancy firms and NAOD. These agencies now share a common concern about the universities and their problematic lack of accurate and uniform costing data. Relatedly, without this costing data, MoF will not be able to calculate public sector productivity. The several years’ long process of problematizing the universities’ accounting practices creates a context within which a solution can be articulated. Such a solution would not only address

the issue of providing more accurate data for benchmarking and productivity comparisons but also in a more general sense address the issue of ensuring better management accounting and control at the universities.

An attempt to provide a solution was made when the MOES in 2012 published a new accounting instruction, specifying how the universities must create a statement of expenditure by purpose outside their accounting systems, which is to be included in their annual reports. The purpose is to “be comparable across universities, main area [of research] and purpose” and to ensure that “the universities collection and reporting of data are as uniform and precise as possible” (Ministry of Education and Sciences, 2012, p. 1). However, the instruction with the notion of making a statement outside the accounting system had little or no effect. The universities followed the instruction but made it clear to MOES that the statement of expenditures by purpose has had little or no effect on the governing of the universities, or the internal management of the universities. The instruction was mainly seen as a bureaucratic hurdle by the universities and MOES recognized that it did not allow for benchmarking of the universities due to their different allocation and bookkeeping practices.

Due to the lack of success of the 2012 instruction, a new consultancy report was produced in 2015 by Deloitte. The report, commissioned by the MOES and MOF, focuses on the costs and funding of educational programs in Denmark, and concludes that “the results show it is difficult to compare costs for higher education across institutions and educations”. Therefore, the MOES will “initiate a dialogue with the educational institutions on establishing a common accounting practice and chart of accounts so that in the future there will be more transparency on how the State’s grants” are used (MOES, 2015). Once again, we see how different actors problematize the lack of cost accounting. What is new compared to the 2012 instructions is the explicit focus on the inside of the accounting system, with a proposal for a CCA. If implemented, the proposal will solve the lack of transparency and comparable cost data for the universities, which hinders the effective management of the universities. As a high-ranking official from the Agency for Public Finance and Management explains it:

“We know how much corn we feed the hen; we also know how many eggs it lay. But exactly what happens inside the hen is somewhat of a mystery. And that’s what this is about; we want to be better at seeing what’s happening inside the hen. Because then we understand the connection between inputs and outputs”

Overcoming the lack of proper data requires a certain accounting technology as a solution to a variety of concerns, and the economics agencement articulates the CCA as the solution to measuring and calculating the universities’ productivity. Implementing the CCA will transform the hitherto problematic and opaque universities into transparent and analysable objects. The CCA must be designed to provide the correct data to ensure that benchmarking and productivity calculations can be done, in line with recommendations from the MoF. The stage was thus set for the trial of strengths concerning the CCA and the struggles for

designing and implementing a registration framework enabling benchmarking and productivity calculations.

5.3 First round of trials: Productivity and the design of the Common Chart of Accounts

The first trial revolved around three issues connected to the proposed model for the CCA: 1. whether to introduce time registration for academic staff, 2. the registration of purposes for all costs at the time of bookkeeping, and 3. if the allocation of costs had to happen within or outside the accounting systems.

In 2015 the Government's Financial Committee, led by the MOF, which acts as the central coordination committee for the financial policy of the Government, approved the introduction of a CCA for the institutions of higher education in Denmark. In December 2015 the MOES invites the universities to participate in the working group on designing a CCA for the sector. The purpose of the CCA is to "increase the transparency in the cost for education and research (...) [and] to follow the development of the expenditures and effectiveness in the sector" (p. 1) by introducing a "common chart of accounts, in the form of a demand to use the State's item specification in the chart of accounts and a new, collective purpose dimension" (p. 1). The original proposal for the CCA included six purposes (in 2018 seventh one concerning student residences was added) that the universities' costs had to be allocated to: 1. Education, 2. Research and development, 3. Dissemination and knowledge sharing, 4. Consultancy services to public agencies, advisory and other services, 5. Student residences (added in 2018). In addition, there are two more purposes: 6. General joint costs for administration and management and 7. Buildings and facility management. The costs related to the two last purposes are to be allocated to the first five purposes. The introduction of the CCA and the goal of more precise and valid data for comparing costs across universities is seen as a prerequisite for analysing and improving the productivity of the universities. An official from the MOF involved in the process states that normally the MOF benchmarks all public institutions on a continuous basis, but this is not possible for the universities:

"It cannot be done meaningfully [benchmarking] in the universities sector if you do not have a similar chart of accounts so you can compare how they book respectively their administration, how they book their PhDs, how do they count towards research and teaching."

Relatedly, the permanent secretary of the MOES, an economist and member of the Danish Productivity Commission, was also involved in the process of designing the CCA. She considers the production of comparable cost data to lay the foundation for further benchmarking and an increase in productivity:

“It is a purpose in itself what we use the money on but on top of that it is the prerequisite; No not a prerequisite, but it can be an important foundation for improving the resource usage and thereby the productivity.”

The university accounting agencements, consisting of the universities, their accounting systems, and their current accounting practices, first react by highlighting the issue of co-production between its two core activities: education and research. The CCA makes it a challenge for the universities to divide and book staff costs into two neatly separated accounting categories, such as ‘research’ versus ‘education’. In a letter to the MOES, the chair of the Danish University association warns against time registration as it will be “unproductive and heavy to administrate”, and a “fundamentally break with a century-old university tradition” (Bjarklev, 2016, p. 1). Heading these warnings, the Minister reassures the universities that the CCA would not contain “central demands about time registration for university staff” (Larsen, 2016, p. 1). Even though this first trial resulted in a positive outcome for the universities since they succeeded in avoiding the time registration of their staff, the success was only partial.

The second part of the ongoing trial revolves around how to connect specific costs to their different purposes. Central to the proposed CCA in 2016 is that “[t]he registration of costs must happen at the lowest possible level and follow that all costs that can immediately be directly allocated to a purpose, must be allocated for that purpose” (MOES, 2016, p. 2). This means that all invoices, when booked, are to be categorized as belonging to a specific purpose. The demand for allocation costs to purposes in the moment of registration is to ensure the direct coupling between input and output and builds on the assumption from public sector productivity, that all public institutions must be able to demonstrate the connection between input and output (Agency for Public Finance and Management, 2020; Ministry of Finance, 2010). This direct connection between input and output is a central part of how the economics agencement wishes to perform the universities and their accounting systems. The proposed design of the CCA follows the general framework of the State’s chart of accounts which links input and output aiming at creating a coherent registration frame with the chart of accounts as the central technology in connecting costs and activities. According to the Agency for Public Finance and Management (2020, p. 9), a coherent registration frame is a fundament for data-driven management with its key analytical power being the ability to “report and visualize data” and calculate and illustrate “unit costs”, “productivity” and “benchmarking”.

However, the university accounting agencement strongly opposes the allocation of cost to purpose in the registration moment, arguing that it would be extremely bureaucratic, time-consuming, and at odds with proper bookkeeping and accounting practice. At the beginning of the project the chair of the Danish University Association informed the Minister of Education and Science that, based on the McKinsey (2009) and Deloitte (2015) reports, it is evident that a CCA is *“Extremely complex and will entail a massive resource usage in set-up and operation phase”* and *due to the complexity of registering cost for all purposes there are “reasons to fear that both the legitimacy, transparency and usefulness – and thereby value – of*

the project will be extremely limited" (Danish University Association, 2016, p. 2). The main issues are, according to the universities; the complexity of the universities' activities and the existence of co-production between several purposes, many categories of costs such as academic staff pay, and a clear resistance towards cost allocation within the accounting systems.

An example of the demand for registering purposes at the lowest possible level concerns the purpose dimension of "Education". The 2016 draft of the CCA requires the cost to be registered on the specific educational program (law, medicine, communication) adding another layer of administration and complexity to the bookkeeping for the universities. One university director explains that the model would "simply be too complex" and exemplifies it by stating that:

"Every time we must buy a piece of chalk for a blackboard, and we had to register the invoice we would have to figure out whether it went for teaching in political science or economics or some other place." (University Director, University A).

At some point, there was even a discussion of whether it would be possible to register the cost of the specific activity related to teaching, which was preparation, teaching, exam, development, and administration adding yet another layer of complexity to the registration.

For the university accounting agencement, the proposed design for the CCA reflects a simplified view of both the activities of the universities and how management accounting works in practice. The representatives from the universities perceive the CCA's demands for purpose allocation at the moment of registration - allocating costs within the accounting system and using general allocation keys across the sector - as the MOF and MOES lack an understanding of the accounting practices of the universities. A university director explains how the:

"Why the hell can't we put it [the accounting data] into a data warehouse? (...) when you ask us to recalibrate our accounting and change the chart of accounts and we must book on it [purpose dimensions] in our daily practice; it does not make any sense for us, and I think that's a problem. It is not a basic resistance towards letting us be benchmarked" (University Director, University D).

The university accounting agencement's opposition towards these three elements of the 2016 design of the CCA is central in understanding the conflict between the local accounting practices of the universities and the abstract productivity demands advocated by the economics agencement. An important aspect of the trials is that both agencements agree on the purpose of the project as so far as it means an increased knowledge of the costs of the universities and reporting these publicly. Representatives from the universities note that "the purpose of benchmarking, I think, that is entirely fair and legitimate from the side of the state" (University Director, University B) and that their "point of departure has been that we want to tell how we use our money, and we would like to create transparency about it" (University Director, University A). The core of the trials is not whether to calculate unit costs and measure the productivity of the universities. It is rather about how the accounting

systems and practices can deliver such calculations. The conflict is centred on the background of accounting, and its technical operation, rather than the foreground, its purpose, and use.

The CCA working group under the MOES met four times in 2016 before the MOES' Permanent Secretary stopped the process due to the massive resistance from the universities. As the Permanent Secretary recalls:

"There was not a sufficient acknowledgment [on our side] that among the universities there was true co-production between research and education (...) and is it then considerate to register directly on the two purposes? It was originally the ambition of the Ministry of Finance to do so. And to be frank it was not very thought through."

Concluding the first set of trials in 2016, the university accounting agencement managed to convince the MOES' Permanent Secretary that the proposed model for the CCA goes against proper accounting practices since the MOF's model failed to recognize that a split between research and education activities is impossible due to the existence of "true co-production." The result of the trial is, therefore, a success for the university accounting agencement and their performance of proper accounting practices, against "the more theoretical approach" of the MOF (Head of Agency, MOES).

The proposed CCA and its productivity calculations stem from the economics agencement consisting of OECD and the links to MOF and its productivity commission, the AOPF, the MOES, the economics theory of productivity, and the former initiatives in the Danish public sector. The agencement attempts to claim that the universities are unproductive, and to perform this statement they wish to calculate unit costs for the universities' activities. The economics agencement and its claims are up against a university accounting agencement consisting of Danish universities, their activities within research and education, and their current accounting practices. This university accounting agencement resists the CCA and its productivity calculations, which they perceive as an insult in the case of time registration of staff, and as bureaucratic and at odds with proper accounting practices in the case of purpose registration. The first set of trials resulted in success for the university accounting agencement, as they managed to stop further work on the CCA. The university accounting agencement mobilizes their knowledge about local accounting practices and their understanding of what constitutes proper accounting in direct dialogue with the MOES' Permanent Secretary of MOES (while bypassing the CCA project committee). The trials revolve around competing theories and models of how to do accounting and calculate productivity. These struggles over different world views, expressed through the theories, reveal the performative struggles between theories as they evolve in practice. However, as we will see the university accounting agencement' successful struggle is only a temporary achievement, it is not permanent.

5.4 Second round of trials – Reviving the productivity pursuit

In December 2017 the initial success in the first trials transformed into a temporary bump on the road towards measuring productivity in the university sector, as the MOES sends out the terms of reference for a new project committee investigating how best to implement a CCA in the university sector. Representatives from the universities are “honestly quite surprised” as “there were some fundamental issues that were brought up back then [in the 2016 committee] that was almost just accepted as being a principal condition “for the new committee (University Director, University A). At the same time, representatives involved in 2016 thought they had “laid it [the CCA] to rest” (CFO, University C) after the 2016 trial. The terms of reference for the new committee are almost identical to the ones from 2016, prompting several of the involved actors to point out that the CCA is a central demand from the MOF. As the chair of the 2017 CCA committee explains

“It is not revealing any secrets that the MOF, of course, had their hands in the glove in this issue. The Government does not simply sit down and figure out if it wants a CCA for the institutions of higher education. It is something that comes from the MOF and the approach to governing they lay down over the public sector.” (Head of Agency, MOES).

The content of the second trial is the same as the first trial: how to register and allocate costs to purposes and especially how to handle the co-production of education and research, with the underlying issue of when a satisfactory connection is created between input and output. As emphasized by the project owner the conflict materializes in the “clash between management approaches” with the MOF’s “relatively square and relatively theoretical” on one side and the “more pragmatic approach at the universities” on the other side (Head of Agency, MOES). The MOES becomes a mediator between the two agencements, actively trying to satisfy the competing demands for what the CCA, and in extension accounting, should be in the cases.

The two agencements mobilize three different approaches in defining the design of the CCA from December 2017 to October 2018. The three approaches are: creating more knowledge of the local accounting practices at the universities, appealing to either public sector productivity or university accounting practices, and threatening with worse alternatives. The MOES leads the first approach of creating more knowledge of the local accounting practices. While the 2016 commission was a “desktop exercise” (MOES official), during 2017 the MOES increased their own knowledge of accounting more generally, to persuade the universities of how little the CCA will actually change in the current accounting practices and shift the discussion from technicalities to more principle issues of what to use the CCA for. The MOES invests in a roadshow to the universities, conducts a large mapping of the current registration and reporting practices of the universities, and receives several cases from the universities on the consequences of introducing the proposed CCA. The Agency of Public Finance argues how the CCA will only be a small change, as: “the increased standardization there is in this project is minimal” (AOPF official), with a MOF

representative stating that their work with the MOES was to “try to convince them [the universities] subsequent that it [the CCA] is in fact not that different.”

The greater involvement with the universities’ accounting practices results in the MOES acknowledging a larger part of the universities’ concerns and critique towards the CCA, creating division in the economics agencement. The head of the CCA committee and head of Agency at the MOES recalls that the process “was all about finding a compromise between what the Agency of Public Finances ideally wanted and ensuring that the universities introduced some element of purpose registration in the final solution”. To increase their chances of success in the trial, the economics agencement changed its approach to both persuade and overcome the university accounting agencement.

The university accounting agencement strongly resists the claim of the CCA involving minimal change and is in line with their current management accounting practices. Instead, the universities put their efforts into constructing the CCA as a contrast to the actual accounting practices they employ. The approach had proven very successful in the first round of trials and given the almost identical design of the proposed CCA to the one laid to rest in 2016, the universities repeat many of their points of critique regarding the allocation of purpose at the moment of registration and that purpose allocation happens inside the accounting systems. By constantly contrasting the CCA with their current accounting practices and highlighting that many aspects of the CCA are in opposition with proper management accounting, the university accounting agencement explicates the central conflict between the two socio-technical agencements: the conflict between accounting and economics. The universities persistently problematize the economics agencement on their lack of knowledge about accounting pointing towards the simplistic design of the CCA:

“There is no acceptance of the complexity in this. And then they believe we just can do something simply because they basically do not know much about accounts and accounting”
(University Director, University C).

Another university director explains that “it sounds so lame, and banal, and typically harsh to say that the MOF does not understand the business [the university]. But I really don’t think they do” (University Director, University D). A concrete example of the approach is a letter from the university representatives to the chair of the CCA committee in April 2018. The letter lists several “principal remarks” to the design of the CCA, such as the issue of allocating costs within the accounting system, registering sub-purposes for costs (specifying a specific education, such as medicine, rather than the overall of Education) when booking costs, and the irrelevance of budgeting on the purpose categories for the universities. To add further strength to the critique of the lack of accounting knowledge, the letter describes the administrative burden of the CCA in following the rigid productivity-inspired design proposed by the economics agencement. The letter details how the allocation of faculty salary will result in a “large administrative burden for the universities”, as faculty’s activities are a co-production between research and education. The letter also estimates that each university on average has more than 160.000 invoices for their operational expenses, and

registering these to a purpose at the time of booking involves a “considerable risk of the registrations becoming random and imprecise resulting in post-entry corrections and a great deal of extra work” (Danish University Association, 2018, p. 3). The outcome of this approach proves somewhat successful for the universities, as they manage to get rid of the demand for registering on sub-purposes in the accounting system and ensure more flexibility in how to allocate costs within the accounting system. The interviews and internal documents from the universities show how they were considering escalating the trial, both by including university presidents in the process and outright resisting adopting the CCA. However, due to the threats from the MOF, the universities stick to a less confrontational approach, accepting what they describe as an “irrelevant but tolerable” version of the CCA to be formulated in the final committee report.

The successful counter-problematization from the universities change the design of the CCA towards their accounting practices and away from a rigid and simplistic productivity ideal. Due to the pressure from the universities, and their earlier success in halting the CCA in 2016, the economics agencement accepts a larger degree of flexibility in the design of the CCA. Flexibility emerges in the form of dispensation opportunities, vague formulations of demands and rules, and a lack of technical specification on the registration and allocation and makes it possible to merge the conflicting opinions and views of the two agencements. Facing the massive critique of the universities, and their persistent attempts at dismantling the rigidity of the CCA, the economics agencement decided to draw the line at what they think is the minimal degree of standardization needed to enable productivity calculations.

Simultaneously with the university accounting agencement’s efforts at modifying the CCA to fit their current accounting practices, the chair of the committee met with the MOF and the Agency of Public Finances to balance the universities’ demands with the MOF’s wish for a more detailed and standardized registration on purposes. During the meetings, it becomes clear, that the flexibility in the CCA is not limitless:

“I think it is positive to have the flexibility [in the CCA design]. I think the MOF has, could have, a strong worry about it is a loophole we are opening, and that in reality, the entire purpose of the CCA and a common methodology disappears. (...) It has always been present, that if we in the ministry [MOES] could not find a solution with our institutions (...) then it could always happen that the MOF pulls the plug on the process and goes to the government with this and says that the MOES cannot manage to find a solution about the CCA, so we [the MOF] suggest that bam bam bam [slams table. And then it becomes a government decision with the MOF’s hand inside and the solution will be theirs, period!” (Head of Agency, MOES).

The MoF’s concern about increasing the flexibility in the standardization of the accounting results in them threatening both the MOES and the universities. The MOF’s threat is that if the final solution is too far from the original design with complete registration on the main and sub-purpose the MOF will design and implement a solution without the involvement of other parties. The message becomes communicated clearly to the universities’ representatives, who are told at the end of the process that if they push to dismantle the

original design of the CCA more, especially concerning the purpose registration when booking costs, then the MOF will enforce its own solution. The threats are successful in convincing the university accounting agencement to accept the CCA, rather than outright rejecting it or attempting to further dismantle it.

In October 2018 the final committee published their report on the introduction of a CCA for all institutions of higher education in Denmark. The report includes demands for registration on main purposes within the accounting system, the possibility to allocate cost to co-production at the end of the accounting period, and permission to allocate cost to sub-purposes outside the accounting system. The description of the technical features of the CCA in the report is very vague and many central decisions, for example, if all universities must use the same distribution keys in allocating costs, are left to be decided later. The 2018 report on the CCA concludes the initial design phase of the CCA, but it is still a partial, flexible, and potential CCA that is depicted and performed. The CCA still requires further investments to be performed and translated into the individual universities' accounting practices.

The outcome of the second round of trials shows the ability to utilize accounting practices as a tool of resistance to economic concepts. The universities managed to mobilize their current accounting practices to challenge several central parts of the initial CCA in the trials. This prompted the MOES to invest heavily in smoothing the relations with the affected universities. This included tours at the universities and bilateral meetings. The university accounting agencement succeeds in altering central parts of the economics agencements preferred CCA design through the mobilization of their argument about proper accounting practice. Here we see how an economics-based approach to accounting clashes with the practice-based approach to accounting over what accounting should be and do.

However, the MOF's ability to potentially bypass the MOES committee by forcing a standardized registration framework highlights the unequal power relationship that exists between the agencements. Such power relations act as a boundary condition for the space within which the performative struggles unfold. The MOF's power is not given but stems from its long investments in the association with economics to become the central actor in the network around public sector productivity. MOF's investments into the infrastructure of productivity mean that the design and implementation of standardized purpose registration becomes a self-evident part of public accounting reforms. It is embedded into the overall governance and management of the public sector. The performative struggles are conditioned by the boundaries established by MOF, and the economic concept of productivity is co-performed both through the concrete activities of the MOF in the CCA process and also by the investments of the MOF into the calculative infrastructure in the Danish public sector.

The MOF's power is not boundless and total, as the universities are successful in their persistent effort at changing and diluting the most central aspects of public sector productivity from the CCA. It seems that MOF accepts a weakened version of the CCA and productivity calculations, that incorporate certain accounting conventions from the

universities' current practice, to ensure that it will be used in practice. The economics agencement's theoretical ambitions and ideas about how to design the CCA face strong opposition from the university accounting agencement. The university agencement mobilizes an entangled practice of accounting systems, routines, and inscriptions to dismiss the simplified statements on how to calculate productivity. The analysis indicates that actors are willing to diverge from pure economic concepts to make the concept, such as public sector productivity, more viable and impactful in the reality in which it is performed and which it tries to perform. Performative struggles and the trials through which they happen, challenge a simple theory-reality" movement of performativity. Instead, it orientates our attention towards the intricate, small, and technical moves and shifts between opposing agencements, rather than the implementation of an economic theory into a blank and malleable reality.

5.5 Ongoing trials and compromises in the performance of the CCA

After the release of the committee report in October 2018 the implementation of the CCA starts while the MOES continuously works with specifying and concretizing the formulation and details of the CCA. The simultaneous work of implementing and defining the design of the CCA results in a series of ongoing trials between the agencements in their attempt to perform their version of the CCA, within the performative boundaries set by the 2018 committee report. An example is the process of specifying and using allocation keys for allocating cost from co-production purposes to the other 7 main purposes. The 2018 report makes the MOES responsible for specifying how to allocate costs, and that will make a list of acceptable costs that can be dispensed from the registration of purpose at the time of registration. During the next two years, the university accounting agencement criticizes the initial proposal for the cost allocation as being bureaucratic, against the universities' accounting and bookkeeping practice, and norms for good accounting. The universities claim that the model for allocating costs in the 2018 report does not handle the central issue of some costs co-producing both research and education, and therefore the universities consider a continuous registration of cost on one purpose to be meaningless. The universities claim that the co-production of research and education is central to what a university is, and the two activities are inseparable. Since the universities managed to avoid time registrations of faculty's work in the second trial, they are now faced with the issue of how to allocate the cost between purposes.

Based on the critique in 2019 the MOES proposes a model for the allocation of the cost defined as co-production, where the universities themselves define the cost pools for the co-production costs and decide on the cost driver, granting the universities a large degree of freedom. This is an instance where MOES reconsiders their theoretical approach and their understanding of the accounting practice at the universities. Despite the MOES including the

model in the formal registration and allocation guide of 2020 other parts of the economics agencement oppose the flexibility allowed to the universities. The MOF and AOPF both strongly oppose the solution and immediately stop the work, as they see it as against the purpose of the CCA. An AOPF official explains that “if we just let everybody do as they see most fit are we then fulfilling the Committee Report’s formal about comparability? And that is when we put our foot down”. The AOPF suspects that the MOES is too accommodating towards the universities’ critique, and the MOES acknowledges that there “was a disagreement. We from [the MOES] thought it was a good model. But the MOF did not believe it was precise enough and was worried” (MOES Official). Tensions between the MOES and the MOF arise, as the MOES begins to accept the university accounting agencement’s accounting practice, which is in contrast to the MOF’s approach. Internal mail correspondence between officials from MOES, MOF, and the AOPF reveals the concerns and disagreements. According to the MOF, the CCA project is in some areas, especially the standardization of accounting practices, “diverging from the tasks set out in the [CCA] committee report” and proposes a more rigid approach to ensure uniform and comparable registrations of costs and methods of allocation. The MOES’ response to the rigid approach, inspired by the simple productivity concept, is that they:

“do not judge the described approach as being realistic. And that the formulations will create so much insecurity and frustration among the [educational] institutions that some will drop out [of the CCA project].”

The outcome of the trial is another compromise. The final guidelines for the cost allocation of the co-production are published after another year of negotiations and introduce an 8th purpose for co-production. The guideline also specifies which costs are defined as co-production and defines the cost drivers that must be used to allocate the cost, but with some flexibility in which methods can be used to estimate the cost drivers. An example is faculty pay, the largest of the co-production costs, where time must be used as a cost driver, but faculty time can be calculated through time registration, norm hours, and quailed estimates of the time used.

The outcome of the disagreement between the MOES and MOF on how to create a model for allocating the production cost reveals the tensions within the economics agencement in the move from a flexible and potential CCA towards the hardening of the different parts of the CCA that happens in its performance. At the same time, the tension points towards the fragility of alliances and how actors change their opinions and actions through trials, which reflects a more dynamic view of the performative struggles. The initial positions of the actors, their membership, and their allegiance to agencements are not necessarily set in stone but can change during the process and trials.

By fall 2023, the implementation of CCA is still ongoing at all universities, and therefore there are some limitations in assessing the expected performative effect on university productivity from introducing productivity theory into the university accounting system. The universities, their accounting practices, and their systems continuously resist and

challenge the proposal from the economics agencement, and their success in the trials leaves the CCA as something different than initially imagined. A major concern among the economics agencement is currently that in amending the CCA to become something that the university accounting agencement accepts and implements, the outcome will not be the pure and precise calculation of unit costs that will eliminate all doubts about the accounting numbers produced. A local accountant at University D openly admitted that the allocation rates and methods of calculating unit costs were wrong and that “they are not drawing a picture that reflects reality. But we are doing it with open eyes”. When asked if the CCA will achieve its goals, a high-ranking official from the Agency of Public Finance answers: “I do not believe so, when I am to be completely honest”. At the same time, all representatives from the universities (still) call the CCA “irrelevant”, “useless”, and “not some that were grown in my backyard” and actively narrate it as an external demand.

Case epilogue

Currently, the effects of implementing and using the CCA are not clear, which mainly stems from the fact that no unit costs have been calculated so far due to the struggles and negotiations between the two agencements. Based on our informants we can however point to two preliminary effects that we expect to continue onwards. First is that the resource usage on the CCA project has been substantial even before the CCS has delivered any outputs in the form of unit costs. The several rounds of designing and writing the report on the CCA involved many top officials and university administrators with high salaries, the MOES received extra financing of 1,3 million euros to implement the CCA, and at the two case universities in the study several accountants are dedicated solely to the task of developing and maintaining the CCA. Secondly, the ambition of having the CCA positively influence and improve the internal management of the universities has not materialized. One university refused to use the accounts on cost for education, research, and the other main purposes in its internal reporting and management system. The numbers were deemed too inaccurate and uncertain to be used for decision-making, performance measurement, and evaluation. The strong reservation from actors towards using the accounting numbers produced by the CCA, which are the official accounts of the university, demonstrate how the compromise between the two agencements seemed to be a loss for all. Throughout the design and implementation of the CCA, many compromises have been made. Another example of the ongoing series of compromises is the MOES’ procedure for calculating unit costs, which gives quite extensive freedom to the universities to decide on their calculations of unit costs. The universities can employ weights to reflect different types of programs, auditory heavy or lab heavy, correct the production of students based on the intake to reflect the costs of non-graduating students or use weights for class sizes. The methodological freedoms in the calculation of the unit costs will most likely make it highly incomparable across universities, as the unit costs might reflect differences in calculation rather than in the cost of students. Despite all these compromises, the CCA must still be used and the MOES expects to publish

the first unit costs in 2024. The CCA and the ambition to improve the productivity of the Danish universities is, as of 2023, at a weak stage, where the ongoing struggles and trials between the agencements have resulted in a compromised version of the initially proposed CCA, reflecting competing demands from the agencements.

Despite the compromises, there is still a clear commitment from the economics agencement to use the CCA and its outputs in the governing dialogue with the universities and to achieve comparability and actively compare the institutions. A high-ranking MOES official states that “The Committee report [from 2018] is the Bible. That is what we must achieve”, which underscores the insistency in calculating unit costs and comparing universities, regardless of the infeasibility of performing the pure version of the CCA. According to the MOF the drive towards ensuring comparability and using it in benchmarking universities is not hindered by the many challenges in implementing and performing the CCA. Even when central aspects of it differ from what is written in the Committee report. It appears that this is an ongoing trial of strength as the MoF’s more than 50 years of pursuit of productivity have not stopped simply due to accounting challenges.

6. Discussion

Our ambition with this paper is to further our understanding of the relation between accounting and economics. We have also pointed out the need for more detailed empirical studies and theorizations regarding the tensions between accounting and economics, notably in the context of accounting change when new systems for accounting are designed and implemented and with what effects. Below, we will summarize our findings and relate them to the extant literature.

6.1 The tensions between accounting and economics

Prior literature has highlighted the importance of investigating and developing a better understanding of the relationship between economics and accounting (Hopwood, 1992; Miller, 1998). The relationship is predominately perceived as a reciprocal one where economics infuses accounting with a purpose and accounting makes economics operationalizable. This reciprocal relationship reflects a perception of accounting as being permeable to other bodies of knowledge, especially economics (Hopwood, 1992; Miller, 1998), and the strength economics has in changing accounting into something new. Yet, Hopwood (1992, p. 128) acknowledges a tension in the relationship, stating that economics also claims to provide a way of “gauging the adequacy of accounting calculation and suggest possibilities for their transformation (...).”

Our analysis of the CCA supports this insight about a tense relationship as the trials of strength revolve around how to design and use accounting to measure and calculate public sector productivity, and the competing perceptions of what accounting should be. The case

shows how economics are leveraged by the economics agencement to problematize the universities' accounting practices and ability to deliver comparable unit costs, which are found lacking in their ability to measure the universities' productivity. An important finding in our case is the significance of the accounting background (Hopwood, 1992) with its technical procedures as the arena for tensioned negotiations. It is at the core of the many trials and struggles between the agencements; the economic purpose of calculating unit costs and benchmarking the universities is not that significant. There is a common agreement on the need to have transparency concerning the universities' resource usage, and both agencements are in agreeance on the relevance and importance of calculating productivity. Among the agencements there is little discussion about the relevance and importance of calculating unit costs, increasing transparency of costs, and comparing organizations about the CCA. All the trials of strength in the performative struggle gravitate around the technical accounting procedures; whether to book expenses on purposes at the time of registration, whether/how to allocate costs to cost objects (called purposes in the CC), and the methods of cost allocation to cost objects (purposes), which are part of the accounting background. This highlights a different aspect of the tense relationship between accounting and economics, as prior studies have rarely considered the technical background in detail (Hopwood, 1992; Miller, 1998; Suzuki, 2003).

While this does not lead us to conclude that accounting has an ontological core outside the reach of economics, it shows how the technical procedures of accounting can be performed as a core from which change can be resisted and rejected. In our case, the lack of detailed technical knowledge into how the universities practice accounting becomes a major weakness for the economics agencements. This dynamic is perhaps best illustrated when MOES eventually begins to sympathize more with the university accounting agencement and echo their concerns and arguments vis-à-vis the economics agencement. Accounting is not just an intermediary, faithfully transporting the intention and ideas of economics, but rather plays an unfaithful role as a technical mediator (Latour, 2005) that distorts the meaning, purpose and usefulness of economics during its translation/operationalization, from an abstract theory of productivity to the practical economy of university cost accounting. Accounting is mobilized by the university accounting agencement to contest economic ideas about productivity (e.g. unit cost calculations, time registration), stressing the complexity of the relationship between economics and accounting. While accounting is seen as malleable and permeable to other bodies of knowledge, such as economics, our findings point to the materiality of an accounting practice and its ability to resist, reject, and modify economic concepts. The influence between the two disciplines on each other can then also be reciprocal. Accounting affects economic concepts when making them operational, resulting in compromises in practice due to the lack of translatability of the pure economic concept of productivity into an accounting practice (Du Rietz, 2023). The initial ambition to include time registration of employees into the design of the CCA is excluded followed by other negotiations and compromises regarding the unit cost calculations.

6.2 Accounting's role in performing economics

Accounting research on performativity focuses on the performative role of accounting as a calculative practice (Boedker et al., 2020; Revellino & Mouritsen, 2015). This article complements and extends this research by building on Callon's (1998, 2007) original work to better understand the performative effect of economics and the role of accounting in performing economics. The paper extends the work of the handful of studies investigating accounting's role in performing economic concepts and theories (Christner & Sjögren, 2022; Cushen, 2013; Pucci & Skærbæk, 2020; Themsen & Skærbæk, 2018; Warren & Seal, 2018) by demonstrating the dual role of accounting; as a device of actualizing the theories of economics (Callon, 2007), and as an opposing theory and practice against economics (D'Adderio et al., 2019; D'Adderio & Pollock, 2014).

At the time of writing, the CCA very much resembles an impure solution (Pucci & Skærbæk, 2020) because of the performative struggles between the university accounting agencement and the economics agencement. The CCA that is currently under implementation is of a different design and purpose compared to the first version initially proposed as the theoretically pure solution by the economics agencement. The case shows how the CCA is necessary for the economics agencement to perform public sector productivity, and accounting becomes part of the socio-technical practice needed to perform economics (Callon, 1998b, 2007; MacKenzie, 2006). Like the original statement by (Callon, 1998, p. 27) that "accounting tools (...) perform the economy" we identify the mediating and unfaithful role (Latour, 2005) of accounting to economics. Accounting does not necessarily act as a faithful vehicle for economics implementation of its theoretical concepts. Accounting practices, procedures, and technologies can actively be mobilized against concepts derived from pure economics concepts. The issue of how to book costs on purpose in an accounting system proved to be an obstacle that the economics agencement could not overcome, revealing how mundane practices of bookkeeping might prove to be stronger than the economics concept of public sector productivity.

Themsen & Skærbæk (2018) highlight how accounting "technologies serve as buffers to shield (economic) theories or framework against competing views" (p. 30). In our case, we find that the existing accounting technologies and procedures of the universities are mobilized by the university accounting agencement to problematize and challenge economics, i.e., acting more like a sword than a shield. We confirm the findings of prior studies suggesting how accounting might not faithfully aid in the performance of economics (Pucci & Skærbæk, 2020), revealing a more complex role of accounting in performing ideas and theories than formerly found (Christner & Sjögren, 2022; Cushen, 2013; Themsen & Skærbæk, 2018). According to Warren & Seal (2018) accounting devices can "frame the negotiations" between actors, we instead find that economics recurrent attempts at reframing accounting is the source of struggle. We suggest a more nuanced view of the performativity of economics, moving away from supposing a mechanical link between economics theories, accounting and economic realities, and instead towards empirically

unfolding the work, routines and practices through which economics theories and accounting interact and perform the economic realities.

A second contribution, expanding on the first, is the studying the process of performativity as a performative struggle between different theories about the world (Callon, 2007; D'Adderio, 2008; D'Adderio et al., 2019; D'Adderio & Pollock, 2014). In the case of the CCA both agencement formulated and mobilized their own theory of how the accounting system and rules should be formulated, implemented and used. The economics agencement relied on the concept of public sector productivity from the economic literature, while the university accounting agencement formulated their current accounting practices as their theory of how the CCA should be and mobilized it more as a "folk theor[y]" (D'Adderio et al., 2019, p. 678). As a result of the competing theories mobilized in the performative struggle, the CCA is continuously modified and changed through ongoing performative struggles and trials.

The revised CCA becomes the (provisional) outcome from the struggles between two agencements engaged in constructing their reality about what the university is. For the economics agencement, they perform a reality through their productivity concept in which the identity of the universities is that of the faithful and productive public organizations that implement the CCA and unambiguously connect input and output, calculate unit costs, and are benchmarked. By contrast, the university accounting agencement responds by performing another reality and identity through their accounting practices, in which the universities are entities with an inseparable connection between research and education, which is supported by their current accounting practice and that acknowledge this inseparability and therefore does not separate it. The focus on performative struggles directs our attention to the importance of existing and developing economic theories and accounting devices, actors and institutions and their practices and motives, in short, how identities are negotiated through the performative struggles between socio-technical agencements. The adoption a relational perspective on competing theories (D'Adderio et al., 2019; D'Adderio & Pollock, 2014)) highlights how the effects of performing competing realities and identities have further complex ramifications for the process and its (more or less) successful outcomes.

Thirdly, our case illustrates the boundaries and limits of performativity, illuminating the trials of strength through which accounting becomes performative or not. Counter-performativity can occur due to the technical and visual working of the accounting devices (Themsen & Skærbæk, 2018), the negative effect of the accounting technology on organizational actors leading to opposition (Boedker et al., 2020). The acceptance and use of the accounting technology (Faulconbridge & Muzio, 2021) is no exception – it is an outcome of the trials of strength. In our case, the CCA is modified and changed by the economics agencement to avoid further trials, securing usage by the universities. During the process the CCA becomes a compromise between the two agencement's wishes and

intentions, demonstrating the importance of the accounting technology itself in understanding its legitimacy and acceptance (Pucci & Skærbæk, 2020).

While the university accounting agencement succeeded in modifying and changing the CCA's design and its use during the performative struggle, their actions were also limited by the strength exerted by the economics agencement. The MOF' responded by threatening to bypass the process and introduce their version of the CCA if the university accounting agencement resisted and modified it too much. The university accounting agencement succeeded in modifying the CCA within the boundaries set up by the MOF and the economics agencement, reflecting the MOF's investments into the public sector productivity theories, accounting, and reporting technologies. Contributing to the recent research on performativity (Boedker et al., 2020; Cushen, 2013) we show the situated and fluid strength between agencements in performing and resisting economic theories. One agencement's strength in constructing the boundaries of the struggle, what can be modified, and by how much, is negotiated and compromised through the ongoing struggles. While the boundary is revealed through the trials, the economics agencement accepts the modification to the accounting technology proposed by the university agencement.

7. Conclusion

Increasing productivity seems to be the answer to most problems facing contemporary public sectors (Kork et al., 2015). However, as the current study shows pursuing productivity requires massive investments into calculative infrastructures over more than 50 years, and there is little or no clear sign that the systems will ever deliver increased productivity, or even be designed and implemented by the economics concepts of public sector productivity.

The performativity literature has predominately focused on the performative effect of accounting as a calculative practice (Boedker et al., 2020; Revellino & Mouritsen, 2015). With a few notable exceptions (Chiapello, 2008; Hopwood, 1992; MacKenzie, 2006; Miller, 1998) there is little attention paid to the relationship between economics and accounting, and how accounting (counter) performs economics concepts and vice versa. Our study extends research on how economics and accounting interact, and the various roles accounting assumes when performing economics' concept of productivity. Our case analysis shows instances of accounting becoming an obstacle and unfaithful mediator (Callon, 1998; Latour, 2005) in operationalizing and measuring productivity for the public sector. Secondly, the paper contributes to the literature on performativity. Extending recent research on how economics and accounting interact, and the various roles accounting plays in performing economics concepts, like a shield protecting fragile economics concepts (Themsen & Skærbæk, 2018) or as an obstacle in realizing the pure, abstract concepts of economics in a practical, accounting reality (Pucci & Skærbæk, 2020). Our case analysis shows instances of accounting becoming an obstacle when economics seeks to mobilize it

to settle an enduring issue within the economics discipline itself; that of operationalizing and measuring productivity for the public sector.

Lastly, and more generally, the paper contributes to the literature on performativity, by drawing attention to performative struggles among socio-technical agencements (Callon, 2007; D'Adderio & Pollock, 2014) and their different realities in understanding the conditions under which economics and accounting become, or do not become performative (Boedker et al., 2020; Revellino & Mouritsen, 2015). To conclude rewording Nobel laureate and economist Paul Krugman (1990) 'Accounting isn't everything, but without it, economics cannot prosper in the long run'. Our study reveals that the 'long run' can exceed 15 years, even 50 years of continuous effort and costly investments in formulating productivity projects making the public sector measurable and operational for benchmarking purposes. That is our answer to Callon's (2007) intriguing question: "What does it mean to say that economics is performative?". Economics is normative, and also problematic in terms of its design implications for accounting and organizational decision-making (Hopwood, 1992; March, 1987). Economics does not simply describe reality but prescribes and performs reality as further pointed out by Callon (2007). Our case analysis confirms Callon's claim that economics is always performative, even when it fails and generates unexpected costs, and contributes to a productivity paradox by undermining it.

Future research into the relationship between accounting and economics should consider the relation, not as a snapshot in time, but as a dynamic process of recurrent trials of strength over a longer time duration. More specifically future research into public sector productivity reforms should inquire into the role of economics in designing accounting systems, and the eventual trials of strength between economics and accounting during implementation. Recent research on how accounting performs an unfaithful role as a mediator vis-a-vis economics' concept of risk (Themsen & Skærbæk, 2018) should be complemented with further research to provide more detailed empirical examples and analytical insights into the potentially conflicting relationship between accounting and economics and with what effects for organizations and society.

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Article 2

The Translation and Counter-Translation of Performance Funding into Public Organizations' Budgeting

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Status: Not submitted

Abstract

Performance funding plays a pivotal role in the management of public organizations. Despite its increasing prevalence, limited insight exists into its implementation within public organizations and the role of organizational budget in this process. This study examines the introduction of a new performance funding scheme in Danish Universities, offering a detailed empirical case study of its implementation within a single university. Drawing upon Actor-Network theory and leveraging the concepts of translation and counter-translation, my research reveals a multifaceted implementation process where different organizational levels inside the university each implement the funding system in their own way. The findings contribute significantly to three key areas in the existing literature. Firstly, I extend the understanding of performance funding by illustrating how public organizations adapt and reshape performance funding schemes through their budget systems. Secondly, I present a unique case of budgetary transformation resulting in the coexistence of multiple budget models within the same organization, each serving distinct allocative and managerial functions. Lastly, through the notion of counter-translation, I find that translation processes can concurrently generate multiplicity and stability.

Introduction

In recent years, performance funding has emerged as a proposed solution for public sectors seeking to strike a balance between the effectiveness of their services and fiscal discipline. Proponents of performance funding underscore its potential to enhance the efficiency, effectiveness, and economy of public services. They argue that by linking performance with funding, performance funding provides decision-makers with valuable information for

allocation decisions and instils accountability in local managers (Curristine et al., 2007; Jagalla et al., 2011; OECD, 2007).

However, despite the assumed benefits of performance funding, a growing body of work has critiqued its effects on organizational practices. Researchers have pointed to issues such as dysfunctionality in organizational practices (Poulsen et al., 2022), design and implementation challenges (Agyemang, 2010; Edwards et al., 1996), and the ambiguity surrounding its use and impact on performance (Grossi et al., 2018; Mauro et al., 2021). These studies underscore the difficulties in implementing and utilizing performance funding effectively, prompting calls for more research into the formulation and implementation of budgeting and performance funding in public organizations (Anessi-Pessina et al., 2016; Mauro et al., 2017). The performance budgeting literature has considered the effects on organizations of introducing new funding schemes, and demonstrated both positive (Cuganesan, 2017; Curristine et al., 2007; Jagalla et al., 2011) and negative (Agyemang, 2010; Edwards et al., 1996; Mauro et al., 2021; Poulsen et al., 2022) effects on organizations. One aspect often overlooked in this literature, as well as in the broader public budget and funding literature, is the role of the organizational budget in implementing performance funding and the nature of budgetary changes in response to performance funding schemes. While there is recognition of the challenges associated with implementing performance funding in the public sector (Mauro et al., 2021), there is a notable lack of studies on how individual organizations implement performance funding schemes into their own budgeting systems. This reveals a gap between the budgeting change literature and the public sector budgeting literature on how public organizations implement new performance funding schemes.

Budgets play central role in organizations, and budgetary change often reveals competing ideals, values, and intentions about organizational priorities and the budget itself. Organizations try to influence the political processes determining the design of the budget allocation (Covaleski & Dirsmith, 1988a, 1988b), adapt their budgeting to reflect external legitimacy (Moll & Hoque, 2011), and manage competing ideas and logics through the budget (Ezzamel et al., 2012; Kaufman & Covaleski, 2019; Lepori & Montauti, 2020). Former research finds how budgets can act as compromises (Chenhall et al., 2013) between different groups within the organization by combining and accommodating demands and ideas through informal practices (Kaufman & Covaleski, 2019) and flexibility (Lepori & Montauti, 2020). An overlooked aspect of budgets as compromises is situations when compromises within the same budget become unachievable and actors instead begin to develop multiple budgets as a response. There is an acceptance of the role of informal, or vernacular, accounting systems (Kilfoyle et al., 2013), but beyond Cooper et al's. (2019) work on multiple performance management systems little is known of how multiple accounting systems, and specifically budgets, come to exist and their organizational impact.

While addressing these two gaps in the literature, the organizational budget's role in implementing performance funding and the multiplicity of budgets, the paper also touches on two concerns raised by Anessi-Pessina et al. (2016): the lack of studies investigating public budgeting as "interactions between the political and managerial realms" (p. 510) and that there is "a promising research avenue with respect to both the allocation and managerial function of budgeting" (p. 504). To contribute to these issues this article asks the following research question: What is the role of organizational budgets in implementing performance funding?

The empirical setting for this study is the Danish university sector, where a new performance-based funding formula was introduced in 2017, emphasizing educational quality and relevance over the prior system's focus on the quantity of students. This article examines the design of the new funding formula and how a specific university, Absalon University (AU), adapted its budgeting system in response. Drawing on Actor-Network Theory (ANT) and the concepts of translation (Callon, 1986; Latour, 1986) and counter-translation (Callon et al., 1983) I trace the process of implementing the new performance funding scheme into the organization through the organizational budget system. These concepts offer a deeper understanding of the implementation process as a process influenced by different organizational groups' decisions regarding the content and form of the budget, and the effects on managerial and allocative functions of the performance funding system. The main finding of the study is that the organizational budget model can both reject and reintroduce the national performance funding model into AU's budget system. AU's top management rejected the national performance funding model and instead allocated funds to the faculties through a negotiated frame budget doing away with the incentives in the national model. However, at one of the faculties at AU the local management decided to reintroduce the national performance funding model into its faculty-wide budget model. The case is further complicated as some departments at Lab faculty use negotiated frame budgets, similar to the AU budget model. The multiple budget models at AU show the difficulties in implementing performance funding, and the active and decisive role of the organizational budgets in implementation.

This article contributes to the literature in three ways. First, it illustrates how the challenges of implementing performance funding in public organizations arise due to the significant modifications introduced by the organizational budgeting system, impacting both the managerial and allocative functions of performance funding schemes (Anessi-Pessina et al., (2016). This highlights the capacity of public organizations' own budgeting systems to reshape and adapt performance funding systems, potentially modifying and undermining both the managerial and allocative functions of performance funding systems. Second, the article sheds light on the diversity of organizational budget models, showing the outcome of a budgetary change as a compromise resulting in multiple co-existing budget models, each with distinct managerial and allocative orientations and incentives. This resulted in the performance funding system being rejected, or counter-translated, by the university's top management but reappearing inside the budget model of a faculty of the case university,

only to be modified by a department under the faculty. Through the analysis this article surprisingly uncovers the coexistence of several competing budget models within the same organization, operating at various organizational levels (university-wide, faculty-wide, and department-specific), each introducing its unique set of managerial, allocative functions, and incentives. Lastly, the article adds to the ANT inspired accounting literature by expanding on the established concept of translation (Arnaboldi & Palermo, 2011; Jeacle, 2003; Skærbæk & Thorbjørnsen, 2007) by introducing Callon et al.'s (1983) notion of counter-translation. The notion helps in understanding how translation processes not only result in stability when the network is presented as one collective actor but can also yield a stable network with the coexistence of multiple forms of the same accounting technologies simultaneously.

Public sector budgeting and performance funding

Performance budgeting is an increasingly prevalent approach in public sector budgeting, involving linking performance metrics with resource allocation to enhance efficiency and effectiveness (OECD, 2007). The proposed effect of using performance information in the allocation process is to promote the attainment of results, increase accountability, and make the delivery of public services more efficient (Cuganesan, 2017; Mauro et al., 2017, 2021; Moynihan, 2008). Rooted in the principles of New Public Management performance funding supports decentralization, devolved budgets, outcome management, and local managerial autonomy (Groot, 1999; Mauro et al., 2021; Moynihan, 2008).

Anessi-Pessina et al. (2016) present two dimensions of public sector budgets; their function and the organizational focus. The authors present three functions of public sector budgeting, allocation, managerial and external accountability, and differentiate between an intra-organizational and inter-organizational focus of the budgeting research. The allocative function of budgeting concerns how funds are allocated to the public organization, for example as lump sums, through funding formulas or political negotiations, or how they are allocated internally in public organizations and the ways in which this happens. The managerial function instead focuses on the assignment of objectives, the strategic priorities in the budget, and the dynamics of budgeting and its effects on organizational behaviour. External accountability is how government and public organizations are held responsible for their spending and achievement in the budgeting towards external stakeholders. The public budgeting literature has investigated these three functions within public organizations (intra-organizational) or across different tiers of government (inter-organizational). According to Anessi-Pessina et al. (2016) most studies have an intra-organizational focus and investigate the managerial and allocative function individually or simultaneously.

Proponents of performance funding emphasize its positive effects strengthening the management of public organizations through the allocative and managerial functions of the

budgets. Performance funding is supposed to create a stronger link between desirable outcomes and funding, providing managers with clearer directions for their work (Jagalla et al., 2011; Moynihan, 2008). Despite these claims about the advantages of performance funding, studies document the unintended consequences when designing and implementing performance funding systems (Edwards et al., 1996; Ezzamel et al., 2012; Heald & Geaughan, 1994; Mauro et al., 2021; Poulsen et al., 2022). Performance funding in the UK university sector has encouraged low-cost student expansion, potentially compromising educational quality (Heald & Geaughan, 1994). Poulsen et al. (2022) describe the local interpretation among teachers of the dysfunctionality of new outcome funding schemes in Danish public schools, relating to the activities initiated, the results obtained, and the intention of the funding scheme itself. Funder priorities occasionally overshadow provider needs in need-based funding formulas (Agyemang, 2010), and performance budgeting's implementation in central government offices may hinder rather than enhance organizational development (Mauro et al., 2021). Mauro et al. (2021, p. 13) conclude that "PBB ended up being an "illusion" that hinders the agency of the individuals rather than a practice for creating and fostering successful organizational development". Edwards et al. (1996) demonstrate the design challenges in performance funding, as issues with calculating the actual costs of specific activities, hinder a cost-based approach.

The studies on the implementation of performance funding have investigated its use in central governmental offices (Carlin & Guthrie, 2003; Mauro et al., 2021), sector or national levels (Bleyen et al., 2017; Grizzle & Pettijohn, 2002; Grossi et al., 2018), and the immediate effects on managers and organizational members (Poulsen et al., 2022). While Teixeira et al. (2022, p. 101) note the difficulties of implementing a national performance funding model in universities, as institutions attempt to "keep a certain degree of autonomy regarding their funding priorities", they do not empirically investigate or support the claim. Furthermore, research is limited in exploring how public organizations incorporate performance funding into their budgets. A critical area of investigation centers on the budget system's role in enhancing, modifying, or diluting the allocative and managerial functions of performance funding schemes. Prior reviews call for more in-depth studies of how the intentions and ambitions of public sector budgeting are implemented by organizations (Anessi-Pessina et al., 2016) and how organizational budgeting practices are changed and the effect on organizational practice and explore the "gap between what is formally declared and what is practically achieved" (Mauro et al., 2017, p. 924), by tracing the new performance budgeting across the boundaries of the political and organizational level.

Budgetary change and multiple accounting systems

The study of budgetary change has garnered significant attention in the literature as it seeks to unravel the intricate relationship between organizations and their external environment, particularly focusing on the role of budgets in integrating or disconnecting external demands within organizations. The classical studies by Covaleski & Dirsmith (1988a, 1988b) illuminate how societal and institutional expectations about public organizations are effectively conveyed through budgetary allocations, making budgets pivotal in both integrating and signalling values to the external environment. Building upon these insights, Moll & Hoque (2011) emphasize that budgetary changes must not only address external legitimacy concerns but also be perceived as legitimate within the organization itself. Their examination of a new budget model implemented in an Australian university challenges the notion of organizational unity by revealing a multitude of contrasting viewpoints and disagreements surrounding the new budget, ultimately undermining its intended impact and purpose.

Investigating divergent practices across organizations often underscores how distinct institutional values and logics contribute to varying approaches among similar entities (Ezzamel et al., 2012). It also delves into the challenges posed by competing logics that impact the budget and its signalling role (Kaufman & Covaleski, 2019). Despite revealing internal conflicts and struggles regarding the nature and usage of budgets (Kaufman & Covaleski, 2019; Moll & Hoque, 2011; Ozdil & Hoque, 2017), a prevalent conceptualization portrays budget systems as unitary and comprehensive accounting technologies. The management of competing values within the budgeting process can lead to the emergence of hybrid practices within organizations, necessitating diverse strategies for navigating such hybridity through budgets and the budgeting process (Kaufman & Covaleski, 2019; Lepori & Montauti, 2020). Budget can resolve conflicts by including informal procedures (Kaufman & Covaleski, 2019) and flexible solutions in decision-making (Lepori & Montauti, 2020) resulting in compromises between actors (Chenhall et al., 2013). Compromises become a way for the budget systems to handle competing logics or demands of different groups of actors (Kaufman & Covaleski, 2019) which might result in stable (Lepori & Montauti, 2020) or unstable outcomes (Moll & Hoque, 2011) depending on the acceptance by the actors.

While these studies both shed light on the conflicting perspective and use of the budget system (Moll & Hoque, 2011) and the potential for diverging outcomes across organizations (Ezzamel et al., 2012) there is less exploration of how budgetary change might result in diverging outcomes inside the same organization. Kaufman & Covaleski, (2019, p. 41) note how prior research “tend to treat organizations as unitary actors (...) and largely ignore the role of intra-organizational dynamics in filtering conflicts between institutional demands”. The paper addresses this point by exploring how conflicts over the budget systems between groups inside the organization are handled through the budget but also how the budget can multiply as a form of compromise, challenging both a unitary view of the organization and the budget system itself. Organizations might set up informal and self-developed, so-called

vernacular, accounting systems to complement and support the formal accounting systems (Goretzki et al., 2018; Kilfoyle et al., 2013). Few have investigated how organizations create and use multiple, formal budgeting systems simultaneously and their effects. Notably, the existing literature lacks research on budgetary change cases where the very unity of actual budget models becomes a point of contention.

In their study of multiple performance management systems within the same organization, Cooper et al. (2019) identify the sensemaking processes conducted by managers to accommodate and stabilize the different systems to each other. Due to the similarity of the performance management systems, the authors find that managers can connect and translate the different systems with each other through accommodation and social skills. They therefore point to the relevance of “examining how accommodation might be impacted by the claims and attributes of different forms for PMS [performance management systems] (Cooper et al., 2019, p. 480). Connecting this point with the budgeting literature, I find it relevant to examining how multiple budget systems arise within organizations, how actors handle competing claims and functions of the systems and the effects on the organization. This is done empirically by following the budgetary change process of a Danish university, and how different organizational groups construct different budget systems at their organizational level by problematizing the allocative and managerial functions (Anessi-Pessina et al., 2016) of the budget proposed by other groups.

Translation and counter-translations in accounting change

The sociology of translation, formulated by Michel Callon (1986; Callon et al., 1983) and Bruno Latour (1986, 1987), focuses on how dispersed sets of actors, both human and non-human, are connected and tied together into a network, and the processes through which interests and identities are transformed and displaced during the translation (Callon, 1986; Latour, 1986). Translation is about connecting elements and actors that seemingly have no prior relationship and make them dependent upon a single actor. The connection of elements and actors is not a static state but rather the establishment of relations and associations between local and global, human and non-human, the social and technical (Latour, 1999).

Although the concept of translation is open to both sameness and modification as technologies move (Latour, 1986, 1999), in this article I specify the concept by following Callon et al. (1983, p. 193) who describe change as an “uninterrupted process of translation/counter-translation”. At the different links in the chain of translation, actors can act in accordance with the former link by translating the network’s goals or choose to modify and alter the original idea or technology by counter-translation, transforming the entity. Callon et al. (1983, p. 193) describe the translation/counter-translation process as one of “tensions, conflicts and struggles” generated by the differing opinions and interests in the

process. The process of translation/counter-translation hinged on how the different actors are associated and how the moments of translation/counter-translation also become “occasion[s] for certain actors to affirm or to modify their identity as well as the identity of other actors” (Callon et al., 1983, p. 193). To engage with and start processes of translation and counter-translation actors problematize situations, claims, and solutions (Callon, 1980, 1986; Callon et al., 1983). Problematization revolves around “map[ing] out an itinerary, to block others and to define the structure of the field of forces in which the solution to the problem could be seen as having an importance” (Callon et al., 1983, p. 204). Actors attempt to create a problematic situation, proposing their problems as solutions to translate their interests and solutions into the network, making problematization “a dual process of construction and deconstruction” (Callon, 1980, p. 209). Actors engage in continuous problematization as part of the attempt to translate and counter-translate both the problem proposed by others in the network and their solutions to the problem. The process of problematization underscores the differing interests and roles in the actor-network, and problematization is both a means to ensure support and a conduit of potential resistance. This means that “the problematization achieves support, in one place and provokes violent attacks elsewhere (...) Thus a chain of relationships, a series of shifts, and a sequence of translations are formed which induce consent or provoke resistance in the various groups” (Callon, 1980, p. 215).

According to Latour (1986) it is central to recognize the fragility of technology and its dependence on local actors to determine its form, usage, and effect. The spread of ideas and technology depends on the actors that use it as “each of these people may act in many different ways, letting the token drop, or modifying it, or deflecting it, or betraying it, or adding to it or appropriating it” (Latour, 1986, p. 267). Actors modify, adapt, or alter technology in various ways, leading to diverse outcomes. The identity of a technology “results from the actions of a *chain* of agents each of whom ‘translates’ it in accordance with his/her own projects” (Latour, 1986, p. 264, my emphasis). Understanding the implementation of an accounting technology means following the technology through the entire chain of translation, and how at each link in the chain of translation new alteration is possible. The notion of a chain with links is relevant as it helps to visualize organizations, not as a single, collective entity but rather as a chain with a series of links, where each link represents a different part of the actor-network, that is the organization. In this article, different organizational levels, the central university management, faculties, departments, and research groups, are seen as links in the chain of the organizations.

The concept of translation has been used by accounting scholars to understand accounting change (Arnaboldi & Azzone, 2010; Skærbæk & Thorbjørnsen, 2007), the fabrication of accounting (Chua, 1995; Jeacle, 2003; Lowe, 1997; Preston et al., 1992), and the process of introducing, or translating, general ideas and concepts into the organization through accounting (Arnaboldi & Palermo, 2011; Pipan & Czarniawska, 2010). The accounting literature has worked on both the successful (Arnaboldi & Azzone, 2010; Jeacle, 2003; Skærbæk & Thorbjørnsen, 2007) and unsuccessful (Arnaboldi & Palermo, 2011; Pipan &

Czarniawska, 2010; Preston et al., 1992) translations. However, few studies of the continuous steps between success and failure in a single translation process. Both Arnaboldi & Palermo (2011) and Pipan & Czarniawska (2010) find varying degrees of success and failure in the implementation of an accounting technology across different organizational settings. Highlighting the importance of the local configuration of the network Arnaboldi & Palermo (2011, p. 14) show the “heterogeneity of outcomes” arising from the translation of a common concept of performance management into the local practice of three Italian ministries. Pipan & Czarniawska (2010) trace the concept of “Management Accounting” as it was translated into different local contexts with different degrees of success and failure. According to Pipan & Czarniawska (2010, p. 244) an idea is successfully translated when “actors, their identities, actions, patterns and the connection between all of them can be presented to the outside as one collective actor, an actor-network”. Such a statement reinforces the emphasis on unity within organizations, and the focus on variety across organizations in translation studies, but less attention is paid to cases where the chain of translations results in a multitude of different constellations of a common phenomenon within the same organization. However, compared to prior studies, which follow how a single idea is translated with different outcomes across several organizations, this article instead investigates how a single idea is translated differently within the same organization.

Coupled with the metaphor of translation as a chain consisting of different links (Latour, 1986), each noting a moment of translation or counter-translation we can follow an accounting technology as it moves through the chain and analyze its form and content depending on how the next link modifies or maintains the technology. The movement along the chain of translation is driven by the ongoing problematization of the prior links' attempts to construct and stabilize the accounting technology and the world around it. The notion of translation is used to describe cases where the actor decided to use and develop the accounting technology following the intentions of the users in the link immediately above them in the chain of translation. The translation consists of moving along the goals and intentions of the accounting technology but might also result in the need to add to the technology with new calculations or visualizations to ensure the translation of the technology. Counter-translation problematizes the solution and problems and instead attempts to modify and challenge the format, intention, and goal of the accounting technology proposed by the link above the chain. Although the technology might retain its name its content and intentions are changed and modified as part of the counter-translation resulting in a new accounting technology with other effects than the initially proposed technology.

Empirical setting - The Danish University sector

The Danish university sector consists of eight public institutions, spanning both large multi-faculty institutions and smaller mono-faculty institutions. In the 2000s a series of reforms in Denmark transformed the universities from mostly collegial institutions integrated into the state, to independent, self-owning public institutions governed by a professional board with a majority of external members, who hired a professional rector to lead the university. While these reforms reflect some aspects of the international movement toward the commercialization of institutions of higher education (Parker, 2011), Danish universities are still strongly regulated by the state (Degn & Sørensen, 2015). The state governs the universities through formal instruments encouraging specific behaviour from the universities to achieve political goals. Such mechanisms include accreditation, competitive research funding, performance-driven funding for research and education, and performance contracts. The increase in rules and formal instruments for governing the universities has led some researchers to call the Danish university system one of the most regulated in Europe (Degn & Sørensen, 2015; Wright & Ørberg, 2008).

The funding system for education in Danish universities

The state provides universities with funding for basic research activities and educational activities but the universities maintain complete autonomy over how it wishes to spend these funds. Apart from the funds directly given to universities, an increasing amount of the funding for research is allocated via competitive schemes through the Danish research councils and strategic research initiatives (Aagaard, 2017). Although increasing in absolute terms, the funding per student has been decreasing slowly in the last decade in Denmark. Since 1994, university educations have been funded through performance funding, based almost entirely on the amount of student full-time equivalent (FTE), with one FTE being equal to 60 ECTS points. The taxameter funding system, as the performance funding system is called in Denmark, is based upon a full-cost logic where funding is supposed to cover all costs related to educational activities. The system consists of three tiers of funding per student FTE depending on the program. The lowest rate covers most social science and humanities education, the middle rate covers IT education, mathematics, and music education, while the highest rate is for natural sciences and technical education with high laboratory activities. While the original size of the grants in each step was based on a cost formula, a defining feature of the Danish taxameter system is that the grants per FTE are politically determined rather than based on actual cost. Danish universities can freely dispose of all public funds, both for research and education, meaning funds are not earmarked for the activity they are allocated.

Case organization

Absalon-University (AU) is among the largest universities in Denmark and consists of several faculties covering such academic areas as humanities, natural science, social sciences, and health science (exact numbers not revealed to ensure the anonymity of the organization and the interviewees). In recent years, the university was affected by the decreasing funding from the state and successfully increased the research income from external sources. The results in using more of the basic research funding to co-finance external projects, increasing the pressure on its educational activities as these to a lesser extent can be subsidized by the basic research grant. In 2018, the management of AU decided to change the budgeting system partially in response to the new taxameter system, departing from a model that allocated educational funds directly to the individual faculties and departments. The new budgeting model instead gave each faculty a frame budget based on dialogue and a series of performance indicators. Each faculty has the autonomy to decide how to allocate the funds towards individual departments, and these in turn decide how, and if, they want to devolve their budget further to individual research groups. The lack of a standardized budgeting system across the different levels of the university has resulted in great variety internally both across different faculties and across departments inside a single faculty.

Research approach

In this article I use a qualitative case study approach (Cooper & Morgan, 2008; A. Hansen, 2011) tracing the development of a new performance funding scheme for Danish universities as it is designed and translated into my case university. The empirical data for the analysis consists of interviews supplemented with documents. Semi-structured interviews (Brinkmann & Kvale, 2018) were conducted with key actors at AU and in relevant ministries and agencies involved in the financial regulation and governing of Danish universities. During the interviews at AU respondents stressed the central role of the budgeting system for their financial situation, and slowly it became evident that when talking about “the new budgeting system” a variety of different practices and processes emerged. This plurality leads to a more focused approach in the interviews on what the new budgeting system was and how it has changed. During the interviews with representatives from the Ministry of Education and Science (MOES) they highlighted the role of the taxameter system in the financial governing of the universities, and the ministry’s attempt at connected funding, cost, and quality. In total 34 interviews have been conducted with 28 representatives from AU, the MOES, and The Ministry of Finance between 2018 and 2023. See table 1 for a full overview of interviewees.

The collection of documents happened by following them in the same manner as other actors. Starting from the central documents on the new taxameter system and following back the reference to other documents, organizations, events, and actors, I identified the

documents having an impact on the project. A similar process was used for documents relating to the budget change at AU. The intertextual references between documents proved an important process for gaining an insight into the actor-network, and the process of tracing made it visible that it was necessary to go beyond organizational boundaries (Czarniawska, 2004) to capture the connections between the budgetary change at AU and the new taxameter system. In total I collected more than 30 official documents such as committee reports, press releases, technical notes, and political agreements. Internally at AU I collected around 100 documents relating to the budget systems centrally and locally at the faculty levels. These documents include appendixes and minutes from the board, academics councils, and management groups, internal budget documents, KPI overviews, sections AU's intranet on the new budget model.

Number	Position of interviewee	Unit	Organization
1	Project manager (three interviews)	Central accounting function	Absalon-University
2	Head of Budgets (two interviews)	Central accounting function	Absalon-University
3	Vice-Director of Finance	Central accounting function	Absalon-University
4	University Director	Senior Management	Absalon-University
5	CFO (three interviews)	Book Faculty	Absalon-University
6	Head of Administration	Department A, Book Faculty	Absalon-University
7	Vice-head of department	Department A, Book Faculty	Absalon-University
8	Head of Administration	Department B, Book Faculty	Absalon-University
9	Vice-head of department	Department B, Book Faculty	Absalon-University
10	Budget consultant	Lab Faculty	Absalon-University
11	CFO	Lab Faculty	Absalon-University
12	Faculty Director	Lab Faculty	Absalon-University
13	Head of Administration	Department Q, Lab Faculty	Absalon-University
14	Vice-head of department	Department Q, Lab Faculty	Absalon-University
15	Head of section	Department Q, Lab Faculty	Absalon-University
16	Head of Administration	Department X, Lab Faculty	Absalon-University
17	Vice-head of department	Department X, Lab Faculty	Absalon-University
18	Permanent Secretary	MOES	Ministry of Education and Science (MOES)
19	Head of Agency	Agency of Education and Science (AOES)	MOES
20	High ranking official	AOES	MOES
21	Project manager (two interviews)	AOES	MOES
22	Consultant	AOES	MOES
23	Division sous chef	AOES	MOES
24	Head of Office	AOES	MOES
25	Division sous chef	Central budget unit	Ministry of Finance
26	Consultant	Office for Education	Ministry of Finance
27	Head of section	Agency of Public Finances and Management	Ministry of Finance

28	Head of Division	Agency of Public Finances and Management	Ministry of Finance
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Table 1. Interviews conducted.

Data analysis

Following Langley (1999) the empirical data was analysed through a combination of visual mapping and narrative approach. The visual mapping resulted in two outputs. First, a timeline was created tracing the development and implementation of the taxameter system to the process of translating the performance funding model into the university. The visualization had an explicit temporal character and helped to identify the different associations and links between different versions of the taxameter system and the budget models at AU creating a temporal order in the case. Secondly, to support the temporal map, a visualization of the outcome of the translation and counter-translation was made, resulting in a visualization of the budget model at AU as it was performed by the end of the research period. The purpose is to show the stable outcome of the translation processes and have the foundation of tracing how the taxameter system itself became translated and counter-translated into the organizational budgeting model.

The two visualizations are supported by a narrative structure where the interviews and documents forming the empirical data for this article, are rewritten into a narrative to dwell on the different actors, and how they engaged in the processes of translating and counter-translating the taxameter system. The data was coded and categorized according to whether the intention and content of the budget model was continued or modified resulting in the theorization of the sets of translation and counter-translations happening. The analysis focused on the problematization of actors, and how the different translations and counter-translations affected the allocative and managerial function of the budget when the two were in conflict and the effect of the multiple budget models on the two functions. The analysis focused explicitly on the claims made about the intentions of the taxameter system and the different budget models, and how different devices and technologies were mobilized and used to aid the translations and counter-translations.

Findings

The sections below detail the ongoing problematization resulting in processes of translation and counter-translation, which either continues or modifies the budget model as it moves along from the national funding model through AU's top management, faculties, and departments. Table 2 summarizes the findings and describes the three cases of translation and three cases of counter-translation. Each case of (counter)translating is based on specific

problematization around the budget model proposed by the group of actors before, resulting in a specific budget model being implemented. Each budget model has an allocative and managerial function founded in the problematization leading to both enabling and constraining effects at the different organizational levels. (See table 2 in the appendix after the bibliography)

1st translation – from quantity to quality in the performance funding

The first translation focus on how a new performance funding model was developed by the MOES, and how the specific problematizations in the network were handled through the proposed model.

In 1994 the Danish funding system for universities became activity-based using student full-time equivalents (FTEs), now equal to 60 ECCTS points, as the activity unit. In the 2010s, the system faced criticism for compromising educational quality by incentivizing higher production at the expense of program quality. In 2013 and 2014, two government committees raised concerns about the taxameter system's impact on educational quality. They argued that the system's sole reliance on the quantity of students produced it can devalue educational quality and relevance. The first committee claimed that:

“when the financing of the educational institutions alone depends on the number of exam diplomas awarded the educational quality and relevance on the job market is pushed into the background.” (Productivity Commission, 2013, p. 120)

A Quality Committee was subsequently formed to propose a new financing model that could enhance quality and relevance while ensuring financial stability. The Quality finds that “the taxameter system potentially contains inappropriate incentive to lower the academic level of the educations, as it can increase the earning of the taxameter finding without increasing the costs” (Quality Committee, 2014, s. 102). The committee proposed using new measures for educational quality for funding purposes and introduce basic funding in a new taxameter system. The problematizing of the current taxameter system provoked a reaction from the MOES, who initiated a process of changing the performance funding model. After initial work by a consultancy on how to design a new taxameter system (Deloitte, 2015), in 2016 the MOES initiated the process of designing a new taxameter system promoting and incentivizing educational quality and relevance. The process started from the problematization of the old taxameter system's inability to promote quality in education. According to the Minister of Education and Science, the purpose of the new performance funding system was clear: “it must support quality and not only quantity” (Larsen, 2016). The process involved hearing rounds with stakeholders, workshops, and an internal working group in the ministry.

Although the new focus on quality had strong support in the network around the taxameter system, actors contested the specific way in which quality and relevance were to be measured. During the process, AU participated in the formal hearing round where they praised the activity-based model for having “several positive aspects”, such as “transparency”, “predictability” and “an explicit connection between activity and funding”. AU proposed using student-faculty ratios, external financing per faculty, and numbers of applicants as proxies for educational quality. The university rejected employment as an element in the model, as they did not believe “the funding system to be adequate for handling such issues. An official from the MOES involved with the process, recalls them experimenting with different models and methods to conceptualize quality and relevance, but eventually ended with graduate unemployment and completion time of studies. These were chosen because

“there was a political focus on both employment and completion at the time, which meant that it was defining for how we politically viewed quality. And on top of that, both elements were well known in the sector, and we had some numbers on them. So, it made sense in that way. But it was not just because we took the numbers we had.”

The taxameter system translated educational quality into well-known measures, relying to some extent on pre-existing data that were part of a broader political focus on employability and completion time in the period. According to the permanent secretary of the MOES, the purely activity-based funding system was “undesirable” as it too strongly incentivizes a large production of students, rather than focusing on the broader outcomes for university education. The new system should incentivize the universities to focus on employment and completion, but the permanent secretary cautioned that the new system had to balance a lot of incentives, as “you can never create any financial system in a way that manages perfectly”. Another central element was the introduction of basic funding as part of the taxameter system, reflecting a political and administrative demand to slow down the rapid increase in university student admissions. According to a high-ranking official involved in the taxameter reform the purpose of the basic funding was, alongside lowering the proportion of activity-based funding, to ensure a slowdown in admission.

“What we did with the funding system is that we put a damper on it so that the next admitted student receives less funding than the first admitted student. And the marginal scaling down in the funding structure makes it less attractive, in the short run, to admit students which was the purpose”

In November 2017, after a long period of negotiation in parliament, the MOES presented the new taxameter system. The new system “has it out with the narrow focus on quantity” in the old system and instead introduces a system that “supports increasing quality in the education” while also “strengthening the managerial focus on good teaching” by providing “more room for management and prioritizing at the educational institutions” (MOES, 2017, p. 1). The new taxameter system introduced several mechanisms for incentivizing quality rather than quantity. First is a basis grant of 25% providing a stable income element, making

universities less reliant on producing more and more graduates. 5% of the basic funding (1,15% of total funding) is reevaluated every 4th year based on two quality dimensions: a national student survey and the universities' fulfillment of their performance contracts with the ministry. Secondly, 7,5% of the new model is based on two "quality parameters": graduate employability and completion time. Lastly, 67,5% of the funding comes from the production of student FTE, retaining the major focus on quantity.

The new taxameter system contained various, and at times competing, incentives to ensure a slowdown of student intake, improve educational quality, and increase graduation time and employment. The translation of these different goals and incentives into a new funding model marks the first translation in the process. It involves a long period of problematization, constructing the old taxameter system as focusing on quantity rather than quality, and then operationalizing the abstract demands for quality into concrete measures and calculations.

1st counter-translation: introducing the negotiated frame budget

The first counter-translated occurred, as the top management of AU rejected the incentives in the new taxameter system, and instead introduce negotiated frame budgets when allocating funds to the faculties.

The new taxameter system did not come as a shock for AU, due to the prolonged process and the university's involvement in it. At the December 2017 board meeting, a month after the new funding system was presented, top management judged the overall consequences to be small scale, with a potential financial upside in the long term. However, top management also notes that it "is expected that the new reform will affect AU's programs differently, why a revision of the university's budget model might be necessary" and the 2018 budget proposal states that "Top management works on creating a new, more transparent and detailed budget model".

In May 2018 AU's board first discussed a new budget model, and in June they established a committee tasked with designing a new budget model and budgeting process. The new budget model covered four main areas: "public funds from the state, external financing, the building area, and the governance structure (including the budgeting process)" (AU, board material September 2018). At the same board meeting, it was noted that the new budgeting model "coincides with the implementation of the new funding reform" (AU, board material, September 2018). Several of the interviewees stressed the implementation of the taxameter model and the change in governance structure as the two main reasons for AU to initiate their revision of their budget model. The new taxameter model challenged AU's current model for allocating funds to its faculties, which allocated educational funds based on production of student FTEs, replicating the old taxameter model. The new taxameter model problematized the internal allocating scheme, as the 25% basic funding meant that the

activity-based element of the funding fell by one-quarter, resulting in the former allocating model breaking down. As a faculty director states

The MOES changed the taxameter model, so you no longer received the funds only based on FTE-Production. Now there's the basic funding and some performance element at around 5%. And then the president had to change the [budget] model because the old, transparent model could no longer handle it"

According to top management, the old activity-based budget model also negatively impacted the organization, as it systematically under-financed smaller programs, leading to a skewness across departments in their possibilities for funding programs. While the new taxameter model problematized the allocative function of the old budget model, AU's top management in turn problematized the new taxameter model itself, marking it as an insufficient in ensuring educational quality due to its allocative and managerial focus. AU's top management problematized the taxameter system not reflecting the cost of the programs, challenging the logic in their budget model, as programs were not financially sustained through the taxameter funding itself. A few years earlier AU closed some of its smaller programs due to this financial skewness as they were no longer financially sustainable in the old budget model. Therefore, the new taxameter model "could lead to a substantial redistribution of resources between faculties if the current model is kept unchanged" (AU board material, September 2018), which would threaten the financial sustainability of some of the smaller programs mainly located at one faculty. An internal FAQ on the university's new budget model states that "the new funding reforming contributes to the need to adjust the old budget model". AU's top management also problematized the lack of connection between the managerial and allocative functions in the new taxameter system and their old budget model. Since the current model at AU allocated all funds through an algorithmic calculation of the student FTE production at the faculties there were no conscious decisions involved in the allocation of funds. This was a major issue as top management wanted a more direct involvement in the strategic development of the university, which became connected to the allocation of funds and the budget model. AU's CFO explained their surprise with the current budget model "I would not imagine any of the places I've been before that the budgets were allocated without any degree of decision. I mean, it just went into a spreadsheet, then it was allocated, and nobody looked at it again".

As a solution to these problematizations AU's board and top management proposed a new budgeting procedure, moving towards using frame budgets rather than activity-based budgets for the faculties. In December 2018, the board proposed allocating funds from the state using KPI and ratios which "must be seen in relation to the strategy" (AU, board material, December 2018). The use of ratios for both research and educational activities was part of the move towards establishing what top management called a "strategic dialogue" between the faculties and themselves. The use of a broader set of KPIs and ratios on educational activities was supposed to give a more holistic picture of what constitutes

quality, than the narrow focus on unemployment and completion time in the taxameter system.

In January 2019 AU's board approved the new budget model for the university, allocating the public funds to faculties based on a frame budget instead of the number of student FTEs produced. This marks the first counter-translation, as AU's board and top management introduced a budget model with an entirely new managerial and allocative function than the new taxameter system. The allocation happened via negotiation between the deans and top management, reflecting both strategic choices and the faculty's performance on a series of KPIs and ratios. The KPIs and ratios for the educational activities cover student admission and population, drop-out rates, the production of student FTEs, unemployment, and the cost of producing 1 student FTE per faculty and per course. The purpose of the wider range of KPIs and ratios was to both go beyond the narrow definition in the taxameter system, while connecting the budget with the MOES' quality assurance system to ensure a streamlining of how to measure and manage educational quality. A new IT system was introduced to support the presentation and accessibility of the new KPIs and ratios, with the system being a key element in supporting the new budget dialogue between top management and the faculties.

The counter-translation was also support by top management's perception of the old budget model at AU as restricting managerial decision-making due to the mechanical allocation of funds to departments based on their production of student FTEs. Central to increasing the managerial action in the new model, was the ambition to have a common budget model for the entire university. The University director explains that

"a first misconception [at AU] is that we had a budget model before. In fact, we had 15-16 of them. First, we had a central allocation mechanism which we used to allocate the taxameter funds and the public research funds to the faculties. Then the faculties allocated the funds to their departments in their own way. And then we actually had some departments that have themselves decided to do it in their own way different from the others"

The quote shows how the old budget model was several co-existing models, potentially operating differently at different organizational layers at the university, distorting the incentives of each other. According to the University Director, this was an issue, as it resulted in

"a medical cocktail. You can easily take each individual budget model and tell about the incentives and logics in it, and the effect it has. Like saying this pill, is a pain killer. But when you take a handful [of pills/budget models] and consume them all, then it's not always clear what happens in the system afterward".

The new budget model was intended to clean up this "cocktail effect", ensuring a coherent and common budget model, with stringent and similar incentives and logic across the different organizational layers, like faculties and departments.

After the board approved the new budget model at the start of 2019 the implementation and use of the model began. The budgeting process centered around the use of strategic goal plans for each faculty which formed the basis for annual action plans. The action plans were part of the discussions in the budget negotiations between the deans and top management and described the planned actions each faculty wished to take the following year in addressing their KPIs. The action plans also became how faculty could increase their frame budget, and new funding was allocated based on concrete initiatives proposed by the faculties. The budgets for the faculties were not fixed, as extra funds could be negotiated from year to year for specific activities, but the new model eliminated the automatic allocating of funds based on the production of student FTEs. As the next sections will show, the faculties at AU reacted differently to the new budget model and there was no agreement on whether the new model was appropriate for supporting educational quality.

2nd counter-translation: bringing back the taxameter model inside Absalon-University

The next counter-translated happens at a faculty at AU, where the faculty management problematizes the allocative and managerial function of new budget model. Through this problematization, the faculty decides to reject top management's budget model, instead reintroducing the national taxameter model into their budget model.

Lab Faculty is one of the largest faculties at AU in terms of income, research, and teaching activities. The programs at Lab Faculty are predominately tier 2 and 3 in the national funding model, that is technical and lab-heavy programs. Income from its educational activities is only around 25% of its total income, as Lab Faculty receives a large amount of funding from external parties for conducting research and consultancy work.

The management at Lab Faculty was critical of the new budget model's disruption of the national funding model. The faculty director at Lab Faculty participated in designing the new budget model for AU, and problematized the new model's allocative and managerial focus;

"in the old model, we had lots of strategic dialogue with our departments. [interviewer: was there also a strategic dialogue between the faculty and the president?] No there wasn't. But the president has misunderstood, that it should be like that. You cannot sit and have a strategic dialogue on a detailed level about teaching and research at each faculty and department from the central administration. You cannot do that. It has to be done locally."

After the approval of the new budget model in January 2019 the faculty started its discussions on how to implement the new model. The faculty's old budget model imitated the old taxameter system model, allocating funds to departments based on student FTE production. Lab Faculty organize its educational programs in a matrix, with different departments offering courses to the programs. Departments receive funding based on the funding tier of the program they are teaching at, even if their teaching is not using equipment

or laboratories. The old activity-based model supported the matrix organization, as collaboration across departments, or even faculties, was unproblematic, as supplying departments would receive funding according to the number of student FTEs produced.

In April 2019 the faculty director orientated the faculty's Academic Council (sounding body with representatives from the academic and technical staff and students), that due to the new central budget model at AU "a process has been initiated at Lab Faculty aiming at adjusting the Faculty's budget model in extension of the new [central] budget model". In September 2019 the Academic Council was updated on the process with management stating that "on the educational area we are working on a model based on cost, quality, and production.". The ongoing discussion about how best to implement the new central budget model at Lab Faculty meant that 2020 and 2021 became "transition years", with departments receiving the same funding as in 2019.

From 2019 to 2021 the dean, the heads of departments, and administrative leaders considered which allocative and managerial functions a new faculty budget models should fulfill, as they all agreed that the new central budget model was problematic and would not function well at the faculty.. The problematization of AU's new central budget model let management at Lab Faculty to experiment with different formats for the new budget model but finally, in 2021 they decided to replicate the MOES' performance funding model into their allocation of educational funds. The same national funding model that initiated the first counter-translation from AU's top management and introduced a new budget model. "What we did was that we recreated the Ministry's model one to one in our internal budget", as the faculty director states. The CFO of Lab Faculty further elaborates "we basically copied MOES's model (...) and actually I don't think we are disloyal towards the [central] budget model because we still engage with the president on the terms as everyone else". The management of Lab Faculty problematized the new frame budget's lack of financial incentives and criticized the new central model for disincentivizing collaboration across departments. The counter-translation of the central budget model aimed at introducing "financial incentives" and establish a "market model" (CFO, Lab Faculty), supporting the faculty's matrix organization of programs. Lab Faculty problematized both the allocative and managerial function of the new central budget model, seeing the lump sum allocations as removing a central managerial function of the old activity-based model, revealing the interconnectedness between the two functions. This is the opposite of top management at AU, who claimed that the activity-based allocation of funds in fact weakened the managerial function of the budget. Despite the counter-translation of the budget model, the faculty still had to adhere to the new budgeting process at AU and develop departmental and faculty-wide annual action plans despite introducing a new allocating method. The faculty participated in the budget negotiation with the president to influence the total frame budget for the faculty and participate in the budgeting process, while using their own budget model for allocating teaching funds.

The counter-translation resulted in the faculty earmarking a fixed amount of the funds in their frame budget for educational activities, then calculating their own rates for the different tiers of programs, and how well the programs do on the performance indicators in the national funding model.

“Since the student FTE funding, that AU receives [from the MOES] is interrupted when allocated to us, we simply cannot use the national funding tiers. So, we calculate our own funding tiers based on the budget we have allocated for teaching. And that is of course a scaling of the national tiers” (budget employee, Lab Faculty).

The budget employee explains how the faculty recalculate their own tiers to replicate the national funding model in the faculty budget model. The faculty likewise includes the 25% basic grants and the 7,5% performance indicators for quality into the faculty budget model. A central change from the old budget model to the new at Lab Faculty was the fact, that the faculty budget was a frame budget, which was not without consequences. Any increase in student FTE production at the faculty no longer automatically resulted in a larger frame budget. Departments were not guaranteed to receive an increase in funding if they produced more student FTEs, as the funding pool was fixed: “let’s say that [department X] increased their FTE production by 5% but everybody else does the same, then [department X] are left with the same level of funding even though they educated more students.”. (CFO, Lab Faculty). The budget model at Lab Faculty incentives the production of more FTEs but the incentives has shifted from the total production to the relative production of FTEs, which “creates some inappropriate [situations] (Vice head of Department Q).

The counter-translation of AU’s central budget model also affected the educational activities at Lab Faculty, as the reintroduction of the MOES model challenges collaborations with other departments at the university. Lab Faculty implemented the new central budget model differently than other faculties, meaning none of the other faculties used a similar budget model for educational activities. This created a gap between the resource usage and the income generated by individual departments as course collaboration across departments resulted in various budget models interacting with no common way of allocating funds. The faculty directors explain the issues with collaborating across faculties under the new budget model(s)

“In the old model [for AU] we said a student FTE was a student FTE and everybody understood that. We knew when we made a course across departments, across faculties or across universities, then we could agree upfront that each partner got their share of funding based on the student FTE production and the tier of the program. It was transparent and everybody knew in advance what we got out of it. That is not possible with the new model. We just received a frame, but we cannot determine the costs. Both because we are missing data to calculate it but also because everybody calculates it differently”

In the new budget model for AU the collaboration across faculties was hindered by the change in focus on income generation to the costs of the activities, without a common method for registering and calculating costs. Lab Faculty had to stop new educational

collaborations across faculties and reconsider if current ones should continue and if so, how the costs should be shared. The vice-head of department at Department Q notes that for their programs the new budget model stopped them from offering courses at another faculty:

“we know that it might no longer be financially worth it to engage in collaborations. If another department [from another faculty] comes and asks if we want to be part of creating this course, then we say ‘no not really’, because we are not getting a single penny for it. Because we don’t know when it’ll be discovered or when, and if, the funds will come”

Lab Faculty’s counter-translation of the central budgeting model demonstrates the work required to implement new budget systems into an existing organizational structure, and the effect of non-human actors, such as the course organizations, the old budget model, the production of student FTEs, and cross-faculty collaboration. All the elements had to integrate with and be organized according to a new budget model. The organization of the programs at Lab Faculty resulted in the move to counter-translate the central budget model, instead reintroducing the MOES’ funding model into the organizational budget. The main ambitions of the new budget model, active strategic and managerial choice, better collaboration across the university, and rejecting MOES’ model were all turned around in the budget model at Lab Faculty. However, the new faculty model did not make the central budget model disappear, nor did it make collaborating across faculties easier as other faculties decided to implement the central budget model in their own manner.

2nd translation: affirming the frame budget inside Absalon-University

Not all faculties counter-translate the central budget model, and we now turn to Book Faculty where the central model was translated into the faculty budget model. However, translating the model was not without problems either, as the new budget model had to fit with the local organization.

Book Faculty is one of the largest at AU in terms of teaching activities but compared to Lab Faculty it has much less externally financed research and relies more on the income from its teaching activities. The educational programs at Book Faculty are primarily organized by departments, and in contrast to Lab Faculty, a single department supply most teaching for a program. The financial situation at Book Faculty has for many years been tight, as political reforms capped the number of students admitted to certain programs based on the unemployment rates, resulting in politically mandated caps on the number of students, and in extension funding, Book Faculty can admit.

Before 2019 Book Faculty had a mechanical budget model, where all funds were allocated to the departments through algorithms. The former dean of the faculty designed the budget

model to ensure maximum transparency in the allocation, emphasizing the department's responsibility to ensure a healthy financial situation. According to Book Faculty's CFO, the old model contained no budgeting process, as the allocation happened mechanically after the faculty received its budget. "It was just a matter of inputting the numbers into the model and then allocate them [the funds] after the keys in the model. It took a few hours and then it was done". The mechanical allocation removed decision-making from the budgeting process. "There was no managerial decision that considered some compared to others. The criteria for receiving the funds were objective and visible (...) once you had accepted the premise [of the model] you had to accept the conclusion as well". (CFO, Book Faculty)

In 2019 the faculty changed its budget model due to the newly approved central budget model from top management. Material from the Academic Council at Book Faculty summarized the reason for modifying the budget model as "[t]he existing budget model for Book Faculty does not function together with the approved budget model for all of AU" and although

"there are no clear guidelines issued by the presidency for the faculties internal budget models (...) it is clearly assumed that the allocation of funds internally at the faculties should follow the AU model. That is be grounded in strategic (managerial) decisions about the sizes of the frames allocated the individual departments" (Academic Council Material, Book Faculty, April 2019)

Book Faculty interpreted the local autonomy in implementing the central budget model differently than Lab Faculty, assuming that faculties must implement the central one. Another important difference with Lab Faculty was the growing dissatisfaction with the faculty's old budget model, as it propelled the financial inequality between departments and amplified the financial distress of certain programs. The CFO at Book Faculty explains how

"the old model geared both the rich and the poor but in different directions, so the rich became richer and richer and the poor became poorer and poorer and poorer. And that was really a perversion in the old model"

At Book Faculty, there was no problematization of the allocative and managerial function of the central budget model and the faculty decided to translate it. The faculty introduced the negotiated frame budgets between the dean and the individual departments supported by the same KPIs and ratios used in the negotiation between the deans and the president. The decision to translate AU's central budget model was quickly taken by the faculty, and the 2020 budgets were allocated based on the new budget model. The motivation to quickly translate the central model was the perceived expectation of the faculties to do so and the wish to neutralize the negative old model's effects on the income distribution between departments. A cornerstone of the new budget model was the increased budget security the fixed frame models ensured compared to the old model's allocation based solely on student FTE production. This was also recognized by the department, with some of the "poor" departments under the old model experiencing a shift in their managerial focus and actions with the new budget model.

"We are not set off one-to-one against a lower production of student FTEs. Before it hurt to see that we have 20 fewer student FTEs this year now we receive 20 less FTE in income. It is not like that anymore. It might be that we have 20 fewer student FTEs and maybe we will receive fewer funds. But it is not the same one-to-one offset. And that I think is nice" (Vice-head of Department A)

The vice-head of the department experience the improved budget security in the new budget model as very positive. The new frame budget also made it possible for some departments to focus more on educational quality, as the vice-head of department A details.

"my own perception has gone from being financially conditioned by our student FTE production to now being about me wanting to make good programs. I have always wanted to do that but I think that [educational] quality has gotten the place of pride now"

The quote demonstrates how it was in fact due to the rejection of the MOES' performance indicators on quality, that the local departments can pursue and offer high-quality programs. In this manner, the translation of AU's central budget model maintained the problematization of the MOES' taxameter model. Although departments at Book Faculty still experience having too few funds to offer the teaching activities they want, the fixed frame budget allowed some departments to focus on quality. While the budget model favored some departments, other departments felt restricted by the frame budget and told of a reorientation away from quality towards cost savings.

"Now we don't get funding per Student FTE as we used to, where there was an incentive to increase the student population (...) now it [the budget model] has another role since we really have to consider sometimes if, don't mistake my meaning, does it 'pay off' to make an extra elective class because we are basically not getting anything for it. I do not get more funds but on the other hand, I have more costs because I must find the teacher" (Head of Administration, department B)

Although the departments at Book Faculty for long have had to optimize their operations to lower costs, the new budget model gave them limited or no possibility to offset costs by increasing their income through higher student FTE production. While departments experienced the effects of the new budget model differently, management at Book Faculty emphasized the strategic role of the budget for the dean and the role of taking active decisions on the allocations of funds.

"it has had the effect that the dean can take an active stand on the allocation of funds. The model that the president [of AU] introduced, and which we more or less use at the faculty, gives the dean a scope of action to give, and of course also take, funds from some [departments]. And that is also what management is about, that it is an allocation exercise and that was hard to do in the mechanical mode, where the premises [of the model] decided the allocation and not management" (CFO, Book Faculty).

The translation of the central budget model at Book Faculty did have the intended outcome, as it created a connection between strategic decision-making and budgeting at the faculty, in line with the intention of the board and presidency at AU.

The translation was not without tensions, as it required a drastic shift in the budgeting practices at Book Faculty. The new budget model was affected by changes in the management at Book Faculty, who experienced replacements in their denary during the first use of the new budgeting process. As the new budgeting model gave the dean an active role in negotiating the budgets with departments, this affected the first year with the new model, which was seen as getting off to a rocky start. In the old budget model at Book Faculty, the dean had a minor role, as all funds were allocated by the algorithms in the budget model. Another issue emerged due to the use of the new IT system for calculating and displaying the KPIs and ratios, which constituted a central part of the new central budget model that Book Faculty translated. The new IT system had issues displaying the ratios on the departmental level making it difficult to use the performance indicators in the budget negotiations, as they did not provide detailed enough insights into the performance of the different programs offered by each department. During the first year, the IT system had not been implemented, and performance indicators were manually put together, printed, and brought to the budget negotiations. This was complicated by the COVID-19 situation, which meant that the first round of negotiations happened online. The next year a new dean led the negotiations, but although the new IT system was implemented it could not supply the performance indicators for the budgeting process. “The second thing was that they [central budget unit at AU] could not deliver the numbers because [the IT system] did not work. So, the reality was that we had our budget meeting without any relevant form of data” (CFO, Book Faculty). The budget negotiation at Book Faculty relied on the same performance indicators as the central budget model and used more extensive quality indicators than the national performing funding model. Even though Book Faculty decided to translate the central budget model of AU into its own, the translation did not happen without friction, as the new identity of the dean and the introduction of a new actor, in the form of the IT system with performance indicators, caused issues in the translation.

3rd Translations – continuing the faculty budget model at the departmental level

The sections above show how faculties at AU either translated or counter-translated the new central budget model into their budgeting practice, but the chain of translation does not stop there, as the departments at the two faculties also had the agency to translate or counter-translate the faculty budget model.

At Book Faculty all departments translated the faculty-wide model into their budgeting, ensuring a consistent budgeting practice from the central AU budget model down to the departmental level. Interviewees present three main reasons for the departments to translate the faculty model. First, management at the faculty perceived the intention of the new central budget to have a single and common budget model for the entire university, meaning they had to implement the new frame budget. Secondly, the finance function at

Book Faculty is centralized and the individual departments do not have their own accountants locally but are served by the shared service function. Even if departments wanted to counter-translate the faculty's budget model, they would not have the resources or capacities to do so. The head of administration at Department A describes the distribution of tasks as "a good model" since the department can "separate itself from the daily budget and consider what is strategically desirable" while the finance handles the "spreadsheet work". Lastly, although the budget model had changed the allocation mechanisms, in monetary terms few funds had been reallocated between departments, as the first year of the new model had to be budget-neutral for all departments. The CFO explains that the initial translation was based on the idea of introducing a set frame budget in the first year and the continue with the same level of funding in the following years "we make some frame [budgets] for the departments and the we just implement them flat over the years, so what they get in funding in 2020 they also get in '21, '22, and '23.". The departments can negotiate an increase in their frame budget, but only if they have new strategic initiatives or document large changes in the activity level. Department B, a department with a large budget under the old model, managed to ensure extra funding for creating a new cohort, while Department A, which had a small budget under the old model, so far did not apply for any new funding. The relative "simple finance model" (CFO, Book Faculty) of the faculty and the departments, meant that departments had few alternative ways of ensuring extra income other than the teaching activities and that most of the costs went to faculty salary, which again meant that the department could to a small extent impact their budgets

"90% of our budget meeting is just fixed salary, of our total budget I mean, is fixed salary. And we can't really do anything about that. So, in reality, we do not have a lot to move around with at the budget meetings (Head of administration, Department A)"

Lab Faculty experienced both translations and counter-translations of the faculty budget model for the educational funds. Departments at Lab Faculty have larger budgets than at Book Faculty due to more external funds and mainly having programs at the highest, rather than lowest, funding tier in the national model. Department X at Lab Faculty decided to translate the student FTE-based model of the faculty into their budgeting practice at the departmental level. Department X has four sections with devolved budgets, where each section receives funding equal to the number of student FTEs they produce. Although the budget model at the department existed before the change in the faculty model, they decided to keep it after the new faculty model was introduced. The department therefore translated the faculty budget model by aligning the allocation mechanism and managerial focus in the departmental budget model. However, the sections offered programs placed on different funding tiers, making the department calculate its own funding tier across all programs. The reason was to ensure a common offering of quality to the students across the sections, effacing the financial differences that adhering to national tiers might have produced.

"the sections' finances are tight connected to how many student FTEs they produce. We have three programs that do not produce equal numbers of student FTEs, so we have chosen to have a unit-FTE tier, somewhere in the middle. Because we don't want any of our master

students experiencing that [a supervisor says] ‘oh, you’re studying that program? Well then, I’d rather have three thesis students from the other program’ since they generate more [income]. There is quite a difference between the middle tier, there is a difference of 4.000-4.500 euro between the middle and top tier” (Vice-head of Department X).

3rd Counter-translation – reintroducing the frame budget at Lab Faculty

Department Q at Lab Faculty show the last counter-translation, as they changed the activity-based budget model of the faculty into a frame budget for the entire department. Like Department X, Department Q has several sections within the department but has devolved the budget to them. Instead, Department Q the head of the department has all the financial decision power, and the sections can ask for resources for staff, conferences expenses, and research infrastructure but the sections do not have any budget themselves. Like Department X the section still registered the number of student FTEs produced and at what funding tier, but all the income generated is held by the head of the department. The head of administration at Department Q explains the logic behind the model is to ensure a solidary model, where the financial pressure for each section to generate income is lessened by having a central budget.

“if we have it all centralized, then we have a form of a solidary budget model. If you are not doing [financially] well in a period, then the community picks you up. If you are doing well, then you are not treated unfairly, but you are instead contributing to helping your colleagues, and then they’ll help you when you have a problem.”

Although Department Q counter-translated the faculty budget model, they thrive financially within the faculty’s budget model, as they deliver a large amount of teaching at programs on the highest tier, meaning that they generate a lot of income for their department in the model. Therefore, student FTE production is still a key managerial topic in the department, although FTE production is not part of the internal departmental budget model. The vice-head of Department Q explains that on the teaching side, “it is a free-for-all because if I can get some [students] from another program then I am pretty pleased, as it is me who gets the money from another department”. At Department Q they keep up the strong focus on student FTE production to increase their overall income for the department but unlike Department X at Lab Faculty, the production of student FTEs does not affect the sections’ financial situation. In this way, the counter-translation of the faculty’s budget model appears weaker, as the strong managerial focus in the model is kept at the departmental level, even though the allocation function of the budget has changed from being activity-based to a frame budget within the department. This shows that the managerial focus does not solely follow the allocation function of the budget, as multiple budget models are in play at the same time. At the same time, the focus on student FTEs is a managerial leftover from the old budget model for AU, which has persisted in the new budget model due to the opacity in how funds are allocated to the faculty.

“Our [budget model] at Lab Faculty is very FTE based. But the funds Lab Faculty receives from the president are not FTE-based. It was before. It is completely opaque.... Nobody at AU knows how the bag of money that goes out to the faculties is allocated. (...) so FTEs can never be a bad thing we agreed on because it is some measure of how much we do and what it costs. So, we still have it in our head, and we articulate to everybody that it’s a good thing to have FTEs.”

The quotes demonstrate the layering of managerial focus that exists across the different versions of budget models at AU, as the incentives in the old model persist locally in the new model. Managers not only have to react to the most immediate budget model they are affected by, here Lab Faculty’s, but also the budget models further up in the hierarchy, as they also impact local action. The ability to counter-translate the goals and managerial incentives of budget models is restricted by the co-existence of other budget models with a different set of incentives. So, while faculties and departmental can counter-translate the allocation function of the budget models quite easily, it is harder for them to counter-translate the managerial function of the budget models.

Discussion

The implementation of performance funding into public organizations

The study answers calls for more insight into public sector budgeting (Anessi-Pessina et al., 2016) and performance funding specifically (Mauro et al., 2017). Contributing to the literature on performance funding, the study reveals how the organizational budget system both modifies and sustains the performance funding system. It goes beyond previous studies into the struggles over the design of performance funding (Agyeman, 2010; Edwards et al., 1996), and the effects of performance funding without considering the organizational budget systems (Mauro et al., 2021; Poulsen et al., 2022). Instead, the paper highlights the role of the organizational budget system in implementing performance funding. I add to the prior literature by showing how performance funding is implemented through the organizational budgets of public organizations. The findings in this study underscore the relevance and importance of tracing performance funding systems into public organizations and try to look beyond the “veil of ignorance” (Heald & Geaughan, 1994, p. 268) of performance funding. AU’s decision to change its budget system in response to the new performance funding system highlights how public managers influence both the allocation and managerial aspects of inter-organizational budgeting systems. AU’s management attempted to influence the design of the new taxameter system, but their influence became more profound when using the organizational budget system to counter-translate the national funding system. The implementation of the taxameter system was not limited to its

approval in parliament in 2017 or its adoption in 2019. It was a continuous process in which various parts of AU actively decided whether to align with the allocative and managerial aspects of the taxameter system.

The findings show the national funding system maintains a strong presence within AU, by acting as a point of comparison for the internal budget models. Another interesting aspect of the implementation was also the rejection of the new performance funding, which aimed at increasing educational quality, with the argument that it did not increase quality. AU central budget model used more KPIs than the taxameter model to provide a more holistic view of quality, and at Book Faculty the shift from activity-based allocation to a frame budget was seen as enabling the pursuit of quality. The findings therefore challenge the ambition to use outcome targets for performance funding (Teixeira et al., 2022), as the outcomes themselves, such as educational quality, can also be modified through the implementation. Although the findings do not say whether educational quality was enhanced, it raises the question of whether more complex performance funding systems are relevant and worthwhile, given the potential to modify and reject them through the implementation. As Pflueger (2020) notes, concepts of quality might seem different from former reforms on efficiency and productivity in the public sector but in practice, they end up fulfilling the same role. This was also the case at AU, where actors either perceived the performance funding using quality indicators as lacking, as encouraging inappropriate behavior, or conflicting with offering quality programs.

The findings also reveal the internal dynamics and effects of the budget model(s) in implementing the performance funding system. Notably, Lab Faculty reintroduced the national funding model alongside its allocative and managerial function in its faculty budget model, circumventing AU's central budget model. However, this counter-translation led to new challenges and conflicts, as faculty budget models diverged, hindering program collaboration, and altering the focus from total student FTE production to relative production between departments. Lastly, the third round of counter-translations out the final emphasis on the instability and multifaceted process of implementing performance funding, as the departmental budget model can once again modify the allocative function of the faculty's budget model. The dynamics also concerned the understanding of the two allocative and managerial functions of the budget. The two functions were interpreted differently regarding their effect. At Book Faculty the decision to translate AU's central budget model was founded on the need to strengthen the role of the managers in the budgeting process, the managerial function, by changing the allocative function to a frame budget. However, at Lab Faculty the same argument regarding strengthening the managerial role was mobilized to counter-translate the allocative function of the budget from the frame-budget to the activity-based model. There also seemed to be a stronger separation of the budgeting process and the allocation function at Lab Faculty, where the management claimed they were not disrupting AU's new budget model since they participated in the budgeting process and had translated that into their model while changing the allocative function.

Budgetary change and multiple budget models

Budgetary change happens through the interaction between the organization and its external environment (Covaleski & Dirsmith, 1988b, 1988a; Ezzamel et al., 2012; Moll & Hoque, 2011) and to mitigate and manage competing demands from the organizational environment through the budget (Kaufman & Covaleski, 2019). Building on Kaufman & Covaleski's (2019) claim that a common theme in the literature is "to treat organizations as university actors developing strategic responses", this article explores the role and agency of different groups inside the same organization during a process of budgetary change.

One key finding is that organizations are not monolithic entities; they encompass diverse opinions regarding the budget's purpose, allocation methods, and the budgeting process itself. This focus on differing opinions about the budget aligns with Moll & Hoque's (2011) findings, emphasizing the importance of not only external legitimacy but also internal support for budgetary change. Kaufman & Covaleski (2019) reveal that internal conflicts and interests can be managed through the budget, and aided by informal budget processes that mitigate some of the conflicts arising during the budgetary change. However, the case of AU goes beyond diverging opinions and informal processes; it results in the coexistence of multiple budget models within AU, both at the faculty and departmental levels. The differing opinions and use of the budget system not only result in a lack of legitimacy and non-users (Moll & Hoque, 2011) but also result in the establishment of local, competing, budget models at the faculty and departmental level. These models were not vernacular (Kilfoyle et al., 2013) or informal (Kaufman & Covaleski, 2019) accounting systems or processes but multiple budget systems.

While multiple budget systems help mitigate conflicts and accommodate diverse intentions, they also introduce new forms of conflict when they interact. In contrast to Cooper et al (2019) the multiple accounting systems did not align or translate from one to another, meaning that accommodation between systems was not also possible, resulting in conflicting interactions between the different functions of the budget models in practice. The different allocative and managerial functions (Anessi-Pessina et al., 2016) clashed when the budget models had to interact, as the case of the educational program at Lab Faculty demonstrated. Even when the same budget model is used from central AU down to the departmental level at Book Faculty, smooth implementation is not guaranteed due to issues related to information availability and adapting to the new budgeting process. The findings underscore the significance of perceiving organizations as composed of internal groups that require coordination. Although top management aspired to eliminate various budget models and establish a unified system for AU, this goal was not fully realized. Instead, the success of the implementation depended on the faculties' and departments' local autonomy to decide on their own budget models. Consequently, the result was a multitude of coexisting budget models that, to some extent, contributed to the overall success of the budget model.

Contrasting earlier studies that explored organizations' decoupling or selective coupling with the external environment through their budgeting systems (Kaufman & Covaleski,

2019), this case presents a more intricate perspective. When decoupling organizations separate their operations from external claims to safeguard legitimacy while protecting their operations. In the case of AU, central budgetary changes were aimed at shielding the university's operations from the perceived negative effects of the new performance funding model, with little focus on gaining legitimacy in the external environment. In fact, AU openly criticized the new funding model and its intentions. Selective coupling typically involves an organization strategically integrating and managing competing institutional demands through the budget. However, at AU, the attempt to manage competing ideas through a single budget (Kaufman & Covalleski, 2019; Lepori & Montauti, 2020) to achieve a compromise (Chenhall et al., 2013) was not pursued. Instead, each group within the university developed its own budget model, either aligning with or opposing the organizational level above, creating compromise based on multiple budget models rather than multiple concerns within a single budget. This offers fresh insights into the dynamics of budgetary change, challenging assumptions about organizational unity and budget systems themselves.

Chains of translations and accounting technologies

The accounting literature is rich with translation studies, focusing on the challenges and processes involved in designing and implementing new accounting technologies (Arnaboldi & Azzone, 2010; Arnaboldi & Palermo, 2011; Briers & Chua, 2001; Jeacle, 2003; Pipan & Czarniawska, 2010; Skærbæk & Thorbjørnsen, 2007). Drawing from the sociology of translation, the current accounting literature illustrates that accounting change and the introduction of new technologies are intricate processes involving both human and non-human elements, ultimately leading to either success (Arnaboldi & Azzone, 2010; Chua, 1995; Jeacle, 2003) or failure (Arnaboldi & Palermo, 2011; Bruno & Lapsley, 2018; Pipan & Czarniawska, 2010; Preston et al., 1992).

Pipan & Czarniawska (2010) and Arnaboldi & Palermo (2011) identify both successes and failures in the implementation of a similar accounting technology in different organizations, the individual translation processes are either seen as distinctive successes or failure. This article instead uses the notion of translation and counter-translation by Callon et al. (1983) to follow accounting as it morphs and stabilizes itself along the “chain of translation” (Latour, 1986). The concept of translation (Callon, 1986; Callon et al., 1983; Latour, 1986, 1999) is open to diverging effects and processes of change, distortion, and modification. By using the dual concept of translation and counter-translation I aim to bring a vocabulary to the accounting literature which can help in understanding situation where the translation results in multiplicity and stability at the same time.

In this article, the concept of counter-translation aids in comprehending processes characterized by both instability and stability occurring simultaneously. Alongside the metaphor of the translation process as a chain with distinct links, I trace the taxameter

system through various links in this chain as the technology moves from one point to another. In the case of the new taxameter system and budget reform at AU, it becomes challenging to determine definitively whether the change was a successful translation. The translation of the taxameter model was deemed a failure from the perspective of the central budget model at AU but proved successful when examining the budget model at Lab Faculty. The notion of counter-translation allows us to conceptualize this movement along the chain as one that generates both stability and multiple constructions of an accounting technology. While it is still possible for AU to present itself as a single whole, there is still an open acknowledgment and acceptance of the multiple budget models inside the organizations, and in fact, the autonomy inside the organization to both translate and counter-translate the budget model resulted in stability rather than instability. The question of success or failure then becomes less central, as stability occurs when there is mutual acceptance of difference rather than alignment of all actors towards the same technology.

Conclusion

Performance funding plays a crucial role in governing public organizations, with potential benefits arising from combining fund allocation and performance assessment (Curristine et al., 2007; Jagalla et al., 2011; Moynihan, 2008; OECD, 2007). Surprisingly, limited knowledge is available on how public organizations implement performance funding schemes. This article contributes to the literature by presenting a detailed case study of the implementation of performance funding within public organizations. It sheds light on how public organizations incorporate performance funding systems into their budget structures and how organizational budget models modify and reintroduce the original performance funding model.

Public organizations are not just passive recipients of new accounting technologies and governing ambitions but become active in their implementation and use of the technologies. Organizational accounting systems can act as mediators, rejecting the intentions and contents of the imposed governing technologies. Inside the organizations, accounting continues to act as a mediator as various groups mobilize it to translate or counter-translate the budget models proposed to them. The study sheds light on the delicate and dynamic processes of governing, the fragility of accounting technologies and governing, demonstrating instead the active roles of groups within the organization in doing their own governing. However, as the multiple budget models were used, they began to create layers of incentives and functions as they interacted with each other. This layering of incentives and governing ambitions muddled to picture of who governing who and how.

Pointing forward, the study points to two areas of attention. First, the connection between the budgeting process, the use of performance information during the budgeting phases, and the actual allocation of funds deserves more attention in future research. As the study is a single case of implementing performance funding more research is likewise needed to

better understand how public organizations use their internal accounting technologies, which might extend beyond the budget, to implement performance funding.

Secondly, the findings on the multiplicity of accounting, and the existence of multiple, formal accounting technologies covering the same area is another relevant direction of research. The emphasis shifts toward understanding budgetary change as a process marked by multiplicity and fragmentation, warranting further investigation in cases where accounting change leads to such outcomes rather than organizational unity.

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Table 2

	1st translation	1st counter-translation	2nd counter-translation	2nd translation	3rd counter-translation	3rd translation
Organizational level	MOES	AU's top Management	Lab Faculty	Book Faculty	Department Q at Lab faculty	Departments at Lab and Book Faculty
Problematization	Old funding model for universities favored quantity at the expense of quality of programs	MOES' funding model limits managerial action and allocations are unevenly distributed across faculties and programs	Central budget model removes financial incentives and hinders cross-departmental collaboration	No problematization of AU's new budget model. Continues problematization of MOES' funding model	Problematization of devolved budgets on the departmental level and incentives in the faculty-wide model on the departmental level	No Problematization. Continuous translation of faculty budget model into departmental budgets
Budget model	Activity-based model with performance criteria and basic-funding	Frame budgets for faculties through negotiation with top management	Activity-based model with performance criteria and basic-funding	Frame budgets for faculties through negotiation with top management	Frame budget for all department sections	Activity-based at Lab Faculty Frame budget at Book faculty
Allocative function	Allocation based on performance, both quantity and quality	Lump sum allocation based on performance and strategic plans	Allocation based on relative performance, both quantity and quality	Lump sum allocation based on performance and strategic plans	Department management allocates funds based on needs	See Book and Lab faculty
Managerial function	Managerial focus on the quality of educational programs through financial incentives	Budget negotiations anchor strategic dialogue between top management and deans	Managerial focus on the quality of educational programs through financial incentives and collaboration	Budget negotiations anchor strategic dialogue between the dean and heads of departments	Equality between sections and strong managerial involvement Financial stability	See Book and Lab faculty
Effects	New performance funding model was introduced but there is	Remove MOES' funding model and its incentives	Reintroduce MOES funding model. Due to the faculty's	Increase in budget stability for departments. Stronger managerial	Multiple, contrasting financial incentives as department model	See Book and Lab faculty

	little concern for implementation	. Faculties can only increase budgets through negotiations	frame budget performance becomes relative rather than absolute	involvement of the dean in budgeting	interact with faculty-wide budget model	
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Article 3

The Production of Accounting Opacities and Their Organizational Effects

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&

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Abstract

Accounting's role in producing both visibility and invisibility is established in the literature, but less attention has been given to different forms of accounting visibility. In this paper, we develop the concept of *accounting opacities* to understand the blurred, distorted, and nebulous forms of visibility that accounting practices can produce. Through a qualitative case study of managers' use of accounting in Danish universities, and drawing on actor-network theory, we analyse the socio-material practices producing accounting opacities. We identify several practices involved in producing accounting opacities: methodological opacity, competing visibilities, and visibility management. Furthermore, we identify the organizational effects of accounting, showing how the actors' positions in the network around the opacity impact its effect on them. Accounting opacities both create new and reinforce existing power relations in the organizations, and depending on the actors' position their actions are enabled or restrained by the opacities. Our first contribution is the development of the concept of *accounting opacities*, its production, and organizational effects. Secondly, we add to the existing literature on the lack of visibility by highlighting the role of multiple accounting technologies, the importance of power and resistance, and the enabling and restraining effects of accounting opacities.

Introduction

The critical accounting literature firmly establishes accounting as a practice of making organizations, people, processes, and objects financially visible (Hopwood, 1987; Miller &

Power, 2013; Robson, 1992). However, there is a growing body of work nuancing the idea that accounting simply creates visibility and that the created visibility is complete (Busco & Quattrone, 2018; Jeacle, 2022; Jensen et al., 2021; Jordan & Messner, 2012; Roberts, 2018). According to this work, accounting sometimes creates invisibilities (Funnell, 1998; Jensen et al., 2021) and non-transparency (Roberts, 2009, 2018), and most often offers nothing but incomplete representations (Busco & Quattrone, 2018; Jordan & Messner, 2012). With this article, we add to previous contributions in critical accounting by suggesting that accounting not only has a limited capacity to provide comprehensive visibility and transparency, but also actively generates *opacity*, and that accounting opacity creates and reinforces power relations and unequally distributed spaces of action within and across organizations. The article thus proposes accounting opacity as a concept that nuances previous scholarly debates on invisibility, non-transparency, and incompleteness of accounting.

Merriam-Webster traces the word 'opacity' back to the Latin word 'opacus', meaning 'shady' or 'dark', and the Medieval-time French word 'opacité', meaning 'shadiness'. Both these origins point to how opacity is connected to the notion of visibility and connotated with shaded or murky areas. The current definition of opacity in Merriam-Webster offers two meanings, both related to the notions of shadiness or darkness. The first meaning is "the quality or state of a body that makes it impervious to the rays of light" (Merriam-Webster dictionary), indicating that opacity marks a quality of an object characterized by limited transparency, causing an obstruction of light or visibility more generally. The second meaning is "obscurity of sense" (Merriam-Webster dictionary), indicating the unintelligibility of an object to an actor. In the Cambridge Dictionary, we find a different but overlapping definition, namely "the quality of being difficult to understand or know about, especially because things have been intentionally kept secret or made complicated" (Cambridge Dictionary). This definition indicates the same sense of unintelligibility as the second Merriam-Webster definition but adds the agency of someone actively rendering an object secret or complicated to others. In our conceptualization of accounting opacity, we follow these definitions and define the concept as a *circumstance where accounting technologies and/or accounting practices generate opacity rather than visibility and transparency to (some) actors in a given context*.

We have structured the article into four parts. The first part frames the article and introduces the methodology and methods we have used in our development of accounting opacity as a concept. In the second part, we outline the concept of accounting opacity in relation to three bodies of literature in accounting: The visibility/invisibility literature, the transparency/non-transparency literature, and the incompleteness literature. In part three, we zoom in on how technologies and practices are involved in generating opacities, and the role of positionality and intentionality of actors. In part four, we explore how opacities involve and affect various actors in a given context, arguing that accounting opacities are themselves important to make visible. We draw on empirical material from our conjoint research projects, the outlined accounting literature, and the broader social sciences.

The main contribution of the article is its conceptualization of accounting opacity. The proposed conceptualization proposes that accounting opacity neither equates visibility nor invisibility and that accounting opacity often accompanies accounting transparency and makes organizations difficult to see through. We identify different accounting technology constellations from which opacity is generated; “methodological opacity” (Dambrin & Robson, 2011) including processual opacity, calculative opacity, competing visibilities (Dechow & Mouritsen, 2015), and visibility games or management (Brivot & Gendron, 2011). Accounting opacities are affected by the different positional relationships across which accounting exist, and different degrees of intentionality involved in producing opacity. Therefore, accounting opacity is not merely a problem, nor simply overcome by organizational actors, but in addition, produces power relations and unequally distributed rooms for organizational action (Ezzamel et al., 2004). The proposed concept and conceptualization of accounting opacity thus add to key discussions on invisibility, non-transparency, and incompleteness within critical accounting (Busco & Quattrone, 2018; Funnel, 1998; Jensen et al., 2021; Jordan & Messner, 2012; Roberts, 2009, 2019). More specifically, the proposed conceptualization confirms that invisibility, non-transparency, and incompleteness exist in relation to accounting technologies, but also adds that a lack of visibility may involve more than mere invisibility, that opacity may generate other effects than limited accountability, and that actors not only make do within complete accounting information but also make them use accounting opacities.. Finally, our article demonstrates why accounting opacities are important to study, as they create and reinforce power relations and unequally distributed rooms for manoeuvre within and across organizations.

Methodology

Empirical setting

The Danish university sector has undergone a large transformation in the last 20 years towards more professional management, tighter financial control, and an increasing use of performance measures and management (Degn & Sørensen, 2015; Madsen, 2022b; Pinheiro & Stensaker, 2014; Wright & Ørberg, 2015). As noted by Pinheiro & Stensaker (2014), “few European, let alone Nordic, university systems have undergone such abrupt changes in the last decade”. In addition, the Danish university sector is characterized by a proliferation of accounting devices, including for example work time reports, budget models, performance contracts, quality assurance, and performance-based funding. For these reasons, Danish higher education makes up an interesting context for the study of opacities.

Although the Danish system is exposed to financial and political pressures similar to other Western countries (Parker, 2013; Pinheiro & Stensaker, 2014), political steering and intervention rather than pure market mechanisms however still dominate the governing of

universities (Degn & Sørensen, 2015). Despite an increase in the share of the total income of universities stemming from industry and competitive research councils, all universities are obliged to conduct research and offer research-based programs and receive public funding from the state (Aagaard, 2017).

The current funding system for university programs in Denmark consists of three parts. First, a basic grant makes up 25%. Second, an activity-based part allocating funds based on the amount of student full-time-equivalents (FTE's) produced, covering 67,5% of the funding. Lastly, the system contains two performance measures, each corresponding to 3,75% of the total funding, reflecting the completion time of students and the graduate unemployment level (Madsen, 2022). While the funding of the Danish university is closely linked to performance (Aagaard, 2017; Jongbloed & Vossensteyn, 2016), cost information on outputs is sparser and not (yet) used as a performance indicator in the allocation of funding. Despite a recent attempt to introduce standardized bookkeeping and cost allocation methods to calculate unit costs (Banghøj et al., 2021), few universities have implemented completely transparent technologies for determining the costs of individual programs, and thus the unit costs.

On top of an increasing number of accounting numbers regarding costs and production of students, the Danish university sector experiences a steady rise in non-financial indicators. These include minimum number of hours of teaching, faculty coverage on courses, graduate employability, dropout rates, exam grades, and many more (Brøgger & Madsen, 2022; Degn et al., 2023; Madsen, 2021; Triantafillou, 2015). While the Danish university sector has experienced a proliferation of accounting numbers and indirect governing through numbers, there is still a strong political and central steering of the university with many laws and regulations directly affecting the organization of the institutions and their educational and research activities (Degn & Sørensen, 2015).

Case description

The Danish university sector includes eight universities differing in both age, size, scope, and academic and pedagogical orientation. Our analyses are based on the many similarities in opaque accounting that we observed across different institutional, cultural, and organizational contexts. Although our data span several departments and universities, we have chosen to include departments from two universities in the empirical unpacking of opacities in the analysis below. These two universities are here named Einstein University and Columbus University.

Einstein University is a single-faculty university with a centralized management structure and quite large departments. On a university-wide level, Einstein University has high faculty/student and permanent/temporary faculty ratios and offers well above the minimum amount of teaching for its students. Financially, the university has a very high proportion of external funding, and most of its programs belong to the technical and natural

sciences and thus tier 2 and 3 in the funding model. The budget model at Einstein focuses on an annual negotiation between the individual departments and the senior management based on the overall strategy of the university and the strategic plans of the individual departments and their plans for teaching and research.

Columbus University is a multi-faculty university spanning across natural sciences, health sciences, the humanities, and social sciences. It is among the largest Danish universities in terms of staff, students, and income. Columbus has a central management, but each faculty enjoys a large level of autonomy in deciding how to organize their departments, how their budgeting system works, and hiring of staff. The large level of autonomy means that the faculties are quite heterogeneous, and there are substantial differences between them in terms of budgetary models, work norm agreements, and amount of external funding. The case departments that we present from Columbus University are located within the social sciences and humanities.

Data collection and analysis

Our approach to accounting opacity is inspired by the epistemological and ontological conceptualizations from actor-network theory (ANT) (Callon, 1986; Latour, 1999, 2005; Mol, 2002, 2010). Following Mol (2010, p. 261), we see ANT not as a theory but as “a repertoire. If you link up with it you learn sensitizing terms, ways of asking questions, and techniques for turning issues inside out or upside down”. This repertoire includes a number of propositions. First, we draw on ANT’s acknowledgment of the agency of non-human actors (Callon, 1986; Latour, 1999), such as accounting technologies and calculations (Chua, 1995; Robson, 1992), along with the agency of human actors. Second, we follow the notion of reality as constructed through associations between actors, such as accounting technologies, managers, and their employees, and the implied stability and instability created by changes in these associations (Latour, 2005). Finally, we view reality as an accomplishment and outcome of actions and the practical activities of actors, for example including the calculations performed by accounting technologies and the decision-making conducted by managers (Latour, 2005; Mol, 2002, 2010)

Our empirical investigations also draw on these same notions. We base our concept of accounting opacity on case studies of Danish universities. The qualitative method used in our case studies aims to pursue an open, explorative inquiry into the organizational processes of accounting and the human and non-human actors involved (Ahrens & Chapman, 2006; Covalleski & Dirsmith, 1990; Parker, 2012). Our empirical data comes from a qualitative investigation of nine different university departments representing three universities. The nine departments cut across most major areas of studies, such as the natural sciences, technical sciences, humanities, and social sciences, and therefore the case studies provide a broad picture of the local practices across different institutions and academic areas. The main source of data collection was semi-structured interviews. In total,

we conducted 39 interviews, covering a broad range of roles within the universities, including both managers and non-managers, faculty and administrative staff, and local and central actors, however mainly focusing on the department level where the responsibility of delivering degree programs is placed. The purpose of the interviews was to obtain information about the organizational practices and conditions of accounting in their institutional contexts, including available numbers and calculations, how they use them, and how accounting technologies enable some organizational realities rather than others. When respondents mentioned relevant documents, we attempted to retrieve these afterward, and these documents, including norm agreements, descriptions of budgeting processes, and work time sheets, supplemented our interview data as background material providing technical and organizational insight into the non-human actors at play. Our empirical lens in the study of opacities is thus shaped by actors engaged with accounting numbers and calculations in their daily work and their observations of how accounting opacities constitute the creation of new organizational realities.

The empirical material was analyzed through several rounds of coding and categorizing (Grodal et al., 2020). Our initial readings of the empirical material gave rise to the idea of opacities as a tentative concept, inspired by interviewees mentioning cases of multiple calculations concerning the same object, processes of resource allocations that were difficult to grasp, and practices of hiding or distorting registrations of costs and activities. From these initial considerations about different ways of making organizations, people, processes, and objects visible through accounting, we began a more systematic categorization of our empirical material. The empirical material was first organized according to the three universities we have investigated and then coded in three overall themes: different kinds of opacity, the practices surrounding them, and how they affected the organizations and the actors inhabiting them. The coding of the different kinds of opacity resulted in a broad series of instances where actors described neither a complete absence nor presence of visibility but rather different forms of distorted, blurred, hard-to-grasp forms of visibility, which consolidated the initial term of accounting opacities to capture these instances. Furthermore, our coding of the effects of accounting opacities revealed both positive and negative experiences from actors, depending on their positions in relation to the technologies and practices producing accounting opacities. Accounting opacity thus emerged as a relational phenomenon dependent on both the accounting technologies and organizational positions, where the same accounting numbers or practices can be perceived and experienced as both clear/visible and opaque at the same time by different people.

After our inductive coding, we began relating our findings and conceptualizations to the literature, positioning accounting opacity in relation to other concepts describing a lack or absence of visibility and reflecting on how the production and effects of accounting opacity differed from terms such as invisibility, non-transparency, and incompleteness. In our writing up of the article, we have prioritized providing the reader with several close-up views of accounting opacities and their effects using the empirical data to flesh out our conceptualization to display a clear picture of the production of accounting opacities and its

effects. Our empirical analysis however covers a much broader set of data, and our theoretical points are supported by a larger material than what is presented in the article.

Unpacking accounting opacity with/in the accounting literature

We now turn to the concept of accounting opacity and its relationship to existing bodies of literature within accounting, including the visibility/invisibility literature, the transparency/non-transparency literature, and the incompleteness literature. By reviewing these bodies of literature and their relevance for the concept of opacity, we also outline our own conceptualization of accounting opacity and its novelty in relation to other similar concepts in the existing literature. We identify a strong recognition of the limitations of accounting understood as technologies of visibility and an active focus on exploring the conditions, practices, and outcomes of accounting visibilities from this perspective. However, by bringing the three bodies of literature together, we arrive at a different conceptualization of the limitations of visibility than each of the bodies of literature offers by themselves.

Accounting opacity as obstructed visibility

Visibility and the reliance on visual and optical metaphors are central themes within the critical and interpretive accounting research tradition (Carmona et al., 1997; Hines, 1992; Hopwood, 1987, 1992; Miller, 2001; Morgan & Willmott, 1993; O'Leary & Miller, 1987; Robson, 1992). Accounting re-presents organizations, people, processes, and objects through its numerical and cognitive procedures, creating a certain economic or numerical visibility of these organizational features (Hopwood, 1987; Robson, 1992). The emphasis on visibility has led authors to draw on visual metaphors when describing what accounting does in practice. Hopwood (1987, p. 223) refers to the “accounting eye” when discussing the representational character of accounting calculations and terms and notices it as a “significant and omnipresent one”. Hines (1992) reflects on the “accounting gaze”, and Morgan & Willmott’s (1993) use of a “visibility metaphor” in their review, stressing the central role of accounting visibilities and the conceptual connections between accounting and visual metaphors. The focus on visibility reflects the importance of “seeing” with accounting for opening and closing rooms for action, since, as Robson (1992, p. 702) notes, “by creating what can be seen, so accounting conditions, as well as enables, action”.

The firm acknowledgment of accounting's role in creating visibility has spurred a keen interest in cases where accounting in different ways, through varying means, and with various outcomes are implicated in creating a lack of visibility – an interest that we share. In the critical accounting literature, this interest has developed into a body of literature on *invisibility*. The foundational argument in the invisibility literature is that while accounting

makes certain organizations, people, processes, and objects visible, tangible, and present, it also makes other objects and subjects invisible in this process. By asserting the non-visible as “unrecognized and unrecorded” (Morgan & Wilmott, 1993, p. 10), it is constituted as devoid of significance, meaning, and value in the accounting representation. The critical literature demonstrates several cases of how slaves (Jensen et al., 2021), Holocaust victims (Funnell, 1998), animals (Vinnari & Vinnari, 2022), and victims of catastrophes (Jeacle, 2022) are made invisible and non-valuable by the use of accounting registrations and calculations. Funnell (1998) demonstrates how the non-visibility of Holocaust victims by accounting simultaneously made them invisible as complex humans, hiding not only the individuals behind the numbers but also their terrible fates. An adverse effect of the visibility of accounting is that through the separation of organizations, people, processes, and objects into “that which is visible and that which is invisible, by definition that which is not captured by accounting must be without value” (Funnell, 1998, p. 452). Similarly, Jensen et al. (2021, p. 2) show how accounting used in the Danish slave trade in effect made “humans visible as articles for trade while rendering invisible the innate, human qualities of enslaved Africans”. In her study of valuing life after the Titanic shipwreck, Jeacle (2022, p. 2) shows how valuation practices and calculations are done “on the basis of economic earning and hence ignored values beyond the world of paid work”, resulting in a biased valuation of women and children, as they had no economic earning power to impute in the valuation models. The research on how accounting makes people, processes, and objects invisible echoes Robson (1992), noting how accounting quantifications efface qualitative aspects and values of the objects, meaning that they “have no visibility in the system of mathematical relations” (p. 688) as these qualities are “actively suppressed by the process of quantification” (p. 688). In this way, accounting serves to constitute not only a “particular field of visibility” (O’Leary & Miller, 1987) but also a particular form of visibility that in effect makes something visible while simultaneously making something else invisible.

While we develop our concept of accounting opacity in relation to the notion of visibility, our concept differs from the concept of accounting invisibility. The concept of accounting opacity does not focus on how organizational features are hidden away, pushed into darkness, and neglected, but rather on how such qualities are blurred and distorted through accounting. We might say that our concept focuses on how qualities and values maintain their presence within accounting inscriptions and technologies yet are made obscure and distorted rather than hidden. The production of accounting opacity does not result in a demarcation between the visible and the invisible, exactly because accounting opacities are produced and work *within* fields of visibilities.

Instead of defining our concept of opacity as a type of invisibility, we draw on broader research in communication (L. T. Christensen & Cheney, 2015), sociology (Star, 1999), and digital studies (Flyverbom, 2015; H. K. Hansen & Flyverbom, 2015) in our conceptualization of opacity. Here, opacity is described as dark, murky areas of secrecy within larger spheres of transparency and visibility ((Birchall, 2011; Christensen & Cheney, 2015; Flyverbom, 2015). However, in our understanding, opacity should not be conceptualized as complete

darkness, but rather as aspects of organizations that are neither made fully visible by accounting, nor fully invisible due to an absence of accounting. Instead, they are made murky, nebulous, and difficult to grasp through an excess or distortion of visibility. If we play with visibility metaphors, accounting opacity could be viewed as the shadows cast in the contours and around the areas made visibility created by accounting technology, or as new forms of shadows and the changed perception of the object appearing when the amount and type of light cast onto the object is changed. While accounting has previously been described as “an eye” (Hopwood, 1987), creating a specific form of financial visibility, we argue that with our notion of opacity, accounting also sometimes acts as a pair of glasses, altering, blurring, and distorting the visibility.

Accounting opacity as limited transparency

Besides visibility, our definition of accounting opacity also refers to the notion of transparency. Transparency represents another visual metaphor, emphasizing the ability not only to see objects, but also to *see through* them (Christensen & Cheney, 2015). Transparency has long had a central role in the accountability literature, identifying it both as the rationale behind and the result of accounting (Frey-Heger & Barrett, 2021; Messner, 2009; Roberts, 1991, 2009, 2018). Prior literature identifies transparency as a universal ideal promoted to achieve better accountability, as transparency becomes connected to various notions of what constitutes good and proper states, organizations, and individuals (L. T. Christensen & Cheney, 2015; Mehrpouya & Salles-Djelic, 2019; Roberts, 2009). Roberts (2009) describes this ideal of transparency to achieve accountability as working by “cast[ing] light upon what would otherwise remain obscure or invisible, and [doing] so in order to provide the basis for confidence for distant others” (Roberts, 2009, p. 957). Within this positive framing, the lack of insight, openness, and accountability produced by non-transparency has a normative negative framing, as it hinders the ability of organizations and actors to provide accounts of performance and actions to others, thereby limiting accountability.

While a growing set of work challenges this naive and positive framing of transparency and questions the possibility of full transparency (Messner, 2009; Roberts, 2009), we are mainly interested in the relationship between transparency and opacity. If we return to transparency as a visual metaphor, the most obvious material indicating transparency is glass. With this metaphor, we might thus think of accounting as a window into an organization, process, or object. However, as Christensen & Cheney (2015) point out, as one sees through a window into the organization, one also ignores part of that organization, namely the window glass itself. In that sense, “the transparency pursuit is a source of opacity as well as clarity, or “darkness” as well as “light,”” (Christensen & Cheney, 2015, p. 73). Thus, opacity should not only be understood as a negation of transparency, but also as a product of the pursuit of transparency, and thus as a byproduct of, or integral phenomenon to, transparency.

Furthermore, according to Roberts (2018, p. 52) transparency is “an alluring but deceptive ideal”, as the belief in total transparency and the good it will bring about ignores the governing rationale behind transparency (Mehrpuoya & Salles-Djelic, 2019). Mehrpuoya & Salles-Djelic (2019) show how transparency fosters the decision-making of economic and political subjects and decision-making at a distance, thus benefitting those looking in through the window, at the expense of those being observed. While the desire to make organizations completely transparent or penetrable by the outside or above gaze is closely connected to the agency such a gaze provides for various actors, transparency is not cost-free, but affects those governed by full transparency in the process. Based on these arguments, the accounting literature has begun focusing on the relevance of non-transparency in organizations (Roberts, 2018). The concept of non-transparency shares similarities with our conceptualization of accounting opacities, as both acknowledge the potentially positive aspects of not creating full nor complete transparency through accounting. Accounting opacity is not conceptualized as inherently positive or negative as it might both enable and constrain action and accountability. Meanwhile, where the discussion of transparency and non-transparency centers around accountability (Messner, 2009; Roberts, 2009, 2018), we see accounting opacities as a much broader concept covering a variety of practices such as budgeting, performance management, and management control.

Accounting opacity as incomplete information

A third body of literature of relevance for our concept of accounting opacity revolves around incompleteness. The notion of incompleteness is less driven by a visual metaphor, yet related to our notion of opacity, as it adds a focus on partiality, inconsistency, and gaps in the gaze provided by accounting technologies. The foundational argument in the incompleteness literature is that accounting technologies are necessarily incomplete, thus questioning the implicit ideal of accounting’s representative ability as total and comprehensive in a given context (Boedker et al., 2020; Busco & Quattrone, 2018; Jordan & Messner, 2012). The representative qualities of accounting information are therefore challenged by the position that accounting cannot provide a complete representation of reality.

However, the incompleteness literature this is not necessarily an issue for organizational action (Ahrens & Chapman, 2004; Jordan & Messner, 2012) stressing the ability of actors to supplement the accounting information through concrete actions such as experimentation (Andon et al., 2007), compromises (Chenhall et al., 2013), repair work (Jordan & Messner, 2012), and management (Ahrens & Chapman, 2004). In this way, the representative quality of accounting in making organizations, people, processes, and objects visible becomes a less prominent issue to actors, as actors are still able to act based on incomplete information. The “accounting eye” (Hopwood, 1987) does not need to be complete or all-encompassing to do its job, as the actions and practices complementing the incomplete information make up for the missing visibility (Boedker et al, 2020). The incompleteness literature thus pays

attention to the practice around accounting information (Ahrens & Chapman, 2007), the perception of the information (Jordan & Messner, 2012), and the effects on organizational actors (Busco & Quattrone, 2018) rather than how the incompleteness is created.

Our conception of accounting opacity shares the attention of the incompleteness literature to the practices of actors and how action is possible in cases of lacking visibility – a question that we will return to in the last part of the article. We do, however, also emphasize the accounting technologies and the particular forms of incompleteness produced by them, and not merely the practices of managers and other actors compensating for incompleteness emphasized by this literature (Boedker et al, 2020). In our conceptualization, the partialities, inconsistencies, and gaps themselves matter equally for the understanding of opacities as the actions they provoke. If we return to our visual metaphors and look at accounting technologies as torches or lamps casting a specific type of light on an observed object, we contend that the ability to act in dark or murky areas depends just as much on the type of lighting source used, the color of the glass in the lightbulb, the number of light sources, and the angles from which they illuminate the object affect the glance at the object as on the navigation skills of the actor. Likewise, we may say that what one sees through a (perhaps dusty) window is not only limited by the cognitive and imaginative capacities of the viewer but also the location of the window in relation to the section of the world visible when looking through it, as well as the size of the window and the quality of the window glass. Thus, the production of visibility, transparency, and opacity through accounting is important for our understanding of *how* it provokes action from involved managers and other organizational actors.

In addition to the focus on partiality, inconsistency, and gaps provided by the incompleteness literature, we draw on this literature in questioning the idea that accounting information can in fact be “completed” [] in the world of action” (Jordan & Messner, 2012, p. 545), thus suggesting that accounting opacities may often exist in tandem with accounting technologies. We nevertheless perceive both accounting visibility and opacities as temporary, dynamic effects of specific socio-material practices, meaning that any form of visibility will be local and malleable, and thus subject to empirical investigation.

The production of accounting opacity

After unpacking the notion of accounting opacities as circumstances where accounting produces murkiness, nebulousness, unclarity, non-transparency, and incomplete information, we now turn to the question of *how* such circumstances are produced. In our definition, we suggest that accounting opacity is produced by accounting technologies and/or accounting practices. Thus, accounting opacities can arise from the type of accounting calculations and inscriptions that are produced, the format and content of them, the level of detail, the number of technologies used to describe the object, and the ways they are used by actors.

In contrast to the visibility literature, which seems underpinned by a strong assumption of the general and universal nature of accounting visibilities when re-presenting objects and subjects in numerical terms (Hines, 1992; Hopwood, 1987; Morgan & Willmott, 1993), we do not make similar claims about the universality of accounting opacities. Instead, we understand them as local and situated theorizing accounting opacities as the outcome of concrete socio-material practices (Flyverbom, 2015). Accounting opacities are thus produced by using technologies that seemingly enhance and improve visibility but often create both visibility and opacity simultaneously. The creation, dissemination, and interpretation of inscriptions and numbers conjointly constitute the processes through which accounting opacity is created (Christensen & Cheney, 2015).

In the accounting literature, we find examples of different ways of producing visibility in ways similar to our definition of accounting opacities. First, in their study of ERP implementation, Dechow & Mouritsen (2005) find that panoptic visibility was not achieved, and instead identify the existence of “competing visibilities” (p. 728), each constituting their own version of the firm and its performance that “are not uniform and may sometimes clash” (p. 728). Here multiple sources of visibility manage to obscure the notion of performance in a specific organizational context. Second, in tracing the performance measurement in the pharmaceutical sector in France, Dambrin & Robson (2011) observe the existence of “methodological opacity” in the calculations of the performance compensation for sales personnel. Due to different regulative restrictions, pharma companies cannot trace the sales of drugs to individual sales personnel and must instead rely on constructing the compensation based on a variety of accounting calculations, such as geographical sale data, developments in market shares, the size of the bonus budgets, and so forth (Dambrin & Robson, 2011). Third, Brivot & Gendron (2011) demonstrate how actors engage in “visibility games” and construct accounting opacities through selective registration and dissemination of data. In their study of a new knowledge management system in a French law firm, the lawyers either refrained from registering in the system, instead sharing knowledge in smaller groups outside the system, or deliberately used the system to “show off”, thus exploiting that the system’s calculations of performance were made visible to all employees (Brivot & Gendron, 2011, p. 152). These visibility games complement the imposed “visibility management” always implied in creating transparency (Flyverbom, 2015, p. 177).

These three examples, encompassing competing visibilities, methodological opacity, and visibility games, underline how opacity is not necessarily a matter of a lack of visibility or transparency, but instead might be a result of excessive or obscured visibility. They furthermore illustrate how opacity emerges sometimes as a result of accounting technologies, such as the pharma performance compensation, or combinations of technologies, such as EPR systems and reports, and other times as a result of accounting practices, such as the registrations conducted by lawyers. However, despite the richness of these three examples, the question of how opacities emerge in specific socio-material processes remains understudied. We, therefore, returned to our empirical material to

explore the variation of technologies and practices involved in creating opacities in our case universities.

The resource allocation framework

We encounter the first case of an accounting opacity in a humanities department at Columbus University. The department provides a number of study programs of varying sizes and comprises approximately 400 permanent and temporary staff, which are organized into sub-departments, responsible for a few study programs each. While the head of department is responsible for managing a complex portfolio of teaching and research activities, the formal university budget is not specified below department level. Thus, the head of department has sole budget responsibility over the entire department.

To manage the resources the department has developed a document called *the resource allocation framework*, which describes the number of work hours allocated to different study programs. A key part of the document is a table that determines the allocation of work hours to teaching in bachelor programs of various sizes. The table separates study programs into five different categories, ranging from large (enrolling more than 61 students per year) to medium (36-60 students), smaller (20-35 students), small (11-20 students), and finally very small programs (enrolling 10 students or less per year). For each of these categories, an upper limit of annual work hours is allocated (1,500 hours for larger programs and 674 hours for smaller programs). The table also includes comments for each category, describing roughly what kind of teaching the resource allocation accommodates. The document furthermore includes an introduction explaining the purpose of the document as well as a number of specific information on the allocation of resources for other kinds of activities, including examination, feedback, bachelor projects, fieldwork semesters, etc.

The resource allocation framework is a socio-material practice dividing up programs into categories and organizing the flow of resources within the department, acting as a budgeting technology for the planning of teaching across the department's study programs. However, it simultaneously produces opacity regarding how the resources came to be allocated. On the one hand, the document does include some transparency regarding the preconditions for the allocation. First, the document specifies that the allocation lives up to a national minimum standard of providing twelve contact hours of teaching per week signaling a minimum requirement of teacher resources. Second, resource allocation takes the varying resources generated by large and small programs into account, as the national funding model predominately awards funds based on the number of student FTEs produced. Third and finally, the document states that the allocation will reduce the number of work hours required for the department by approximately 15,000 for bachelor programs and an additional 10,000 work hours for master's programs, and thus implements a cutback in resources for some programs.

On the other hand, while these premises for resource allocation are made explicit in the document, they only provide a rough and loose idea of how the allocation came about. Interviews with the head of department and people around him show that there was an attempt to create an allocation framework based on a simple calculation, but that this was difficult to achieve. Thus, the allocation framework was in the end created through a different kind of process:

...and we did create various overviews and calculations, but we actually struggled to find a solution. And in the end, our head of department more or less went into a room by himself and came out a Friday at noon and said: "This is our resource allocation framework".

(Interview with head of programs)

The quote demonstrates how the department management attempted to develop a simple and transparent calculation for the allocation of resources but eventually had to give up, and instead, the head of department created the allocation framework alone by going by himself to decide on how to allocate the resources. This made the resource allocation framework

"I have no idea how the head of department ended up with those numbers. You will have to ask him about that. Because it was him, as already mentioned, after we had been struggling with this an entire summer holiday, then he came out of his cave a Friday before noon and said "I think we should do it like this and like this". And then the rest of us were a bit like

"hmm". (Interview with head of studies)

As the quote shows, the exclusionary process of developing the resource allocation framework contributed to its opacity leaving the head of studies with "no idea" about the calculations behind the final result. However, the opacity was enhanced by the nature of the calculations conducted. When we asked the head of department himself about how the resource allocation framework was created, he answered that the framework is partly based on discretion:

I admit that it is an estimate. But it is built on the contact hour requirement that we are subject to, which is what we approximately follow for our programs. [...] So that is the point of departure. It has nothing to do with going into a room – it has to do with calculations.

(Interview with head of department)

As the head of department dismisses the metaphor of withdrawing or making himself inaccessible, thus creating the framework in a hidden domain, he acknowledges the calculations as being 'estimate' and 'approximately'. In addition to what appears as an opaque process to other members of the organization, and despite relating to official requirements of a minimum of contact hours, the framework is created through non-exact calculations. The need for a simple *framework* made simple and transparent *calculations* unfit. In result, the resource allocation framework as an accounting technology blurs the relationship between generated income and the allocation of resources in terms of work hours.

Besides the opacities enacted by the nebulous process and estimative calculations, the framework furthermore introduces categories of programs of varying sizes demarcated by specific thresholds with opaque origins. It is unclear how the categories were divided and how they make sense. The head of studies at the department critically notes this:

"It turned out that the division between 35 and 36 was really, really stupid, because [now] we only have one program where they can enroll 36 and one program where they can enroll 37. And it is quite random – it is not always the case that we enroll exactly those numbers, and it is actually completely unfair that one program has 300 work hours more per semester than the other one, when they might have exactly the same number of students". (Interview with head of studies)

In other words, the sharp distinctions between program sizes are not always effectuated in practice, as programs may enroll the same number of students in a given year even if they are placed in different categories based on their maximum enrollment. Nevertheless, despite this critique, the process of the head of department going by himself and creating the divides between categories does not appear as a strategic act with ulterior motives. Rather, it appears to be a pragmatic act driven by the necessity of reaching a simple framework, attempting to reflect the didactic ideals of the head of department. Thus, for him, the resource allocation framework resulting from the process is a logical and pragmatic framework that will ensure that teaching can be conducted in a suitable manner. However, these ideas do not fully make the rationales transparent for the rest of the organization.

Thus, while the resource allocation framework indicates how many work hours a study program is allocated, some middle managers responsible for individual programs spend many more hours than allocated. The budget control on study programs regarding their use of work hours is incomplete and out of sync, preventing the department management from interfering with the specific allocation of resources for course modules within individual programs. However, due to the opacity in how to control the resource usage program managers and faculty often chose to act differently than the resource allocation framework prescribes. The head of studies in the department tells us about a case where a teacher

"thought that his course was extremely important, so he had reported to the administration that he was not only going to teach three hours per week – he was going to teach six hours per week. And that was then what he had taught, so that was what we had to give him" (Interview with head of studies).

In summary, a single technology can create opacity in several ways. Opacity can be generated through a non-transparent process, from which various organizational actors are excluded, whereby they lose their understanding of the technology. Opacity can also be generated through complex calculations or non-transparent estimations and thresholds that prevent organizational members from accessing the precise mechanisms of a technology. In this case, the resulting technology makes the allocation of resources across large and small programs opaque, as well as the relationship between the allocation of resources to various study programs and the income generated by them.

Money and hours

The second example of an accounting opacity that we encountered appeared in the same department in Columbus University, thus existing side by side with the opacity regarding the allocation of resources to programs described above. However, the example concerns the co-existence of a number of different accounting technologies, each serving different purposes while overlapping slightly in what organizational aspects they describe and inscribe. One of these accounting technologies is the *formal department budget* calculated in monetary terms. The budget is developed annually and revised several times each year following strict processes that involve both the head of department and the finance unit supporting the departments. The budget is restricted by requirements from the board of directors of the university setting a target for the outcome of each budget year, thus limiting the room for maneuver in the monetary economy. The budget is furthermore an accounting technology that communicates 'upwards' in the organizational hierarchy and is aggregated with other department budgets into faculty budgets and the overall university budget. The budget describes revenues from public state funding, external research project funding, and sales, as well as costs in terms of administration fees paid to other organizational units of the university, rent, salaries, and operating costs. Most budget items, such as salaries, are calculated bottom-up, referring to an underlying budget with an item per staff.

Meanwhile, in parallel with the formal monetary budget, the department also operates with another set of budgets and accounts. As already indicated in the previous section, these accounting technologies calculate the resources of the department in work hour terms. The resource allocation framework is one example of these accounting technologies; another example is the *work hour accounts*. In this department, all academic staff has individual accounts, or more specifically a page in an IT system displaying their teaching workload obligations and the work hours spent on teaching and examination for each semester. The balance shows whether the staff member in question is in deficit and should take on more teaching tasks – or in surplus and in principle entitled to a reduction in teaching tasks until the surplus is settled. The work hours of individual academic staff can be aggregated into budgets and accounts at sub-department level (roughly corresponding to study programs). These calculations indicate the resources that are required to provide teaching and can be spent by study programs according to the resource allocation framework. The allocation practices involve yet other accounting technologies, such as work hour budgets for individual study programs.

The co-existence of the formal monetary budget and the work hour accounts mean that the organization needs to navigate two parallel economies:

"There are two types of economies at play, right? There is a money economy, which primarily is the one that the head of department and the head of secretariat are looking at, and then there is a work hour economy, which almost develops into a kind of separate economy system." (Interview with head of studies)

While the formal department budget is recognized and formalized upwards in the organization, the accounting technologies calculating resources in terms of work hours are developed at department level (in some cases in collaboration with the other departments within the faculty) and used for internal management purposes only. This means that the two economies (money and work hours) operate separately. There are no officially recognized conventions on how to translate between the two, i.e. calculate hours into money or vice versa, and two economies are subject to different levels of restrictions on budget balances. Furthermore, the finance unit staff supporting the monetary budgeting do not take the economy of work hours into account in their work. This sometimes creates confusion both in the department and in the university finance unit:

“This also sometimes creates confusion in our unit. Because it is not necessarily connected. And there could be someone saying for example that now we had a lot fewer paying students, for example because of covid, and then there are a lot of people [...] saying “well, then we also save a lot of costs, right?”. And yes, you do so in the internal work hour bank, because there are fewer that teach. But we do not save anything in the budget, we still have salaries, so those people, they are just chilling. So that is the thing – it is two different worlds.” (Interview with head of university finance unit)

The state of confusion appears as a deliberate choice from the head of department, and is further strengthened by the lack of financial budgets for the sub-departments. The head of the university finance unit explains that

“when you ask what a given study program in the department costs, then we cannot answer that. We actually do not have those budgets. And that is partly deliberate. In part, I think of it as a matter of resources [...] The other argument is that... how to put it... each financial activities within the department do not necessarily need to balance” (Interview with head of university finance unit).

By refraining from producing budgets at sub-department level, the department management and finance unit avoid political discussions about how monetary resources are allocated across study programs.

Thus, while the two economies both shed light on the resources available in the department, their co-existence creates murkiness and unclarity about the very same issue, such as the saving of costs. The murkiness also concerns a much more fundamental issue: While the monetary budget displays a healthy economic situation, as it is required to, the work hour accounts display a massive organizational ‘debt’ in work hours to the majority of academic staff who have earned a surplus on their work hour accounts over time. The resulting opacity regarding the financial situation of the department is not only a product of the disconnection between the two co-existing economies, but also the ambiguous nature of the work hour economy, which is formally enacted, yet experienced as more ‘fictional’ than the monetary economy, as by for example mentioned by the head of studies in an interview. The ambiguous status of the work hour economy blurs whether the ‘debt’ in work hours should be understood as a financial deficit or merely an indication of exploitation of staff.

The discretionary budget allocation

The third example of accounting opacity is from a different university, Einstein University. Einstein University is a single-faculty university with a centralized management structure and quite large departments. On a university-wide level, Einstein University has high faculty/student and permanent/temporary faculty ratios and offers well above the minimum amount of teaching for its students. Financially, the university has a very high proportion of external funding, and most of its programs belong to the technical and natural sciences, tiers 2 and 3 in the funding model, provided with a higher funding rate per FTE. The budget model at Einstein focuses on an annual negotiation between the individual departments and the senior management based on the overall strategy of the university and the strategic plans of the individual departments. Each department presents a strategic plan for the next few years, outlining the activities they expect in the budget year and the effects on the budget. The strategic plan includes a broad array of KPIs on research, teaching, and third mission activities, and after a negotiation with top management, each department is allocated both an operational and an investment budget for the following year. For educational activities, the allocation model at Einstein University differs from the model at Columbus University, as there is even less of a clear connection between budget allocations and the amount of income generated in the national funding model. Departments delivering many courses and producing a high number of student FTEs, which produce income in the national funding model, are not guaranteed an increase in their operational budget. The resource allocations in the budget model at Einstein University produce opacity, in terms of the nebulous and, for some, arbitrary outcome of the budget negotiations.

In the budget negotiation at Einstein University between top management and the individual departments, a large number of indicators are used to supplement and inform the resource allocation. According to a member of top management involved in the budget negotiations, the budgeting process is supported by “a swarm of data sheets (...) there are a set of 100 standard indicators that are included and then a special summary of the financial conditions”. The large number of standard indicators covers information on research output, external funds raised, number of student FTEs produced, collaboration with business, and so forth. While the main argument from the management is that these indicators and data support the process to make it more transparent and anchor it around the strategic plans of the different departments, the final budget numbers are shrouded in some element of mystery, thus producing opacity. A head of department, involved in the negotiation, exemplifies this:

Interviewer: *“How is your budget calculated?”*

Head of department: *“That’s a good question. I don’t think anyone knows. You probably have to ask [member of top management] about it. But I don’t think... it is partly historical and of course it is adjusted to how the areas develop, student admission, and so forth. There is nobody... we have accepted that you cannot calculate/figure out [regne ud] where it [the final resource allocation] comes from.”*

The quote reflects the accounting opacities created through the socio-material practice of budget negotiation at Einstein University. The strategic plans, standard indicators, historical elements, and current developments are all incorporated into the budget negotiations but the connection between the past performance and future plans are blurred together in the negotiation, making the process of deciding on the resource allocation opaque. The production of accounting opacities in this case draws on many different numbers and quantitative projections of future activities, but despite this, the steps involved from having a mass of numbers, indicators, and plans to a budget for a department is not clear nor visible when looking at the final budget. As the head of department notes, it is impossible to “calculate” backward from the budget to the standards indicators and the budget negotiations.

The second way the resource allocation at Einstein University produces accounting opacities relates to the connection between the amount of student FTEs produced at the departmental level, and thereby the income the university receives from the state, and the resource allocation to the departments. All interviewees acknowledge the unclear connection between the number of student FTEs produced and the allocated funds, noting that “there is a connection but there is no algorithm” (head of department). The national funding model and its mechanism of allocating funding according to the number of FTEs produced becomes a point of reference for the departmental resource allocation, and gaps between the income generated and the budget received add to the production of opacity. One head of teaching in a department claims that “Einstein University has decoupled the FTE income from the budget the department receives”. Even though FTE production is a key indicator in the budget negotiation, the lack of transparency about how it impacts resource allocations adds to the confusion and blurriness around the final budgets. One member of top management claims that FTEs matter more than the costs of programs stating that “it is not so relevant to know what the individual program costs. It’s relevant to know how much income we receive from our programs in the form of student FTEs”. This is supported by other actors, who note that when negotiating the budgets top management simply argues that “a FTE is a FTE. But you have to acknowledge that the cost of producing a FTE in an auditorium and producing a FTE in a laboratory is very different”. Other actors assume it is the other way around, that the cost of programs weighs more than the number of FTEs produced. The confusion over what determines resource allocation - FTE production or costs - contributes to the production of opacity around the budgeting practice at Einstein University.

Selective registration practices

The final empirical example of how accounting opacities are produced is also from Einstein University. Here, a large proportion of this university’s income is generated by external private and public funding sources for research projects that cover the salaries of the faculty members associated with the externally financed projects. In the accounting framework for

universities, there is a sharp distinction between different funding sources. The associated costs belong to different “sub-accounts” and cannot be mixed across subaccounts. Meanwhile, in practice, the registration practice in two different accounting systems allows for resources provided via research funding to flow into teaching activities, thus obscuring the sharp distinction. Actors register information about resource usage and faculty work hours in different accounting systems and ensure that the registered data are not translatable to each other, thereby making several partial forms of visibility available rather than a total visibility. A head of teaching and section at a department at Einstein University explains how it is common practice to have faculty members being formally funded 100% (37 standard hours per week) by external sources, while having them teach on top, in effect making them work for the department without any direct costs:

“We have a lot of teachers that are paid by someone else to do something else. (...) I mean, we have PhD students that are employed, or post docs that are employed on the basis of some private foundations funds that we ask to teach (...) Yes, yes, but it is something that is secret despite the fact that we all know it.”

As externally funded faculty members are, in principle, committing all their time to external research projects, they are formally not allowed to conduct activities connected to the main operation of the university, such as teaching. This is a case of using externally funded funds on operational activities using funding in one sub-account, externally funded research, to cover costs in another sub-account, teaching, which is prohibited by the accounting regulations for the universities. In order to overcome this hurdle, different accounting systems are used to register the funding of faculty’s salary and their teaching workload. Furthermore, actors ensure that the registrations are not compared.

There is an entire “dark” economy, which gives rise to a lot of well-being and dissatisfaction. But that is probably why we don’t have spreadsheets and all those things. Because there are simply some things which, if it is written down, would result in us not being able to do it. But at the same time, we also have to have an account for... there needs to be some sort of fairness in what is going on (...) Do we have an account somewhere where we account for all faculty members without checking which type of funding they have, and then ask them without checking which funding they have? Yes, of course we have that. But then we make sure to write down as little as possible. (Section leader of department)

The quote shows the practices involved in creating a “dark” space between the different accounting technologies, including the minimization of formally writing down and registering the teaching workload of externally funded faculty. A head of the study board at another department at Einstein University notes that this kind of accounting opacity is often produced in order to meet budget targets and ensure a stable financial situation:

“Then we move around on the funds a bit. Because they are using the funds for teaching and that has to be registered in a slightly different way, so there is some allocation. And it is not always that the allocation is actually real. (...) so if it is a researcher on external funds then it will be in their research time they are teaching.”

We observe a similar practice around the funding of laboratories and equipment, where departments are actively trying to have external funding sources cover costs for new infrastructure that will benefit the teaching activities. Departments actively try to make the externally funded equipment and infrastructure relevant to their teaching activities. The head of the study board recounts that at their department they have “a lot of the equipment we have is financed by research” and that “when you plan what kind of equipment that was needed for this and this research project, then you also took into account that it would also be good for teaching”. The head of the section at another department also talked about this practice and when asked if external funding covers other costs than extra teaching hours, he replied: “Yes, equipment! It’s bonkers. A lot of the equipment that is purchased. Advanced courses utilize the equipment bought by research projects”. Like with the teaching workload, this practice of having external sources cover the cost of teaching-related equipment is made possible by the fact that the system registering teaching activities and the usage of the equipment are not compared:

“If we acquire a computer for a research project, then it will in reality be used for all purposes, but it is just external research funding which has financed it. But there I would not go in and say that 10% or 20% of the computer is used on educational activities because the funding provider will not finance it.” (university director)

The registrations in each system make the activity fully visible, but due to the lack of comparison between the accounting systems and the active management limiting such comparison, a distorted form of visibility is created regarding the connection between the funding of a resource and the use of the resource.

Implications of the emergence of accounting opacities

The final aspect that we will engage with is how the emergence of accounting opacities affects organizational actors. As noted at the end of part three of the article, accounting opacity is a phenomenon related to power relations and inequalities in organizations. The positional and agentic character of opacity, sometimes deliberately introduced by some actors to prevent other actors from gaining clarity, implies that different actors are left with unequally distributed rooms for action (Ezzamel et al., 2004). Budget numbers might be opaque for some actors, causing ambiguity and confusion and thus restricting their agency and ability to navigate accounting data to conduct management and/or protect their interests, while creating visibility and prescribing very specific forms of action for others. While the ability to produce opacity depends on an actor’s access to technologies, allies, and experience, as demonstrated above, actors also depend on these resources to navigate obstructed visibility or opacity. Accounting opacities are therefore not only produced within and by power relationships but also co-producing and re-enforcing new or existing power relations within and across organizations. Such power relations and unequally distributed rooms for action are, we suggest, the main types of effects produced by accounting opacities.

Yet, actors affected by opacities, regardless of whether these are caused by accounting technologies or deliberately produced by specific actors in a given organizational context, also play an active role in navigating opacities. Here, we find it relevant to return to the incompleteness literature. A central argument here is that lack of completeness in accounting information affects and propels the actors using the inscriptions (Ahrens & Chapman, 2004, 2007; Boedker et al., 2020; Busco & Quattrone, 2018; Chenhall et al., 2013; Giovannoni & Quarchioni, 2019; Jordan & Messner, 2012; Yu & Mouritsen, 2020). The incomplete accounting information makes actors “complement” (Jordan & Messner, 2012) and “supplement” (Giovannoni & Quarchioni, 2019) the information with extra activities to overcome the limited representational qualities of the accounting technology. Such activities include strategic dialogue and interpretation of information among users (Ahrens & Chapman, 2004, 2007), repair work (Jordan & Messner, 2012), questioning current accounting practices (Busco & Quattrone, 2018), and designing alternative projects of the future (Giovannoni & Quarchioni, 2019). Starting from the point of view that accounting cannot provide a complete or full representation of reality, the literature adds another dimension to the varying degree of accounting visibility and its consequences, as it investigates the processes through which actors “make do” (Boedker et al., 2020, p. 6) with the lack of visibility. Through continuous compromises (Chenhall et al., 2013) and experimentations (Andon et al., 2007), actors can stabilize accounting technologies and the inscriptions they produce, thereby turning the incomplete representational ability of the technology into an enabling and positive feature (Busco & Quattrone, 2018; Giovannoni & Quarchioni, 2019; Jordan & Messner, 2012). As underscored by Busco & Quattrone (2018, p. 2), the “[i]ncompleteness of information can therefore be seen as having a positive (and not a negative) effect on managerial actions and organizational dynamics”.

Compared to the focus on governing and controlling found in the literature on visibility, the literature on incompleteness demonstrates how incompleteness of accounting can enable actors and propel actors to search for new solutions and courses of action. While there is also evidence of the frustrations and tensions created by the incompleteness and how actors engage with the accounting information and use it (Busco & Quattrone, 2018; Jordan & Messner, 2012), Boedker et al. (2020) note the underlying positive assumption in these studies. Even though the search to complement and complete accounting might result in “detours and deviations”, common courses of action are eventually found, meaning “there are only productive detours” (Boedker et al., 2020, p. 2). Like Boedker et al. (2020), our notion of accounting opacities critiques the dominant focus on positive effects of incompleteness, as we conceptualize accounting opacities as having both negative and positive effects on actors, partly dependent on their position in the socio-technical network around the accounting opacities. The spectrum of outcomes stresses that an accounting opacity might simultaneously be positive for some actors and have negative consequences and effects on others. As the following examples of effects of accounting opacities found in our empirical cases will demonstrate, accounting opacities can thus be beneficial and

enabling to some actors, enhancing their room of action, while restricting the possibilities for action and creating less beneficial circumstances for other actors.

Accounting opacity as a flexible room for action

In our empirical material, we found two overall sets of effects of accounting opacities. The first one is the generation of a flexible room for action for managers. As already indicated, managers navigated opacities for their own benefits, for example, to make ends meet in a university economy with scarce resources. In Columbus University, the balance of the formal monetary department budget was secured through the exploitation of academic staff, made possible through the opaque relationship between the money economy and the work hour economy. The opacity generated by competing visibilities thus made it possible to navigate scarce resources and publicly maintain a sound economic image. Similarly, in Einstein University, the processes of producing accounting opacities around the use of external funds for teaching activities were done to ensure the financial sustainability of the educational programs and enable the offering of higher quality courses and activities, which would not be possible only using the funding from the national funding system. As explained by a head of section:

“both on personnel and equipment, our graduates receive more than their parents pay in taxes. And that is why we can teach 20-25 hours a week. That is not possible in programs where they have to live off the national funding model alone. Our budget around here is three times what we get from the public funding.” (head of section)

The accounting opacity in terms of visibility games played by the managers means that the university as a whole and especially the local departments could offer more hours of teaching for students than would be possible if they only used public funding. In this way, the accounting opacities opened new courses of action and enable managers to offer quality programs, which would not be possible without the channeling of external funds into teaching activities. These courses of action and activities were made available at the expense of the funding providers outside of the university.

Creating space for management decisions

However, besides making ends meet in the budgets of university managers, accounting opacities also allowed them room for action in terms of making management decisions that would otherwise be determined by calculative technologies. For example, the calculative opacity embedded in the resource allocation framework at Columbus University enables particular forms of management that are beneficial to a large share of the department. Whereas a transparent model of resource allocation would provide study programs with resources according to the income they generated for the department, the resource allocation framework and its calculative opacity enable the head of department to protect

small programs by allocating them a larger share of the resources than what they would in principle be entitled to:

"We have two large programs that clearly carry more, because they are large and because they can. And it is more... sometimes more rational when we can have larger programs and larger classes. And they then have to contribute a little bit to the small programs." (Interview with head of secretariat)

In this way, the calculative opacity of the resource allocation framework, made possible by the processual opacity of its creation, enables the manager to care for small and tiny programs by redistributing resources across the programs.

The connection, or lack thereof, between the monetary and the work hour economies in the department at Columbus University, also helps the department management make ends meet. This is evident in restaffing decisions where the department management exploits the accounting opacities to their ends by replacing monetary expensive staff with cheaper ones while maintaining the same number of work hours in the department. When professors receive external research funds, they can pay out their own teaching obligations to the department, and be replaced with a junior faculty, in effect ensuring a monetary saving for the department. The basis for making cost-saving decisions on teaching is that "a work hour is a work hour, regardless of who supplies it" (head of studies), thereby making money savings possible while maintaining the same level of work hours, and enabling the head of department to balance the financial budget.

At Einstein University we also observe how the budgeting process enables the senior management to conduct decision-making rather than leave the allocation of the budget to a calculative formula. However, through this case, it also becomes clear how, from the view of the departments, the nebulous and inscrutable calculations behind the resource allocation to departments not only create and are created within horizontal power relations, favoring top management's political aims and gains, but also constitute a vertical difference between units on the same positional level (departments), allocating more funds to certain departments at the expense of others. One of the departments receiving fewer funds than they feel they were entitled to actively attempts to change the budgeting model to make it more transparent by linking it closer to the production of student FTEs and by extension the national funding model:

"We [Einstein University] don't use the word student FTE and I think it's a strategic choice from top management because the more we say 'student FTE, student FTE, student FTE, student FTE' the more we awaken a hope that someday we might get a, if not complete, then closer connection between student production [and the budget allocation]. And top management has been against this all the years I've been at Einstein University." (Interview with head of studies)

In the quote, it is clear that the head of studies perceives the opacity in the budget model as a deliberate choice by top management to maintain their positional strength in relation to the departments and exploit the discretionary decision-making made available to them. At

another department, receiving a large proportion of funds compared to their educational activities, the budgeting process is praised and seen as central to their ability to offer high-quality teaching and programs. At the department, they “are really happy that there is no connection” (head of education) between the production of student FTEs and their budget. Given the lack of connection, the department is able to offer small, laboratory courses of high international quality based on “academic assessments more than financial optimization” (head of department).

This situation contrasts the “poor” department mentioned above, where the financial situation has resulted in them “not just cutting to the bone but into the bone” (head of education) when it comes to the quality of their courses. For the department the quality issue is a consequence of the budget model, and they see themselves as in a worse position than other departments who are gaining from the budget model: “When other heads of education talk about big courses of 70 students I want to laugh scornfully, because our big courses have 200 students and our small ones 70” (head of education). Concretely, for this department, the accounting opacity and the department’s position implied necessary decisions about closing courses, having staff teach more courses, and changing exam format to control and lower costs. The material effects of creating a space for management decisions benefiting some programs over others thus also involve cutbacks in other programs, showing how accounting opacities create positive and negative effects simultaneously depending on the positions of the actors affects.

Accounting opacities and the production of inequality

The second set of effects of accounting opacities found in our empirical material was the production of inequalities among academic staff. One of the inequalities co-produced by accounting opacities is related to seniority. Due to the underfinancing of the departments, and the educational activities, departmental managers in Einstein University are pressured into exploiting faculty who are mainly financed by external funding sources to work more to balance the budgets. These are most often younger, non-tenured scholars. Our interviewees stress that younger faculty are not disgruntled with the practice, as it is “a secret despite the fact that we all know it. We just don’t say it out loud because there isn’t really anybody who are unhappy with it” (head of section). Despite the claim that in general the practice does not make people unhappy, the head of section also acknowledges that the practice creates “a lot of well-being and dissatisfaction”. At the same time, younger faculty can in fact resist the attempt to make them work more, by proposing to challenge the opacity and bring more visibility and transparency into the practice. As the head of section continues to explain:

“we have some who say ‘I would like to do that [teach while being fully externally funded]’ and then we have some who says, ‘you know what I actually don’t think I want to do that, and when it comes down to it I actually don’t think I’m allowed for by funding provider. Should I

call them and ask?'. No, it's fine I say then we'll just skip you" (Interview with head of section)

Creating more visibility, in this case, by proposing a formal approval from the funding provider, is a way in which junior staff can resist the exploitation that accounting opacities allow for. As the response from the head of section shows, such resistance is also accepted in order to avoid the selective registration practices becoming visible to the external funding partner, and thus to maintain this practice.

We also find the co-production of inequalities in the work hour system, which in itself generates opacity by only awarding official work hours for some types of activities. The work hour system "captures many of the tasks, but I am also aware that it only captures some tasks. [...] So you can say that the work hour accounts are more like a shadow of the actual work taking place" (Interview with head of section). While the partiality of the work hour system is a generally accepted fact in the department, its unequal distribution of workload is less recognized. For example, the system allocates the same number of work hours to teaching, regardless of whether it is conducted for the first, second, or tenth time. In other words, the system does not allocate work hours for development of new teaching. This mechanism in the system benefits senior academic staff who have taught the same subject repeatedly over a number of years, while it heavily disadvantages junior academic staff, as one of them here explains:

"If you need to start teaching a new course, then you use, relatively, much more time than if it is a course that you have taught before. Whereas the work hours... or the work hour accounts are more accurate for a course that you have run before, or where you are familiar with the subject. But for example, when I shall teach philosophy of science in [another scientific discipline] and be able to lecture on that subject, well, then I need to get familiar with a completely new scientific discipline, and then I do not use three hours to prepare one contact hour. I rather use 40 work hours to prepare... or perhaps 50 work hours to prepare two contact hours." (Interview with junior academic staff)

As demonstrated in the quote, the opacity of what counts in the work hour system leaves the workload of developing new teaching in the shadows. Junior scholars are more often required to teach something they have never taught before, given their limited experience. The work hour system thus constitutes another way that junior academic staff are exploited through accounting opacities. In addition to inequalities according to *seniority*, the empirical material also includes examples of *gendered* inequalities co-produced by accounting opacities.

Meanwhile, sometimes managers also actively seek to counter such inequalities by making use of the room for action provided by accounting opacities. In the case of gender inequalities, a head of section at Columbus University actively used his own budget to allocate "easy" work hours like meeting activities to for example females, often carrying a heavier workload than their male colleagues:

"I have 200 hours per semester in total, and those 200 hours are for example spent on... I wish to repair the gender inequality in our department, right? [...] So I appoint a working group to look at this, and when you are a member of that group, you receive a certain amount of hours to do that, so in that way, I can... well, use them." (Interview with head of section)

The allocation of work hours conducted by the head of section not only promotes gender inequality by appointing a working group to come up with gender equality initiatives but also by appointing members usually disadvantaged in the work hour economy and allocating them the "easy" work hours of attending meetings. In that way, he compensates for inequalities through his practices in the opaque areas of the work hour system.

Discussion

The production of accounting opacities

In our empirical examples, we find examples of both "methodological opacity" (Dambrin & Robson, 2011), "competing visibilities" (Dechow & Mouritsen, 2005), and "visibility games" (Brivot & Gendron, 2011). The two cases, including the resource allocation framework at Columbus and the discretionary budget allocation at Einstein, are both cases of methodological opacity. In both cases we find examples of obscured, hidden, or estimative calculative practices, making it difficult to calculate backward from one number to another. However, the two cases also differ. At Columbus University, the resource allocation framework is a single document specifying the overall calculative rules and guidelines, yet created in a murky process of one man going into a room by himself. This privacy provides the resource allocation framework with strength and sturdiness, as there are no formal procedures or processes through which the calculations and final numbers can be challenged or discussed by others. This stands in contrast to the budget negotiations at Einstein University, which follow several formal procedures regarding the number of meetings, the material, the inscriptions used in the negotiations, and the dedicated roles for those who participate. There are a greater number of actors and technologies engaged in the budget negotiations, and due to the formality of the procedures, there is a greater degree of publicity around the negotiations, making it possible for actors to engage critically in the discussions and attempt to influence the outcome of resource allocation, thereby negotiating the extend of opacity. Based on these two examples, it appears that a simple technology may produce stronger and unchallenged forms of accounting opacities than a complex one, due to the privacy of the calculative process in the department at Columbus University. Where both cases illustrate "methodological opacity" (Dambrin & Robson, 2011, p. 446) as a kind of accounting opacity, the difference between them points out a need to specify the concept of methodological opacity further. The commonality across the cases is the *calculative opacity* implied in estimations and discretionary decisions devoid of clear

calculative formula, but the difference is the added *processual opacity* in the case of a head of department going by himself in Columbus University, in contrast to the publicly orchestrated process in Einstein University. The complexity and scale of this budgeting practice necessitates more formal procedures and processes, thereby making it more accessible for actors to engage with, discuss, and influence. As such, complexity in an accounting technology and an increase in the number of involved actors and their relations does not necessarily lead to a stronger or more sturdy form of accounting opacity.

In our examples, we also find cases of “competing visibilities” (Dechow & Mourtisen, 2005, p. 728) when different accounting representations are not directly comparable even though they in principle make the same object visible. At Columbus University, the inability to translate one set of calculations to another produces two separate economies around money and time, which can produce conflicting visibilities around the financial health of departments. Multiple accounting technologies and types of accounting visibilities therefore do not simply create more visibility (Carmona et al., 1997, 2002), but can also produce accounting opacities. The different practices leading to opacity can also interact, resulting in a stronger form of opacity or an extra layer of opaqueness around the accounting numbers. At Einstein University the national funding model becomes a reference point for comparing the budget allocation, thus acting as an extra layer of accounting opacities on top of the methodological opacity detailed above, resulting in a blurred understanding of the final budget allocations due to the partial and often conflicting overlaps between the two accounting technologies. Competing visibilities become problematic when it is not possible to translate one number to the other, as in the case of methodological opacity when using a single technology.

Finally, our empirical cases include an example of “visibility games” or “visibility management” (Brivot & Gendron, 2011; Flyverbom, 2015), namely when actors at Einstein University actively use the accounting technologies to obscure the visibility produced by accounting registrations. Registrations in a single program resemble a form of accounting incompleteness (Jordan & Messner, 2012), as it only provides actors with a partial representation of the use of organizational resources. However, when managers begin to manipulate these representations, they in addition create accounting opacities. Through the use of several registration systems, each creating a partial form of visibility, managers are able to distort the appearance of the use of the external research funds for illegitimate activities, such as teaching.

In summary, our cases confirm “methodological opacity”, “competing visibilities”, and “visibility games” or “visibility management” as relevant concepts conjointly describing different kinds of accounting opacities. In our research, we were able to identify cases of these types of opacity, but also found it relevant to distinguish between calculative opacity and processual opacity as two forms of methodological opacity. We furthermore demonstrated how different kinds of accounting opacity may add layers of opacity to each other in specific cases, such as when a processual opacity adds to a calculative opacity of the

resource allocation framework at Columbus University, or when competing visibilities reinforce the calculative opacity in the budget allocation at Einstein University. However, in addition to these nuances, we also identified three dimensions of accounting opacities that unpack the analyzed forms of accounting opacities even further, including the role of technologies and humans in producing opacity, the positionality implied in opacity, and the degree of intentionality behind the production of opacity. Each of these three dimensions will be presented below as possible analytical categories for future studies of accounting opacities.

Positionality and intentionality

Our cases show that opaque aspects, qualities, and values in/of organizations are not necessarily opaque to everybody. A single set of accounting technologies or practices may result in visibility and transparency for actors in some positions and in opacity for others (Yu & Mouritsen, 2020). For some actors, the deployed accounting technologies and practices thus provide means to protect one's interest, while other actors (both within and outside the organization) are left to navigate the murkiness. Drawing on our empirical material, we conceive that the positionality of an actor affects the intelligibility of various aspects and qualities of organizations, just like light and shadows cast by a light bulb or torch appear different, depending on one's position in relation to the light. Thus, while actors can deliberately attempt to design and produce accounting inscriptions that leave certain organizational aspects opaque, the emergence of opacity is simultaneously determined by the position of the actors using accounting inscriptions.

One dimension of positionality determining what becomes opaque to whom concerns vertical hierarchies within organizations. Opacity across vertical hierarchies is often generated through processes of in/exclusion of various organizational actors in decision-making processes through which accounting technologies are produced or decisions made. This dimension is found in cases of processual opacity, such as when the head of department in Columbus University went by himself to create a resource allocation framework or when the senior management in Einstein University decides on the allocation of resources to departments in the budget. The initial positional power of the head of department allowed him to create accounting opacities through the arbitrary classifications and calculations in his formulation of the resource allocation framework. The dimension of participation and exclusion clearly reinforced the power of the head of department in relation to everybody else in the department. However, the case of the resource allocation framework is not only a case of managerial top-down power enhanced by processual and calculative opacities. The case also involves upward resistance towards resource management through opaque reporting. The accounting opacities in the allocation of resources at the department simultaneously create opacities around the budget control of those resources, enabling faculty and local managers to disregard their resource limitations. While the resource allocation framework mainly reproduced hierarchical power relations between the head of

the department and faculty, it also opens up for subtle modes of resistance as faculty use the opacities to overuse more resources than allowed. Unlike the invisibility literature, which focuses on how those in power use accounting to constitute others as invisibility (Funnel, 1998; Jensen et al., 2021) the positionality in accounting opacities reveals the reciprocal relationship between power and resistance. Interaction among actors can play out differently than the typical relationship of actors in power (for example managers) creating opacities that make various organizational aspects murky for their subjects (for example employees).

In addition to vertical hierarchies, the positionalities of accounting opacities also involve various forms of boundaries being established or permeated. Such boundaries may prevent actors from access to information, thus making particular organizational aspects opaque. An example of limited access to information is the organizational boundary between the department and the study programs described above at Columbus University, where study programs could overspend resources due to a lack of control and thus insight into the spending at a lower organizational level, also representing an intra-organizational boundary. However, intra-organizational boundaries may also legitimize information ignorance, thus allowing actors to remain in an accounting opacity that is beneficial to them. Relying only on accounting numbers and ignoring local knowledge and other relevant information outside the accounting systems is a form of ignorance created by transparency which might have a “strategic function” in practice (Roberts, 2018). An example of such ignorance is the boundary between the department and the university finance unit, also at Columbus University, where the monetary economy is shared across this boundary through the formal department budget, but the work hour economy remains within the department and out of sight for the university finance unit. In this case, the position of the finance economy unit, as separate from the department where the work hour economy thrives and appears tangible for all academic staff, allows the university finance unit to ignore the deficit in the work hour economy and prepare official financial reports of a university in balance, based on the monetary economy alone.

Finally, the outer boundaries of organizations constitute a third dimension of positionality along which opacities may emerge. Like intra-organizational boundaries, outer boundaries may also prevent access to information and thus keep external actors in the dark about what is going on inside an organization. An example of this is the accounting practices at Einstein University, deployed to create a veil of opaqueness around the university and its use of external funding sources. There is a broad acknowledgment across the university of the divergence in the practices of registering a resource on the one hand and using it on the other, as both members of top management and departmental management mention this in our interviews. However, as the external funding partners will not accept the use of funds for research on educational activities, the active management of the accounting visibility is necessary for actors inside the university to be able to continue their practice of cross-financing. Thus, while the use of resources for many different purposes, including teaching,

is visible for a range of actors within the university, it remains unintelligible to actors outside the university, including the funding partners.

Finally, in continuation of both the role of humans in the production of opacities and the positionality implied in accounting, our empirical examples demonstrate how intentionality may play varying roles in the production of accounting opacities. As reflected in the etymological definitions of opacity, the obstruction of meaning can both be the result of intended and unintended actions. The production of opacity may thus in some cases be intentional and initiated or promoted by specific actors for specific purposes. The aspect of intentionality is also implied in the notion of visibility management suggested by the transparency literature, where “what to make transparent and highlight, and what to keep opaque and out of sight – becomes a central issue” (Flyverbom 2015, p. 117). The intentional production of opacity is most obvious in the case of Einstein University registering costs in a way that hides how research funding is used for teaching purposes, for example when postdocs employed to do research are also asked to teach, or when equipment bought for research projects are also used in teaching. Both of these empirical examples demonstrate how accounting opacity can be deliberately constructed through active visibility management, highlighting the agency involved in the production of particular forms of visibility and opacity.

It is important to note that the ability to reduce or increase opacity is not available to all actors, but is limited to actors with access to technologies, allies, and experience that may assist them in achieving this. The question of intentionality thus also brings forth power (Ezzamel et al., 2004; Miller, 2001; Robson, 1992) as a key concept in relation to the production of opacity. However, just because power is involved, intentions behind visibility are not always related to power struggles and personal gain, for example in terms of expanded resources (like in Einstein University) or avoided politics (like in Columbus University). Such intentions may themselves be shaped by pressures from above, for example, the situation of scarce teaching resources, which motivates the strategic use of opacities in both these cases. Thus, the use of research funding for teaching purposes in Einstein University is not merely conducted to create better circumstances for the managers themselves, but also to negotiate the power relations of the university in relation to external funding bodies to manage budgetary pressures on teaching. Intentions may also simply be shaped by pragmatism, like in the case of the head of department at Columbus University going by himself to create the resource allocation framework after several unsuccessful attempts by the collective department management. In this case, we interpret his intentions as a response to the necessity of creating a simple and operational resource allocation framework and the inability to achieve this in the collective department management, rather than a desire to exclude other members of the department to exclude their interests in how resources are allocated. While actors such as managers thus have the power to promote particular intentions in the creation and use of accounting technologies, they do not always do so for personal gains, but often for organizational gains benefitting other organizational actors like students and teachers.

Organizational effects of accounting opacities

In the empirical examples of the effects on various organizational actors produced by accounting opacities, we see that actors largely manage to function and navigate within accounting systems despite opacities. Tasks are allocated, teaching is conducted, and financial reports are produced, even if accounting technologies are not total nor fully transparent. In that sense, organizational actors *make do* (Boedker et al., 2020) with accounting opacities. However, in addition to the focus on how actors make do by complementing (Jordan & Messner, 2012) or supplementing (Giovannoni & Quarchioni, 2019) incomplete accounting information, we furthermore find that actors *make use* of accounting opacities to achieve certain goals. In the murky areas of unclear or incomplete information, both managers and other actors negotiate their room for action and push the limits of rational and legitimate action prescribed by accounting technologies. Such practices are also closely connected to the positions of actors in the socio-technical networks around accounting opacities, as well as their ability to make use of power structures to promote their own goals intentionally. In that sense, accounting opacities become organizational resources that actors can have more or less access to.

How do actors then make use of accounting opacities? The answer depends on the organizational position from where opacities and their effects are observed. For managers, accounting opacities create possibilities for conducting action other than what is otherwise prescribed by accounting technologies and for navigating internal and external pressures. Such pressures may involve situations when some programs push for more fairness in the distribution of resources, or when funding resources are inadequate in relation to quality standards. Such practices can be interpreted sceptically as making use of accounting opacities to create favourable circumstances for oneself, or credulously as making use of accounting opacities to compensate for structural inadequacies. However, we also see that such room for action may arise at the expense of other organization actors, such as junior scholars and female scholars. In turn, not only managers but also other actors make use of accounting opacities, for example to resist management control from above. While managers in our empirical cases thus in general have better access to technologies, allies, and experience that enable them to make use of accounting opacities, such resources may also in some cases become available for actors to push upwards in the organizational hierarchy. In addition, we also find cases of managers making use of accounting opacities to benefit their organizations or vulnerable actors within the organizations. “Making use” is thus not always about exploiting people to favour oneself but may also be about exploiting systems to favour other people. Across these examples, our empirical material confirms that accounting opacities are not merely paralyzing, but rather promote action from actors, as also argued by the incompleteness literature (Boedker et al., 2020; Busco & Quattrone, 2018; Jordan & Messner, 2012).

Conclusion

With our concept of opacity in accounting, we have unpacked how accounting opacities may take the forms of processual opacity, calculative opacity, competing visibilities (and thus non-translatability) across different but overlapping accounting technologies of various statuses, and visibility management. We have demonstrated how accounting opacities may emerge from single technologies, from multiple co-existing technologies, and from using accounting technologies in particular ways, as well as how intentionality may or may not play a role in the design and use of accounting technologies. A variety of socio-material practices may be involved in the production of accounting opacities, in which human agency as well as the agency of non-human technologies interact in different kinds of associations. The specification of socio-material practices involved requires empirical investigations of opacities in specific situated contexts. Such empirical investigations may also determine the roles of – and relationships between – human and non-human actors in these practices. In many cases, human beings play active roles in the creation and use of accounting technologies, but accounting technologies may also become sufficiently durable to affect organizations and human beings without any continuous human agency involved. In our empirical cases, we for example see how both the monetary economy and the work hour economy are sturdy enough to continue operating separately, despite attempts by some human actors to connect them.

We have furthermore shown how accounting opacities appear differently from different organizational positions, depending on the participation, access, and ignorance of actors in relation to technologies, allies, and experience that may enable or prevent them from making use of accounting opacities as a resource. Finally, we have demonstrated how accounting opacities create rooms for action but also create and reinforce new and existing power relations, which may be promoted or mitigated by actors making use of accounting opacities.

The concept of opacity suggests that the visibility literature could benefit from contrasting visibility to opacity rather than invisibility (Funnel, 1998; Jensen et al., 2021; Morgen & Willmott, 1993). There is more to invisibility than simply darkness – the distorted and murky sight gained in areas of opacity produce other effects than merely an absence of information. Furthermore, the concept of opacity suggests that while accountability is a key concept in relation to transparency (Roberts, 2009; 2018), this is not sufficient for our understanding of what happens in the absence of transparency, or when transparency is distorted. Besides a lack of accountability, accounting opacities also generate a vast range of possibilities, including room for making other decisions than what is prescribed by accounting information or making ends meet. In turn, our concept of opacity adds to the incompleteness literature by demonstrating how actors not only make do (Jordan & Messner, 2012) with, but also make use of accounting opacities, to achieve a range of goals, ranging from favoring to oneself to mitigating structural inequalities reinforced by accounting technologies. Actors thus play an active role, as also highlighted by the

incompleteness literature; however, this may involve both positive and negative effects depending on the organizational positions of the affected actors. as also extending the critique by Boedker et al. (2020) of the predominant attention to only the positive effects of incompleteness.

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9 Discussion

The purpose of the dissertation was to study the role of accounting in governing public organizations through a qualitative case study of the Danish university sector. The three papers of the dissertation each contribute to the distinct fields they engage with. The point of the following discussion is to move beyond the individual contributions of the papers and return to the dissertation's overarching research question. It does so by providing the reading of the papers in light of the public sector accounting research discussion on the role of accounting in governing public organizations.

9.1 Contribution public sector accounting literature

Prior research has investigated the use of accounting in governing public organizations has (Broadbent & Guthrie, 1992, 2008; Lapsley, 1988; Lapsley & Miller, 2019) but there are still calls for more insight into the multiple roles of accounting in governing public organizations, and the effects of new reforms on public organizations (Grossi et al., 2023; Lapsley et al., 2020; Steccolini et al., 2020).

The thesis contributes by looking across organizational boundaries, highlighting the relevance of investigating the role of accounting *in* governing public organizations rather than focusing solely on the governing *of* or *at* public organizations. By looking across the functions and organizational boundaries of accounting, the dissertation provides a nuanced perspective on the multiple roles of accounting in governing the public sector (Steccolini et al., 2020). The dissertation has four contributions to the public sector literature on governing public organizations: the multiple roles of accounting as a means for control and resistance, and the reciprocal relationship between the two: the challenges and effects of translating and performing (economic) concepts in public sector governing: accounting and the role of compromises: and lastly, bridging the critical and public sector accounting literature through theorization.

The papers find that accounting is simultaneously involved in governing and resisting, revealing the complex connection between accounting, power, and resistance. In all three papers, accounting is both a means of governing and resistance depending which actors use it, and how they use it. In paper 1 the introduction of the CCA marks a distinct change in governing the Danish universities, by using cost information to measure productivity and benchmark universities. The role of accounting in the governing of public organizations is a central theme in the literature (Ahmad et al., 2021; Ahrens et al., 2020; Edwards et al., 1996; Hopwood, 1992; Kork et al., 2015; Kurunmaki & Miller, 2006; Mennicken, 2013; Miller, 1990; Power, 1999). The paper confirms this, as the CCA is mobilized to change the behaviour of the Danish universities through the measurement of productivity. What is more surprising is how the representatives from the universities influenced, resisted, and

modified the CCA by mobilizing their calculative practices in opposition to the technical aspects of the CCA. While resistance to public reforms and new accounting technologies has been shown before in the literature (Ahrens et al., 2020; Broadbent & Laughlin, 1998; Nyland et al., 2020; Perray-Redslob & Morales, 2023; Soin & Huber, 2023) the findings illustrate new facets of the interplay between resistance and control. The conflict around the CCA was not the governing rationale of measuring productivity and benchmarking universities but how the reform challenged the current accounting practice at the universities. This is different from former studies, where conflicts over accounting and resistance mainly concern the political programs and rationales of the reforms (Ahrens et al., 2020; Broadbent & Laughlin, 1998; Perray-Redslob & Morales, 2023). The conflicts over the technical features of the CCA show the interconnectedness between accounting technologies and the reform ambitions, in practice making the two inseparable. In the case of the CCA, it was impossible for actors to agree on the specific use and purpose of the accounting technology, as this immediately began discussions on the technical features of the CCA and how it would affect the accounting practices at universities. The case shows how public organizations do not simply react to finished and complete accounting technologies but can participate actively in the entire process of designing and implementing the system. The universities mobilized their current accounting practices against the proposed CCA, using the organizational accounting system to resist and modify the new accounting technology.

In paper 2, control, resistance, and counter-resistance are also central themes. The paper illustrates how public organizations are not passive recipients of reforms imposed on them, as they use their accounting systems to implement and potentially modify the reforms. The new performance funding system installs new attention to quality into the universities by incentivizing managers and faculty to strive for increased quality. However, top management at Absalon University rejected the incentives in the performance funding system by introducing a new budget system for allocating funds to the faculties. The budget model introduces the negotiated frame budget as opposed to the activity and performance-based model in the performance funding system. While the decision is similar to the decoupling of the organizational activities from the demands of the environment (Brunsson, 2019; Edwards et al., 2000; Malmrose & Kure, 2021; Meyer & Rowan, 1977; Narayan et al., 2017), top management at Absalon University was very clear in their critique of the performance funding system, publicly stating they thought it to be inappropriate to replicate in their organizational budget. Although top management used the changes in the funding system to initiate organizational change (Abernethy & Chua, 1996) they did so in opposition to the external demands rather than attempting to conform with them. The case goes even further, as the reintroduction of the performance funding system into the budget model at Lab Faculty becomes a manner of resisting top management's budget model, becoming a form of counter-resistance to top management's resistance to the MOES' model. Organizational boundaries are permeated by tracing the accounting technology, with the decision to reintroduce the performance funding model at the faculty. Resistance is layered

and groups within a public organization use accounting to resist external reforms and each other.

The permeation of boundaries is also a theme in Paper 3. The financial constraints put on Einstein University by the funding system, combined with the large sum of external financing from foundations makes it possible to channel funds around internally at the university. The accounting opacities create flexibility for managers, allowing them to financially supplement their educational activities with external research funds as a way of resisting the tight financial situation. The changing financing of Danish universities, with increasing use of performance funding and a larger share of external research funds, are both installed to govern the universities, but due to the accounting opacities at the universities, actors can creatively use the external funds to counter the effects of the performance funding system. In this form, the resistance is not the promotion of new accounting regulations and tools working in opposition to the current system (Ahrens et al., 2020) or overt attempts at undermining or sabotaging the accounting technology (Perray-Redslob & Morales, 2023). Resistance is part of the effects of the multitude of accounting available for actors, as it relies on having a large amount of external funds available to cross-subsidize the teaching activities. Accounting has multiple roles of accounting in governing public organizations, with the reciprocal relationship between control and resistance being a central one.

The second major contribution to the public sector accounting literature lies in tracing specific concepts as they are translated into local settings and used in governing public organizations (Kurunmäki et al., 2011, 2019; Pipan & Czarniawska, 2010). Papers 1 and 2 follow how the concepts of productivity and quality are inscribed in accounting technologies and translated into local settings. In paper 1 public sector productivity, in the form of unit costs, is attempted to be inscribed into the bookkeeping and cost allocation practices of the universities. Using the concepts of performativity from Callon (1998, 2007) the paper shows the central role of economics in reforming and transforming the public sector, and the dissatisfaction from economists about the inability to measure productivity as driving the process onward. Like Kurunmäki et al. (2019) the paper provides empirical evidence for the ongoing economization of the public sector, revealing the complexities in translating an abstract economic concept into the messy reality of the public sector. In the case of the CCA, the original conceptually pure model failed to gain support among the actors, as the universities fiercely resisted the initial proposal. However, this did not result in the failure of the accounting technology (Preston et al., 1992) or the economic concept itself (Kurunmäki et al., 2019), as the ongoing trials between the universities and the ministries resulted in a compromise between the competing perspectives what accounting should be. In the case of the CCA, there was agreement over the regulative aim of the project, rather conflicts arose from the process of trying to align accounting more closely with the economic concept of public sector productivity. Lastly paper 1, contributes to the understanding of what public sector productivity is, how it is defined by different actors, and the tool needed to make it operationalizable. The paper goes beyond notions of NPM or neoliberalism (Hood,

1991; Lapsley & Miller, 2019) using ANT to trace the definition of public sector productivity from economics, describing how it entices and convinces actors to support it in public sector reforms.

In paper 2 the central concept is 'quality', and the process of integrating ideas of educational quality into the performance funding model for Danish universities. Similar to paper 1, economists and economic theory play a central role in problematizing the current practices but have less impact on the final content of the performance funding scheme. Like former work, the paper identifies a development from a narrower productivity focus (only rewarding the number of graduates produced) to a broader focus on quality, as it becomes a primary goal of the reform (Malmose & Skjøtt Linneberg, 2024; Pflueger, 2020). Together papers 1 and 2 thus show the co-existing of multiple concepts being mobilized to govern the same subsector, as politicians and officials are simultaneously pursuing productivity and quality through different accounting technologies. In this case, quality was not a broad catch-all category (Pflueger, 2020) but was concretely defined as competition time and graduate employment revealing one way to define quality through accounting technologies. Neither was quality a legitimizing concept (Pflueger & Pedersen, 2022), as the first counter-translation by Absalon's top management was a direct criticism of the specific definition of quality. Drawing on ANT the paper provides empirical evidence of how quality is challenged, modified and used in practices by actors, answering Pflueger & Pedersen's (2022, p. 23) call for "further investigations of the missing links between discourse and practices in the study of quality". The discourse of quality in the case was part of the initial problematization of the lack of quality, but as the paper shows the practices of integrating and translating quality into accounting technologies proved much more challenging, as the practice was messier and more complex than the discourse (Ahrens & Chapman, 2007). Worthy of note is how the different actors construct quality in terms of accounting. At Book Faculty actors express support for top management's budget, its definition of quality, and the allocative mechanism introduced to support it. Actors claim that it is precisely because top management rejected the performance funding model, and its notion of quality, that the departmental managers at the faculty can pursue quality in their educations. However, at Lab Faculty the opposite claim is made by actors, stressing how it is the ministry's funding model with its financial incentives that allow departments to offer quality programs. To understand how quality is used in governing public organizations, we need to study how it is translated into practice. The paper shows as quality is translated into local settings differences emerge within the same organization in how quality is defined and integrated into accounting technologies.

The third contribution is how compromises are part of governing, and all papers deal with conflicting views and perspectives on what accounting is, how it should be used, and towards what ends. The papers offer new insights into how compromises between competing demands and interests are reached over accounting and through accounting (Chenhall et al., 2013; Kaufman & Covalleski, 2019; Trevisan & Mouritsen, 2023). Paper 3 conceptualizes accounting opacity to be a compromised form of visibility, which enables and

restrains action and has positive and negative effects. For example, the resource allocation framework from Columbus University was a compromise between having a simple, pragmatic framework and simple, transparent calculations. Likewise, the budget system at Einstein University was seen as a compromise between transparent KPIs, targets, and strategies, and the need for the university's top management to make discretionary decisions when needed. However, as the article also shows power was a central aspect of the accounting practices, as the positions of actors in the network allowed them to create and uphold the technologies and practices to create room for management and exploit others. Conflicts and struggles between actors in public organizations can be settled by reaching a compromise on how the accounting technology should be formed and used, but such compromises are affected by the power relations between the actors. Accounting technologies do not only create but also reinforce power relations between actors, revealing how some actors manage to draw on more resources, technologies, and allies when exerting action and influencing the actions of other actors. Power is not something actors hold or have, but rather their ability to make others act in a certain way (Latour, 1986a), and power dynamics plays a central role in reaching compromises on what accounting is and the situations around accounting.

A form of power often overlooked in the literature, is the power to separate groups or parts of organizations from each other. Compromises do not necessarily entail combining competing claims and interests into a single accounting technology (Chenhall et al., 2013; Kaufman & Covaleski, 2019) but can instead result in multiple accounting technologies working side by side. In paper 2 disagreement over the managerial and allocative functions of the budget first led to Absalon University separating itself from the MOES and the national performance funding system. Later on, Lab Faculty reintroduced the performance funding back into the university separating itself from top management and other faculties while reconnecting with the MOES' incentive structure. In this case, a compromise at Absalon University was not reached by combining competing perspectives on the allocative and managerial functions of the budget but by allowing different groupings at the university to create their own accounting systems. The findings challenge the view on compromises as integration into accounting technologies, which is found in Kaufman & Covaleski (2019). They write that "the organizational budget provides an effective forum for negotiation (...) the budget process serves as a tool to facilitate the communication, coordination and compromise necessary for institutional change" (Kaufman & Covaleski, 2019, p. 55). The authors underscore the budget as a medium and container for compromises. I find the opposite at Absalon University, where top management's budget model could not contain the competing demands about what accounting should be, resulting in multiple formal budget models. Compromises are not only about reaching common understandings, goals, or interests by integrating them into a single accounting system, such as a budget model. However, as the case shows the multiplicity actually created a stable situation although the interaction between the models became conduits for revealing the competing interests installed in the different budget models thus reminding actors of the compromise.

This is also evident in the findings of paper 1, where the ongoing compromises about the CCA happened through the struggles and trials between the two socio-technical agencements. Similar to Chenhall et al. (2013) the case shows the difficulties in reaching a compromise on the technical aspects of accounting, as competing claims about the technical aspects of accounting were an ongoing source of further conflict. Through the lens of ANT, the case shows the fragility and instability of compromises on what accounting is, as actors constantly problematize the accounting technology, making the ongoing compromises a resource for further destabilization. Another aspect of the case is how compromises on what the accounting technology is, do not result in a compromise between actors. While conflicts have been shown as part of the process of reaching a compromise, the compromise about accounting is perceived as also being a compromise on the situation around the accounting technology (Chenhall et al., 2013; Kaufman & Covalleski, 2019). However, in the case of the CCA the ongoing trials all marked the events where the actors reached compromises about what the accounting technology should be, but the compromises did little to stop the conflicts around the CCA. This points to the need to reconceptualize what compromises are, how they are reached, and what their effects are, considering the difference in compromises on accounting and around accounting.

The last ambition of the dissertation is to add to the public sector accounting research, which has noted a lack of theorization and isolation of the scholarly community from broader accounting debates (Anessi-Pessina et al., 2016; Broadbent & Guthrie, 2008; Goddard, 2010; Jacobs, 2012; Steccolini, 2019). Steccolini (2019) urges researchers to move beyond the narrow focus of NPM, instead exploring new avenues for understanding the public sector and the role of accounting in public sector research. The dissertation does so through a coherent theorization about public sector accounting using ANT as a coherent framework for exploring new facets of governing organizations in the public sector. Although the use of ANT is not new to public sector accounting research (Lapsley & Miller, 2019) it is still a niche theory (Jacobs, 2012). Theorizing through ANT assisted me in moving beyond a rigid focus on NPM and its effects on public sector organizations. In the analysis of how accounting is used in governing public organizations, ANT has worked as a lens to challenge established thoughts in the public sector accounting literature. Through ANT's concept of performativity (Callon, 1998, 2007) paper 1 singled out a specific economic concept rather than falling back on broader social structures or ideas, such as NPM or neoliberalism, to analyze and understand the role of accounting. The development of accounting opacities in paper 3 was inspired by ANT's epistemological and ontological, as the actors' positions in a network constitute their identity and how they are affected by accounting. In paper 2, the notions of translation and counter-translations (Callon et al., 1983) enabled an analysis of how accounting ideas are implemented by organizations, demonstrating how the processes resulted in multiple co-existing budget models, challenging the ideas of unitary organizations and accounting systems often found in the literature.

The combined reading of the common wrap-around and the individual articles aims at bridging the public sector accounting literature with the broader interpretive and critical

accounting research community, highlighting the mutual benefits of engaging with both streams of knowledge. A final encouragement based on the findings in the thesis is for a stronger dialogue between the public sector accounting community and the broader interpretive communities. Interpretive researchers using the public sector as an empirical site should consider if their findings hold more concrete insights into how public sector organizations and accounting work. Likewise, public sector accounting researchers could benefit from attempting to reframe their findings into insights relevant to the interpretive accounting audience more broadly.

9.2 Contribution to university accounting literature

The thesis contributes to broader public sector accounting literature but also holds specific insights into accounting's role in governing universities. Universities are a distinct type of knowledge-intensive public organization (Grossi et al., 2019) offering a complex set of services with hard-to-measure outcomes and effects (Kallio et al., 2017; ter Bogt & Scapens, 2012). A central topic in the dissertation is how accounting is used in and around universities, using ANT to closely explore the change processes, the role of technologies, and the practices of accounting. Given recent calls for more research into the calculative practices and technologies used at universities (Argento et al., 2020; Grossi et al., 2019; Hyndman et al., 2024) it is surprising that practice and technology-orientated research approaches, such as ANT, have largely been ignored. Most studies instead focus on the institutional values, logics, and legitimacy as reasons for using accounting in universities (Ahrens & Khalifa, 2015; Conrath-Hargreaves & Wüstemann, 2019; Covalleski & Dirsmith, 1988a; Guarini et al., 2020; Łada et al., 2020; Modell, 2003; Moll & Hoque, 2011; Narayan et al., 2017). Using ANT allows for a deeper theorization of the calculative practices as the outcome of both human and non-human actors, foregrounding the concrete practices of actors in using accounting.

The first contribution is how universities are governed in specific settings where the forces of corporatization are mixed with strong state involvement. There is a strong focus on the experiences in Anglo-Saxon countries in the literature (Agyemang & Broadbent, 2015; Covalleski & Dirsmith, 1988a, 1988b; Du & Lapsley, 2019; Gebreiter, 2022; Guthrie & Neumann, 2007; Martin-Sardesai et al., 2017, 2020; Moll & Hoque, 2011; Narayan & Stittle, 2018; Parker et al., 2023) which is reflected in the literature on the corporatization of universities, where market mechanisms are underscored as central to the transformation (Gebreiter, 2022; Parker, 2011, 2013; Parker & Guthrie, 2005). However, it is more uncertain how accounting is used in governing universities in the absence of pure "market-based competition" (Parker, 2011, p. 417), and where the state still has an active role in more closely regulating the direction and activities of universities. The Danish university provides an empirical setting, where a proliferation of accounting and accountability mechanisms are combined with active governmental regulation and management of

universities (Brøgger et al., 2023; Degn & Sørensen, 2015; Ejersbo et al., 2018). The difference is stark, as Parker (2011) emphasizes the global trend as “governments have released a degree of direct control”, while Degn & Sørensen (2015, p. 941) describe the Danish reform track as one of “increasing state control and a tendency to steer universities in a specific direction”. The difference in the overall mode of governing is clear but it is much less clear how the form, content, and use of accounting is affected by and affect the mode of governing.

The findings of Paper 1 propose two answers to the question. First accounting is introduced and used to mimic the absent market forces, as it substitutes market prices with unit costs (as recommended by the economic literature). To fully replicate the information value of market prices calculating the unit costs require a very high degree of standardization, as reflected by the initial proposal for the CCA. Another answer is that accounting is introduced to strengthen and expand governmental control over universities, as the lack of market-based mechanisms resulted in a more active government. The increasing state control goes beyond what has been observed earlier in the Danish context (Degn & Sørensen, 2015; Madsen, 2022a; Wright & Ørberg, 2015), as the CCA not only formulates new performance targets or incentives but directly interferes with the bookkeeping and cost allocation practices of universities. While the Danish government has used its direct control over universities before to dictate aspects of university activity, such as student intake numbers, the dictation of specific accounting practices for the organization indicates a new trend to not only regulate the input and output of universities but also regulate the internal operations. The paper furthermore provides more evidence of the challenges associated with introducing sector-wide costing principles for universities (Modell, 2006; Venieris & Cohen, 2004). It shows how the broad idea of corporatization is translated into a national setting through specific accounting technologies (Kurunmäki et al., 2011), finding that the lack of market-based mechanisms does not automatically result in more freedom or autonomy for universities. Rather accounting, such as the CCA, can serve the dual role of mimicking market-based mechanisms but also strengthening direct governmental control.

The second contribution is the empirical evidence of the implementation and use of accounting in universities. Although prior literature stresses the relevance and importance of performance funding for universities (Dougherty et al., 2016; Frølich, 2011; Heald & Geaghan, 1994; Jongbloed & Vossensteyn, 2016; Teixeira et al., 2022; Zacharewicz et al., 2019) few study the actual implementation and effects of performance funding. In the accounting literature attention has primarily been on budgetary change often independent of specific funding initiatives or systems rather than the implementation of new funding systems (Conesa Carril et al., 2020; Covalleski & Dirsmith, 1988a, 1988b; Ezzamel, 1994; Kaufman & Covalleski, 2019; Lepori & Montauti, 2020; Moll & Hoque, 2011; Ozdil & Hoque, 2017). Paper 2 connects these two streams of research, in exploring how the organizational budget is used to implement a new performance funding system. The implementation of the performance funding systems at Absalon University is an example of how universities are not passive recipients of accounting reforms but have much more agency than former

literature tends to award them. Although prior studies find that universities might actively attempt to shape the design of new public funding mechanisms (Aliabadi et al., 2021; Covalleski & Dirsmith, 1988b) or respond by aligning their budget system with public funding mechanisms (Moll & Hoque, 2011) the paper provides new insights on the dynamic process of accounting implementation and the agency of organizational actors.

Moreover, the implementation process showed the messiness within the university, as different groups implemented and used accounting in distinctly diverse manners. The diversity in practices within the same university, and faculty, challenges research which highlights different values or logics as motivating and conditioning the use of accounting. The existence of an “academic” logic underpinning the actions and beliefs of university actors (Conrath-Hargreaves & Wüstemann, 2019; Kallio et al., 2021; Łada et al., 2020) is challenged as the implementation gives rise to several different uses and understanding of accounting. Although the choice to reintroduce the ministry’s performance funding model at Lab Faculty, could potentially be explained by referring to a stronger permeation of a market logic locally, the diversity in practices among departments at the same faculty is harder to explain. One department chose to translate the faculty model with devolved budgets and activity-based financing, while another department instead had an overall frame budget for the department. The existence of practice variations at such a local level is hard to explain through reference to institutional systems, norms, or logics (Callon, 1998b), pointing to the relevance of studying the calculative practice of actors to bring forth the surprising variety and effects as the outcome of networks of human and non-human actors.

The papers also contribute to educational science research, where the focus is on the policy level (Brøgger, 2018; Brøgger et al., 2023; Degn & Sørensen, 2015; Madsen, 2021, 2022a) rather than the practical use of accounting in universities. However, as the dissertation shows there is a need to move beyond research only using formal documents and policy analysis (Grossi et al., 2019), as the messy calculative practices of actors escape the intended courses of action and use written expression in the policy documents. For example, the universities chose not to use the CCA in internal management despite the intention to do so (paper 1), they rejected the performance funding model in the organizational budget system (paper 2 and paper 3), and cross-subsidized external research funds for teaching activities (paper 3).

Lastly, the thesis gives new insights into the role and use of accounting by university actors by investigating the calculative practices, showing how accounting both enables and restricts action. A main finding in Paper 3 was the how calculative practices of the actors involved created accounting opacities, which in turn allowed them to exploit both systems and people to achieve their ends. By avoiding any presumptions about who used accounting and how the paper finds how actors use accounting in various manners to achieve a multitude of goals. Contrary to former studies, we did not find that managers only used accounting for symbolic reasons (Pettersen & Solstad, 2007), nor a distinct difference between the use of accounting by administrative and academic managers (Heinicke &

Guenther, 2020) or at different organizational levels (Salemans & Budding, 2024). Instead, we trace the diversity of practice to the composition of the socio-material network the managers are part of, as accounting is used to handle every task of university management. The paper finds that managers often use accounting to further what is thought of as traditional academic objectives, such as ensuring high-quality teaching, as accounting technologies enable new forms of actions and create local managerial flexibility. The antagonized relationship between accounting and academic practices (Agyemang & Broadbent, 2015; Craig et al., 2014; Du & Lapsley, 2019) is nuanced by the findings, as managers not only mobilize and use accounting to subvert and degrade academic concerns but also use accounting to alleviate the negative effects of university corporatization. Accounting is not only a means of strengthening the professionalization of the management of universities as it enables actors to go beyond the restraints of low public funding and tight financial budgets. However, this does not mean that the use of accounting at universities is inherently beneficial and positive, as the studies also point to the negative effects of using budgets, performance measurement, and evaluation in managing institutions of higher learning. Accounting was not only used for the benefit of all, as the former and new accounting practices affected actors differently in the same organizations. In paper 3 we refer to this as the positional aspect of accounting opacities, as the budget allocation at both Columbus and Einstein University favoured certain programs and departments at the expense of others. In paper 2, this was also the case at Book Faculty, where the new frame budget benefitted the smaller departments with few educational activities while putting financial pressure on the larger departments, which could no longer increase their income by increasing their production of student FTEs. Accounting devices, such as budgets, create winners and losers, and further exploration of this multifaceted role of accounting is needed to better see how is affected by accounting and how.

9.3 Implications of the thesis

Lastly, I want to reflect on the implications of the thesis for practitioners, as authors have noted the lack of practitioner relevance in both the broader accounting literature (Malmi & Granlund, 2009; Scapens, 2008) and public sector accounting (Van Helden & Northcott, 2010). I recognize the point of critique by Scapens (2008, p. 916) that interpretive researchers tend “to *follow* practice. In other words, although we can now explain what is going on, the research has only a very limited impact on what is actually happening in practice”. Although my ANT-inspired research approach gives primacy to describing the observed practices, I still believe practical implications can be drawn from the thesis. Description and understanding do stand in an opposing relationship with impacting practices through translating idiosyncratic and context-specific results to broader implications (Flyvbjerg, 2006). One of the strengths of qualitative case studies is the in-depth understanding they give of empirical phenomena. The in-depth understanding

enables the researcher to critically reflect on the conditions and limits of knowledge and practices, providing a possibility to move beyond rules and normative prescriptions in contributing back to practice (Flyvbjerg, 2006; Parker, 2012; Vaivio, 2008). Based on my experiences from my PhD I have the following reflections on the practical implications of my work.

The first implication is around the knowledge of public sector accountants and officials involved in designing, implementing, and using accounting technologies. A continuous theme during my interviews and observations was the actors' dissatisfaction with others' lack of knowledge about accounting techniques, practices, and systems. This was especially present in the CCA study, where university accountants would often strongly criticize the lack of accounting concepts, techniques, and systems by the MOES and the MOF. Officials representing both ministries also expressed concerns about the others' accounting knowledge, while at the same time expressing frustrations about the universities' unwillingness to comply with what they perceived as proper accounting. As becoming a public accountant requires no specific training in Denmark, introducing common public sector accounting courses for all public accountants might prove to eliminate some of the struggles and conflicts between actors in the future. Having a common understanding and knowledge of accounting concepts and techniques and recognizing the diversity in accounting practices across public organizations is a strong foundation for future reforms. Related to this is also the type of expertise drawn upon in public accounting reforms. In the case of the CCA and the new performance funding system, economists problematized current practices and proposed new solutions. However, as both cases show the solutions struggled to fit current practices, and were either substantially modified or rejected. Both cases point to how the expertise advised by economists might be of less practical relevance in governing universities, leading to using many resources on designing systems that might never work as intended or simply be ignored by public organizations. Therefore, including a broader set of experts, as accounting researchers, can potentially lead to fewer conflicts and more effective reforms.

The second implication points to the use of multiple accounting devices covering the same area, resulting in what many participants at the universities called "double management" of many areas. An example is the job market relevance of candidates, which is covered by the result contracts between the universities and the MOES, the performance funding system, the national quality assurance system, in the series of politically determined dimensioning of study seats since 2014, and by the committee approving the establishment of new programs. The different mechanisms for regulating the same topic led to a lot of bureaucracy in measuring and reporting results but also lowered the effects of the individual mechanisms. Several university managers highlighted the irrelevance of the financial incentives for lowering graduate unemployment, as they saw themselves doing all they could already, making the latest mechanism have a minimal impact on their behaviour. Reviewing the mass of mechanisms used to govern and steer universities is therefore relevant if it can create a more focused and easily understood way of encouraging

universities to follow specific goals. Similar to how too many targets in performance management might lead managers to ignore several of them (Merchant, 2006), the layering of steering mechanisms and “double management” of universities might in fact discourage universities from reacting to several of them. A related issue is when the incentives of the steering mechanisms are in internal contradiction with each other. University managers mentioned how the focus on reducing the study time of their graduates conflicted with increasing graduate employability, as students wanting to study part-time to do internships at companies would both increase completion time and employability of students. Another example is the performance funding of university programs, where the introduction of a basic grant was meant to lower the incentives for universities to focus solely on the number of student FTEs produced. However, in the performance funding scheme for the basic research grant, 45% of new funds are allocated based on the universities’ level of income generated from their educational activities, incentivizing them to increase the number of student FTEs produced. Reviewing the contrasting incentives can also create a more clear and understandable relationship between the political demands for the universities, and local behaviour.

Lastly, there is the concern about how accounting is used by managers and administrators at the universities. Universities are increasingly using more and more detailed and sophisticated cost accounting systems for decision-making and to cover indirect costs for externally funded projects. While improving the knowledge about costs and activities has become central to creating more secure financial situations for universities (as they can prioritize cutbacks or have indirect costs covered by external funders), my empirical cases highlight the need for flexibility in both the formal and informal accounting tools used. While the formal accounting and performance management systems were known and used at the departmental level, most local managers (both administrative and academic) relied on local, informal accounting systems for decision-making, resource allocation, and evaluation. The informal systems were perceived as more customized and flexible, making them more relevant than the formal accounting systems for everyday managerial practice.

The dissertation therefore suggests that university managers and accountants should be aware of the value of informal accounting systems, and explicitly consider how to balance the use of these compared to the more formal, and rigid, accounting systems. A way to do this is a stronger separation of tasks in universities where accountants and administrators handle the formal accounting systems while letting academic managers work with the informal systems alone. However, this might result in further distancing financial and academic decisions, which might not be attractive in practice. Another solution is to acknowledge and encourage the use of informal accounting systems by local managers and refrain from imposing the use of collective and common accounting systems for all parts of the university. Doing so is a way to abstain from imposing accounting systems on managers and assume their relevance. Instead we should allow managers to define what is relevant for them. The recommendation recognizes that not using any accounting tools is unrealistic advice to give managers in the Danish university sector, as accounting is entrenched and a

part of the managerial practice at universities. I do, however, believe that giving managers a role in determining which type of accounting they think is relevant, rather than imposing it on them, can lead to a more fruitful form of management. The goal is to ensure the flexibility to acknowledge the worth and contributions of the researchers based on a local definition of value rather than a universal one. I don't think that the abandonment of accounting is necessarily the right path to take, and therefore I propose to include academics, managers, and all stakeholders at the university in designing meaningful accounting devices, that respect the local and specific activities and definitions of performance.

9.4 Future research

Finally, I want to look forward point at possible directions for future research.

The reforms of the public sector continue, making it relevant to continue to study how accounting is mobilized and used in governing public organizations. While there are calls for exploring how new post-NPM ideas and paradigms influence reforms (Steccolini, 2019), my dissertation instead points to the relevance of digger deeper into how specific concepts are defined, mobilized, and used. Rather than replacing the general focus on NPM as a broad perspective with ideas of publicness, public governance, or public value (as proposed by (Steccolini, 2019) and Grossi & Argento (2022)), I instead propose to focus on how reforms used concepts from other bodies of knowledge to govern public organizations. There is a growing interest in the definition and use of specific concepts such as productivity (Kork et al., 2015), economic failure (Kurunmäki et al., 2019), and quality (Malmose & Skjøtt Linneberg, 2024; Pflueger, 2020; Pflueger & Pedersen, 2022) but we still need more detailed empirical studies of how such concepts are performed in practices. The use of performativity of theories (Callon, 1998b, 2007; D'Adderio et al., 2019; D'Adderio & Pollock, 2014; MacKenzie, 2006) to study these concepts has proven valuable in the dissertation and could be used in future studies. Extending on this such studies should also follow accounting and its effects, as a series of questions are yet to be answered: can different forms and uses of accounting create similar performative effects, or what is the relationship between specific accounting technologies and economic concepts? Can accounting be used to entirely reject economics in practice? How do economics inform the design, implementation, and use of current accounting practices? What happens when competing economic theories are used to influence accounting? Although all articles study how accounting is changed and used, many effects are still to be seen as processes drag on, highlighting the value of longitudinal studies. Future studies should attempt to trace the effects of different concepts and theories as they are used to govern public organizations. The interaction among different concepts and theories (D'Adderio et al., 2019; D'Adderio & Pollock, 2014), is another direction to explore, as the reformation of the public sector often involves mobilizing multiple concepts at the same time, such as productivity and quality.

Another avenue of research is the variety in the use of accounting at universities, aiming at nuancing and broadening the current perspective of ubiquitous corporatization with accounting having an inherent negative effect on individuals, organizations, and sectors (Agyemang & Broadbent, 2015; Argento et al., 2020; Craig et al., 2014; Gebreiter, 2022; Olssen & Peters, 2005; Parker, 2011, 2013). This research stream demonstrates the substantial transformation of universities, and the multitude of negative effects from it such as anxiety, loss of motivation, loss of novelty in research, and massification of education. However, there is a danger of using corporatization as a backdrop for all research on universities since it leads to a search for identifying it in new contexts, new forms, and with new effects. Therefore, to supplement and nuance the literature on universities future research should take a more ambiguous approach to how accounting is used in governing universities. Can academics use accounting to foster more innovative, cross-collaborating, and novel forms of research and teaching? How do universities translate general performance measurements and rankings into their specific context, for example, journal rankings, and with what effects? How are local accounting practices used to alleviate the effects of governmental systems? Do universities use accounting to cross-subsidies activities, for example, educational activities with research funds or research with educational funds, and how do they do it? The point is not to reject the findings on the negative effects of accounting in existing work but to encourage research that not only confirms former trends and outlooks but can hopefully provide concrete examples of how accounting can be used in bringing back some of the values, activities, and practices that corporatization have effaced in universities.

Lastly, is interaction between accounting technologies as they are used in the governing of and at public organizations (Anessi-Pessina et al., 2016; Lapsley et al., 2020). We know a lot about how accounting is developed, designed and implemented in the governing *of* public organizations (Kurunmäki et al., 2019; Kurunmaki & Miller, 2006; Llewellyn & Northcott, 2005; Mennicken, 2013; Mouritsen & Bekke, 1997; Pflueger, 2020) and how accounting is used *at* public organizations (Arnaboldi & Lapsley, 2004; M. Christensen et al., 2019; Laguecir et al., 2020; Perray-Redslob & Morales, 2023; Pettersen, 2001). While there is some research on the interaction between the two levels, the main focus is on how the external environments (the governing of) affect the internal management of public organizations, as they accommodate their accounting practices to the external demands (Abernethy & Chua, 1996; Boitier & Rivière, 2013; Christiansen & Skærbæk, 1997; Edwards et al., 2000). Much less is known about how public organizations use their accounting practices and technologies to influence the reforms they are exposed to and act within. A promising way to do so is to follow accounting across organizational boundaries, analysing how what is assumed to be an organizationally bounded technology or practice, can be mobilized to influence reforms of the organization. How do various actors use their knowledge of accounting to influence the design and intended use of new accounting technologies and reforms? How are organizational accounting technologies and practices mobilized to have an impact on broader reforms, when are they successful and when do they fail? Do different

public organizations have competing or diverging local practices, and how does this affect their ability to influence broader reforms? Such questions are based on moving away from focusing on the governing of or at public organisations and instead move towards the role(s) of accounting in governing, tracing accounting where it is developed and used, and identifying its multiple effects.

10 Conclusion

The overall purpose of the dissertation is to explore how accounting is designed, implemented, and used by actors in the governing of public sector organizations through three articles. The overarching research question for the dissertation is: *how is accounting used in governing public organizations, how do different accounting technologies interact in governing, and with what effects?*

For the first part of the question, the thesis shows that accounting has several roles when used in governing public organizations. Accounting is used by governments and officials in the central administration to govern and control public organizations from a distance, as accounting defines the inputs, activities, and outputs of the organizations through processes of quantification. Prior studies have shown this in a variety of empirical contexts and with many different types of public organizations (Broadbent & Guthrie, 1992, 2008; Kurunmäki et al., 2019; Kurunmaki & Miller, 2006; Lapsley et al., 2020; Lapsley & Miller, 2019; Miller, 1990). The interesting and novel insight is how accounting's role changes according to how it is used and by whom, showing both the versatile roles of accounting (M. Christensen et al., 2019) and also the dynamics of accounting as it is moulded and shaped according to specific events. In all articles accounting is used not only to govern others but also to resist and enable new forms of actions, meaning accounting has multiple roles in the same empirical cases. Drawing on ANT, the performative role (Callon, 1998a, 2007; Latour, 1986a; Mol, 2002) of accounting is demonstrated as accounting is mobilized as part of performing different realities through the performance of different roles of accounting. Some actors simultaneously attempt to perform accounting to govern while others attempt to perform it as a point of resistance. The focus on performativity also connects to the use of accounting to perform specific concepts, introducing them into public organizations as part of the governing activities. Accounting is thus used, or attempted to, to make public sector organizations more productive and have higher quality in their services. However, these attempts to introduce and perform specific concepts are not smooth processes of diffusion but involve trials, struggles, and compromises as the concepts travel with and through accounting as they are translated into specific actor-networks.

Accounting does not act alone, and as is the case in all papers several accounting technologies interact in the processes of designing, changing, or using them. The process of investigating the role of accounting in governing, rather than in advance assuming organizational boundaries has allowed for a much greater emphasis on how accounting technologies interact. Looking across organizational boundaries the thesis finds that in practice organizational accounting systems, such as budgets, costing systems, and time registration, interact with the governmental or sectoral-wide accounting technologies and regulations, such as the CCA, the performance funding system, or the state's accounting regulations. The dual role of govern/resist mentioned above works through and upon accounting, making the interaction between accounting technologies the central link in

understanding how governing functions. The interaction is not characterized by the passive adoption or implementation of accounting but rather reveals the dynamic agency that public organizations have in shaping and modifying the “external” accounting technologies as they are designed (paper 1), implemented (papers 1 and 2), and used (papers 2 and 3). Accounting technologies do not act faithfully according to their inscribed functions but are in the hands of the user (Latour, 1986a, 2005), creating multiple courses of action and effects. The empirical cases show how the use of accounting often is quite far away from its prescribed or assumed use, suggesting that relying too much on formal descriptions of the ideas behind accounting and its assumed use is a potential pitfall in understanding the role of accounting in governing public organizations. While accounting is used to enable “control at a distance” (Latour, 1987; Miller, 1990; Robson, 1992), researchers should abstain from only studying it at a distance. Getting closer to the calculative practices of accounting is a fruitful way of investigating the practical aspects of governing, showing the relevance of focusing on how accounting technologies interact.

The interaction between accounting technologies creates a variety of effects on different actors, both positive and negative. Governing involves changing the behaviour and actions of others, making it a common finding that actors perceived the use of accounting to modify their actions as negative. An interesting finding in papers 1 and 2 was the lack of disagreement and conflicts over the purpose of the new accounting technologies, measuring productivity, and enhancing quality, but the conflicts over the technical aspects of accounting and its negative effects. When the technical aspects of accounting technologies were at odds with the practices of the actors the negative aspects were stressed. Likewise, as paper 3 shows the use of accounting can result in the exploitation of managers and staff, as financial responsibility is pushed downward into the organization pressuring individuals to find their own solutions. While the organizational outcome might be positive, such as balancing the budget, the individuals exploited experience the negative effects. However, there are also positive effects of the use of accounting, even though these mainly exist in a reciprocal relationship with the negative ones. Actors use accounting to alleviate its negative effects. The positive effects created at one place in the network lead to negative effects in other places in the network. The exploration of the effects of the calculative practices involved in governing public organizations allows a deeper exploration of the mutual positive and negative effects of accounting, pointing to the relevance of studying accounting practice without prior assumptions about its use or effects.

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Appendix 1 Observation overview

Organization	Meeting/group observed	Present	Number of observations	Time	Lenght of observation in hours
Einstein University	Group on calculating cost of courses		3	2022	4
Absalon University	Coordination group for CCA implementation	Members from salary, accounting, and finance units	13	2021-2022	12
	Meeting between the finance unit and faculties	Accountants from central finance unit and faculty finance unit	4	2021	3
	CCA and unit cost implementation group	Members of central accounting unit	15	2023-2024	22
	Meeting between MOES and CCA group at Absalon	Members of CCA group at AU and MOES accountants	1	2021	1
	Internal meetings in AU central accounting unit	Various members of central accountant unit	4	2021	4
Ministry of Education and Science		MOES accountants and accountants from four universities	1	2023	5
Total hours observed				Total hours observed	51

Appendix 2 Interview overview

Interviews conducted during PhD

Interview number	Year	Recorded	Organization	Position	Length in minutes
1	2020	Yes	Ministry of Education and Science	High ranking official	91
2	2020	Yes	Ministry of Finance	Deputy head of office	71
3	2021	Yes	Ministry of Education and Science	Project leader CCA	56
4	2021	Yes	Ministry of Finance	Dual interview with Head of Division & head of section	90
5	2021	Yes	Absalon University	Official	58
6	2021	Yes	Einstein University	Head of Team	111
7	2021	Yes	Einstein University	Head of Team	109
8	2021	Yes	Ministry of Finance	Head of Division	26
9	2021	Yes	Absalon University	Official	101
10	2021	Yes	Ministry of Finance	Head of section	73
11	2021	Yes	Absalon University	Head of budgets	54
12	2021	Yes	Absalon University	Vice director of finance	71
13	2021	Yes	Absalon University	Head of Budgets	82
14	2021	No	Ministry of Education and Science	Head of section	60
15	2021	Yes	Einstein University	CFO	57
16	2021	Yes	Absalon University	Faculty CFO	99
17	2021	Yes	University C	CFO	51
18	2021	Yes	Ministry of Education and Science	Deputy head of section	72
19	2021	Yes	Absalon University	Vice-head of department	54
20	2021	Yes	Einstein University	Head of team	47
21	2021	Yes	Absalon University	Vice-head of department	70
22	20.01. 2022	Yes	Absalon University	Accountant	81
23	2022	Yes	Einstein University	Member of senior management	64
24	2022	Yes	Absalon University	Head of Administration	60
25	2022	Yes	Absalon University	Head of administration,	70

26	2022	Yes	Absalon University	Vice-head of department	84
27	2022	Yes	Einstein University	Head of Education	85
28	2022	Yes	Absalon University	Vice-head of department	71
29	2022	Yes	Absalon University	Head of Section	55
30	2022	Yes	Einstein University	Head of Department	55
31	2022	Yes	Ministry of Education and Science	Official	72
32	2022	Yes	Einstein University	Head of study board	94
33	2022	Yes	Einstein University	Head of study	81
34	2022	Yes	Absalon University	Dual interview with CCA team leader and CCA team member	58
35	2022	Yes	Absalon University	Faculty CFO	115
36	2022	Yes	Absalon University	CFO	42
37	2023	Yes	Absalon University	Dual interview with CCA project leader and CCA team member	49
38	2023	No	Absalon University	Faculty CFO	30
39	2023	Yes	Absalon University	Faculty CFO	69
40	2023	Yes	Absalon University	Faculty Director	60
41	2023	Yes	Ministry of Education and Science	Head of Office	60
				Total time	2.858 min / 47 hours

Prior interview conducted used in PhD dissertation.

Interview number	Year	Recorded	Organization	Position	Length
1	2018	Yes	University D	University Director	54
2	2018	Yes	University E	University Director	45
3	2018	Yes	Einstein University	University Director	55
4	2018	Yes	Ministry of Education and Science	Official	61
5	2019	Yes	Absalon University	University Director	97

6	2019	Yes	Einstein University	University Director	88
7	2020	Yes	Ministry of Education and Science	Permanent Secretary	70
8	2020	Yes	Ministry of Education and Science	Head of Agency	63
9	2020	Yes	Danish Economic Council	Vice director	69
10	2020	Yes	Ministry of Finance	Official	58
				Total	660 min. / 11 hours

Appendix 3 Interview guide example

Interview guide for second article on budget model change at Absalon University

1) Introduction

- Introduction to project, use of interview.
- Introduction to interviewee (background, education, current job function)
- What are your current tasks as CFO?

2) Current budget model and process at faculty

- Can you describe the current budget model at the faculty?
- What are your managerial considerations in the model?
- Can you describe the current budget process? What phases are there and who are involved?
- Which data do you use in the budget process?
- Do you use budget control? How, at what level and with what focus?
- Are there common budget models among the departments at the faculty?
- Why/Why not? What are the effects of different budget models?

3) Budget negotiations between the faculty and top management

- How does the negotiation between the faculty and top management happen?
- How does it differ from earlier practice?
- Which data and numbers are used in the negotiations?
- Is it possible to improve your performance to get more funds?

4) Process about changing the budget model at AU

- When did the process of changing the budget model start? What started it?
- Can you describe the process as detailed as possible?
- Which actors participated?
- When did you do what?
- Who was for and against different models?
- Did you discuss different budget models? How did you decide between different models?
- Why did you choose another model at X Faculty compared to top management and other faculties?
- How did top management react to you choosing a different model at the faculty level?

5) Effects of changing budget model

- What is the biggest difference between the new and the old budget model?

- Can you identify any effects on the behavior and priorities of the departments? You do see it as positive or negative?
- Are there any unintended consequences or effects of the current budget model? For example on performance goals or collaboration across departments and faculties?
- Do you measure the effects of the budget model in any way?
- Did the change in model affect the funds given to the individual departments? Do some get less or more?

6) Quality in programs and accounting

- Do you have a focus on the quality of programs through the accounting at faculty? If yes, how?
- If not – why? It is part of performance funding.
- Do you have other mechanisms/means in relation to educational quality in the financial management and control?

7) Common chart of accounts

- Have you heard of the CCA?
- Is the data in it relevant to you?
- Could it be part of the budget process?

8) Finishing off

- Repetition of process for using interviews
- Do you have any questions or comments?
- Reference to other relevant people to interview

Appendix 4 Document overview

Author		Name	Year(s)	Document type	Number of documents	Pages
Ministry of Finance		Budget statements	1999-2010	Public report	7	500+
		Reports on public sector management, accounting, and governance	2003-2010	Public reports	4	400+
Ministry of Education and Science		“Committee report. The committee for a common chart of accounts for the institutions of higher education” + “Appendixes”	2018	Public report	2	150+
		“Guidelines for main area and purpose allocation for the universities’ costs”	2012	Guidelines for institutions	1	22
		“Bookkeeping and allocation guidelines”	2019, 2020, 2021, 2022, 2023	Guideline for institutions. Both draft and final versions	16	200+
		Meeting material for 2016 committee on the common chart of accounts	2015-2016	Mails, formal letters, meeting appendixes and minutes	53	200+
		Meeting material for 2018 committee on the common	2017-2018	Mails, formal letters, meeting appendixes and minutes	77	300+

		chart of accounts				
		Committees related to the CCA	2019-2023	Appendixes and meeting minutes, newsletters	40+	350+
		Annual reports for agency	2007-2021	Public reports	14	200+
		Material relating to the new performance funding system	2015-2017	Public reports, political agreements, press releases, hearing responses	18	150+
Ministry of Education		Reports on the performance funding system	1998-2008	Public reports	5	400+
Productivity Commission		Reports on public sector productivity and education productivity	2013-2014	Public reports	3	400+
Agency of Public Finances and Management		Reports on public sector accounting and management	2010-2020	Public reports	5	150+
Absalon University		Annual reports	2017-2020	Public reports	4	60+
		Budget reports and budget notes for university and faculties	2017-2022	Internal reports	12	200+
		Board meeting appendixes and minutes	2016-2023	Internal reports	50+	300+
		Other internal documents on budgeting, accounting, and management	2017-2023	Power points, guidelines, homepage FAQ, KPI-reports, ect	20+	100+
		Material relating to the	2019-2024	Emails, spread	50+	300+

		common chart of accounts implementation and use		sheet, power points, internal memos.		
Einstein University		Budget notes and budgets	2020-2021	Budgeting process descriptions, KPI overview, budgets	10+	150+
		Documents relating to the common chart of accounts	2019-2021	Auditor comments, bookkeeping guidelines, internal memos	7	68
Quality Committee		Public committee reports	2014	Public reports	3	350+
OECD		Public reports on productivity, national accounts, public management, and accounting	2000-2018	Public reports	7	400+
EU and Eurostat		Public reports on public finances, productivity, and national accounts	2001-2016	Public reports	5	400+
Total					413	5750

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