Between two chairs: Perspectives on the modernization of the Danish public sector through increased public-private interaction

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Sometimes the ability to forget our struggles and worries as time goes by is one of the greatest things about being human. Something that holds especially true for PhD students as doing a PhD is a bumpy road indeed. When I started out as a PhD student, I was motivated and grateful for being here, happily unaware of the frustration and difficulties that were about to follow throughout the years. Never the less, looking back, I truly struggle to recall ever having such frustrations, but somehow I do remember a time when I thought I was never going to finish. However with help and guidance from people both within and outside the academic life I managed to complete my dissertation. In the following I would like to extent my gratitude to some of the people who guided me along the way.

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Denne afhandling består af fire separate artikler der omhandler forskellige aspekter af moderniseringen af den offentlige sektor i Danmark. Det samlede fokus for afhandlingen ligger på forskellige måder hvorpå elementer fra den private sektor i blandet omfang er blevet inddraget i de offentlige organisationer. Siden introduktionen af New Public Management (NPM) i 80’erne op til de seneste årtiers mange moderniseringsreformer, har den danske offentlige sektor i stigende grad været styret af et fokus på resultater og effektivitet. Hvad enten det omhandler selskabsskaber, brugen af resultatkontrakter eller reel udlicitering er der over årene sket en stigning i brugen af markedet eller private leverandører i leveringen af de offentlige serviceydelser. Empirisk er afhandlingen baseret på to hovedområder indenfor den offentlige sektor i Danmark. Det første område er de danske kommuner og det andet, er offentligejede selskaber som er selskaber der enten er stats- eller kommunalejede men opererer på markedslignende vilkår. De fire forskellige artikler der ligger til grund for afhandlingen strækker sig over tre forskellige områder indenfor litteraturen i offentlig forvaltning og dækker udlicitering, selskabsskaben og sammenlægningsaktiviteter. Hermed analyseres nogle af de moderniserings elementer der har været mest udbredte i transformeringen af den offentlige sektor i Danmark.

Den første artikel i min afhandling undersøger, hvordan en ny udliciteringspraksis kaldet ESCO (Energy Service Companies) kontrakter har spredt sig på tværs af de danske kommuner. Guidet af institutionel teori som forståelsesramme, finder jeg frem til at valget af ESCO kontrakter i høj grad hænger sammen med hvorvidt nabo kommunerne ligeledes har gjort brug af ESCO. Derudover findes der signifikante sammenhænge med hvorvidt de kommunale ledere har erhvervserfaring fra det private, samt graden af finansiel ustabilitet i kommunen. I den næste artikel fokuserer jeg på,
hvordan offentlig sektor socialisering kan føre til større tilbøjelighed til at medarbejdere forlader deres stilling i offentlige virksomheder når virksomhederne udviser en højere grad af privatsektor træk. Baseret på argumentet om offentlig og privat sektor forskellighed, argumenteres der for at individer igennem deres arbejdsliv bliver socialiseret i henhold til normer og erfaringer indenfor de forskellige sektorer. Resultaterne peger på, at medarbejdere med længere erhvervserfaring fra den offentlige sektor er mere tilbøjelige til at forlade virksomheden når denne i højere grad udviser privatsektor træk.


Med denne afhandling har jeg arbejdet på at bidrage til eksisterende viden ved at belyse nogle af konsekvenserne NPM har haft internt i offentlige organisationer. Hermed belyses yderligere hvordan øget eksponering til markedet påvirker medarbejdere der arbejder indenfor disse
**Summary in English**

This dissertation contains four distinct papers each addressing different ways of bringing private sector elements into public organizations. Ranging from early New Public Management (NPM) tools, such as contracting, up to recent decades many modernization reforms, the Danish public sector have increasingly been guided by a focus on performance and effectiveness and have increasingly relied on private sector elements for dealing with delivery of public service. The empirical context underlying the research in my dissertation is the Danish public sector. More specifically, the research setting is constituted by the Danish municipalities and state or local government owned public sector companies. The dissertation contains four different papers each addressing the impacts of some of the modernization elements, such as contracting, corporatization and merging activities that have been particularly pronounced in the modernization of the Danish public sector.

The first paper explores how a new contracting practice – ESCO (Energy Service Companies) contracting – has diffused across Danish municipalities. Drawing on institutional theory results indicate that neighbour adoption of ESCO contracts as well as managers’ former private sector work experience and financial instability is associated with adoption of the. In the second paper I focus on how public sector socialization might lead to increased turnover likelihood when public sector companies exhibit a higher degree of privateness. Drawing on the argument of public and private sector distinctiveness the paper addresses the role and impact of sectorial socialization imprinting individuals with norms and experiences associated with the different sectors. In the paper we find that employees with longer public sector work experience become more likely to leave when the organization exposes a higher degree of privateness. The third paper addresses the
impact of merger activities in local governments by focusing on whether increased municipality size brought about by a structural reform of the Danish municipalities affects public management and the priorities of managerial task at the highest level of management. Drawing on quasi-experimental methods the results indicates that managers in large organizations on average to a higher extent prioritize external networking and support of their political environment. And finally, the fourth paper in the dissertation addresses the debate about bringing in private sector skills and experience into the public sector. In this paper I explore whether former private sector work experience strengthens the likelihood of internal promotion in public sector companies. Here results suggest that holding most recent job in private sector strengthens the likelihood of internal promotion to the managerial level.

Taken together this dissertation contributes to our existing knowledge by illuminating the impact of NPM internally in public organizations hereby addressing how increased exposure to the market affects the employees working in these organizations. So far most of the impact of NPM and marketization has focused on the outcome and performance of new organizational forms in the public sector and arrangement. Much fewer studies are concerned with how these objectives are achieved and how these changes affect organizations internally. By shedding light on when organizations adopt new practices as well as on the importance of changes in size, organizational environment, organizational practices and staffing patterns, the dissertation provides a deeper insight into the interrelation between the public and private sector of the economy.
Introduction

Since the 1980s it has been debated whether to bring the market into play for public service delivery. The rise of New Public Management (NPM) and the increased exposure to market forces has had a global impact transforming public sectors throughout the world. Whether relating to the more direct moves such as privatization, contracting and company formation or the adoption of more indirect New Public Management tools (performance measures, contract management and activity-based budgeting), it all points to a more extensive use of the market and an alignment with the private sector.

This dissertation explores these various ways of bringing private sector elements into public organizations. Ranging from early New Public Management tools, such as contracting, up to recent decades many modernization reforms, the Danish public sector have increasingly been guided by a focus on performance and effectiveness and have gradually relied on private sector elements for dealing with delivery of public service. Despite the fact that New Public Management might no longer be seen as “new”, it still provides the foundation for the further development of the sector. In this dissertation I take stock and focus on some of the impact of the last decades of New Public Management infusion on public sector organizations. I do so by addressing some of the elements and ways in which the increased use of private sector elements has become institutionalized in the Danish public sector. Firstly, by exploring how a new practice has diffused across Danish municipalities, I consider the impact of contracting. In the second paper I focus on how public sector socialization might lead to increased turnover likelihood when public sector companies exhibit a higher degree of privateness. In the third paper I address whether increased municipality size brought about by a structural reform of the Danish municipalities affects public management
and the priorities of managerial task at the highest level of management. And finally, by focusing on whether former private sector work experience strengthens the likelihood of internal promotion in public sector companies, the fourth paper explores the debate about bringing in private sector skills and experience.

Overall the impact of some of the modernization elements, such as contracting, corporatization and merging activities that have been particularly pronounced in the modernization of the Danish public sector, is addressed. In the remaining parts of this introduction chapter, first the research questions and the dissertation’s main contributions are presented. Then a general overview of the transformation of the Danish public sector is given followed by a presentation of the research design and general methodological approach together with the advantages and limitations on the data and method. Lastly I provide an overview of the content of the papers as well as a short introduction to each of the four papers in the dissertation.

**Research questions and contributions**

As I focus on four different elements of the development of the Danish public sector no single research question is presented. The papers are tied together by a common theme and together illuminate important aspects of organizational processes in the public sector. Overall I explore some of the impact the increased market focus has had on the Danish public sector and the employees working in the organizations. To narrow it down, I decided to focus on four research questions each addressing a different aspect of this modernization process.

In the first paper I explore the diffusion of new contracting practices across local governments by addressing the following research question: *What explains the probability of a given municipality adopting ESCO contracts?*
In the second paper I focus on sectorial socialization and turnover in public sector companies by addressing: *How does the relative organizational “privateness” affect turnover likelihood among employees with long public sector work experience?*

In the third paper I focus on the impact of organization size on public management: *Does change in organization size affect public management?*

In the fourth paper I address the impact of sectorial socialization on the likelihood of internal promotion: *When does former public and private sector work experience lead to increased likelihood of internal promotion in public sector companies?*

It is clear that while these research questions are related they are also different. For instance, the notion of marketization is more clearly illustrated in paper 1, 2, and 4 where I explore contracting and the importance of private sector influences on employees. In paper 3 the focus is on the effects of creating larger organizational units. This has been a pronounced and widely used element in public sector search for performance not only in Denmark (Denters, Goldsmith, Ladner, Mouritzen, & Rose, 2014) but related more to the pursuit of increased efficiency and professionalization than to marketization. As the dissertation addresses four different research questions and areas of the modernization of the Danish public sector, they embody different contributions to the existing knowledge and literature. Leaving the specific contributions to the individual papers, I briefly want to discuss some of the most important ones. This dissertation contributes to existing knowledge by illuminating the impact of NPM internally in public organizations hereby addressing how increased exposure to the market affects the employees working in these organizations. So far most of the impact of NPM and marketization has focused on the outcome and performance of new organizational forms in the public sector and arrangement (where much still remains to be addressed). Much fewer studies are concerned with how these objectives are achieved and how
these changes affect organizations internally. By shedding light on when organizations adopt new practices as well as on the importance of changes in size, organizational environment, organizational practices and staffing patterns, the dissertation provides a deeper insight into the interrelation between the public and private sector of the economy.

**Modernization of the Danish public sector: from New Public Management to public sector reforms**

In this section I provide a brief overview of how the Danish public sector has developed when it comes to NPM and the use of market mechanisms for public service delivery. The first section is an introduction to how private sector elements are embraced in public organizations. The following sections focuses on three specific elements, contracting, public sector companies and merging activities; these have been particular pronounced in the transformation of the Danish public sector and constitute the research areas for the papers in this dissertation.

Rooted in the global introduction of New Public Management, the Danish public sector has experienced increased exposure to market forces by various modernization reforms of the sector since the 1980s. From the 1990s and onwards market orientation gained momentum with the market having a prominent place on the political agenda (Ejersbo & Greve, 2005). In the early years, the transformation involved introducing privatization, corporatization and outsourcing in the production of public services (Greve, 1997b), where the most recent decade to a larger extent has been dominated by more extensive reforms with the aim of improving effectiveness and professionalism. As Greve (2012) points out, NPM might no longer be new, however, the idea lives on and has become institutionalized in most parts of the public sector. The basic idea of NPM is thus still relevant and dominant. Despite the development of Public Value Management, New Public Governance and Digital Era Governance (Greve, 2012), the basic NPM idea will remain relevant as
its constituent parts such as performance management and marketization are here to stay and not likely to disappear with further transformation and development of the public sectors.

However, the increased interest in bringing private sector skills and experience into the public sector is not a Danish phenomenon and has long been recognized within the public administration literature (Bozeman & Ponomariov, 2009). The introduction of private sector elements into the public sector has many different manifestations. Firstly, it can be done by bringing in private suppliers into public service delivery. This can for instance be done by setting up public-private-partnerships where public and private organizations collaborate on finding new ways of delivering public services or by contracting out. A second way of exploiting private sector elements, which has been much less studied, is by modifying internal staffing patterns in public organizations, i.e. taking on workers or managers with private sector backgrounds who possess skills and expertise from private sector organizations (Su & Bozeman, 2009). However, besides the direct path of incorporating private sector elements, some public organizations undergo organizational changes in their search for increased effectiveness and efficiency. A quite common practice in the Danish public sector is corporatization or setting up public sector companies. These companies are set up with the specific aim of going between the sectors, working partially on market conditions financially detached from national accounts, but owned (by majority of shares) public sector. Maintaining full control the main idea is that these companies are free to work on more market like conditions forcing them to increase their efficiency in the production of services for them to survive. This practice has among other areas been used within smaller utility organizations within water and wastewater but also larger organizations such as postal services and railway services. The last way of transforming public organizations which will be discussed in this thesis with the aim of higher performance, professionalization and effectiveness is to merge existing units into larger ones.
In the Danish context, this has been particularly pronounced with the 2007 Structural Reform of the Danish municipalities where 271 municipalities amalgamated into 98.

So all in all, the introduction of NPM has had a significant impact on the Danish public sector. However, despite the NPM claim of universalism and the potential to provide public management for all seasons (Hood, 1991), the impact of the NPM differs across countries when looking at it in an international perspective. If we compare the level of marketization of the Danish public sector with other countries such as US and the UK, we still lag behind when it comes to using the market for service delivery. Or, as Greve (2006) refers to it, the Danish public management reform is more a question of modernization than marketization. Despite being driven by the NPM idea, major marketization and full use of the market for service delivery has been limited. In the Danish context, marketization has been viewed as a means to obtain higher effectiveness but not as a goal in itself (Ejersbo & Greve, 2005). The outcome was a new era where focus is on developing ideas to create public value and coming up with long-term solutions. This is potentially done by creating partnerships and being more innovative in the way of delivering public services.

In the following section I will provide a short introduction to the use of private suppliers, company formation and merger activities which are the main modernization elements studied in the papers of this thesis.

**Private suppliers**

Back in the early 1990s the use of market for public service delivery became a high priority on the political agenda. The call for increasingly relying on contracting and private suppliers was further backed up by the Social Democrat-led government (1993) calling for more collaboration and use of the private sector (Ejersbo & Greve, 2005). In this debate the use of internal as well as external contracting was aimed at as a means of providing more quality in service delivery. By introducing
competition through tender into the public sector, contracting has been proposed as one of the main drivers of economic efficiency and effectiveness (Domberger & Jensen, 1997). However, as many areas of public service delivery can be characterized as monopolies or have to contend with very little competition, introducing contracting sometimes becomes a political act rather than an economic one due to the scarcity of competition and management capacity for controlling contracts (Van Slyke, 2003).

In the public administration literature whether to contract or not has largely been debated by supporters and critics of the marketization trend. As a part of the general NPM movement that has transformed public sectors throughout the western world, contracting is commonly promoted as a tool for increasing cost efficiency in the provision of public services (Fernandez, 2007; Hood, 2002; Van Slyke, 2003; Warner & Hefetz, 2012). However, where the supporters of contracting have argued for the scope of economic benefits related to contracting out public services, its critics have pointed to the loss of control and accountability (Walker, Brewer, Boyne, & Avellaneda, 2013).

Looking at the municipal level in Denmark, the use of private service suppliers has seen a slow increase. In the 1990s local governments took a somewhat cautious approach towards using contracting for service delivery (Greve, 1997a). Figure 1 shows the development in the average municipal use of private suppliers from 1993 to 2010. The figure presents the proportion that local governments contracted out, out of the total amount allowed. The development shows an average increase from about 15 per cent in 1993 to about 25 per cent in 2010. This also indicates that despite an increase in the average level, many Danish municipalities chose to produce their services in-house. Moreover, in the Danish context primarily the technical area and construction work (Ejersbo & Greve, 2005) are contracted whereas the soft areas, where contracts can be difficult to specify, remain in-house. However, a recent study by Petersen, Houlberg and Christensen (2015) shows that
the area of contracting also depends on the size of the municipality where the larger municipalities tend to contract more within technical areas and the smaller ones more within social welfare.

**Figure 1: The average use of private suppliers in municipal service delivery**

![Graph showing the average use of private suppliers over time from 1993 to 2009.]

Source: municipal key figures. www.noegletal.dk

Recent decades have seen a vast amount of literature on contracting. Scholars have covered a large variety of perspectives on contracting such as contracting performance (Fernandez, 2007; Walker et al., 2013), insourcing and outsourcing (Hefetz & Warner, 2004; Warner & Hefetz, 2012), make or buy decisions (Brown & Potoski, 2003; Rosenberg Hansen, Mols, & Villadsen, 2011). So why is it so interesting to revisit studies on contracting with so much existing literature? Firstly, the field is very much dominated by studies on performance or financial benefits of making contracting decisions; and secondly, our knowledge about how new contracting practices diffuse and become institutionalized in the public sector is limited. In the first paper of this dissertation I address these issues by focusing on how a new contracting practice – ESCO contracting – diffused across Danish municipalities from 2007 to 2013.

**Creating public sector companies**

Company formation or corporatization has been a particularly popular form when transforming Danish government units (Greve, 1997a, b). In Denmark public sector companies tend to be either former public agencies, which have been transformed into companies or companies deliberately designed for cross sector purposes. Company formation was particularly dominant in the 1990s
where some of the major organizations such as the national telephone company (1994, later fully privatized in 1997), the postal service (1995) and the national railway company (1999) where transformed into companies. However, the idea of obtaining higher efficiency by corporatization is still relevant today. One example is the transformation of the water and wastewater sector into municipality-owned companies, which central government instituted in 2007 (Miljøministeriet, 2009). As a consequence all municipalities had to transform their water supply sections into companies that were financially detached from the public accounts and had to operate on semi-market conditions. In 2010 no less than 110 (with more than 10 employees) entities were categorized by Statistics Denmark as public sector companies across many different areas of industry (IDA)\(^1\).

The creation of public sector companies at the public-private intersection is an area that has gained awareness in the public administration literature; scholars are becoming ever more interested in the new organizational structures found at the intersection between sectors (Gulbrandsen, Thune, Brorstad Borlaug, & Hanson, Forthcoming; Joldersma & Winter, 2002; McGivern, Currie, Ferlie, Fitzgerald, & Waring, Forthcoming; Waring, Forthcoming; Wise, 2010). As the transfer of private sector skills and experience is boosting, new hybrid forms of organizing are gaining foothold. Studies on sector switching in Denmark have shown that the number of workers transferring from the private sector is increasing (Frederiksen & Hansen, Forthcoming); moreover workers’ higher cross-sector mobility was already on the reform agenda in 1993 where the government tried to even out some of the sector boundaries (Ejersbo & Greve, 2005). Situated between state and market, public sector companies can be characterized as being owned by (majority of shares) public agencies but financially detached and performing on market like conditions (Greve, 1997b).

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\(^1\) This is, as mentioned, based on the classification provided by Statistics Denmark for companies with more than 10 employees. However, within the continuum between private and public a much greater number of companies are to be expected.
However, while the logic of the state and the logic of market are clearly different (Friedland & Alford, 1991), it is rarely possible clearly to distinguish what is public and what is private. Instead organizations should be viewed as located somewhere on a continuum with varying degrees of “publicness” and “privateness” (Bozeman, 1989; Rainey, 2009). This clearly indicates that public sector companies cover a variety of organizations with common traits, they are partly state-controlled but they operate on market conditions to a certain extent. In the literature they have many different labels such as state-owned enterprises (Toninelli, 2000), quangos (Bertelli, 2006; Greve, Flinders, & Van Thiel, 1999), public private partnerships (Skelcher, 2005), and partly privatized public companies (Gupta, 2005; Pack, 1987), all illustrating a state and market element mix. In this dissertation I employ the label public sector companies when addressing these companies. I refer to them as public sector companies as this label is aligned with the literature and can be fully understood in an international as well as in the Danish context.

The central motive for creating public sector companies is that including market features will increase efficiency and competitiveness in former public organizations resulting from a change of structure, economic basis, competition, and performance requirements. Transforming public agencies into companies affects the established organizational framework and how the organizations function (Greve 1997a). However, when assessing the impact of creating these new companies, the primary concern has been the external side and the change-related performance. However, as many scholars in institutional theory have argued, institutions tend to change their external behaviours to signal the "right behaviour" but they do not necessarily change their routines, norms and culture (Meyer & Rowan, 1977). In order to address these issues, I chose to explore the organizations from the inside focusing on how the various degrees of privateness in organizations affect the employees working there.
Creating larger public entities: a decade of public sector reforms

After two decades of NPM infusion, the development of the Danish public sector entered an era of modernization through major public sector reforms. From 2000 to 2010 the Danish public sector underwent eleven major reforms (Greve, 2012). Despite taking place in different parts of the public sector and embracing specific purposes, many of these large reforms had something in common: the merger of existing units into fewer and larger administrative units. This development is aligned with the perspective that large units will boost performance and professionalism. Setting up large administrative units has been particularly pronounced in four of the eleven reforms. Firstly, in the Police Reform, 54 police districts were merged into 12, second in the Court Reform, 82 jurisdictions were merged in to 22, thirdly in the University Reform that involved the creation of new big units (e.g. my own department which is now part of the largest Business School in Denmark – Business and Social Sciences at Aarhus University), and finally the Structural Reform that led to the amalgamation of 271 municipalities into 98 and 14 counties into five regions (Greve, 2012). However, municipality amalgamation is by no means a Danish phenomenon. In their book on local government, Denter and colleagues (2014) discuss the impact of the extensive merging activities taking place at local government level in Denmark, the Netherlands, Norway and Switzerland. More particularly they discuss the impact of local government size on democratic quality. They argue that larger municipalities have their disadvantages and may lead to loss of democratic accountability and control.

So as research clearly indicates some downsides of the merging activities (Denters et al., 2014), why are we so keen on creating these large entities? One of the main conclusions from the Structural Reform commission was that the municipalities were too small to carry out their tasks (Sundhedsministeriet, 2005) and that larger municipalities were required to secure a higher level of professionalism as well as economic sustainability. With the amalgamation, the average size of
Danish municipalities grew from just below 20,000 inhabitants to 55,000 inhabitants. Some years after the introduction of the reform, it was concluded that despite it being a success there was still room for increased effectiveness and efficiency in the delivery of public services. Studies have found support for an increasing economy of scale resulting from the increased entity sizes (Blom-Hansen, Houlberg, & Serritzlew, Forthcoming). However, we still know relatively little about how change in size affects the daily operation of organizations and how managers carry out their daily work in these larger organizations. In order to illuminate this topic, the third paper in this dissertation explores the effect of organization size on priorities of task among municipal top managers by using the Structural Reform as a quasi-experiment.

**The research setting**

The infusion of NPM and increased use of the market is taking place in many parts of the public sector. In this dissertation I concentrate on two different settings: firstly, the Danish municipalities and secondly, public sector companies. The Danish municipalities constitute the setting for the first and third papers. The municipalities provide a very good research setting as they are quite homogeneous. The municipalities are governed by the same law and are required to deliver the same services. The very equal feature of the municipalities makes it possible to hold many variables constant when making statistical analyses, which ensures comparability.

The second part of the empirical context is constituted by the total group of public sector companies; this is used as the research setting for the second and fourth papers. This context differs a bit from the very stable research setting of the municipalities used for the first part. The group of public sector companies has been identified by a precise Statistics Denmark code. Consequently these companies are formally defined as being financially detached from national accounts and are owned by majority of shares by public organizations – either state or local governments. However,
where municipalities face the same requirements when it comes to legislation, governance and service areas, these companies differ more as regards requirements and working area. As they operate in diverse business areas and have different public owners, they are also governed by different laws. However, many of the differences can be controlled for, which allows studying other differences, such as various degrees of privateness. In the following section I will provide an introduction to the research design chosen and the methodological approach to the dissertation.

**Research design and methodological approach**

In order to provide an overview of the research design underlying this dissertation this section briefly introduces the different methods as well as the data for the four different papers. Where a more detailed description of the design and statistical procedures is left to the specific papers, this section argues for the overall motivation for the chosen approach as well as points to some of the advantages and weaknesses associated with the different designs.

Lately scholars have called for more and better methods guiding research in public administration and management arguing that the field is methodologically underdeveloped to some extent particular in comparison to other disciplines (Groeneveld, Tummers, Bronkhorst, Ashikali, & Van Thiel, 2015). In particular the lack of advanced quantitative methods has been pronounced and raises a concern and focus for future research. Within the field of public administration, qualitative studies are still most prevalent and most of the quantitative studies build on survey data and simple statistical procedures such as Ordinary Least Squares (OLS) regression. However the field is becoming increasingly quantitative, especially in the field of public management where a little over half of the research published (among the four highest ranked journals in public administration) is now quantitative (Groeneveld et al., 2015).
The work in this dissertation is solely built on a quantitative approach. By relying on panel data and experimental methods throughout the dissertation, I aim to answer to the call for more sophisticated methodological procedures within the field of public administration. Throughout the four papers I make use of various quantitative techniques each with a particular potential for illuminating the adoption of private sector skills and practices into the public sector. In order to do so, I use three different datasets and different statistical methods for estimation, all with their limitations and advantages. I will discuss these in turn.

The data for the first paper, which addresses the diffusion of ESCO contracts among Danish local governments, is based on a panel dataset with secondary data from various governmental registers and records. As all public tenders, such as ESCO contracts, must be listed on the government public tenders website\(^2\), I was able to gather information about the time and adoption of the contracts in order to code the dependent variable. The panel stretches from 2007 to 2013 and contains information about all municipalities. This type of data is very well suited and necessary in the study of how ESCO contracts were adopted over time and how these contracts diffused among local governments.

The second and the fourth papers of the dissertation are based on data from the IDA database, which is the national register database hosted by Statistics Denmark. The database contains information about every individual working in Denmark and dates from 1980 and up to 2010. Using this database holds several advantages. Firstly, instead of relying on survey data, the data provides a rare possibility of using population data with no selection bias or bias in relation to representativeness. Secondly, this secondary register data ensures objective measures of all variables. Thirdly, the data contains 30 years’ worth of information at the individual level. However, there are also some downsides that should be mentioned. Despite the database being

\(^2\) www.udbud.dk
extremely rich and containing lots of information it is also very limited in some areas. Whereas the database contains all objective measures on workplace, income, marital status, education etc., it contains no information about individual attitudes and behaviours implying that some of the analysis has to rely on cruder measures.

While relying on secondary panel data from various registers for most of the dissertation, the data used for the third paper differs. The third paper is based on data from a questionnaire survey among public managers of Danish municipalities. The methodological setup of the paper uses the 2007 Structural Reform of the Danish municipalities as a quasi-experiment of the effect of size on public management. The data is based on two survey rounds in early 2006 and late 2008 with very high response rates; this offers the opportunity of applying a difference-in-difference design reducing the potential threat of endogeneity often associated with using survey data.

While the data and the statistical techniques used in the dissertation have their limitations (which will be addressed further in the individual papers), the design still has the advantage of not relying on survey data, which is often the case in field of public administration. One of the main problems associated with using survey data is common method bias which is viewed as systematic error variance shared among variables that are either measured or introduced as a function of the same method or source (Jakobsen & Jensen, 2014). In survey data common method bias often arises as common source bias when all data and measured variables originate from the same questionnaire where both the dependent and the independent variables rely on self-reported measures. Another type of bias is associated with the characteristics or the items; it arises when the items are either too ambiguous or too complex. Too vaguely defined items will make respondents more likely to develop their own idiosyncratic meaning giving either random responses or individual systematic
responses (Jakobsen & Jensen, 2014). Using register data where the variables are based on objective measures eliminates the common method bias problem.

Testing effects over time requires panel data with repeated measures on the same individuals. Making use of experimental methods, hand-coded panel data with objective measures as well as the IDA database provide a good opportunity for testing such effects. Establishing causality remains an everlasting challenge in social sciences as research is often based on observational data. In this dissertation the argument for causality is strongest in the paper drawing on a quasi-experimental design. However, despite being unable to argue for strong causality in the three papers drawing on observational data, I try to isolate the effects of interest in the studies by including a number of relevant control variables as well as relying on panel data which considers the order of time.

The four papers

The following section provides a short introduction to each of the four papers and at the end there is an overview and summary of the papers in the dissertation.

Paper One: Contracting for Energy Efficiency: The Diffusion of Novel Contracting Practices at Local Government Level

Studies on contracting out have provided essential knowledge about the effect of contracting on various types of services, yet the antecedents driving the adoption of new contracting practices remain an under-researched area. Previous studies addressing the antecedents of contracting have focused on the financial benefit of specific services. This study draws on the innovation diffusion literature to explore organizational and managerial influence on a novel contracting practice: the contracting out of energy efficiency improvement services in Danish municipalities. More specifically, the paper focuses on how a new contracting practice called Energy Service Companies
ESCO) has diffused across municipalities. ESCO is a special category of contracting where an organization puts out a large scale energy improving project for tender. The use of ESCO contracting has diffused across municipalities since 2007 and this paper explores some of the determinants driving the adoption of ESCO contracts.

Whereas a large amount of earlier research has addressed the performance of contracting or viewed the choice driving contracting as economic make-or-buy decisions, this paper provides a more institutional approach to understanding the contracting choice. In the paper I consider the importance of institutional pressure from the environment as well as the potential impact of managerial factors when adopting ESCO projects. Organization theory studies have illustrated how organizations are profoundly influenced by their institutional environment (Lounsbury, 2001) and that public organizations themselves are particularly vulnerable to pressure due to lower accountability and weaker control (Frumkin & Galaskiewicz, 2004). Drawing on research from institutional theory, I argue that municipalities look to each other when engaging in new contracting practices and that adoption of ESCO is related to having neighbour municipalities that have already adopted ESCO. As a second line of determinants driving adoption, the paper discusses the importance of managerial background as a potential influence on the choice of adoption. Results from the paper suggest that the antecedents driving the adoption of contracting out may result from inter-organizational influence as much as managerial factors. With this paper I contribute to the existing knowledge on contracting by illuminating how a new contracting practice diffuses across a field.
Paper Two: When does Public Sector Socialization Lead to Turnover? The Role of Organizational Privateness (with Anders R. Villadsen)

To an increasing degree public sector reforms blur the boundaries between the public and the private sectors making way for new hybrid forms of governing. Given the often divergent motives, values and norms of the public and private sector, the question remains about how these organizations’ employees respond to increased public-private hybridity. In this paper we explore the conditions under which public sector socializing are related to organizational turnover in public sector companies.

Despite the fact that turnover has been much in focus in the private sector, studies of turnover in the public sector are scarce and especially individual level analysis predicting turnover (Pitts, Marvel, & Fernandez, 2011) as well as studies on actual turnover remain under-researched (Meier & Hicklin, 2008). This is an unfortunate gap in our knowledge as high turnover rates are of great concern to public managers and organizations as often the lack of personnel stability is related to increased cost and decreasing performance (Bertelli, 2007; Meier & Hicklin, 2008; Pitts et al., 2011).

Recent research interest in organizational hybridity has increased the understanding of how individuals respond when organizations pursue contradicting demands (Buffat, 2014; Skelcher & Smith, 2014). For instance, these studies have shown how medical managers develop new identities when managerialist thinking enters the field of healthcare (McGivern et al., Forthcoming) and practices in public-private research centres (Gulbrandsen et al., Forthcoming). This research is important as it increases our understanding of how the public sector reacts to the prevailing values and practices traditionally associated with the private sector of the economy. In this paper we build on this research and aim to further this line of study by exploring how employees are affected by
increased public-private hybridity. We focus on two crucial dimensions. First, inspired by the dimensions of publicness theory (Bozeman & Bretschneider, 1994), we focus on the degree to which a (public) organization is affected by elements from the private sector, and second, the degree to which an employee is socialized into the public sector through working experience (Becker & Connor, 2005; Petrovsky, James, & Boyne, 2014). We argue that the more pronounced the organizational privateness, the stronger the positive relation of an employee’s public sector socialization to turnover.

Focusing public sector company employees at the intersection of the public and the private sectors, we suggest that highly socialized public employees are more likely to leave when their organization assumes an increasing level of privateness. We analyse matched employer-employee register data hosted by Statistics Denmark. This data includes all public sector companies and their employees in the period from 2005 to 2009. We are able to track each employee’s employment history back to 1980 and to measure socialization by employment experience in the public sector. Our results show that socialization is related to a higher turnover likelihood when (and only when) organizations are exposed to higher degrees of privateness in their environmental interactions, internal pay structures, and staffing patterns.

Paper Three: What to Do Here? What to Do There? The Effect of Organization Size on Public Management (with Anders R. Villadsen and Morten Balle Hansen)

Research has naturally been interested in the consequences of creating large public organizations whether as a result of amalgamation (Denters et al., 2014) or city-county consolidations (Feiock & Carr, 1997; Leland & Thurmaier, 2005). Most interest has concentrated on whether large organizations are more efficient and thus unit costs lower than in small organizations. So far empirical evidence has been mixed, but using quasi-experimental evidence Blom-Hansen, Houlberg, and Serritzlew (Forthcoming) find considerable positive effects of size on administrative
costs. Another stream of research has focused on how organizational consolidation is achieved through political struggles when actors have different agendas (Gibbs Springer, Feiock, Carr, & Johnson, 2006; Leland & Thurmaier, 2005). Yet, while our knowledge of reforms and specifically the relation between size and organizational outcome is increasing, we still know very little about how increasing organizational size affects internal organizational dynamics, i.e. how organization members arrive at potential benefits of size. In this paper we focus on managers as important agents in facilitating the operation of organizations.

This paper explores whether organizational size affects public management. As endogeneity is an inherent problem when studying outcomes of organizational size, we apply a quasi-experimental design in order to establish the causal linkage between size and various elements of public management. We use unique survey data collected on either side of a large reform that changed the size of most Danish municipalities. As data is collected at two different points in time, before and somewhat after the reform, we can use a difference-indifference design. In the reform process, 32 municipalities were left untouched when the others amalgamated as part of the reform and we use these municipalities as a control group. This allows us to specify the effect of the increase in size as we can control for the effect of time.

In the paper we consider eleven different dimensions of public management that can be placed within four general categories of management, leadership, internal operations, political environment and external network. Our results suggest that public management related to daily operations seems to be generic and not affected by size, whereas public management related to overall tasks such as creating a vision, servicing the mayor, and maintaining external relations is positively affected by size.
Paper Four: Who Gets Promoted? The Impact of Former Work Experience on Internal Promotion in Public sector Companies

This paper explores the entry of private sectors skills and experience into public organizations by focusing on the relationship between former work experiences and promotion to the managerial level in public sector companies. The need for bringing in private sector skills and experiences into the public sector has long been recognized, however little is known about how this actually effect internal priorities when promoting managers inside public organizations. In this study I explore the influx of private sector skills and experience by focusing on the relationship between former work experience and internal promotion to the managerial level in public sector companies. As of now, studies on promotion are quite rare in the public administration literature and actual promotion remains difficult to study. Previous studies on executive succession have addressed the choice between internal promotion or hiring external managers. The choice between hiring managers internally or externally has been linked to different organizational outcomes such as organizational performance (Hill, 2005) and organizational change (Villadsen, 2012). However, so far little attention has been devoted to the actual drivers of internal promotion.

Former studies have suggested that top managers in public organizations are important actors in shaping organizational strategies as well as performance (Hill, 2005; Meier & O'Toole, 2002). Drawing on the argument of distinctiveness between the public and private sector, scholars have begun to explore the role of sectorial socialization. Petrovsky, James and Boyne (2015) conceptualize the importance of publicness fit when assessing managerial performance. They argue for the importance of fit between the type of organization and the managers’ work history originating from their previous work places. This emphasizes the importance of a socialization effect in the two sectors. As public and private organizations often have different cultures due to
divergent motives, values and norms (Waring, Forthcoming), employees become socialized with different values and knowledge salient in the two sectors.

Contrary to expectations the results suggest that one’s most recent job being in the private sector does not influence the likelihood of promotion in itself. However, results imply that the most recent job being in private sector does indeed strengthen the effect of former public sector work experience and the probability of promotion.
### Overview and summary of papers

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References


Abstract
Studies on contracting out have provided much needed knowledge about the effect of contracting on different types of services, yet much remains unknown about the antecedents driving the adoption of new contracting practices. The focus of previous studies that have addressed the antecedents of contracting has been on the financial benefit of specific services. This study incorporates the innovation diffusion literature to explore organizational and managerial influences on a novel contracting practice: the contracting out of energy efficiency improvement services in Danish municipalities. The paper finds that the antecedents driving the adoption of contracting out may result from interorganizational influences as much as managerial factors.

Keywords: Contracting, Innovation, Local Government, Energy Efficiency¹.

¹ The paper has been accepted for publication and is forthcoming in Local Government Studies.
Introduction
Contracting out usually is considered as an integrated part of the “New Public Management (NPM)” reforms that have been sweeping the political scenes of the western world for the last decades (Fernandez, 2007; Hood, 2002; Van Slyke, 2003; Warner & Hefetz, 2012). The concept of contracting is generally built around the idea of introducing competition into public service delivery (Domberger & Jensen, 1997), and it has been promoted as a useful tool for public organizations facing the challenge of balancing public service provision with the requirements for economic efficiency and effectiveness. Supporters of contracting have argued for the scope of economic benefits related to the contracting out of public services whereas critics have pointed to the loss of control and accountability (Walker, Brewer, Boyne, & Avellaneda, 2013).

So far the contracting literature has presented a vast amount of studies on performance and cost efficiency, whereas the focus on what explains the level of contracting or the use of a specific contracting practice is more limited (Boyne, 1998; O’Toole & Meier, 2004). Further, when assessing the determinants of contracting in the existing literature, most research focuses on what explains current levels in traditional service areas such as transportation, healthcare, recreation (Domberger & Jensen, 1997; Hefetz & Warner, 2007) or schooling (O’Toole & Meier, 2004). However, we know very little about what drives new contracting practices and the diffusion of contracting into new service areas. This is an important gap in our current knowledge as many countries experiment with contracting out new types of task and services (Hefetz & Warner, 2004). In order to address this gap, this paper explores antecedents and the diffusion of a novel contracting practice in a local government setting.

Although the interest in the diffusion of innovation literature in public administration has been increasing, the main part of research has been conducted in a private sector setting (Damanpour &
Schneider, 2009). The focus on innovations in the public sector has seen an increase, however; despite an increased focus on learning and mechanism underlying diffusion, the factors that drive adaptation of innovations in the public sector still need further exploration (Walker, 2006). As studies on diffusion of innovation have shown, antecedents of innovations may vary depending on the type of innovation being diffused (Homburg, Dijkshoorn, & Thaens, 2013). To better understand how a novel contracting practice is diffused, I bring in the context of contracting as I build a framework bridging the literature on contracting with some of the insights provided by the literature on diffusion of innovation in public sector.

In order to explore what drives adoption of a novel contracting practice, I consider how a new type of contracting called ESCO (Energy Service Company) contracting has been adopted across Danish municipalities. The case of ESCO contracting constitutes an excellent setting for increasing the understanding of organizational antecedents to the adoption of a novel contracting practice as it provides a useful case for elaborating on the drivers and barriers promoting and challenging the choice of contracting public services in a new service area. It is an area where contracting decisions are clear and observable as well as an area of high importance and salience for administrators and policy makers. From this point of departure, the paper explores the diffusion of a novel contracting practice by focusing on: What explains the probability of a given municipality adopting ESCO contracts?

This research question will be pursued by suggesting a model considering inter-organizational, intra-organizational as well as management factors in the exploration of how new contracting practices are adopted at local government level. Former research suggests that institutional pressures homogenize organizational practices (DiMaggio & Powell, 1983) driving municipalities to emulate and use each other for learning when adopting new practices (Berry & Berry, 1990; Bhatti, Olsen, & Pedersen, 2011; Homburg et al., 2013). However, organizations differ in their
response to institutional pressure due to managerial factors and their institutional context (Ashworth, Boyne, & Delbridge, 2009; Greenwood & Hinings, 1996; Lounsbury, 2001; Oliver, 1991). As a consequence the adoption of new practices can be viewed as a function of the interplay between environmental pressures and strategic choice at the organizational level (Van de Ven & Hargreve, 2004), where local governments might be more or less receptive due to organizational and managerial factors. In order to test the proposed framework, I apply an Event History Analysis on a 2007-2013 panel data set to explore how ESCO contracting has diffused across local governments in Denmark.

This article provides three contributions to the existing literature on contracting and diffusion of innovation in the public sector. Firstly, this study contributes by showing how a new contracting practice diffuses at local government level. Doing so, it illuminates the antecedents of a novel contracting practice as well as explores some of the drivers or barriers of the contracting decision. By focusing on the diffusion of a single practice in contrast to explaining the choice of contracting from aggregated historical levels, this paper provides new information about the actual decision-making as regards a new specific form of contracting at local government level. Secondly, this study adds to the growing knowledge on drivers of diffusion in public administration by adding to and testing some of the proposed factors in the literature. As the study builds on a longitudinal dataset, it provides the opportunity to argue for the causal mechanism driving adoption of new practices at local government level (Damanpour & Schneider, 2009). Thirdly, the paper improves the understanding of the processes through which public sector agencies use contracting to pursue energy reduction. Even though the use of ESCO contracts is increasing across Europe, very few studies have dealt with the adoption of ESCO contracts (Marino, Bertoldi, Rezessy, & Boza-Kiss, 2011; Soroye & Nilsson, 2010; Sorrell, 2007). This paper brings together the contracting literature
with the more technical literature on energy improvements and highlights a politically important topic that so far has been neglected in public administration research (Sorrell, 2007).

**Contracting for energy improvements**
In recent years the debate regarding public sector involvement in contracting out has seen a transition from an ideology-based view to a more pragmatic perspective (Greve, 1997; Hefetz & Warner, 2004), thereby arguing that involvement in contracting out is "not a quest for a better administration philosophy, but for better functioning public organizations (Hefetz & Warner, 2011)". Choosing whether to contract or not has been much debated by supporters and critics of the privatization trend. The idea of introducing competition through tendering into the public sector has been proposed as one of the main drivers of economic efficiency and effectiveness (Domberger & Jensen, 1997). However, when there is lack of competition and management capacity for controlling contracts, the choice of using privatization tools is often more a political act than an economic one (Van Slyke, 2003). To date, the contracting literature has covered a large variety of perspectives on contracting. Especially the performance view on contracting has been much discussed in the existing literature (O'Toole & Meier, 2004); studies include contracting performance (Fernandez, 2007; Walker et al., 2013), insourcing and outsourcing (Hefetz & Warner, 2004; Warner & Hefetz, 2012), make or buy decisions (Brown & Potoski, 2003; Rosenberg Hansen, Mols, & Villadsen, 2011) and to some extent the determinants of contracting out (Bhatti, Olsen, & Pedersen, 2009; Boyne, 1998; Fernandez, 2007; Levin & Tadelis, 2010).

However, the question concerning what is contracted and how contracting moves into new areas of public service delivery, has so far received little attention. Traditionally contracting at local government level has taken place within most local governments’ core functions, such as construction, healthcare, elder care, transportation, and schooling. This leaves the question of why
organizations use contracting to different degrees and why some organizations tend to embrace new contracting opportunities while others prefer in-house production. Transaction costs theorists have argued that some areas are more suitable for contracting than others due to asset specificity and monitoring problems; however, research has produced inconsistent results (Domberger & Jensen, 1997; Hefetz & Warner, 2007). In order to address this gap, this paper explores antecedents and the diffusion of a new contracting practice called ESCO contracting.

**The introduction of a new contracting practice – ESCO contracts**
ESCO is the contracting out of energy-related services to a third party by means of a tender process among private sector firms (Sorrell, 2007). In the ESCO contracts the yearly savings on energy are specified and the contractor provides an embedded guarantee on reaching the target securing savings are reach every year. Large scale energy improvement projects are not a traditional area for contracting in most local governments. However, despite most of the political debate on energy consumption taking place at the national level, repeatedly calls are made to contemplate the potential for achieving the energy goals at the local government level with the intention to boost commitment to energy reductions at the national level (Bale, Foxon, Hannon, & Gale, 2012). The concept of ESCO contracting has regained its influence with the intensification of the energy consumption debate in most parts of the world (OECD, 1999). By increasingly displaying environmental concerns in a financial light, the economic challenge arising from energy-saving investments has shifted the public agenda making way for the introduction of ESCO as a new way of reaching lower energy consumption in a more cost-efficient way. Parts of the European market have seen ESCO projects since the late 1980s, especially in Germany, France and the UK (Bertoldi, Boza-Kiss, & Rezessy, 2007), and lately they have gained ground in other European countries, e.g. Denmark. As a result the concept of ESCO can be viewed as a product innovation as it is a new service that is introduced to meet a new market need (Walker, 2006).
The diffusion of ESCO contracts: Hypotheses

The question of how new practices and ideas spread across a field of organizations has been a central starting point in much organizational literature (Van de Ven & Hargreve, 2004). Both in institutional theory and the literature on diffusion of innovations, it has been pointed out how internal as well as external factors impact organizations’ decisions to adopt a new practice (Homburg et al., 2013; Wang & Zhao, 2014). One dynamic that has been forcefully demonstrated is imitation. Assessing the differences across sectors, Frumkin and Galaskiewicz (2004) argue that public sector organizations are more likely to imitate as imitation seems to thrive where accountability is low, and measurement and control weak or imprecise. The more uncertain the relationship between means and ends, the greater the extent to which an organization will model itself after organizations it perceives as successful (DiMaggio & Powell, 1983). Increased uncertainty, in particular, will foster greater attention to the choices made among peer organizations. Therefore, the decisions to contract out services at local government level are rarely made by managers looking only inside their own organization. Research has illustrated that to a great extent organizational practices are shaped by institutional factors (Homburg et al., 2013) and inter-organizational relations as well as by managerial decision-making (Lounsbury, 2001). When assessing the diffusion of new practices, managerial characteristics such as tenure, experience and education have been argued to be influential (Damanpour & Schneider, 2006, 2009; Hansen, 2011). This suggests a need to consider contracting in a more general interplay between its societal context and managerial influences when exploring why contracting is adopted across a field. In order to elaborate on how contracting spreads from a field perspective, I derive a series of hypotheses combining inter-organizational, organizational and managerial drivers of local government adoption of ESCO contracts.
Inter-organizational factors

Okhmatovskiy (2010) argues that when conceptualizing inter-organizational relationships, researchers have begun viewing those relationships as associated with norms, expectations, and responsibilities instead of just arms-length practices of co-operation. Former studies of contracting out have indicated that this propensity for emulation is likely to trigger a pattern of adoption among neighbors due to the existence of formal regional municipal organizations, employee transfers and regional cooperation in service provision (Bhatti et al., 2011). Strang and Meyer (1993) argue that ‘when adoption is socially meaningful, it is common to think of actors as making different choices cognitively available to each other, developing shared understandings, and exploring the consequences of innovation through each other’s experience’ (Strang & Meyer, 1993). Neighbor municipalities that are closely tied together are therefore more likely to engage in transactions with each other, which in turn fosters the development of similar internal structures.

The newness of ESCO projects in most local governments might trigger some degree of uncertainty regarding the adoption and successful outcome of a new practice. Uncertainty regarding ESCO projects and the energy efficiency prospects can serve as drivers of local cooperation and sharing of experience across municipality boarders. In Berry and Berry’s (1990) study of adoption of state lotteries, they argue that state policy makers tend to view nearby states as "experimental laboratories" for policies and because predicting the consequences of adopting a new program can be very difficult, knowledge about effects of the program in a similar state can help overcome uncertainty. DiMaggio and Powell (1983) argued that organizations tend to become more similar due coercive, normative and mimetic pressures for increasing conformity and similarities of internal structures. In the same vein Villadsen, Hansen and Mols (2010) found support for technological uncertainty as a driver of imitative behavior in contracting decisions. Thus, the adoption of ESCO
contracts in a nearby municipality will advance knowledge on how to reduce cost thereby easing the uncertainty related to making the contracting decision.

Summing up the preceding discussion, the argument for neighbor emulation is threefold. Firstly, neighbors provide cues about the adoption of a new practice as a palatable solution; secondly, neighbors are more likely to engage in knowledge sharing and learning; and thirdly, with the institutionalization of a new practice, legitimacy of how to carry out energy efficiency measures is developed increasing the organizational environment’s normative pressure for adoption. As a result, the adoption of ESCO contracts is expected to be related to adoption of ESCO in neighbor municipalities. The first hypothesis therefore reads as follows:

\[ H_{1_{\text{emulation}}} \text{: The adoption of an ESCO project in a neighboring municipality is positively related to its adoption in any given municipality.} \]

**Organizational factors**
Controlling costs and staying within budget is an everlasting issue faced by most public organizations (O'Toole & Meier, 2004) – a situation that was intensified with the financial crisis and economic downturn in 2008. The prospect of controlling expenditure with an embedded guarantee provided by an ESCO contract is likely to become an attractive solution for municipalities that have trouble staying within budget. For most local governments, the main objective is to meet their financial targets. Large deficits require heavy cutbacks in following years, whereas large surpluses imply underspending and excessive financial slack for public organizations whose main purpose is the provision of the best possible service. Financial instability results when the gap between actual and budgetary result increases. Financially unstable municipalities are likely to engage in contracting that runs on closed circuits because risk opportunity for cutting back on public sector spending is low. Municipal risk aversion makes ESCO contracting palatable due to the
lack of financial concerns regarding possible budget impact. The choice of adopting ESCO guided by financial instability is likely to be expected. Hence:

\[ H2 \text{financial instability: Financial instability is positively related to adoption of an ESCO project.} \]

Besides financial concerns, organizational capacity to manage contracting in new or on previous occasions is likely to influence the choice of whether or not to engage in new contracting practices (Amirkhanyan, Kim, & Lambright, 2007; Fernandez, 2007). Fernandez (2007) argues that previous experience with contracting is positively related to the choice of contracting out. The importance of experience may not only be understood as experience in itself; later lack of experience may foster a culture of fear around contracting out and this may permeate the municipality creating a barrier for future contracting. Previous studies have argued for the presence of administrative professionals as a driving force of contracting in public service provision (Bhatti et al., 2009; O'Toole & Meier, 2004; Rho, 2013). Administrative professionals bring a higher education in administration to the table and consequently increased knowledge, skills and experience of handling contracting. A high concentration of administrative professionals in an organization will increase the likelihood of contracting out due to their ability to handle such contracts. On the other hand, a low concentration of administrative professionals cannot display the same knowledge and ability and consequently not have the same interest in engaging in new contracting practices. Consequently the extent to which a given municipality employs a large number of administrative professionals is expected to have a positive effect on the probability of a municipality choosing to adopt the ESCO contracting practice. The third hypothesis is:

\[ H3 \text{administrative professionals: The proportion of administrative professionals in an organization is positively related to the adoption of an ESCO project.} \]
Managerial factors

‘If we want to understand why organizations do the things they do, or why they perform the way they do, we must consider the biases and dispositions of their most powerful actors – their top executives’ (Hambrick, 2007). Even though a shift towards stronger inter-organizational relationships increases institutional pressure to adopt new practices, local government managers arguably maintain an important impact on the contracting decision in their own organization. Ashworth et al. (2009) argue that local policy makers have significant scope for “deviant” behavior influencing institutional pressures for conforming. This implies that top managers exercise some choice when confronted with pressure to adopt a rapidly spreading practice. Damanpour and Schneider (2009) introduced the importance of managerial characteristics in their study of innovation characteristics and adoption in public organizations. Strang and Meyer (1993) argue that actors can be viewed as carriers of diffusion through their drive and capacity for reform and innovation. Top executives have values and experience from their former workplaces as well as educational insight, values and experience that to some extent influence their organizations’ strategic (Hambrick & Mason, 1984; Petrovsky, James, & Boyne, 2015; Villadsen, 2012). As a result, top executives with prior work experience in the private sector are arguably likely to have values as well as a larger network and general insight into the possibilities the use of private suppliers may offer. Researchers have argued that highly-educated managers will be more receptive to new ideas and as innovation tends to increase uncertainty, in the same manner educated managers will have a greater ability to gather information on how to reduce uncertainty (Damanpour & Schneider, 2006, 2009). Top executives with an administrative professional background are likely to be more positively predisposed towards engaging private suppliers due to their superior skills in, and experience of, dealing with contracting (Bhatti et al., 2009). Hypotheses four and five are therefore:
**H4 Directors work experience:** Municipal directors with private sector work experience are more likely to adopt an ESCO project.

**H5 Directors education:** Municipal directors with an education in professional administration will be more likely to adopt an ESCO project.

A third managerial factor that influences the decision to adopt a new contracting practice is the importance of tenure. Tenure has been argued to reduce the likelihood of adopting new practices, because as tenure increases so do familiarity and experience with administrative practices and culture which may hamper engaging in new and unfamiliar administrative practices (Damanpour & Schneider, 2006; Hansen, 2011). Conversely, new CEOs are more likely to make important strategic changes due to their fresh view on things; a managerial drive for reform and innovation might make them more inclined to copy new ideas and practices (Strang & Meyer, 1993). The final hypothesis is:

**H6 Director tenure in position:** Director tenure is negatively related to adoption of an ESCO project.

**Research setting**

This study considers how ESCO contracts spread across Danish local governments. ESCO contracts usually come as a combined package covering a variety of elements such as energy information, control systems, energy audits, installation, operation and maintenance of equipment, competitive finance, and fuel and electricity purchasing (EU, 2006; Sorrell, 2007). The winner of the public tender carries out the energy improvements at the same time guaranteeing the savings to be obtained by the contract holder. This embedded guarantee on the cost reduction allows the public organization to reduce its energy costs at the same time transferring the risk to the contracting firm. Even though part of the savings are accrued by a private sector partner, the ESCO contracting practice has been proposed in Denmark and many other European countries as an optimal solution.
for bridging energy reduction and cost efficiency. Recent studies discussing the use of ESCO in the EU concluded that there were as many as one thousand ESCOs in hand at present, but that the potential market is far from depleted (Marino et al., 2011).

The interest in ESCO projects has been rising during the last decades, but only recently have ESCO projects entered the Danish scene seeing a rapid diffusion across municipalities since 2007. The choice of ESCO represents one among many options when it comes to dealing with energy efficiency. Some municipalities perform energy improving services in house or they hire external consultants for short-term projects. Since the ESCO concept is far from the only way to carry out improvements in energy efficiency, it is an especially useful case for studying the drivers of and barriers to the contracting out of public services. Up till now there has been no regulation or requirements for local governments to decrease their energy consumption; however since the financial crisis in 2008, most local governments have started to realize the economic potential in reductions on their energy consumption. A study carried out by Local Government Denmark showed that nearly all Danish municipalities engage in energy saving practices (Larsen, 2013). The operating companies in the field of ESCO cover a large variety of engineering firms, of which most operate across the entire country. ESCO contracts in Denmark vary in size and run up to EUR 20 million. Figure 1 display how ESCO contracts have diffused across the 98 Danish municipalities from 2007 to 2013. The first adoptions took place at three distinct locations in Denmark and have since spread from these centers. In 2013, 29 out of 98 municipalities had adopted ESCO contracts.

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3 97 % of the municipalities argued for a higher commitment to energy savings.
Figure 1: Diffusion of ESCO contracts from 2008, 2010, 2012 and 2013.
Historically, the level of contracting out municipal tasks to private suppliers in Denmark has not increased significantly during the past two decades (Greve, 2003). However, to some extent the use of contracting is inherent in most parts of government today but varies greatly across municipal settings (Greve & Ejersbo, 2005). In all municipalities the formal executive is the Mayor. Mayors are elected every four years and are mainly concerned with political decision-making. On the administrative level, municipalities are headed by the municipal director who is in charge of the administrative organization. Municipal directors are powerful bureaucrats who remain in office across political elections and they have the main responsibility for providing public services within their municipality (Villadsen, 2012). The Danish municipal environment is very suitable for analyzing adoption of new practices because the municipalities are fairly similar. This provides a useful foundation for exploring variations in organizational responses to a new contracting practice.

**Methods**

In order to test the proposed hypothesis, I gathered a panel dataset including data from seven years from 2007, when the first ESCO was adopted, to 2013. The data for the statistical analysis originates from various sources. The financial data is obtained through the “Municipal key figures” website, Statistics Denmark, and KREV’s (Danish Evaluation Institute for Local Government). Information regarding a given municipality’s choice of ESCO was hand collected and coded using municipal websites and crosschecked with information on the official governmental public tender website. The data on managerial background is coded by information from “Mayor facts” and

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4 www.noegletal.dk
5 www.dst.dk
6 http://krevi.dk/noegletal
7 http://www.udbud.dk/
8 www.borgmesterfakta.dk
occasional newspaper articles in order to construct a full dataset on managerial background for all Danish municipalities.

**Dependent variable**
The dependent variable included in the analysis is coded as a dummy variable indicating whether or not a given municipality adopted an ESCO contract in a given year. The first ESCO was adopted in December 2007. However, due to the municipal amalgamation in January 2007, adoption is coded as having taken place in 2008 in order to avoid possible data breach.

**The independent variables**
*Neighbor emulation* is coded as a dummy variable for whether or not a given municipality had at least one neighbor that had engaged in an ESCO contract the previous year. Municipalities are coded as neighbors when they share borders. *Financial instability* is measured as the absolute difference between the annual budget and actual yearly result of the total municipal budget for every year. *Administrative professionals* are measured as DJØF members – a union representing lawyers and masters of economics, political and social science. The variable is coded as the number of administrative professionals as a ratio to number of inhabitants in the municipality (then centered, so that 100 is the mean for all municipalities). *Top executive education* is measured as a dummy variable where a municipal director with a degree in professional administration is coded 1 and 0 otherwise. Municipal directors were chosen as the level of managerial influence as ESCO contracts are big scale contracts that will require top level approval. The size of these contracts usually varies from about 3 to 20 million Euros. Despite other managers at lower levels in the administration might influence the decision making as well, projects of this scale in a Danish context requires support and approval at the highest level of management. Education in professional administration is defined as a master degree in public administration, political science, law or economics. *Tenure* for directors is coded as years in current position and *former experience* is coded as a dummy variable with 1 for managers with private sector work experience and 0 otherwise.
Generally all independent variables and controls are included as lagged effects as it is hypothesized that last year situations are related to adoption in the current year.

Controls
The following variables are included in the analysis as controls due their likely influence on the adoption of new contracting practices. In previous literature the impact of Political ideology on the choice of contracting out in a municipal context has produced mixed results (Bhatti et al., 2009). One of the central arguments presented is the influence of the conservative/liberal ideology on contracting due to ideological recognition of contracting as an important tool for modernization increasing efficiency in public service delivery. This implies that a more intense focus on contracting out at the political level is likely to be related to the diffusion of contracting out in municipalities (Ashworth et al., 2009). The possible impact of conservative/liberal ideology is included as a control in the analysis measured as a dummy variable coded 1 for conservative/liberal ideology and 0 otherwise. Earlier studies have found that municipal size as an important antecedent for determining the adoption of New Public Management innovations (Hansen, 2011), which implies a need to control for the potential impact of municipal size. I have included to financial measures, per capita spending and service level, the latter being measured as the ratio of local government per capita spending to the funding needed due to societal composition hereby controlling for cost and efficiency in service delivery. Director age is included in the analysis as a control for managerial independent variables. Membership of Energy Forum Denmark, which is an association for both private and public organizations on energy matters, is included to control for the possible influence of alternative inter-organizational relationships than the one hypothesized between neighboring municipalities. Income tax reports the level of income tax per capita. The last control is use of private suppliers, which indicates the level of contracting of services in general.
measured as a percentage of how much the municipalities are allowed to contract out. This provides a control for the differences in the previous interest in contracting.

**Estimation**
In order to explore the diffusion of ESCO contracting, I use discrete event history modeling. Event history modeling has some advantages over other regression models due to its ability to examine the underlying causal mechanisms of event occurrence as well as the possibility of modeling time-varying covariates. The risk set includes all 98 municipalities for the first year (2007) and decreases as the municipalities that have adopted ESCO are removed from the risk set after adoption. The municipalities are set to be removed from the risk set since only the first adoption of ESCO is the focus of this analysis. To estimate the model, the complementary log-log transformation is used. It takes a variable with the values of 0 and 1, marks the occurrence of the event in a given year, and changes it to a continuous value ranging from minus infinity to plus infinity where the coefficients estimated by this procedure have a relative risk interpretation (Dobbin & Kelly, 2007). This kind of model is suitable when the precise time of adoption in a given year is unknown (Dobbin & Kelly, 2007). Since the data has a “cross-sectional times series” structure, the model was initially estimated with the panel structure with controls for unobserved heterogeneity (‘frailty’). Initial tests showed that the variation accounted for by the panel structure (“rho”) was not significantly different from zero. Consequently the models were estimated without the panel data estimator (though these coefficients are very similar – available on request). The statistical program STATA was used for estimating models using the complementary log-log function “cloglog”. The variance inflation factors for the variables included in the analysis are all less than 3.5 so there is no sign of multicollinearity biasing the analysis.
Results

Table 1 reports the descriptive statistics for the dependent variable, independent variables and controls included in the analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCO</td>
<td>0.047</td>
<td>0.212</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Emulation</td>
<td>0.329</td>
<td>0.470</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Financial instability</td>
<td>1322</td>
<td>1389</td>
<td>5</td>
<td>17,560</td>
</tr>
<tr>
<td>Administrative professionals</td>
<td>87.74</td>
<td>45.64</td>
<td>0</td>
<td>249</td>
</tr>
<tr>
<td>Director education</td>
<td>0.581</td>
<td>0.494</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Director tenure</td>
<td>3.22</td>
<td>4.39</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>Director experience</td>
<td>0.185</td>
<td>0.388</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Director age</td>
<td>53.16</td>
<td>5.87</td>
<td>38</td>
<td>65</td>
</tr>
<tr>
<td>Service level</td>
<td>1.01</td>
<td>0.049</td>
<td>0.91</td>
<td>1.25</td>
</tr>
<tr>
<td>Liberal mayor</td>
<td>0.46</td>
<td>0.499</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Municipal size (log)</td>
<td>10.62</td>
<td>0.766</td>
<td>7.55</td>
<td>13.13</td>
</tr>
<tr>
<td>Expenditure pr. capita</td>
<td>74,049</td>
<td>9,542</td>
<td>51,071</td>
<td>106,459</td>
</tr>
<tr>
<td>Membership energy association</td>
<td>0.675</td>
<td>0.469</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Tax base</td>
<td>34,549</td>
<td>5,074</td>
<td>26,630</td>
<td>57,880</td>
</tr>
<tr>
<td>Use of private suppliers</td>
<td>24.07</td>
<td>3.96</td>
<td>15.6</td>
<td>44.1</td>
</tr>
</tbody>
</table>

Table 2 reports the results of the discrete event history analysis, where model 1 presents the test for the control variables, and the following models report the tests of the six hypothesis.
<table>
<thead>
<tr>
<th></th>
<th>Model 1 ESCO</th>
<th>Model 2 ESCO</th>
<th>Model 3 ESCO</th>
<th>Model 4 ESCO</th>
<th>Model 5 ESCO</th>
<th>Model 6 ESCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-22.61(-3.62)***</td>
<td>-23.14(-3.64)***</td>
<td>-20.60(-3.26)***</td>
<td>-18.95(-2.90)**</td>
<td>-28.73(4.17)***</td>
<td>-25.49(3.46)***</td>
</tr>
<tr>
<td>Emulation</td>
<td>0.78(1.62)*</td>
<td>0.9(1.84)*</td>
<td>0.00 (1.67)*</td>
<td>0.00(1.93)*</td>
<td>0.01(1.45)†</td>
<td>0.01(1.45)†</td>
</tr>
<tr>
<td>Financial instability</td>
<td>0.00 (1.67)*</td>
<td>0.00(1.93)*</td>
<td>0.00 (1.67)*</td>
<td>0.00(1.93)*</td>
<td>0.00 (1.67)*</td>
<td>0.00(1.93)*</td>
</tr>
<tr>
<td>Administrative professionals</td>
<td>0.01 (2.13)*</td>
<td>0.01(1.45)†</td>
<td>0.00 (2.13)*</td>
<td>0.00(1.45)†</td>
<td>0.00 (2.13)*</td>
<td>0.00(1.45)†</td>
</tr>
<tr>
<td>Director education</td>
<td>-0.11(-0.25)</td>
<td>0.14(0.28)</td>
<td>-0.11(-0.25)</td>
<td>0.14(0.28)</td>
<td>-0.11(-0.25)</td>
<td>0.14(0.28)</td>
</tr>
<tr>
<td>Director experience</td>
<td>0.83(1.98)*</td>
<td>0.81(1.89)*</td>
<td>0.83(1.98)*</td>
<td>0.81(1.89)*</td>
<td>0.83(1.98)*</td>
<td>0.81(1.89)*</td>
</tr>
<tr>
<td>Director tenure</td>
<td>-0.17(-1.77)*</td>
<td>-0.19(-2.05)*</td>
<td>-0.17(-1.77)*</td>
<td>-0.19(-2.05)*</td>
<td>-0.17(-1.77)*</td>
<td>-0.19(-2.05)*</td>
</tr>
<tr>
<td>Director age</td>
<td>0.06(1.60)</td>
<td>0.08(2.08)*</td>
<td>0.06(1.60)</td>
<td>0.08(2.08)*</td>
<td>0.06(1.60)</td>
<td>0.08(2.08)*</td>
</tr>
<tr>
<td>Service level</td>
<td>13.87 (2.63)**</td>
<td>14.76(2.77)**</td>
<td>12.49(2.35)*</td>
<td>14.33(2.71)**</td>
<td>15.62(2.77)**</td>
<td>15.17(2.66)**</td>
</tr>
<tr>
<td>Liberal mayor</td>
<td>-0.16 (-0.38)</td>
<td>-0.01(-0.03)</td>
<td>-0.09(-0.21)</td>
<td>-0.02(-0.04)</td>
<td>-0.02(-0.04)</td>
<td>-0.02(-0.04)</td>
</tr>
<tr>
<td>Municipal size (log)</td>
<td>0.94 (3.00)**</td>
<td>0.95 (2.89)**</td>
<td>0.88 (2.93)**</td>
<td>0.87 (2.93)**</td>
<td>1.01(2.83)**</td>
<td>0.86(2.67)**</td>
</tr>
<tr>
<td>Expenditure pr. capita</td>
<td>-0.00 (-1.45)</td>
<td>-0.00(-1.52)</td>
<td>-0.00(-1.41)</td>
<td>-0.00(-2.08)*</td>
<td>-0.00(-1.17)</td>
<td>-0.00(-1.50)</td>
</tr>
<tr>
<td>Membership energy association</td>
<td>-0.49 (-1.24)</td>
<td>-0.50(-1.25)</td>
<td>-0.54(-1.35)</td>
<td>-0.66(-1.63)</td>
<td>-0.51(-1.27)</td>
<td>-0.72(-1.75)†</td>
</tr>
<tr>
<td>Income tax pr. capita</td>
<td>-0.00 (-0.49)</td>
<td>-0.00(-0.86)</td>
<td>-0.00(-0.37)</td>
<td>-0.00(-1.33)</td>
<td>-0.00(-0.29)</td>
<td>-0.00(-1.08)</td>
</tr>
<tr>
<td>Use of private suppliers</td>
<td>0.00(0.06)</td>
<td>-0.00(-0.11)</td>
<td>-0.03(-0.37)</td>
<td>-0.02(-0.38)</td>
<td>-0.00(-0.02)</td>
<td>-0.05(-0.76)</td>
</tr>
<tr>
<td>Wald Chi²</td>
<td>30.90 (12)**</td>
<td>33.80(13)***</td>
<td>33.55(13)***</td>
<td>35.07(13)***</td>
<td>39.99(16)***</td>
<td>49.99(19)***</td>
</tr>
<tr>
<td>N</td>
<td>520</td>
<td>520</td>
<td>520</td>
<td>520</td>
<td>516</td>
<td>516</td>
</tr>
</tbody>
</table>

Significance level: † p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001. One tailed test for hypothesized effects and two tailed test for controls (z value in parentheses). Year dummies controlled for but results not reported.
The results support Hypothesis 1 and the hypothesized relation of neighbor emulation on the choice of ESCO contracting. This indicates that ESCO contracting is driven forward by neighbor emulation, cooperation and exchange of ideas between the municipalities. Model 3 shows support for Hypothesis 2 regarding the impact of financial instability on the likelihood of adopting ESCO contracts, which supports the argument that municipalities that have large budgetary discrepancies, are more likely to adopt ESCO contracting than municipalities that find it easier to stay within their budgets. Considering Hypothesis 3 on the importance of administrative professionals, the results of model 4 at first offer support for the hypothesis; this relationship, however, becomes insignificant in the full model (model 6) suggesting no support for the hypothesis. The hypothesis was expected to reveal a positive effect but the results show no relationship between the number of administrative professionals and the likelihood of adopting ESCO contracting. Turning to the impact of managerial influence, model 5 confirms the positive impact of private sector experience (Hypothesis 4) on the choice of ESCO contracting, which supports the argument that public managers bring experience and values from prior work engagement which fosters encouragement for the use of private suppliers. The test of Hypothesis 5 on the expected positive impact of an administrative professional background on the adoption of ESCO reveals no relationship. The results for director tenure (hypothesis 6) confirm the expected negative association between years in position and the adoption of ESCO contracting, based on greater reluctance to change administrative practices among those public managers who have remained in their position for many years.

**Discussion**
This paper focuses on how the adoption of ESCO projects is diffused at local government level. By illuminating local governments’ varying susceptibilities to collaborate and engage in partnerships
with private sector actors in the case of ESCO contracting, this study contributes to the literature on local government contracting. Domberger (1998) argues that even though many aspects of contracting have been analyzed there is still a long way to go before all possibilities have been explored. The diffusion of ESCO across Danish municipalities provided a new setting for the study of contracting out and consequently the possibility for analyzing how such a practice is spreading. Event history modeling was used to uncover antecedent of a new contracting practice over time contrary to static perspectives using cross-sectional data, thereby adding further confidence to the findings.

The test of the proposed hypotheses revealed support for the idea that neighbor emulation, financial instability, managerial work experience and managerial tenure in position all are important drivers of ESCO contracting. However, the study was unable to support the expected impact of administrative professionals on the adoption of ESCO both on an organizational and a managerial level. The lack of support challenges former studies that have argued that administrative professionals drive contracting (Bhatti et al., 2009; O'Toole & Meier, 2004; Rho, 2013). This might be due to the fact that former studies were either focused on historical levels or aggregated measures of contracting, whereas this study focuses on a new contracting practice within a service area not usually contracted out. As this study finds little support for the relationship by tracking a novel contracting practice from its first appearance, it raises the hen-and-egg discussion regarding the relationship between bureaucrats and the degree of contracting out.

In line with some of the previous suggestions from the literature on diffusion of innovation in public administration (Damanpour & Schneider, 2006, 2009), results show support for the importance of management characteristics. Public managers carry with them values and experience which influence their perceptions and decisions and in turn their commitment to engaging in new administrative practices. Likewise, the results support the expected effect of neighbor emulation
between municipalities, stressing the role of institutional forces as drivers of adoption of new practices. This highlights the interplay between public sector organizations illuminating that public organizations are, like private ones, susceptible to cross-organizational learning and imitation. Frumkin and Galaskiewicz (2004) argue that public organizations have been neglected not only as creators of institutional pressure but as vulnerable to such pressure themselves. The fact that emulation and learning serve as a driving force for contracting out implies that new practices are carried forward by recognition of opportunities and encouragement for sharing experience and knowledge regarding these new practices. Hence, some of the obstacles for engaging both in ESCO contracting and in other contracting areas might be overcome by increased sharing of experience. Further research exploring this important issue would be extremely valuable.

This study is different from most other studies on contracting as it focuses on a discrete contracting practice and not an aggregated measure of the level of contracting in municipalities. This holds several advantages with implications for existing knowledge. First, the aggregated level of an organization’s contracting is likely to reflect a long series of decision points. The finer details of specific decisions may be hidden to aggregated analyses. By focusing attention on a discrete contracting event, this study gains precision and can surface the important role that neighbor emulation plays in making high-uncertainty decisions. A second advantage of studying a discrete contracting event is that it allows gaining substantial knowledge about a specific contracting practice which is impossible in studies with aggregated measures. ESCO contracts have been suggested as an attractive solution to the conundrum of achieving energy reduction in a cost effective way. While this study cannot disclose about whether the contracts actually achieve this goal, I point to a number of factors which make the diffusion of this contracting practice more or less difficult. Policy makers committed to ESCO contracts should acknowledge the great
uncertainty inherent in this type of projects and facilitate cross-organizational collaboration and inspiration which appear important.

Finally, this study has some limitations that should be recognized. ESCO contracting constitutes a specific form of contracting in a field that provides good opportunities for measuring and specifying goals and outcomes. Consequently, specifying and handling these types of contracts is likely to differ somewhat from “softer contracts” where goals and outcomes are difficult to measure. The possibility of transferring a “known” risk – an embedded guarantee – to the contracting firm might make it easier for municipalities to venture into new practices compared with contracting where a larger proportion of the financial risk remains with the municipality. This study has examined the diffusion of contracting from a macro-perspective. One avenue for future research is to explore the macro-mechanism uncovered in this article by elaborating on how the municipalities engage in sharing of experience and knowledge from a micro-perspective. Another suggestion for future research is to illuminate the performance side of ESCO in order to test the frequently proposed link between cost efficiency and the use of ESCO contracts.
References


**Paper 2: When does public sector socialization lead to turnover? The role of organizational privateness**

**Authors:** Sarah M. L. Krøtel & Anders R. Villadsen

**Abstract**

Public sector reforms are increasingly blurring the boundaries between the public and private sectors making way for new hybrid forms of governing. Given the often divergent motives, values and norms of the public and private sectors, the question remains how these organizations’ employees respond to increased public-private hybridity. In this paper we explore the conditions under which public sector socializing are related to organizational turnover in public sector companies. Turnover is an understudied topic in public administration literature. Focusing on employees in public sector companies at the intersection of the public and the private sectors, we suggest that highly socialized public employees are more likely to leave when their organization embodies an increasing level of privateness.

**Keywords:** Turnover, public sector socialization, public-private hybrid organizations

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1 This paper has been accepted for publication in *Public Administration*. A previous version of the paper was awarded the Charles Levine Best Paper Award at the Academy of Management Meeting in Vancouver 2015.
Values and practices rooted in the private sector have increasingly been introduced into the public sector with the aim of boosting efficiency and quality in service delivery (Waring, Forthcoming). Following these reforms public sector employees across a wide range of work areas have had to adapt to new ways of doing things, for instance new control systems, new work routines or other practices. Studies have in detail described the content and prevalence of such reforms as well as the outcomes achieved. However, so far less attention has been awarded the internal side of the organizations and how increased privateness affects employees in public organizations.

Recent research interest in organizational hybridity has increased the understanding of individuals’ response when organizations pursue contradicting demands (Buffat, 2014; Skelcher & Smith, forthcoming). For instance, studies have shown how medical managers develop new identities when managerialist thinking enters the field of healthcare (McGivern, Currie, Ferlie, Fitzgerald, & Waring, Forthcoming) and practices in public-private research centres (Gulbrandsen, Thune, Brorstad Borlaug, & Hanson, Forthcoming). This research is important as it increases our understanding of how the public sector reacts to the dominant values and practices traditionally associated with the private sector of the economy. In this paper we build on this research and aim to further this line of study by exploring how employees are affected by increased public-private hybridity. We focus on two crucial dimensions. First, drawing inspiration from the dimensions of publicness theory (Bozeman & Bretschneider, 1994), we focus on the degree to which a (public) organization is affected by elements from the private sector; and second, on the degree to which an employee is socialized into the public sector through working experience (Becker & Connor, 2005; Petrovsky, James, & Boyne, 2015). We argue that the more pronounced the organizational privateness, the more strongly an employee’s public sector socialization is positively related to turnover.
We draw on public sector socialization theory to increase our understanding of turnover from public sector companies. Public sector companies are a perfect example of entities where the lines between the public and private sectors are blurred. Despite being publicly owned they operate on market-like conditions to various degrees. We propose three ways in which public organizations can embrace elements from the private sector: first, in their degree of marketization; second, in their internal practices; and third, in their staffing patterns by hiring new employees from the private sector. We hypothesize that each of these dimensions increase the likelihood of turnover among employees with longer public sector experience.

This paper aims to make three important contributions. First, as argued by Meier and Hicklin (2008), turnover is an understudied topic in public administration. Only a limited number of empirical studies deal with this important phenomenon and most of these studied turnover intention only. This is a problem as studies have suggested that turnover intention substantially overstate actual turnover (Cho & Lewis, 2012; Dollar & Broach, 2006). Second, while it has been shown that employees leave organizations when their person-organization fit decreases (Moynihan & Pandey, 2008), we point to how specific organizational practices are associated with actual turnover behaviour. We suggest that there are three ways in which organizations can embrace private sector values affecting employees socialized into the public sector. Finally, the study contributes to the general debate about public and private sector blurring by illustrating how private sector influence along different organizational dimensions affect employees socialized into the public sector. We provide a relatively rare, large-scale quantitative illustration of how organizational hybridity has tangible consequences for the individual.

We analyse matched employer-employee register data hosted by Statistics Denmark. These data include all public sector companies and their employees in the period from 2005 to 2009. Employment histories could be traced back to 1980 and socialization by employment
experience in the public sector could be measured. Our results show that socialization is related to a higher turnover likelihood when (and only when) organizations are exposed to higher degrees of privateness in their environmental interactions, internal pay structures, and staffing patterns.

**Public sector socialization and turnover**

Over time and as their work experience in public service increases, individuals get socialized into the public sector (Becker and Connor, 2005; Petrovsky, James and Boyne, 2014). Socialization is about learning and internalizing dominant values and beliefs in a social setting (Bright, 2010). Research has found that employees socialized into the public sector have different values than their private sector counterparts (Becker and Connor, 2005; Meyer and Hammerschmid, 2006) which may affect work behaviour (Petrovsky et al., 2014) and future career choices (Jacobsen & Kjeldsen, 2013).

To better understand how socialization affects turnover dynamics in public sector companies, we present two lines of theory on which we subsequently build our hypotheses. First, we explore the concept of public sector socialization and next we focus on the literature on employee turnover.

**Socialization into the public sector**

In this study we argue that public sector socialization affects turnover likelihood among employees in public sector companies who have been subjected to private sector ways of thinking to different extents. Work experience exposes individuals to the norms and values of a workplace setting. Over time these are internalized and likely to shape attitudes and actions accordingly. On a general level, Pache and Santos (2013) argue that work activities shape individuals’ socialization into that work setting as “they receive rewards for logic-congruent
behaviors and sanctions for logic-discrepant behavior.” Socialization happens through a self-reinforcing process in which employees internalize specific ways of managing daily activities in accordance with existing norms and values. As they gain experience with solving problems and work challenges, individuals working in public sector organizations become increasingly socialized into the norms and values underlying the public sector by drawing on a legitimized repertoire of sector-specific responses (Petrovsky et al., 2015). Elements of this process have been documented empirically. Becker and Connor (2005) show that managerial value systems differ across public and private organizations due to socialization effects where the values of public and those of private managers develops in different directions as tenure increases.

Stackman, Connor and Becker (2006) examine the existence of distinct sectorial ethos (disposition, character or fundamental values peculiar to a specific people, culture or movement) underlying the public and private sectors. Their findings support the existence of distinct public and private sector ethos rooted in different value systems (Stackman et al., 2006). The longer the duration of public sector work experience of an individual, the more ingrained the public sector values and ways of thinking. Meyer and Hammerschmid (2006) find that tenure in the public sector is associated with increased embeddedness in a bureaucratic logic. As a result we expect that despite individual differences on average public sector employees become increasingly socialized into public sectors values, norms and practices from handling everyday life at work.

If public sector socialization is more than a theoretical concept, its effects should be observable in individuals’ actual values and behaviour. Research has argued that unlike their private sector counterparts, public sector employees are motivated by a desire to serve a wider public good (Houston, 2000; Perry, 1996; Perry, 2000) and treasure tenure, norms of impersonality, continuity, legality and objectivity (Meyer & Hammerschmid, 2006a; Özcan
& Reichstein, 2009). Such priorities conflict with performance, effectiveness, prudence, and flexibility which are more prevalent values among private sector employees (Meyer & Hammerschmid, 2006a). Studies have suggested that public service motivation is strengthened through public sector employment (Perry, 2000) and that longer public sector experience decreases the likelihood of leaving public sector employment for a for-profit entrepreneurial entry (Özcan & Reichstein, 2009). This indicates that people develop strong sector preferences which represents markedly different reasonings of work life (Lewis & Frank, 2002). Petrovsky et al. (2015) draw on the importance of public managers’ socialization through former work experience when assessing the degree of publicness fit between a new manager and an organization. This supports the idea that employees become socialized in different sectors throughout their work life.

**Public organization turnover**

Despite the fact that private sector turnover has attracted much attention, studies of turnover in the public sector are scarce, and particularly individual level analysis predicting turnover (Pitts, Marvel, & Fernandez, 2011) as well as studies on actual turnover remain limited (Meier & Hicklin, 2008). This is an unfortunate gap in our knowledge as high turnover rates are of great concern to public managers and organizations as staff instability often is related to increased cost and decreasing performance (Bertelli, 2007; Meier & Hicklin, 2008; Pitts et al., 2011).

An individual’s decision to quit a workplace depends on multiple factors. Research points to turnover being determined by a balance of motives and opportunities. In a meta-analysis by Griffeth, Holm and Gaertner (2000) some of the strongest predictors of turnover were found to be low job satisfaction and the perceived availability of outside options while demographic factors are related to turnover only to a limited extent. This indicates that turnover to large extent seems to be driven by a conscious evaluation of the present satisfaction with the
current job as well as an assessment of alternative opportunities inside or outside the organization. This is reflected in empirical work on turnover. Research has pointed out how individuals’ sentiments toward their workplace are related to their turnover likelihood. Studies within organization theory have illustrated that turnover is influenced by job satisfaction and job commitment and that less satisfied and less committed employees are more likely to leave (Felps et al., 2009). Drawing on social comparison theory, researchers have argued for the importance of job embeddedness (Felps et al., 2009; Mitchell, Holtom, Lee, Sablynski, & Erez, 2001) emphasising sacrifice, social links and fit with the organizations and its employees.

Within public administration researchers have shown that turnover intention is influenced by functional preferences and friendship solidarity (Bertelli, 2007), overall job satisfaction and age (Pitts et al., 2011), role clarity (Hassan, 2013) and goal clarity (Jung, 2014). Few studies directly address how a person’s fit with an organization affects turnover. Bright (2008) finds that public employees are significantly less likely to leave when they are in an environment that is compatible with their needs and desires. When the work environment becomes too incongruent with a person’s desires, the person is likely to leave the organization (Rhodes & Doering, 1983). In a study of public and non-profit organizations in the United States (2008), Moynihan and Pandey find a negative relation between the person-organization fit and turnover intention.

With this study we hope to contribute to the current understanding in public and public-private organizations by highlighting the importance of organizational privateness. This factor relates both to an individual’s motives and opportunity for exit. Overall we argue that employees with a strong public sector socialization may be motivated to leave an organization that adopts more elements from private sector organizing because they experience an increasing lack of fit with the organization and its norms and values. Further,
such employees also face a different internal opportunity structure that may affect turnover likelihood. Succeeding and obtaining advancement in the organization becomes more difficult for employees with long public sector experience as they have to master new practices and work routines and perform according to new values and ideals. Mechanisms that shape this process are outlined below. In this paper we do not speculate how external opportunities are affected by employment in a reformed organization. We do, however, try to take this into account in our empirical analyses.

The clash between individuals’ socialization into the public sector and organizational privateness: Hypotheses

Gulbrandsen et al. (Forthcoming) define hybridity as a term for a variety of organizational arrangements found at the intersection of different organizations such as the private and public sectors. One example of such hybrid forms of governing is publicly-owned companies constituted by public ownership but operating on market-like conditions. Hybrid organizations face the challenge of balancing their hybridity and consequently the occasional contradictory demands of the public and private sectors. Given the often divergent motives, values and norms of the public and private sectors, the question remains how to reconcile cultural differences (Waring, Forthcoming) and how employees inside the hybrid respond to such divergence. In this paper we are specifically interested in exploring how the relative degree of an organization’s privateness affects the likelihood of employee turnover. We consider three fundamental ways in which the organization can exhibit various degrees of privateness with tangible consequences at the work level of the individual employees: in its environmental interactions, in its internal practices, and in its workforce composition. We treat these aspects of organizational reform separately to describe different mechanisms leading to turnover. In practice, however, they are likely to be related. An organization’s internal practices are likely to reflect the environmental conditions in which it operates.
Environmental Interactions

The environments surrounding public and private firms traditionally differ greatly from each other. Private firms view their environment largely as sources of competition and opportunities, whereas the environment of most public organizations is likely to be focused on their core public service delivery (Rainey, 2009). One area of the environment, which traditionally is argued to differ among public and private sector organizations, is the degree of market forces and competitive pressure (Boyne, 2002). However, the degree of competition not only varies between the sectors but also greatly within the public sector. Some organizations are more exposed to privateness as they have to operate under market conditions competing either against private sector actors or other public organizations in quasi-markets. Organizations operating on such conditions face an environment much like that of private firms without much protection from their public status. In a Dutch comparative case study, Joldersma and Winter (2002) show how strategic management becomes different when public organizations are operating under fiercer market competition. These organizations are more focused on their competitive environment and their relative financial performance than traditional public organizations.

When an organization’s external actions are oriented more towards the market, the organization’s external strategies and goals are likely to become increasingly incompatible with the core values and beliefs of employees highly socialized in public sector (Joldersma & Winter, 2002). It will be hard for these individuals to understand and consent to the organization’s strategy, which will lead the individual functioning poorly in practices and tasks which are derived from the strategic stance. While some employees are motivated by such competition, employees with long public sector experience are likely to feel alienated by a focus on competitors, costs, and efficiency. Our first hypothesis is:
Hypotheses 1: The relationship between public sector experience and an individual’s turnover likelihood is more strongly positive in organizations with higher market exposure than in organization with lower market exposure.

Organizational Pay Dispersion

Organizational practices may make individuals feel safe when they are well aligned with organizational culture and the individuals’ dominating belief systems. For employees with long public sector experience their encounter with practices rooted in the private sector of the economy clashes with their core beliefs (O’Reilly et al., 1991) and they will find practices associated with private sector harder to understand and even unfair. This will lead to poorer attachment between the individual and the organization.

A salient practice which separates private firms from public organizations is the extent of pay dispersion among employees (Melly, 2005). More compressed wages in the public sector have been shown to be caused by a more regulated wage formation as well as higher wages for the lesser skilled employees (Lucifora & Meurs, 2006; Mueller, 1998).

Pay dispersion may provide an opportunity structure that motivates some individuals seeing that the organization offers attractive rewards. Accordingly pay dispersion is a practice that is likely to have a heterogeneous effect on individuals. Some value equity in the workforce while others value the opportunity that the pay structure provides. Individuals socialized into public sector values may be more likely to fall in the former group. A relatively flat pay structure is well aligned with public sector values. It may also promote camaraderie and a common spirit. Such individuals are likely to see high pay dispersion as unfair and incompatible with their overarching values for how people should be compensated. Studies have illustrated how pay dispersion may be related to individual turnover (Bloom & Michel,
2002; Pfeffer & Davis-Blake, 1992). This tendency, we argue, is stronger when pay dispersion in itself is seen as a practice which is incompatible with individuals’ values and beliefs.

*Hypotheses 2: The relation between public sector experience and an individual’s turnover likelihood is more strongly positive in organizations with higher pay dispersion than in organizations with lower pay dispersion.*

**Workforce composition**

Above we argued that formal exposure to private sector practices is likely to affect turnover for individuals with extensive public sector experience. Informal encounters with the increased privateness in public organizations are similarly important. In line with the increased focus on New Public Management (NPM) in the public sector, public organizations recruit staff from the private sector in order to gain knowledge and values related to market competition. Compared to public sector employees these individuals bring different routines and values developed through education and private sector work experience (Santos & Pache, 2013). As the proportion of individuals with private sector background increases, individuals with long public sector may experience a loss in social identity. They feel estranged from organizational values, cooperation becomes harder, and the working climate changes. New routines are likely to be introduced; this may accelerate the loss of social identity (Ashforth & Mael, 1989) and increase turnover likelihood. This is consistent with empirical findings by Vancouver et al. (1994) who argue that higher peer goal congruence is negatively related to intention to quit.

Staffing patterns are expected to influence turnover likelihood at two different levels. Firstly, turnover likelihood for an individual with long public sector work experience is likely to increase when the organization recruits more individuals from the private sector into similar
Social comparison theory suggests that individuals compare themselves with others they resemble. When the proportion of individuals with private sector work experience in an equivalent position increases, it poses a challenge in daily practices and routines offering new and contrasting ways of dealing with them. Further, even if not directly affected by new routines, recruitment of new individuals with a fundamentally different profile may be a strong signal about a changing organizational focus and work culture. Overall, we expect turnover likelihood to increase for individuals with long public sector work experience when the number of co-workers with private sector background increases as they are guided by different ideas about how work should be organized and executed.

Hypotheses 3: The relationship between public sector experience and an individual’s turnover likelihood is more strongly positive when a higher proportion of the organization’s employees at the same skill level are recruited from the private sector.

Secondly, turnover likelihood for individuals with long public sector experience is, however, also likely to increase as the overall proportion of employees recruited from the private sector increases. When the proportion of individuals’ instantiating the private sector increases, it influences the overall public-private balance inside the organization. Organizational goals, values, and norms will be shaped by an increased dominance of the market and, in turn, influences how and when organizational outcomes are perceived as successes or failures. This creates estrangement between the individual and the organization as the individual experiences that the organization embraces different values for how work should be performed and by whom. Organizational norms, goals and values become misaligned with those of individuals highly socialized in the public sector.
Hypotheses 4: The relationship between public sector experience and an individual’s turnover likelihood is more strongly positive when a higher proportion of the organization’s employees are recruited from the private sector.

It should be noted that the hypotheses above implicitly assume that all employees have outside opportunities allowing them to exit an organization they no longer fit into. We acknowledge that individual heterogeneity exists and that this is truer for some individuals than others. Below we will explain how we conducted our analyses by using an extensive range of control variables to justify the ceteris paribus assumption to the extent possible.

Methods

Empirical setting

In order to investigate how organizational privateness affects employees with high public sector experience, we focus on public sector companies in Denmark. Public sector companies can be viewed as a hybrid form of governance as they draw on both the public and the private sector, and are especially set up to go between the sectors. These organizations are government-controlled companies working partially on market conditions with relatively high levels of autonomy. The Danish public sector companies were created de novo or by transforming existing agencies (Greve, 1997).

The driver behind this approach was the higher efficiency and cost control assumed to be accomplished by private sector firms. Public sector companies are now found within a range of different areas. Eventually some are sold off to private control (examples include the national telephone company and Copenhagen Airport) while most are purpose-designed to operate in the public and private sector interface. Table 1 below shows the areas in which public sector companies operate.
<table>
<thead>
<tr>
<th>Main area</th>
<th>Examples of public sector companies</th>
</tr>
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<tbody>
<tr>
<td>Utility</td>
<td>- Water and wastewater</td>
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<td></td>
<td>- Waste management</td>
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<tr>
<td></td>
<td>- Gas production and supply</td>
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<td>- Electricity production</td>
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<td>- Heating</td>
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<td>Transport</td>
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<td>- Bus service</td>
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<td>- Metro service</td>
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<td>- Airports</td>
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<td>- Harbours</td>
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<td></td>
<td>- Toll roads, bridges and tunnels</td>
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<tr>
<td>Postal Service</td>
<td>- Postal service</td>
</tr>
<tr>
<td>Media</td>
<td>- Television production</td>
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<td></td>
<td>- Television stations</td>
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<td></td>
<td>- Data analytics</td>
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<tr>
<td>Finance</td>
<td>- Central banks</td>
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<td></td>
<td>Credit institutions</td>
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<tr>
<td>Trade and service</td>
<td>- Administration service</td>
</tr>
<tr>
<td></td>
<td>- Technical support</td>
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<td></td>
<td>- Printing and publishers</td>
</tr>
</tbody>
</table>

Many public sector companies execute tasks which either support core public functions (like financial institutions and procurement organizations), others constitute public near-monopolies separated from national accounts (like postal service, public service television, and lotteries). Within the utility area, public companies have been formed with the aim of promoting real competition and these are evaluated based on benchmarking systems.

Public sector companies constitute a significant part of the public sector in Denmark. According to Statistics Denmark, in 2010 (the last year of our observation window) public sector companies were responsible for 8.9 percent of the total wages paid out in the public sector corresponding to 3.1 percent of the total wages in the economy (Statistics Denmark,
This organizational form is becoming increasingly important for the Danish economy. In 2012 public companies were responsible for 7.3 percent of gross investments in Denmark (public and private) up from 3.1 percent five years earlier (Statistics Denmark, 2013).

**Data**

For the study of employee dynamics in hybrid organizations, this paper employs the Integrated Database for Labour Market Research (IDA) in Denmark. The IDA database is a linked employer–employee database hosted by Statistics Denmark; it comprises information on all individuals and companies in the Danish labour market from 1980 to 2010. The data in the database is retrieved from various governmental registers and is updated each year in November. It allows us to study all individuals employed in public-private hybrids in any given year. As observation of individual occupational status over time is possible, the data is excellent for studies of turnover dynamics.

The dataset used in this study was developed by merging firm level data with individual level data. The individual-level dataset goes back to 1980 while the firm-level dataset only contains information since 1999. However, the long timespan offered in the individual level data makes it possible to trace individuals’ employment history back to 1980.

Statistics Denmark has only identified public sector companies since 2005 where our sample window consequently starts. The annual turnover rate (as defined below as turnover to other occupation) was between 7.8 % and 14.5 % with lower rates following the financial crisis in 2008.

To construct our dataset we focus on firms registered as public sector companies in 2010 (last year in which data are currently available) to get an encompassing sample. We identified 113 public sector companies employing more than 10 individuals in 2010. We excluded organizations with less than 10 employees as turnover dynamics may be quite different in
these. We traced our sample of organizations and their employees back in time. The estimated models cover a timespan of five years from 2005 to 2009. In this period we have yearly observations of between 43,466 and 45,018 individuals having their primary occupation in the public sector companies and working more than 30 hours per week. The unit of analysis is the employee-year observation.

**Measures**

**Dependent variable**

We observe all individuals occupied in public-private hybrids in any given year. We excluded those below 18 and people aged over 55 as nearby retirement may affect turnover intentions. Part-time employees were also excluded.

In this study we focus on turnover to other employment as turnover to unemployment may have different causes like health issues or termination due to poor performance. Individuals leaving the organization for other occupation in the following year (turnover) are coded 1. Individuals who leave the organization for reasons other than new employment including unemployment, early retirement, sickness, and death remain in the risk set until the year before this event after which they become missing. All other individuals are coded 0. As the dependent variable indicates next year’s employment status, its effect is forwarded by one year to all explanatory variables to better reflect causality.

**Independent variables.** Our hypotheses are all conditional expectations positing that as public sector work experience increases, increased organizational “privateness” will have a stronger effect on individuals’ turnover likelihood. Our data allows us to observe the sector of employment each year back to 1980. Public sector work experience is coded as the number of years that an individual has been employed in the public sector (*experience public*). The cumulative work experience in the public sector was chosen as our focus point as public
sector socialization is likely to develop and strengthen over time even if the employment spell is broken temporarily. The variable covers the number of years each individual has worked in the public sector before being employed either directly in a public sector company or in an organization which was later partially privatized into a public sector company. As the dataset allows us to trace individuals from 1980 to 2010, the variables take on values from a minimum 0 to a maximum of 30 years of public sector experience for an individual hired into a public company in the last year of our observation window after a long employment spell in the public sector.

We only focus on experience prior to the employment spell in the current organization. As some of the public sector companies were public agencies before their partial privatization, it could be argued that work experience before this transition should be counted as well. Unfortunately, we are unable to track the exact time where an agency becomes a public sector company due to pre-2005 data limitations. This not considered a big problem as the organizations that eventually become partially privatized are not likely to be random public agencies.

Our main argument is that as public-private hybrid organizations grow more “private”, employees with stronger public sector socialization will be more likely to exit. Hypothesis 1 posits that turnover patterns may be different in relatively more marketized areas compared to less marketized ones. The measure of marketization of the area in which a public-sector company is operating is based on the industrial classification of the public-private hybrid. The 113 public sector companies are divided into 42 different industries according to a six digit classification (similar to the NACE industrial classification). In order to create more meaningful categories with a reasonable number of companies, we recoded these into six different overall areas covering: utilities, transportation, postal service, finance, media and service (see figure 1).
While many of the public sector companies work with relative little competition within their area, this is different in the utility area. This area consists of a range of companies in different utility industries such as water supply, renovation, heating suppliers, and related companies. The companies in the utility area were gathered under a single dummy variable (Utilities). This area is fundamentally different from the other areas because a national benchmarking system compels many of the companies to supply their service at a competitive price which is calculated based on the better performing companies’ average prices. As customers cannot freely choose their utility company, the benchmarking system provides a mechanism forcing less efficient companies to supply at a cost which is on par with the price they would have had in a free market. These companies have a real risk of failure which does not exist, for instance, for the national television broadcaster or the railways. Compared to the other areas in which public sector companies operate, and which are dominated by former public monopolies, utility companies are faced with higher efficiency and cost control requirements in order to stay alive.

Pay dispersion, which is posited in hypothesis 2 to be related to increased turnover among employees with longer public sector experience, is measured by the dispersion index (Barsky, 1981). This is computed at company level as the standard deviation of the hourly wage divided by the mean of the hourly wage multiplied by 100.

Hypotheses 3 and 4 suggest that the effect of an individual’s public sector experience on turnover likelihood increases when he/she works around a larger proportion of co-workers with recent private sector experience. To examine this we constructed a variable indicating the sector of each employee’s most recent work experience before entering the current organization. Private sector work experience among all workers within the organization is measured as the proportion of those whose prior work place was in the private sector (co-workers’ private experience). Because individuals may be affected more by proximate
encounters with individuals adhering to a different logic, we similarly constructed a measure of the proportion of co-workers within the same skill level whose most recent employment was in the private sector before entering the hybrid organization (co-workers same skill level private experience). The Statistics Denmark data does not allow detecting whether people with similar skill levels actually work together. However, it seems reasonable to assume that people compare themselves to and interact with comparable co-workers. As a result employees at the same skill level constitute a salient reference group for any given individual.

Control variables. In order to provide a more precise test of the effect of the independent variables, we included a number of control variables that theoretically are likely to be related to employee turnover. The individual level control variables include gender, age, and age squared as turnover dynamics may be related to a person’s life stage. Outside job opportunities may be partly determined by educational level, at least in early career stages, so we included a measure of education in total number of months from elementary school to final degree. Further we looked at variables relating to the individual’s employment relation. We included measures for tenure in the current position measured in years as well as hierarchical position in the company measured with four dummy variables: management, white collar, technicians, and skilled worker (unskilled worker is the reference category). We also control for the number of years of prior work experience in the private sector as well as the sector of the most recent employment experience (previous employment public and previous employment private). We included salary as it may be related to work background as well as turnover intentions.

Only a limited range of organizational level controls is available. Because the dynamics under study may be controlled partly by top management, we include a variable measuring the proportion of top managers whose prior work experience was from the private sector (managers’ private experience). We also control for accounting figures indicating turnover
and value added in the production. As the information from Statistics Denmark only indicate public sector companies from 2005 and forward, company age cannot be included. We do, however, include a variable indicating whether the company existed in 2005 or formed subsequently. Because organizing and employment opportunities may be atypical in the capital area, we included a dummy variable indicating location in Copenhagen. Finally, we included a measure of organizational size measured by number of employees.

All controls are updated yearly. All variables in the interactions are included as controls in all other models. Furthermore we included year dummies in order to capture specific year effects in the data as well as dummy variables for the different industrial classifications.

Estimation

We estimated the odds for individual turnover in public-private hybrid organizations by means of logistic regression. The five hypotheses are estimated as interactions between the baseline expectation for public sector work experience and the five different expectations for the moderating effect on turnover. We report odds ratios instead of raw coefficients to aid interpretation of interaction effects as suggested by Buis (2010). As stated above we included year and industry area fixed effects to better isolate the relations of interest. All estimations using the IDA data must be conducted via the Statistics Denmark servers and their version of Stata (Stata 11). We used the xtllogit command. As this command does not support robust standard errors, we also ran models using the logit, robust command. Results were largely similar.

Because many of the variables we are interested in are time invariant, we estimated a random effects regression model, the advantage being that all individuals are preserved in the data set: the ones that exit an organization as well as the ones that maintain the same job throughout the sample window. This is important to avoid selection bias. A fixed effects
specification would inhibit the inclusion of all individuals not changing jobs. On the other hand, we recognize desirable features of fixed effects models for this study, mainly the possibility of taking unobservable time invariant individual level factors into account. Such factors might relate to intelligence or ambition, which may be related to a given employee’s motives and opportunities for finding a new job, which is why a fixed effects specification of our model is included in the appendix.

A special consideration is that one organization in our data is substantially larger than the rest. It is a postal service operation covering approximately half of the individuals in our dataset. All models have been rerun excluding that specific organization in order to assess the robustness of the results. In essence, results without this one organization are similar to the ones reported here (available from the authors). To preserve the comprehensiveness of the study and including all individuals occupied in Danish public sector companies in the period of study, we report results of the full sample. A dummy variable indicating employment in the postal service area is included as control in all models.

Results

Table 2 presents the descriptive statistics. In order to present the test of the hypotheses, we present five different models in table 3.

The first model includes the control variables. Each of the following models represent a test of the four different hypotheses including the control variables. Because our hypotheses involve the interaction of public sector experience and different measures of private sector influence, they are tested with a series of interaction effects. All models represent improvement in fit compared to model 1 (p<0.001). In the appendix we report the results of our fixed effects estimations.
Table 2: Descriptive statistics

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<tr>
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<th>Mean</th>
<th>Std. Dev.</th>
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<th>Max</th>
</tr>
</thead>
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<td>1.00</td>
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<td>6.10</td>
<td>0.00</td>
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</tr>
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<td>1.00</td>
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<tr>
<td>Age</td>
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</tr>
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<td>Age squared</td>
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<tr>
<td>Tenure in current organization</td>
<td>9.30</td>
<td>8.59</td>
<td>1.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Manager</td>
<td>0.02</td>
<td>0.15</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>White collar</td>
<td>0.13</td>
<td>0.33</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Technician</td>
<td>0.79</td>
<td>0.40</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Skilled</td>
<td>0.66</td>
<td>0.47</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Level of education (years)</td>
<td>150.77</td>
<td>28.02</td>
<td>0.00</td>
<td>252.00</td>
</tr>
<tr>
<td>Post-2005 Organizational start-up</td>
<td>0.97</td>
<td>0.18</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Managers’ private experience¹</td>
<td>40.76</td>
<td>16.95</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Capital area</td>
<td>0.18</td>
<td>0.39</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Employment after hybridity</td>
<td>0.34</td>
<td>0.47</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Organizational size (std.)</td>
<td>-0.03</td>
<td>1.00</td>
<td>-1.22</td>
<td>1.21</td>
</tr>
<tr>
<td>Pay dispersion (std.)</td>
<td>-0.02</td>
<td>1.00</td>
<td>-1.98</td>
<td>9.80</td>
</tr>
<tr>
<td>Co-workers w/ private experience same skill level (std.)</td>
<td>0.03</td>
<td>1.00</td>
<td>-4.13</td>
<td>5.95</td>
</tr>
<tr>
<td>Experience public (years)</td>
<td>8.10</td>
<td>7.62</td>
<td>0.00</td>
<td>29.00</td>
</tr>
<tr>
<td>Co-workers w/ private experience (std.)</td>
<td>0.03</td>
<td>1.02</td>
<td>-5.07</td>
<td>7.30</td>
</tr>
</tbody>
</table>

Because interaction terms in non-linear estimation techniques, such as logistic regression, cannot be interpreted directly based on the simple coefficient, we have calculated the ratio in odds for turnover between high (75th percentile) and low (25th percentile) levels of the moderating variable for all observable values of our main variable, years of public sector experience (using Stata’s “lincom” function). This factor indicates how much more or less likely turnover is for the specified “high” compared to “low” values of the moderating variables. We have depicted these results graphically and they provide the most accurate image of the interactions (Buis, 2010).
Table 3: Logistic Regressions Predicting Turnover from Public-Private Hybrid Organizations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous employment public</td>
<td>1.01 (0.04)</td>
<td>1.01 (0.04)</td>
<td>1.01 (0.036)</td>
<td>1.02 (0.04)</td>
<td>1.02 (0.04)</td>
</tr>
<tr>
<td>Previous employment private</td>
<td>1.01 (0.03)**</td>
<td>1.10 (0.03)**</td>
<td>1.10 (0.03)***</td>
<td>1.10 (0.03)**</td>
<td>1.09 (0.03)**</td>
</tr>
<tr>
<td>Experience private (years)</td>
<td>1.02 (0.00)**</td>
<td>1.02 (0.00)**</td>
<td>1.02 (0.00)**</td>
<td>1.02 (0.00)**</td>
<td>1.02 (0.00)**</td>
</tr>
<tr>
<td>Female</td>
<td>1.26 (0.03)**</td>
<td>1.26 (0.03)**</td>
<td>1.26 (0.03)**</td>
<td>1.26 (0.03)**</td>
<td>1.26 (0.03)**</td>
</tr>
<tr>
<td>Age</td>
<td>0.78 (0.01)**</td>
<td>0.78 (0.01)**</td>
<td>0.78 (0.01)**</td>
<td>0.78 (0.01)**</td>
<td>0.79 (0.01)**</td>
</tr>
<tr>
<td>Age squared</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
</tr>
<tr>
<td>Tenure in current org.</td>
<td>0.94 (0.00)**</td>
<td>0.94 (0.00)**</td>
<td>0.94 (0.00)**</td>
<td>0.94 (0.00)**</td>
<td>0.94 (0.00)**</td>
</tr>
<tr>
<td>Management</td>
<td>0.74 (0.06)**</td>
<td>0.74 (0.06)**</td>
<td>0.74 (0.06)**</td>
<td>0.75 (0.06)**</td>
<td>0.74 (0.06)**</td>
</tr>
<tr>
<td>White Collar</td>
<td>0.87 (0.04)**</td>
<td>0.87 (0.04)**</td>
<td>0.87 (0.04)**</td>
<td>0.86 (0.04)**</td>
<td>0.87 (0.04)**</td>
</tr>
<tr>
<td>Technicians</td>
<td>0.90 (0.03)**</td>
<td>0.90 (0.03)**</td>
<td>0.90 (0.03)**</td>
<td>0.90 (0.03)**</td>
<td>0.90 (0.03)**</td>
</tr>
<tr>
<td>Skilled</td>
<td>0.92 (0.03)*</td>
<td>0.92 (0.03)*</td>
<td>0.91 (0.03)**</td>
<td>0.90 (0.03)**</td>
<td>0.91 (0.03)**</td>
</tr>
<tr>
<td>Utilities</td>
<td>1.49 (0.07)**</td>
<td>1.21 (0.07)**</td>
<td>1.49 (0.07)**</td>
<td>1.51 (0.07)**</td>
<td>1.52 (0.08)**</td>
</tr>
<tr>
<td>Postal service</td>
<td>1.47 (0.19)**</td>
<td>1.41 (0.18)**</td>
<td>1.47 (0.19)**</td>
<td>1.52 (0.19)**</td>
<td>1.56 (0.20)**</td>
</tr>
<tr>
<td>Media</td>
<td>1.39 (0.07)**</td>
<td>1.37 (0.07)**</td>
<td>1.40 (0.07)**</td>
<td>1.40 (0.07)**</td>
<td>1.42 (0.07)**</td>
</tr>
<tr>
<td>Finance</td>
<td>1.36 (0.15)**</td>
<td>1.34 (0.15)**</td>
<td>1.39 (0.15)**</td>
<td>1.40 (0.15)**</td>
<td>1.42 (0.16)**</td>
</tr>
<tr>
<td>Service</td>
<td>1.38 (0.09)**</td>
<td>1.38 (0.09)**</td>
<td>1.39 (0.09)**</td>
<td>1.42 (0.09)**</td>
<td>1.44 (0.10)**</td>
</tr>
<tr>
<td>Organizational size (std.)</td>
<td>1.26 (0.09)**</td>
<td>1.30 (0.09)**</td>
<td>1.27 (0.09)**</td>
<td>1.26 (0.08)**</td>
<td>1.25 (0.08)**</td>
</tr>
<tr>
<td>Level of education (years)</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
</tr>
<tr>
<td>Wages (hourly)</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
<td>1.00 (0.00)**</td>
</tr>
<tr>
<td>Organizational startup after 2005</td>
<td>0.68 (0.05)**</td>
<td>0.68 (0.05)**</td>
<td>0.69 (0.05)**</td>
<td>0.64 (0.05)**</td>
<td>0.63 (0.05)**</td>
</tr>
<tr>
<td>Managers private experience¹</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
</tr>
<tr>
<td>Coworkers private experience same skill level (std.)</td>
<td>1.02 (0.02)</td>
<td>1.03 (0.02)</td>
<td>1.02 (0.02)</td>
<td>0.95 (0.02)*</td>
<td>1.03 (0.02)</td>
</tr>
<tr>
<td>Coworkers private experience (std.)</td>
<td>1.09 (0.02)**</td>
<td>1.09 (0.02)**</td>
<td>1.09 (0.02)**</td>
<td>1.09 (0.02)**</td>
<td>0.99 (0.02)</td>
</tr>
<tr>
<td>Capital area</td>
<td>1.02 (0.03)</td>
<td>1.02 (0.03)</td>
<td>1.02 (0.03)</td>
<td>1.02 (0.03)</td>
<td>1.02 (0.03)</td>
</tr>
<tr>
<td>Employment after hybridity</td>
<td>1.43 (0.05)**</td>
<td>1.44 (0.05)**</td>
<td>1.44 (0.05)**</td>
<td>1.44 (0.05)**</td>
<td>1.44 (0.05)**</td>
</tr>
<tr>
<td>Experience private (years)</td>
<td>1.00 (0.00)</td>
<td>0.99 (0.00)*</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.00)</td>
</tr>
<tr>
<td>Pay dispersion (std.)</td>
<td>0.94 (0.02)**</td>
<td>0.94 (0.02)**</td>
<td>0.90 (0.02)**</td>
<td>0.94 (0.02)**</td>
<td>0.94 (0.02)**</td>
</tr>
<tr>
<td>Experience public*Utilities</td>
<td>1.04 (0.01)**</td>
<td>1.04 (0.01)**</td>
<td>1.01 (0.00)**</td>
<td>1.01 (0.00)**</td>
<td>1.02 (0.00)**</td>
</tr>
<tr>
<td>Experience public*Pay dispersion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience public* Coworkers same skill level private experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience public* Coworkers private experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald chi²(df)**</td>
<td>7286.36(31)***</td>
<td>7242.22(32)***</td>
<td>7310.07(32)***</td>
<td>7306.76(32)***</td>
<td>7304.86(32)***</td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-42988.2</td>
<td>-4263.29</td>
<td>-4297.84</td>
<td>-4295.45</td>
<td>-4293.35</td>
</tr>
<tr>
<td>LR test (chi²(df)) against Model 1</td>
<td>49.82(1)**</td>
<td>26.71(1)**</td>
<td>99.71(1)**</td>
<td>67.50(1)**</td>
<td></td>
</tr>
</tbody>
</table>

Reported coefficients are odds ratio. Standard errors in parentheses, N = 157,037.

* p < 0.05, ** p < 0.01, *** p < 0.001. ¹ denotes variable in percentage
An alternative way of illustrating the effects is through predicted probabilities. This is, however, not straightforward in panel analyses like these where the model contains no known intercept (alpha). To calculate predicted probabilities, we therefore had to assume a value for alpha (Wooldridge, 2010). This is problematic as we had no reason to expect any specific value. We chose to provide the intuitive illustration of predicted probabilities assuming that alpha is equal to zero. This, of course, is highly questionable and these illustrations should be interpreted with caution and as a supplement to the odds ratio illustration, which does not suffer from this limitation. The two graphs offer different illustrations of the same patterns.

It should be noted that we did not find any main effect of public sector experience on turnover likelihood in model 1. Conversely we found private sector experience to be positively related to turnover. This is not surprising as the public sector companies expose strong public sector elements and job changes have been shown to be more frequent among employees in the private sector (Frederiksen & Hansen, 2014).

Hypothesis 1 proposed that the effect of public sector experience on an individual’s turnover likelihood is larger when the organization operates in the utilities industry with more market competition. Assessing the results of model 2 we find support for this argument. The coefficient of 1.037 indicates that for every year that public sector experience increases, the effect of being in the competitive industry increases by 3.7 per cent ([1.037-1]*100) on average.

Figure 1 provides a graphical interpretation of the interaction effects. The graphs on the left indicate the difference in effect for high and low levels of the hypothesized moderators. The multiplier effect indicates the ratio of odds for turnover between these two groups, that is, how much the effect of the moderator changes with an additional year of public sector experience. Values higher than one indicate a positive multiplier effect. Values below one
indicate a negative multiplier effect. The graphs on the right illustrate predicted probabilities of turnover for the same values of the moderator (assuming alpha = 0). Focusing on hypothesis 1 we see that the effect in model 2 is continuously increasing, which suggests that belonging to a competitive industry becomes an increasingly important predictor of turnover as public sector experience increases. With 15 years of experience, the effect is around a factor of two higher if an employee works in the utilities industry compared to other industries. The same picture is observed when focusing on the predicted probabilities.

**Figure 1: Ratio of effects (left hand side) and predicted probabilities (right hand side) between high and low levels of moderators.**

*Hypothesis 1: Effect of Competitive Industry on Turnover Rate*

*Hypothesis 2: Difference in turnover rate between High and Low Levels of Pay dispersion*
**Hypothesis 3:** Difference in turnover rate between high and low levels of co-workers with same skill level with private sector experience

**Hypothesis 4:** Difference in turnover rate between high and low levels of employees with private sector experience
In hypothesis 2 we argued for a larger effect of public sector experience on an individual’s turnover likelihood in organizations with higher levels of pay dispersion compared to organization with lower levels. The results of model 3 support the third hypothesis. The coefficient of 1.01 indicates that the effect of pay dispersion increases one per cent for each year that public sector experience increases. When assessing the graphical display of the results in figure 1, we see that the multiplier effect of turnover increases with higher public sector experience. With low public sector experience the effect is negative indicating that turnover is less likely when pay dispersion is high. As expected in the hypothesis, this effect changes as public sector experience increases. After around 11 years of public sector experience, the difference between high and low levels of pay dispersion becomes positive and turnover is more likely when pay dispersion is high. This is also clearly indicated by the crossing lines in the display of predicted probabilities. The difference in odds increases and is around 1.2 times higher in organizations with high pay dispersion compared to organizations with low pay dispersion for otherwise comparable employees with 30 years of public sector experience.

For the third and fourth hypotheses we considered the interaction between public sector experience and the proportion of co-workers recruited from previous private sector employment. Model 4 shows support for the fourth hypothesis and the expected larger effect of public sector work experience on an individual’s likelihood of turnover when the proportion of co-workers at the same skill level were recruited from the private sector. The coefficient of 1.014 indicates that the effect of working with colleagues recruited from the private sector increases by around 1.4 per cent for every year of public sector experience. If we consider the multiplicative difference in odds as displayed in figure 1, we see that the difference in odds of leaving increases with higher levels of public sector work experience. Already with a few years of public sector experience, there is a significant difference in odds
of turnover comparing employees in organizations with high and low levels of co-workers with private sector experience at the same skill level. This difference increases continuously. This is also clearly observed when focusing on the predicted probabilities where the two lines move in opposite directions.

The final model reports the test of the fourth hypothesis. Here we find support for a larger effect of public sector experience on an individual’s turnover likelihood when a higher proportion of co-workers were recruited from the private sector. This is also supported in the graphical presentation that illustrates how the difference in odds for leaving the organization between high and low proportions of co-workers from the private sector increases for employees with long public sector experience.

Turning to the robustness test estimated with fixed effects, the results are largely the same (cf. the appendix). This indicates that unobserved individual characteristics do not confound our results.

Our statistical analyses generally support our expectations. Longer public sector experience is related to higher odds for turnover when the public-private hybrid organizations expose a higher degree of privateness. It is interesting to see these effects being monotonically increasing as public sector experience increases. This indicates that employees indeed become socialized with public sector values through their careers in public service, and that this socialization is related to radical behavioural outcomes when challenged by values and practices rooted in the private sector. While the displays of predicted probabilities should be interpreted with caution, they illustrate that the effects are quite significant. The difference in turnover probability between high and low levels of privateness seems to be substantially higher when public sector experience is also high.
Discussion

This paper suggests that longer public sector experience is related to increased turnover likelihood in organizations where private sector practices are more dominant. We would like to discuss three main contributions of this finding.

First, we contribute to the recent stream of research on public-private hybrid organizations. While case studies have begun to understand how organizational hybridity affects organizational practices as well as employee identities (Gulbrandsen et al., Forthcoming; McGivern et al., Forthcoming), until now only few quantitative studies have been conducted. Organizations that have to balance the often contradictory demands of the public and private sectors are becoming more common (Meyer & Hammerschmid, 2006b; Waring, Forthcoming). We follow these previous studies to theorize hybridity as “middle ground” where beliefs, values, and assumptions from different societal spheres meet and interact. Yet, this study extends existing knowledge by focusing on how overall organizational dynamics affect individual action. We cannot observe a change in individuals’ identities like in other studies (Meyer & Hammerschmid, 2006a; Meyer & Hammerschmid, 2006b), however, we can observe the temporal dynamics under which individuals over time respond to hybridity.

A particular challenge for managers in many public organizations is managing human resources by developing employees that is able to work on both sides of the sector divide. In this paper we have illuminated one of the potential challenges in this process, namely retaining employees socialized into the public sector when elements of the private sector become more dominant in the organizations. Research has become increasingly interested in the role that public sector socialization plays for employee level outcomes. This paper has contributed to this line of research by showing the conditions under which socializing is related to organizational turnover.
Second, this study suggests how employees’ motives and opportunities for turnover are shaped by organizational reforms that increase public-private hybridity. We suggest an operational theory of how sectors collide in the clash between organizational and individual-level values. When an employee with strong public sector socialization experiences her workplace taking on practices and values from the private sector, it affects how she assesses the current situation and future opportunities. It is well documented that low job satisfaction and perceived opportunities are related to turnover (Griffeth et al., 2000). With this paper we suggest some of the organizational dynamics that may trigger such sentiments. On an overall level, this is aligned with the finding that lack of organizational fit increases turnover intention (Bright, 2008; Rhodes & Doering, 1983).

Third, the paper addresses a gap in our understanding of sector differences in general. Most existing studies of differences conceptualize sector as something static (a “dummy variable”) or in terms of very overall concepts related to ownership and financing (Bozeman, 2007). While both of these operationalizations hold obvious face validity and are applicable in a number of instances, they are quite far from what actually takes place inside organizations. To understand how sector differences impact the daily life of employees facing influence from both sides, we must employ measures that vary in the way and to the degree they influence employees. We suggest that new knowledge may be gained by distinguishing the formal degree of publicness from the degree of publicness experienced by employees. The results from this paper indicate that factors such as staffing and pay structure, which are largely detached from funding and ownership, affect how employees evaluate their organizational future. It has been proposed that the identities of public sector employees are changing with public management reforms (Meyer & Hammerschmid, 2006a). This study illustrates one way in which such a development is taking place. As influence from the private sector moves into organizations, our findings suggest that especially highly socialized
public sector employees are likely to quit. This means that the identity and culture of public sector workplaces change through personnel selection. We have no knowledge of previous research pointing to the informal dimensions of degree of publicness.

These three contributions open for speculation about the managerial implications of this study. Overall, we argue that differences between the public and private sectors are complex and multifaceted, yet highly significant. Human resource management strategies matter. Organizational hiring patterns and wage policies affect current employees’ future outlook on an organization. Some are attracted to new ways of doing things; others resist them. No normative conclusion can be drawn. The point that employees with strong public sector socializations leave reformed organizations may be an intended consequence of the reform. However, it may also be an unintended consequence which managers should be aware of.

**Limitations and future research**

Like any other study there are a number of limitations to be noted. We chose to focus on public sector companies as this is an important organizational form in which there is variation in the relative mix of public and private sector values and furthermore to focus on a group of employees with potential outside work options in both sectors. Danish register data enabled us to explore how workplace level differences affect individuals’ turnover. The drawback of this strategy is that we are only able to observe a limited range of organizational practices and behavioural responses that are common to all types of public sector companies. We have no knowledge about the day-to-day events and occurrences that may trigger an individual’s exit from an organization. It would be interesting to see future studies investigate in more detail the meeting between organizational practices originating in the private sector and highly socialized public sector employees. Such research could explore interesting questions about how and when such practices are resisted and the dynamics leading to higher turnover likelihood among employees.
Leaving aside the challenge of empirically studying behavioural mechanisms in large scale longitudinal quantitative research, this study suffers from relying on quite crude data. Danish register data is extremely rich in some respects but only contains information that one way or the other is reported to the authorities. As the organizations and individuals are anonymous it is difficult to supplement the data. Of particular interest to a study like this would be measures of job performance which may be related to selection into particular organizations as well as exit at a later stage. Further, we do not have detailed data on how work is organized in the organizations. Hypotheses 3 and 4 posit that the profiles of co-workers affect the relation between socialization and turnover. This argument would conceivably be stronger if we could observe individuals at team level or office level and draw some clear indications of how various degrees of privateness affect the practices, norms and routines of individual employees.

Our independent variable, public sector experience, merits a comment. In this study we simply count the number of years of public sector experience. As the public sector is complex and consists of numerous types of organizations, it is reasonable to believe that the effect of this variable may depend on in which part of the public sector that experience is obtained. Individuals with long experience in more business-like public sector organizations are probably less affected by the relative organizational privateness than employees with experience from traditional public bureaucracies. A promising avenue for future research is to investigate how experience in different parts of the public sector may shape future career outcomes in different ways.

Finally, we want to call for more research on public sector companies. As previously argued the number of these organizations is likely to increase in the near future as public budgets are tightened and public organizations progressively engage with a myriad of different stakeholders (Jay, 2013; Provan & Milward, 1995). What is public sector and what is private
sector is becoming increasingly blurred. Between public agencies and private firms, public sector companies are not coherent uniform entities but rather a matter of degree. No matter how the mix of public and private sector elements are put together, more knowledge about how organizations and their employees react, is required. This may help build better public – and private – organizations for the future.


Gulbrandsen, M., Thune, T., Brorstad Borlaug, S., & Hanson, J. Forthcoming. Emerging hybrid practices in public-private research Centres. *Public Administration*.


Jacobsen, C. B., & Kjeldsen, A. M. 2013. Should I stay or should I go now?, *Public Management Research Conference*. Madison, Wisconsin


Appendix

Logistic regression models estimated with fixed effects

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.679(0.105)*</td>
<td>0.994(0.167)</td>
<td>0.920(0.151)</td>
<td>0.938(0.156)</td>
</tr>
<tr>
<td>Age squared</td>
<td>1.019(0.002)***</td>
<td>1.017(0.002)***</td>
<td>1.018(0.002)***</td>
<td>1.018(0.002)***</td>
</tr>
<tr>
<td>Tenure in current org.</td>
<td>2.694(0.079)***</td>
<td>2.401(0.07)***</td>
<td>2.405(0.07)***</td>
<td>2.406(0.07)***</td>
</tr>
<tr>
<td>Management</td>
<td>0.793(0.423)</td>
<td>1.050(0.575)</td>
<td>1.068(0.579)</td>
<td>1.053(0.581)</td>
</tr>
<tr>
<td>White Collar</td>
<td>0.765(0.179)</td>
<td>0.743(0.183)</td>
<td>0.715(0.177)</td>
<td>0.737(0.182)</td>
</tr>
<tr>
<td>Tenure in current org.</td>
<td>1.066(0.285)</td>
<td>0.940(0.266)</td>
<td>0.927(0.265)</td>
<td>0.942(0.269)</td>
</tr>
<tr>
<td>Skilled</td>
<td>0.938(0.216)</td>
<td>0.855(0.203)</td>
<td>0.814(0.191)</td>
<td>0.832(0.199)</td>
</tr>
<tr>
<td>Organizational size (std.)</td>
<td>2.061(0.441)***</td>
<td>2.268(0.499)***</td>
<td>2.152(0.476)***</td>
<td>2.146(0.474)***</td>
</tr>
<tr>
<td>Wages (hourly)</td>
<td>1.001(0.000)**</td>
<td>1.001(0.000)**</td>
<td>1.001(0.000)**</td>
<td>1.001(0.000)**</td>
</tr>
<tr>
<td>Managers private experience¹</td>
<td>1.008(0.004)¹</td>
<td>1.004(0.004)¹</td>
<td>1.005(0.004)¹</td>
<td>1.005(0.004)¹</td>
</tr>
<tr>
<td>Coworkers same skill level private experience (std.)</td>
<td>0.870(0.077)</td>
<td>0.876(0.08)</td>
<td>0.738(0.076)**</td>
<td>0.880(0.081)</td>
</tr>
<tr>
<td>Coworkers private experience (std.)</td>
<td>1.150(0.143)</td>
<td>1.057(0.13)</td>
<td>1.025(0.124)</td>
<td>0.849(0.125)</td>
</tr>
<tr>
<td>Experience public (years)</td>
<td>0.007(0.002)***</td>
<td>0.008(0.002)***</td>
<td>0.008(0.002)***</td>
<td>0.008(0.002)***</td>
</tr>
<tr>
<td>Pay dispersion (std.)</td>
<td>0.889(0.041)¹</td>
<td>0.738(0.043)***</td>
<td>0.861(0.041)**</td>
<td>0.860(0.041)**</td>
</tr>
<tr>
<td>Experience public* Pay dispersion</td>
<td>1.033(0.008)***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience public* Coworkers same skill level private experience</td>
<td></td>
<td></td>
<td>1.038(0.012)**</td>
<td></td>
</tr>
<tr>
<td>Experience public* Coworkers private experience</td>
<td></td>
<td></td>
<td></td>
<td>1.037(0.015)¹</td>
</tr>
<tr>
<td>Wald χ²(df)</td>
<td>9.367(16)***</td>
<td>9.707(18)***</td>
<td>9.697(18)***</td>
<td>9.694(18)***</td>
</tr>
<tr>
<td>N</td>
<td>20,031</td>
<td>20,031</td>
<td>20,031</td>
<td>20,031</td>
</tr>
</tbody>
</table>

Standard errors in parentheses.
* p < 0.05, ** p < 0.01, *** p < 0.001
¹ denotes variable in percentage.
Year dummies controlled for, but results not included in the model.
**Paper 3: What to do here? What to do there? The effect of organization size of public management**

**Authors:** Sarah M. L. Krøtel, Anders R. Villadsen & Morten Balle Hansen

**Abstract**

Research has for a long time been interested in the consequences of creating larger public organizations. So far the outcomes of changes in the size of public organizations have been relatively widely studied, however, much less is known about the internal processes through which these outcomes are actually achieved. This paper explores whether organizational size affects public management. As endogeneity is an inherent problem when studying outcomes of organizational size, we apply a quasi-experimental design in order to establish the causal linkage between size and different elements of public management. We use unique survey data collected on both sides of a large reform that changed the size of most Danish municipalities. Results suggest that public management related to the daily operations are generic and not affected by size, whereas public management related to overall tasks such as creating a vision, servicing the mayor, and maintaining external relations is positively affected by size.

**Keywords:** Public management, size effects, quasi experimental design.

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1 The paper is currently in “revise and resubmit” in Public Administration Review.
A common trend in recent years’ efforts to develop the public sector is changing the size of public organizations. In many countries public sector organizational entities are becoming bigger either by design or as the result of amalgamations (Denters, Goldsmith, Ladner, Mouritzen, & Rose, 2014). Compared to smaller entities, large public organizations are thought to be more efficient and able to deliver qualitatively better outputs. The first objective is accomplished based on scale economies when similar services are grouped together and carried out by the same organization. The second is made possible due to the increased specialization and professional development in larger organizations (Leland & Thurmaier, 2005). It should be noted that political scientists for a long time have argued that these advantages are made possible at potential democratic costs (Lassen & Serritzlew, 2011).

Research has naturally been interested in the outcomes of creating larger public organizations whether as a result of amalgamations (Denters et al., 2014) or city-county consolidations (Feiock & Carr, 1997; Leland & Thurmaier, 2005). Most interest has concentrated on the question of whether larger organizations are more efficient and unit costs consequently lower than in smaller organizations. As recently pointed out by Blom-Hansen, Houlberg, and Serritzlew (2014), empirical results have generally been mixed. Using quasi-experimental evidence, however, these authors find sizeable positive effects of size on administrative costs. Another stream of research has focused on how organizational consolidation is achieved through political struggles where actors have different agendas (Gibbs Springer, Feiock, Carr, & Johnson, 2006; Leland & Thurmaier, 2005). Yet, while our knowledge of reforms and specifically the relation between size and organizational outcomes is increasing, we still know very little about how increasing organizational size affects internal organizational dynamics, i.e. how the potential benefits of size are accomplished by the people in organizations. In this paper we focus on managers as important agents in facilitating how organizations operate.
Scholars of public administration have demonstrated that public management matters for organizational performance (Favero, Meier, & O’Toole, 2014; O’Toole Jr & Meier, 2011). Consequently, research has investigated antecedents of public management efforts and pointed to the role that structural contingencies may play in the behavior and actions engaged in by managers (see Rainey, 2009). One such structural contingency is organizational size, which is likely to affect the ways in which public management is exercised in organizations. How size affects public management is not clear. On one hand, management may be rather generic and the roles of managers and the activities they engage in have been shown to be remarkably similar across different types of organizations (Kurke & Aldrich, 1983; Mintzberg, 1973). On the other hand, small and large organizations are likely to put quite different requirements on the work of their managers. This is true for internal management and leadership, strategic deliberations, as well as external networking efforts. Larger organizations are more complex and engage in more interactions with their environments; smaller organizations are less professionalized and may require more hands-on management.

While organization size figures in many studies, often as a “control variable”, we have very little robust knowledge about the relation between size and public management. This is a considerable gap in our knowledge as the importance of management is well established and the sizes of organizations remain volatile. Further, the relation between size and management is likely to be multi-faceted. Some elements of management may be generic and important in large and small organizations alike, others may be more important in smaller or larger organizations. Clarifying this question is important to understand how work is performed in organizations. Practically, it is important for recruiters that seek to find candidates who match organizational requirements.

There may be good reasons why so few studies have tried to estimate the relation between size and public management. As most existing studies rely on observational data, often cross-sectional in
nature, endogeneity is likely to pose severe problems when addressing this question. As we shall return to later, multiple sources of endogeneity may be present. The most serious problem for this study is probably endogeneity caused by omitted variable bias. Because organizational size is a variable that affects multiple aspects of organizational life, it is difficult to isolate its effect and avoid spuriousness. In this paper we propose a research design based on a quasi-experiment to estimate the causal effect of organization size on the public management practice of top executives.

In 2007 a radical reform changed the municipal structure in Denmark as the number of municipalities was reduced from 271 to 98. This happened through a large number of amalgamations which to a large degree were mandated by the central government. We follow recent studies to use this reform as a quasi-experimental setting for our study (Blom-Hansen, Houlberg, & Serritzlew, Forthcoming; Lassen & Serritzlew, 2011). We rely on surveys sent to municipal top managers before and (two years) after the reform to assess public management practices. As the reform was imposed for reasons unrelated to the management in specific municipalities, it constitutes a (largely) exogenous shock which can be used to assess any changes in management between smaller units (before the reform) and larger units (after the reform). Because 32 municipalities were not amalgamated, we have a feasible control group to compare any changes against.

In the analysis we rely on aggregated management data from each municipality. This means that we do not focus on how and whether individual managers change when organizations increase in size (see supplementary analyses though); rather we focus on how the aggregated management at the organization level is affected by the size reform. That is, we focus on the overall public management exercised within the organization. Results of difference-in-difference estimates reveal a complex picture of the relation between size and public management. Some elements related to
leadership and external networking are positively affected by the change in organizational size while others related to day to day operations are not indicated to be affected by changes in size.

The study holds two important contributions to existing research. First, this is one of the very few studies that rigorously seek to estimate a causal effect of antecedents to public management. With the importance of management well established, it is important to illuminate some of the structural constraints that affect how it is performed. This paper focuses specifically on organizational consolidation which has been widespread and remain an active reform element in many countries (Denters et al., 2014; Martin & Schiff, 2011). Second, outcomes of changes in the size of public organizations have been relatively widely studied. Much less is known about how these outcomes are achieved. Using unique data collected around a reform we are able to provide new knowledge to this line of study and explore how internal dynamics are affected by changes in size.

**Organizational size and public management**

Researchers have for a long time argued that managers have different roles in organizations (Mintzberg, 1973). Research on manager roles, often relying on longitudinal observations of managers at work, has challenged the traditional view that managers mainly are engaged in coordination, planning, and control activities (Mintzberg, 1975). Mintzberg (1973) suggested that managerial work can be divided into three overall role categories. The first role a manager has to occupy is an inter-personal role as a leader and a liaison both internally and externally. The second role is an informational role as a knowledge broker in the organization. The third role is as a decision maker ultimately in charge of important decisions. These roles take up varying amounts of the managers’ work and involve overlapping activities. Interestingly, managerial roles have been suggested to be quite generic and applicable across sectors (Lau, Newman, & Broedling, 1980). While the research observing managerial work is somewhat dated (for an exception see Mintzberg’s
reexamination of his old findings (Mintzberg, 2009)), public management research has explored multiple aspects of managerial work within recent decades (see Rainey, 2009 for a comprehensive review).

According to O’Toole and Meier (O’Toole & Meier, 1999), management refers to “the set of conscious efforts to concert actors and resources needed to carry out established collective purpose” (p. 510). Other scholars add the process of influencing these collective purposes (Yukl, 2013). Management involves both internally oriented efforts targeted at improving the way inputs are transformed to outputs, as well as externally oriented efforts to garner support or affect environmental conditions. Further, management can be directed at preserving organizational stability or promoting change efforts. The role of management in affecting organizational outcomes has been documented in a number of studies (Meier, O’Toole Jr, Boyne, & Walker, 2007; Meier, O’Toole Jr, & Goerdel, 2006; Meier & O’Toole, 2003; Walker, 2013) as well as their importance in organizational change and innovation (Hansen, 2011; Villadsen, 2012).

In this paper we consider a number of different managerial tasks and how they are prioritized among public managers. As we are in need of rigorous knowledge of how organizational size affects public management we take an exploratory approach in this study and investigate multiple dimensions of public management. This approach draws inspiration from O’Toole and Meier (1999) who, in developing their formal theory of public management, describes how public management consists of multiple different elements. While some aspects of management are generic and needed in large and small organizations alike, other aspects may be more context specific and required to different extents by organizations of different sizes. An aggregated measure of management, therefore, may conflate the separate effects of underlying elements. As we will explain later we draw on surveys sent out on both sides of a comprehensive structural reform of Danish municipalities. Table 1 presents the different managerial task that were part of both surveys
and that form the basis for our empirical analysis. The different items are all connected to different managerial functions and aspects of public management. As we have little knowledge about how size effects public management we have chosen to look at individual items within different areas of management in the analysis.

Table 1: Dependent variables: items on public management

<table>
<thead>
<tr>
<th>Question: Every municipal manager must prioritize among different tasks. Listed below are a number of different tasks. Please state how you would rate each of them in your job?</th>
<th>Main managerial task or function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Formulate ideas and visions</td>
<td>Leadership</td>
</tr>
<tr>
<td>2. Supervise subordinates in their daily work processes</td>
<td>Internal operations</td>
</tr>
<tr>
<td>3. Keep informed about employees views</td>
<td>Internal operations</td>
</tr>
<tr>
<td>4. Keeping control of economy, accounting, budgeting</td>
<td>Internal operations</td>
</tr>
<tr>
<td>5. Making sure that rules and routines are followed</td>
<td>Internal operations</td>
</tr>
<tr>
<td>6. Provide counseling within law, finance and technical issues to the mayor</td>
<td>Political environment</td>
</tr>
<tr>
<td>7. Provide political counselling to the mayor</td>
<td>Political environment</td>
</tr>
<tr>
<td>8. Ensure effective use of resources</td>
<td>Internal operations</td>
</tr>
<tr>
<td>9. Stay informed about political signals</td>
<td>Political environment</td>
</tr>
<tr>
<td>10. Keeping subordinates informed about goals and plans</td>
<td>Leadership</td>
</tr>
<tr>
<td>11. Represent the administration on external matters</td>
<td>External networks</td>
</tr>
</tbody>
</table>

The different task can be placed within different functions of the daily work among public managers. We propose that they fall into four overall categories: internal operations, leadership, political environment, and external networking. Research has explored the multiple dimensions of a public manager’s job. Studies have focused on distinctive tasks including leadership (Fernandez,
2005), the importance of the political environment (Pandey & Wright, 2006), and external networking (Meier & O'Toole Jr, 2001) which are all critical tasks for public managers navigating complex and unstable settings. On top of these activities, the managers must, of course, be effective in managing internal operations including planning, coordination and human resource management (Favero et al., 2014).

**How size affects public management**
Structural contingencies affect public managers. In O’Toole and Meier’s (1999) formal treatment the relative hierarchical stability is included as a factor that affects the impact of management. However, relatively little research has directly explored the impact of organizational size on managerial work. This may largely be because of the methodological challenges associated with endogeneity. Because size is such an omnipotent variable related to multiple parts of organizational life, it is difficult to distinguish the effects of size from the effects of other variables. This, however, does not make the question less interesting. Especially in a time where the size of public sector entities is often debated, it is important to explore how reforms that introduce changes in organizational size affect public management inside organizations.

It is an empirical question whether public management is a function of organizational size. Research has illuminated how there are generic elements to management which can be expected to be constant and stable across organizational settings. The roles of managers and the activities they engage in have been shown to be remarkably similar across different types of organizations (Kurke & Aldrich, 1983; Mintzberg, 1973). This line of research suggests that important aspects of managerial work would be present in all managerial contexts despite variations in organizational size and other contingencies. On the other hand, larger organizations differ from smaller organizations in both internal and external respects. Recent research indicates that larger organizations are likely to have more professionalized workforces (Bhatti, Olsen, & Pedersen,
2011), in some ways they tend to be more innovative (Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés, & Boronat-Navarro, 2004), more change oriented (Haveman, 1993), and engaged in more boundary spanning activities (Andrews, Boyne, Meier, O'Toole, & Walker, 2011). Each of these activities could impact the public management needed and how different managerial tasks are prioritized in the organization. We do have empirical evidence hinting that management is different in organizations of different sizes. On an operational level, Kurke and Aldrich’s (1983) results indicate that in larger organizations managers spend more time in meetings, while managers in smaller organizations are engaged in more activities of shorter duration.

It is not clear how a change in organizational size is likely to affect different elements of the management task. However, overall we expect that management becomes increasingly important as organizations increase in size. Still, some managerial tasks and functions are likely to be less affected by organizational size while others may be awarded higher priority in larger organizations.

Considering leadership tasks Wright and Pandey (2009) find that organizational size, indicated by the number of employees, is not related to the use of transformational leadership in a study of senior managers in US local governments. On the other hand, setting clear visions and goals may be needed to a larger degree in larger organizations as the managerial level is further away from everyday life. Next, we consider the priorities of internal operations needed to run the everyday life inside the organizations. Many of the internal tasks such as controlling budgets, making sure rules are followed and supervising subordinates may become more complex as size increases. On the other hand such core management tasks are needed in all organizations and the priority given to them may be equal across organizational sizes.

Turning to the political level, the priorities among managerial task supporting the political level might be different in larger organizations compared to smaller ones. For instance larger
municipalities will have a much higher number of voters and is likely to attract larger interest from the media as well as the public in general. This means that providing counseling within different areas to the political level could be of higher importance among managers in larger organizations.

Finally, the important management task of external networking could likewise be expected to differ with size as smaller organizations might not have the same need or the same expectations from its environment to engage in networking activities. Andrews and colleagues (2011) report a positive effect of organizational size on external networking behavior of managers. On the other hand managers in smaller organizations might have a higher interest in prioritizing external networking as they might need this to promote their organizations that due to its size could be easily overlooked in the political environment. Based on this discussion we expect the priority that managers give to managing the political environments and external networking will increase as organizations increase in size while the priority given to internal operations and leadership is likely to be more unaffected.

Importantly, our aim is to investigate whether the managerial behaviors exhibited in the organization are affected by organizational size; not how this happens. Organizations can change their management approach by developing existing managers or by replacing them. Our data is not well suited to resolve this question. We do, however, perform limited analysis to assess which of these paths may be more likely.

In the following we will present the Danish structural reform as a quasi-experimental setting which offers a feasible solution to inherent endogeneity concerns of studies involving organizational size.
The structural reform
The structural reform of the Danish municipalities took place the 1st of January 2007 with the main consequence of amalgamating the existing 271 municipalities into 98. As a result of the amalgamation the average size of the municipalities increased from 19,900 inhabitants in 2005 to 55,200 in 2007 (Denters et al., 2014). Before the reform, the Danish government structure contained three electives levels, the state, 13 counties and 271 municipalities. In the transformational process the 13 counties were turned into 5 regions, and 239 former municipalities were amalgamated into 66 while 32 municipalities were left untouched.

The key changes within the structural reform were built on the recommendations from the structural committee that was first organized in the summer of 2002. One of the main outcomes of their recommendations was to increase the size of the municipalities to insure greater professionalism and economies of scale at the local government level (Bhatti & Hansen, 2011; Indenrigsministeriet, 2005; Strukturkommissionen, 2004). The new guidelines for the optimal size of municipalities were set at around 30,000 inhabitants with 20,000 as an absolute minimum. Due to geographic circumstances (e.g. small islands), a few exceptions were made. A second requirement for amalgamation was geography, making sure that amalgamating municipalities would end up being geographically connected. As a result, the smaller municipalities were forced to amalgamate; however, they were given a choice of whom to amalgamate with.

Besides for changes in the jurisdiction size, the structural reform brought about changes in the division of task that formerly existed between the municipal and county level. A number of tasks formerly within the counties were reorganized to be provided and carried out by the municipalities. Importantly for this study, in reallocating tasks that formerly belonged to the counties, there has been reported no systematic difference between allocation to the amalgamated municipalities and the municipalities left untouched.
One concern about using the reform as a quasi-experiment would be that municipalities sought out partners with compatible public management approaches. Technically, a specific challenge of this study is whether assignment to treatment is unrelated to the outcome of interest. While the question of whether to amalgamate or not was mainly a question of size and achieving scale advantages, one could speculate that management approach played a role in partner selection. Either because poorly managed municipalities tried to find better managed ones, or because municipalities looked for partners with compatible management approaches. While the case studies of the reform as well as more formal studies (Bhatti & Hansen, 2011) did not suggest this to be the case, we conducted a test to ensure that this was not a problem. We followed Bhatti and Hansen and constructed a dyad-level dataset with all municipality neighboring dyads. We then constructed a variable indicating whether a neighbor dyad ended up amalgamated into a new municipality or not. We then ran a series of logistic regressions predicting amalgamation of neighborhood dyads. As independent variables we included control variables like size and tax base. We then entered each of the management variables to see whether it predicted amalgamation. We did this in three steps. First, we included the management of the focal municipality as independent variables. In the second step we used the management of the neighbor municipality as independent variables. Finally, we included a measure of the difference in management between a focal and neighboring municipality as independent variable. In total 33 logistic regressions were conducted (11 management variables times three) showing no results of a pattern among the amalgamated municipalities. This clearly indicates that management approach did not drive assignment to treatment and supports the use of this quasi-experimental setting.

Our analyses above are in line with previous research. In a systematic treatment Bhatti et al. (Bhatti & Hansen, 2011) examine the possible underlying reasons and behaviors for who amalgamated with whom. They find social connectedness of citizens, jurisdiction size and geography to be significant
in explaining with whom the municipals chose to amalgamate. Contrary, they found no support for neither political nor economic explanations. If the rich municipalities had chosen to amalgamate with the rich or amalgamation was driven by political coherence this could result in differences in how public management is carried out within the new municipalities other than what is caused by size. This does not appear to be the case. Finally, it should be noted that the reform has been used as a quasi-experiment in other studies (Bhatti, Gørtz, & Pedersen, 2015; Blom-Hansen et al., Forthcoming; Lassen & Serritzlew, 2011).

The municipal amalgamation as a quasi-experiment
Quasi-experiments differ from true experiments and natural experiments as assignment to treatment or control is neither random nor as-if random (Dunning, 2012; Rubin, 1974). The amalgamation of the Danish municipalities in 2007 provided an exogenous shock on size which was unrelated to existing or future management practices. Of the existing 271 municipalities, 239 where amalgamated into 66 new municipalities, and 32 where left untouched. This means that we can compare the public management in smaller municipalities before the reform with public management in the same municipalities after the reform when they are now part of a larger municipality. The 66 amalgamated municipalities form the treatment group with the 32 municipalities that where not amalgamated as a control group.

The use of experimental approaches has several advantages for dealing with problems with endogeneity often related to cross-sectional studies using observational data. Due to the randomization of assignment to treatment and control, experimental methods are able to deal with the most common problems with endogeneity; namely the problem of omitted variables, simultaneity and self-selection. The problem of omitted variables is solved by randomization as randomly assigned treatments are statistically independent of all observed and unobserved variables.
(Gerber & Green, 2012). The problem with simultaneity and self-selection are equally resolved upon, as the experiment provides order in the timing of causality and the randomization solves potential problems with self-selection into treatment. However, the amalgamation of the Danish municipalities did not occur perfectly random as one of the main arguments driving the reform was the requirement for larger municipalities (Bhatti & Hansen, 2011). Despite the fact that assignment to treatment and control did not occur perfectly random, the use of the municipal amalgamation as a quasi-experiment addresses some of the major problems with endogeneity. The following section deals with some of these issues in turn.

By using the reform as a quasi-experiment we are able to deal with the issue of simultaneity as we can treat size as exogenously given, and consequently size is not likely to be an outcome of public administration. In order to address the problem of self-selection into treatment, we need to consider the question of why municipalities chose to amalgamate. As the reform of the Danish municipalities in 2007 was decided upon at the national level, it left the smaller municipalities with no choice on whether or not to amalgamate. In the process, the smaller municipalities had the choice of which to amalgamate with, but not whether or not they wanted to. Even though there is no substantial problem with self-section into treatment among the municipalities, there is still a potential problem related to possible differences unrelated to jurisdiction size that could cause problems with compatibility of small and large municipalities. Lassen and Serritzlew (2011) argue that potential problems relating to different institutional constraints and tasks are limited as the Danish municipalities are organized and responsible for carrying out the same task, which makes them very comparable. This means that the managers of the municipalities by and large are responsible for carrying out the same task despite the size of their municipality and organization. The issues of how these tasks are solved and how public management is carried out within the organization may differ
between small and large municipalities, but not due to the task and institutional constraints as they are regulated at national level and the same for all municipalities.

In a true experiment where randomization occurred perfectly, the difference in the outcome between treatment and control group would be an unbiased estimate of the average causal effect (Rubin, 1974). The quasi-experimental approach reduces the potential bias from omitted variables; however as the randomization did not occur perfectly random, we will include a number of covariates as robustness test in order to eliminate possible observable differences between the treatment and the control group (Gerber & Green, 2012; Wooldridge, 2010).

A specific challenge with this case relates to the fact that changes in public management may be caused by the changes following the reform itself which are unrelated to the change in size. In order to disentangle the effect of size from the effect of the reform we considered two things. Firstly, the surveys were carried out almost one year before and almost two years after the amalgamation. With the second survey almost two years after the amalgamation, the effect of the reform itself is expected to be limited. Secondly, in order to disentangle the effect of size from the possible effect of the reform itself, we have been selective in the items used to measure public management. This means that we have stayed clear of questions related to change, adaption, development of new practices etc. A valid concern is the timing of the pre-reform survey. When to do a pre-treatment survey is always a dilemma in quasi-experimental settings. Too early runs the risk of treatment effect being conflated by other events. However, if done too late the treatment assignment may already be in effect (at least informally). With a pre-reform survey in 2006 some managers may already have started to prepare for their new jobs. On the other hand, the advantage of this timing is that measurement is close to the reform and can potentially provide a valid picture of its effects. While the timing of the survey can be discussed, we are confident that any biases that may arise
because of this are conservative and likely to decrease any effects. If managers were already starting to adjust to a new job, the difference in management between surveys should be smaller.

**Data and methods**

To exploit the analytical opportunities related to a reform it is necessary to have data before and after the reform. In this study we rely on survey data collected from municipal top managers in early 2006 and late 2008. This means that our baseline measurement is taken around a year before the reform, while our measurement of effect is taken a little less than two years after the reform took action on January 1st 2007. That the second round was not until almost two years after the reform should ensure that our public management measurement reflects normal operations in the new entities rather than change management related to the reform. Data was collected in collaboration with different associations of municipal managers to achieve a high response rate. The response rate in 2006 was 58.5% and in 2008 81.1%. In both rounds we have responses from all municipalities. As stated, the response rate of the first survey was somewhat lower than the second. The primary reason for the lower response rate in the first round provided by the municipal managers was that they were busy preparing for the new tasks and functions after the reform. This possibly indicates that responses to the survey have been from the most obliging managers within the organization. At the time of the first study the municipalities had already been notified about with who they were to amalgamate. If we consider the managerial responses from the first survey, many of the managers had already resolved upon their future position in the new municipalities. Figure 1 shows the distribution of the future positions among the managers from the municipalities to become amalgamated. However, as all municipalities where busy preparing for the takeover of new functions and tasks from the former counties after the amalgamation, we do not expect any

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2 The statistical analysis is run on 95 municipalities out of the total sample of 98, as due to missing answers on some of the included items.
systematic differences in the responses from managers in the amalgamated and non-amalgamated municipalities.

**Figure 1: Overview of indicated future positions for managers in the municipalities to merge**

While some lower level managers were also included in the survey, in this study we only focus on top management defined as the CEO and the directors directly below (typically 2-4 per municipality). To establish municipality-level measures of public management, we average the responses from each individual municipality. A separate challenge is that the amalgamated municipalities naturally did not exist before the reform (in which they were created). To obtain a baseline measurement for these, we had to aggregate observations for the soon-to-be amalgamated municipalities (see (Blom-Hansen et al., Forthcoming) for a similar approach). From the 2006 survey, the average measures for the control group we calculated from between 1-4 responses to the survey with an average of 2.35 responses per municipality. For the municipalities to be amalgamated, the average number of responses was higher at 6.15 and included from 1 (in one case only) to 18 respondents. This is because the averages are calculated for the new municipalities and therefore include a higher number of managers.
Measures
In order to test how size influences public management, we have considered a number of items measuring different parts of public management (see table 1). As we expect some overlap among the different roles, we made individual tests of the causal relationship between size and items measuring how managers prioritize different aspects of public management. Consequently, the purpose of the paper is not to test specific underlying factors or dimensions of leadership, but more broadly to try to incorporate different elements relevant for managers of public organizations.

The stated items were asked in the two surveys rounds in 2006 and 2008 using identical worded questions. The items are measured on a 5 point scale from 1 to 5 representing various degrees of priorities given to the different tasks in daily jobs among the municipal leaders. The scale includes: no priority, little priority, some priority, great priority, very great priority. We calculate the average score on the given items within each municipality and use that as the measure of public management across the different items within each municipality. These items constitute the dependent variables in our analyses.

We note that this is a measure of stated priority given to different elements of management by managers. As such, the measure contains both a behavioral dimension of management as well as a more cognitive. A higher priority to a certain task may indicate that more time is spend on the task but could also indicate that more resources are devoted or that it is performed before other tasks. It is beyond the scope of the paper explore the link between priorities and behavior in detail. As priority is an indication of importance placed in a task we consider the measure well suited for this paper. Besides, as we have taken a more explorative approach to the effect of size on public management we chose to test the effect on single items. This means that assessing the validity of the underlying dimensions is more difficult. However, we provide a basis for understanding how size effects public management and leave to future studies to further specify theoretical dimensions. In
order to control for potential bias resulting from differences among the demographical distributions and possible systematic differences in the changes across the treated and the control group, we have developed a number of control variables to be run in a secondary analysis as robustness test. As the analyses are run at municipal level, we have calculated aggregated measures for each municipality. As the composition of the top management team may matter for public management practices (Opstrup & Villadsen, forthcoming), we included two controls for this. The measure for educational diversity is calculated as $1 - \sum p_i^2$ where $p$ equals the proportion of each group of interest (i.e. elementary school, skilled, highly skilled) and $i$ represent the number of different groups (in this case three). Proportion with education in public administration indicates the number of managers within each municipality that have an education in public administration. Proportion of female is calculated as the number of females within the management group and takes on values from 0 to 1, where the former indicates no females and the latter indicates only females. Further, at the organizational level we include the spending per capita to account for possible differences in public management due to wealth as well as a dummy indicating being a small island which was unlikely to be amalgamated (due to no direct borders with other municipalities).

**The difference-in-difference estimator**

In order to estimate the effect of municipal size on management before and after the municipal amalgamation, we make use of the difference-indifference approach by comparing the difference in means in treated and untreated municipalities in 2006 and 2008. We estimate the effect of size on public management by calculating the difference in means of our focal variables between a treatment group that experienced an increase in size and a control group that did not. The model is estimated by use of repeated cross-sectional data at municipal level before and after the reform. This approach is similar to other studies that use the reform as a quasi-experiment (Blom-Hansen et al., Forthcoming; Lassen & Serritzlew, 2011).
Let the average public management style in municipality \( i \) be denoted \( Y^1_i \) in the treated case and \( Y^0_i \) in the untreated case. As we are interested in estimating the causal effect of municipal size on the average public management style within a given municipality, we are interested in the difference \( \Delta i = Y^1_i - Y^0_i \). However, as we can never observe the counterfactual, the fact that we will either experience \( Y^0_i \) or \( Y^1_i \) and never both for the same municipality, we will have to estimate the missing outcome from an appropriate group of means. So, we estimate the typical causal effect as the average causal effect (Rubin, 1974). Let \( tr = 1 \) denote treated and \( tr = 0 \) denote untreated and \( t = 0 \) denote time before the amalgamation and \( t = 1 \) denote after amalgamation. In order to estimate the difference in means between the treated and the untreated groups before and after the amalgamation we estimate the difference in means for the treated \((Y^{tr=1,t=1}_i - Y^{tr=1,t=0}_i)\) and the difference in means for the untreated, the control group \((Y^{tr=0,t=1}_i - Y^{tr=0,t=0}_i)\). Following the equations, the difference in means for the treated represents the combined effect of treatment and time whereas the difference in means for the control group represents the effect of time. Hence, the difference between those two differences is the difference-in-difference estimator which indicates the combined effect of treatment and time minus the effect of time (i.e. the treatment effect of the treated). The difference-in-difference is estimated by the following regression (Blom-Hansen et al., Forthcoming):

\[
Public\ \management_i = \beta_0 + \beta_1 Amalgamation_i + \beta_2 Post_i + \beta_3 (Amalgamation \ast POST)_i + \epsilon
\]

Where \( amalgamation \) is a dummy variable denoting whether a municipality has been treated or not and \( post \) is a dummy variable indicating the time period pre/post reform. The interaction between the two takes on the value 1 for the treated group post reform and 0 otherwise. This means that we can estimate the difference-in-difference, the effect of the increase in size due to the amalgamation as:
Using a difference-in-difference design implies that the treatment and control groups would have followed the same development over time. As we can never observe the counterfactual, using the control group to establish an appropriate group of means requires a parallel development between the two time periods for the analysis to be unbiased. In order to justify the assumption of parallel trends between the control group and the treatment, being able to show parallel paths on the scores of managerial priorities over time would have been ideal. However, as we do only have one measure before the reform, we are not able to show a parallel time trend across the two groups. Considering the economic development, the study by Blom-Hansen et al. (Forthcoming) shows a clear parallel path for the municipalities before the reform. As the Danish municipalities are highly regulated and are required to carry out the same functions and tasks, there is no reason to suspect that they would have evolved differently. As the model provides a test at two different points in time, we include a number of controls in a robustness test of the analysis in order to capture potential changes evolving differently between the treatment and the control group. This is done by expanding the model by including time-varying control variables in order to minimize possible bias subsequent to systematic differences in changes over time in the treatment and the control group (Blom-Hansen et al., Forthcoming).

As the demographic features of the samples before and after are not completely alike across treatment and control group, as described above, we have included controls for demographic differences at an aggregated level in the analysis. Table 2 shows the demographic distributions on the leaders before and after and in the different groups treated and not treated.
Table 2: Differences in demographical composition in treatment and control group

<table>
<thead>
<tr>
<th></th>
<th>Pre-reform</th>
<th>Post reform</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (female =1, male =0)</td>
<td>473</td>
<td>0.175</td>
</tr>
<tr>
<td>Age</td>
<td>430</td>
<td>54.13</td>
</tr>
<tr>
<td>Short education (yes = 1, no = 0)</td>
<td>477</td>
<td>0.201</td>
</tr>
<tr>
<td>Skilled (yes = 1, no = 0)</td>
<td>477</td>
<td>0.174</td>
</tr>
<tr>
<td>Higher education (yes = 1, no = 0)</td>
<td>477</td>
<td>0.53</td>
</tr>
</tbody>
</table>

|                       |            |             |       |     |     |            |             |       |     |     |
| **Treatment group**   |            |             |       |     |     |            |             |       |     |     |
| Gender (female =1, male =0) | 401        | 0.17        | 0.376 | 0   | 1   | 309        | 0.223       | 0.417 | 0   | 1   |
| Age                   | 362        | 54.17       | 6.345 | 34  | 65  | 300        | 52.69       | 6.56  | 34  | 66  |
| Short education (yes = 1, no = 0) | 404        | 0.22        | 0.415 | 0   | 1   | 316        | 0.16        | 0.368 | 0   | 1   |
| Skilled (yes = 1, no = 0) | 404        | 0.168       | 0.375 | 0   | 1   | 316        | 0.373       | 0.484 | 0   | 1   |
| Higher education (yes = 1, no = 0) | 404        | 0.52        | 0.50  | 0   | 1   | 316        | 0.61        | 0.488 | 0   | 1   |

|                       |            |             |       |     |     |            |             |       |     |     |
| **Control group**     |            |             |       |     |     |            |             |       |     |     |
| Gender (female =1, male =0) | 72         | 0.208       | 0.409 | 0   | 1   | 133        | 0.346       | 0.477 | 0   | 1   |
| Age                   | 68         | 53.9        | 6.672 | 38  | 65  | 131        | 51.76       | 7.2   | 35  | 65  |
| Short education (yes = 1, no = 0) | 73         | 0.15        | 0.36  | 0   | 1   | 137        | 0.124       | 0.331 | 0   | 1   |
| Skilled (yes = 1, no = 0) | 73         | 0.205       | 0.407 | 0   | 1   | 137        | 0.301       | 0.463 | 0   | 1   |
| Higher education (yes = 1, no = 0) | 73         | 0.589       | 0.495 | 0   | 1   | 137        | 0.700       | 0.46  | 0   | 1   |

Besides this we include controls for small islands which are different as they have not been amalgamated because they do not directly border other municipalities. This means that some of the smaller islands are still independent municipalities despite being of relatively small size. However, when including these new controls as robustness tests, a caution should be made. As we are studying how an increase in organizational size affects the managerial behaviors exhibited in the
organization and not whether managers differ or the same manager acts differently in small or large organizations, including managerial characteristics in the analysis may introduce a potential bias. Since any changes in manager characteristics should be associated with the treatment and reflecting a selection process by which organizations of various sizes produce different managerial priorities, including demographics could serve as mediating variables and impose bias on the estimated treatment effect. This implies that in order to control for possible violations of the assumption of parallel paths, we might impose a new bias. We will consequently use the added controls as robustness tests of the main analysis.

All models are estimated by use of STATA and regression analysis on panel data with robust standard errors (xtreg).

**Results**

In total we have run 11 models, one for each of the public management items displayed in table 1 as dependent variable. Four models out of the 11 provided insignificant omnibus test of the overall model as well as insignificant difference-in-difference estimate both in the primary analysis and the robustness test. The insignificant Chi-square of the overall models suggests that taken together, the coefficients in the model are statistically insignificant. This implies that these variables are either not affected by the increase in organization size caused by the reform or the effect is too small to detect (table 5 in the following section provides an overview of the tested items). Below find results of regression analyses.
Table 3: Results of fixed effects difference-in-difference regression analysis with robust standard errors

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.3 (168.9)**</td>
<td>2.55 (78.87)***</td>
<td>4.16 (108)***</td>
<td>3.81 (93.76)***</td>
<td>4.38 (166.8)***</td>
<td>4.54 (193.9)***</td>
<td>3.82 (132.3)***</td>
</tr>
<tr>
<td>Difference-in-difference</td>
<td>0.31 (2.62)**</td>
<td>-0.08 (-0.53)</td>
<td>-0.02 (-0.12)</td>
<td>0.37 (2.08)*</td>
<td>0.20 (1.67)†</td>
<td>0.21 (2.21)*</td>
<td>0.38 (2.93)**</td>
</tr>
<tr>
<td>Treatment¹</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Time (2008)</td>
<td>-0.22 (-2.14)†</td>
<td>-0.06 (0.48)</td>
<td>-0.19 (-1.24)</td>
<td>-0.45 (-3.11)**</td>
<td>-0.09 (-0.86)</td>
<td>-0.13 (-1.73)†</td>
<td>-0.26 (-2.31)*</td>
</tr>
<tr>
<td>Model F value</td>
<td>3.50*</td>
<td>0.14</td>
<td>3.95*</td>
<td>5.25**</td>
<td>2.21</td>
<td>2.45†</td>
<td>4.38*</td>
</tr>
<tr>
<td>R²</td>
<td>0.08</td>
<td>0.004</td>
<td>0.07</td>
<td>0.11</td>
<td>0.04</td>
<td>0.05</td>
<td>0.09</td>
</tr>
<tr>
<td>N</td>
<td>189</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
</tbody>
</table>

Significance level: †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.
¹ treatment is omitted as main variable as the model is fitted with fixed effects and omits time-invariant variables.
Table 4: Robustness test of difference-in-difference regression analysis with clustered standard errors

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate ideas and visions</td>
<td>4.34 (12.43)***</td>
<td>0.99 (1.73)†</td>
<td>5.13 (8.64)***</td>
<td>3.71 (4.87)***</td>
<td>4.9 (18.83)***</td>
<td>5.2 (15.45)***</td>
<td>3.17 (5.07)***</td>
</tr>
<tr>
<td>Making sure that rules and routines are followed</td>
<td>0.26 (2.19)*</td>
<td>0.92 (1.73)†</td>
<td>-0.03 (-0.15)</td>
<td>0.44 (2.35)*</td>
<td>0.16 (1.36)</td>
<td>0.16 (1.64)</td>
<td>0.44 (3.20)***</td>
</tr>
<tr>
<td>Provide counseling within law, finance and technical issues to the mayor</td>
<td>-0.28 (-3.01)**</td>
<td>-0.32 (-2.77)**</td>
<td>-0.55 (-3.71)***</td>
<td>-0.15 (-1.33)</td>
<td>-0.25 (-3.46)***</td>
<td>-0.38 (-2.87)**</td>
<td></td>
</tr>
<tr>
<td>Provide political counselling</td>
<td>-0.26 (-1.91)†</td>
<td>-0.39 (-1.97)*</td>
<td>0.03 (0.13)</td>
<td>-0.62 (-2.47)*</td>
<td>0.02 (0.18)</td>
<td>0.00 (0.04)</td>
<td>-0.45 (-2.42)*</td>
</tr>
<tr>
<td>Ensure effective use of resources</td>
<td>0.008 (0.86)</td>
<td>0.039 (3.62)***</td>
<td>-0.021 (-1.29)</td>
<td>0.005 (0.31)</td>
<td>-0.011 (-1.72)†</td>
<td>-0.014 (-1.90)†</td>
<td>0.022 (1.56)</td>
</tr>
<tr>
<td>Stay informed about political signals</td>
<td>0.11 (0.75)</td>
<td>0.04 (0.19)</td>
<td>-0.11 (-0.52)</td>
<td>0.17 (0.69)</td>
<td>0.02 (0.17)</td>
<td>0.12 (1.08)</td>
<td>-0.12 (-0.57)</td>
</tr>
<tr>
<td>Represent the administration externally</td>
<td>-0.09 (-0.73)</td>
<td>0.08 (0.35)</td>
<td>-0.11 (-0.65)</td>
<td>-0.03 (-0.12)</td>
<td>0.15 (1.14)</td>
<td>-0.08 (-0.55)</td>
<td>-0.31 (-1.54)</td>
</tr>
<tr>
<td>Proportion of leaders with an education in public administration</td>
<td>-0.25 (-1.12)</td>
<td>-0.2 (-1.41)</td>
<td>-0.00 (-0.00)</td>
<td>-0.22 (-0.61)</td>
<td>0.06 (0.33)</td>
<td>-0.16 (-1.79)†</td>
<td>-0.35 (-1.20)</td>
</tr>
<tr>
<td>Proportion of females</td>
<td>-0.18 (-0.93)</td>
<td>0.17 (0.53)</td>
<td>0.13 (0.48)</td>
<td>0.35 (0.88)</td>
<td>-0.15 (-1.02)</td>
<td>-0.05 (-0.329)</td>
<td>0.16 (0.46)</td>
</tr>
<tr>
<td>Small island</td>
<td>0.006 (1.46)</td>
<td>-0.002 (-0.38)</td>
<td>-0.01 (-2.06)*</td>
<td>0.003 (-0.39)</td>
<td>0.008 (2.5)*</td>
<td>0.001 (0.41)</td>
<td>0.01 (2.19)*</td>
</tr>
<tr>
<td>Education diversity</td>
<td>0.18 (0.93)</td>
<td>0.17 (0.53)</td>
<td>0.13 (0.48)</td>
<td>0.35 (0.88)</td>
<td>-0.15 (-1.02)</td>
<td>-0.05 (-0.329)</td>
<td>0.16 (0.46)</td>
</tr>
<tr>
<td>Population size (pr. 1,000)</td>
<td>0.006 (1.46)</td>
<td>-0.002 (-0.38)</td>
<td>-0.01 (-2.06)*</td>
<td>0.003 (-0.39)</td>
<td>0.008 (2.5)*</td>
<td>0.001 (0.41)</td>
<td>0.01 (2.19)*</td>
</tr>
<tr>
<td>10,000)</td>
<td>0.18 (0.93)</td>
<td>0.17 (0.53)</td>
<td>0.13 (0.48)</td>
<td>0.35 (0.88)</td>
<td>-0.15 (-1.02)</td>
<td>-0.05 (-0.329)</td>
<td>0.16 (0.46)</td>
</tr>
<tr>
<td>Wald Chi 2(df)</td>
<td>29.79 (9)***</td>
<td>19.62 (9)*</td>
<td>31.42 (9)***</td>
<td>23.02(9)**</td>
<td>33.52(9)**</td>
<td>46.42(9)**</td>
<td>26.86(8)**</td>
</tr>
<tr>
<td>N</td>
<td>189</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
</tbody>
</table>

Significance level: †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.
In table 3 the remaining 7 models are presented. All the presented models have equally been tested with the control variables for robustness (see table 4), however, the models show substantially similar results indicating that there is little confounding effect of the controls on the results.

The coefficient of main interest is the difference-in-difference estimate. Out of the seven models, four found significant differences between the treatment and control group (see table 5 which sums up the outcome of the 11 tests). Model 1 in table 3 shows the results of “formulate goals and visions” as the dependent variable. The positive coefficient of the difference-in-difference estimator indicates that the increase in size has a positive effect on the priority given to “formulate goals and visions” among managers in municipalities that amalgamated. In order to get a clearer picture, figure 2 graphically displays the results of the difference-in-difference estimates by use of STATA’s margins command. For each combination of the interaction (treatment and time) it calculates the mean predicted value of the dependent variable with all other variables kept at their mean.

In relation to “formulate ideas and visions”, the graph reveals a negative change over time in the average mean for the control group, whereas the result for the treatment group remained the same. Combined this provides a positive effect of size (treatment) on the priority given to “formulating goals and visions”.

Model 4 showing the results with the dependent variable “provide political counseling to the Mayor” revealed a positive difference-in-difference estimate meaning that an increase in size leads to increased priority for “providing political counseling to the mayor”. Examining the results closer, the graphical display shows the change in mean for the control group, meaning the effect of time is negative, whereas the change for the treatment group is less negative indicating a positive treatment effect.
Figure 2: Difference in means from 2006 to 2008 for treatment and control

Formulate ideas and visions

Making sure that rules and routines are followed

Provide counseling within law, finance and technical issues to the mayor

Provide political counselling to the mayor

Ensure effective use of resources

Stay informed about political signals

Represent the administration on external occasions
Model 6 in table 3 reveals a positive effect of size on the item “stay informed about political matters”, however, the F-test of the overall model is only significant at a 0.1 level. Besides, when assessing the robustness test in table 4, the relationship becomes insignificant. That the effect becomes insignificant could be because of a spurious relationship, but could also be caused by the potential bias introduced when the managerial variable is introduced in the model. We can therefore not conclude that size has an effect on the managerial priorities of “staying informed about political signals”. Model 7 shows the result of the test with the priority given to “representing the administration on external matters”. Here the picture is similar with a positive interaction term indicating that an increase in size on the priority given to representation of the administration on external matters is positive. In figure 2, the graphical display shows that the priority given to this item drops for the control groups whereas it has a small increase for the treatment group.

Assessing the magnitude of the effects, the $R^2$ in table 3 indicates the amount of explained variance in the dependent variables. The $R^2$ of the significant models lies between .08 and .11 which means that we can explain between 8 and 11 percent of the variation in the dependent variables.

From table 3 it shows that the results of the difference-in-difference estimates for model 2, 3 and 5 are insignificant. This means that an increase in size has no significant effect on public management in relation to “making sure that rules and routines are followed”, ”provide counseling within law, finance and technical issues to the mayor”, and “ensuring effective use of resources” This tendency is equally illustrated in figure 2 which shows that the means for the different groups are either close to being equal before and after, which means following the same trend, or are different both before and after the reform indicating that size has little or no effect on these aspects of public management.
The results of the test are summarized in table 5 indicating a complex picture where not all elements of public management are affected by organizational size.

### Table 5: Summary of the statistical results of the items on public management

<table>
<thead>
<tr>
<th>Item (dependent variable)</th>
<th>Difference-in-difference estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Formulate ideas and visions</td>
<td>Significant positive effect</td>
</tr>
<tr>
<td>2. Supervise subordinates in their daily work processes</td>
<td>Insignificant omnibus test (no results reported)</td>
</tr>
<tr>
<td>3. Keep informed about employees views</td>
<td>Insignificant omnibus test (no results reported)</td>
</tr>
<tr>
<td>4. Keeping control of economy, accounting, budgeting</td>
<td>Insignificant omnibus test (no results reported)</td>
</tr>
<tr>
<td>5. Making sure that rules and routines are followed</td>
<td>No significant effect</td>
</tr>
<tr>
<td>6. Provide counseling within law, finance and technical issues to the mayor</td>
<td>No significant effect</td>
</tr>
<tr>
<td>7. Provide political counselling to the mayor</td>
<td>Significant positive effect</td>
</tr>
<tr>
<td>8. Ensure effective use of resources</td>
<td>No significant effect</td>
</tr>
<tr>
<td>9. Stay informed about political signals</td>
<td>No significant effect</td>
</tr>
<tr>
<td>10. Keeping subordinates informed about goals and plans</td>
<td>Insignificant omnibus test (no results reported)</td>
</tr>
<tr>
<td>11. Represent the administration on external matters</td>
<td>Significant positive effect</td>
</tr>
</tbody>
</table>

The results suggest that as size increases so does public management within the need for “formulating goals and visions”, providing political counseling to the mayor, and representing the administration on external matters. On the other hand, public management along with other dimensions is not found to have significant coefficients. This means that they are either unaffected by increases in size or the potential effect is so small that it is substantially negligible.
Supplementary analysis: Do individual managers change when their organization increases in size?
We have explored how aggregated management practices at the municipality level are affected by organizational size. One could wonder whether individual managers change when becoming part of a larger organization or whether the changes found above are likely to come from different hiring patterns. We cannot provide conclusive answers to this question due to data limitation. We are, however, able to identify a group of managers that have remained in a reformed or un-reformed municipality across the reform and have answered both surveys. In total we identified 119 such individuals in the two datasets and did a new difference-in-difference estimation on the same items with these as units of analysis.

We have estimated the models both by use of regression analysis as well as an ordered probit model as this is the most suitable for dealing with Likert scale data in the dependent variable. In these tests we did not find support for any differences on the 11 public management items. This indicates that there is no individual level effect of the reform. This suggests that managers do not change and that the significant findings above are caused by reformed municipalities assembling a management group with a different profile. While interesting, these results should be only cautiously interpreted as only a subset of the data is used.

Discussion
Recent decades have seen widespread amalgamations and consolidations in local government entities (Denters et al., 2014; Leland & Thurmaier, 2005). This paper explores how such changes affect public management. Prior research has been almost silent on this question. Results of difference-in-difference estimates reveal that size positively affects the priority given to “formulating goals and visions, providing political counselling to the mayor, and representing the organization on external matters”. Our results suggest that some elements related to leadership and
external networking are positively affected by organizational size while others related to day to day operations are not indicated to be affected by changes in size. This point to a complex picture of the relation between size and public management: some elements appear to be generic while others are context specific.

Why do we find that some elements of public management are positively affected by a change in size while others are not? The fact that public management in relation to the day to day operations such as following rules and routines and allocation of resources is not affected by size perhaps is not very surprising. Such activities can easily be thought of as being equally important no matter the change in size of the organizational entity as these are core elements in running most organizations on a basic level. Oppositely, the strongest effects of size appear to be in areas of public management which are not part of everyday operations. A leadership activity such as “formulating goals and visions” becomes increasingly more prioritized as size increases. As the organization grows larger, the top management might move further away from the rest of the organization, which will foster a need for providing a clear focus for the organization by clearly specifying the goals and priorities. Similarly, the second item that significantly changes with size is the priority on “providing political counselling to the mayor”. This suggests a change in the degree of political involvement from the managerial side as the organization increases in size. The mayors in larger municipalities are to a larger extent in need of political counselling and consequently draw on their top managers for information and political advice on how to act. As municipalities increase in size, the requirement for professionalism increases, this might leave less room for political mistakes and foster an increased focus on how to behave. The third item to significantly change with size is the degree of priority given to “representing the organization on external matters”. Previous research has suggested that the degree of external networking is shaped by organizational strategy and perception of environment (Andrews et al., 2011). With these results we get a clear indication that
organizational size affects the need for networking. Boundary spanning appears to be more important for larger organizations.

In many of the difference-in-difference tests run we find a negative effect of time indicating that the aggregated levels of public management on the measured items decreases over the 3 years’ time span (see figure 1). There seems to be a tendency for managers to score lower on these identically worded questions in 2008 compared to 2006. This is not a problem to the analysis, but an interesting outcome which is worth discussing a little further. There may be various reasons for this decrease in public management. First, besides for the amalgamations there were a number of tasks and functions that were transferred from the former counties to the municipalities. It is likely that restructuring of tasks within the municipalities could have a potential impact on how public managers prioritize in their daily job. Secondly, despite the financial crisis not yet having full impact on the public sector in late 2008, the increased pressure on keeping budgets and prioritizing a financial focus did potentially influence the priority among managers in public organizations. These possible influences would be equally influential in both control and treatment group and explain this common tendency.

With this study we make two important contributions to existing literature. Firstly, we contribute by directly estimating a causal effect of a change in organization size on public management and secondly, we illuminate how changes in size affect the internal side of public organizations. With the importance of management well established in the literature, it remains important to illuminate some of the structural constraints that affect how public management is performed.

This paper explores the effect of size on public management; however, there are some limitations to the study that should be mentioned. First, this paper utilizes a difference-in-difference estimation by considering the priority that public managers award a number of different elements of management.
at two periods in time. As we only have data for two time periods, we cannot establish the trend in relation to the level and the development of public management within the treatment and the control group before the first measure in 2006. This means that we do not know whether two groups followed the same development over time before the structural reform and the amalgamations. We only know how their “states” of public management changed across the reform.

Secondly, we want to note the limitations involved in using self-reported data on public management. There is a real risk that respondents do not report accurate information about their work priorities. All the public management practices in the surveys could be argued to be expected of managers, so they may have been reluctant to report a low priority. This is also indicated by the right-skewed answers. We do not consider this a large problem to our results as this social desirability bias should be similar in both reformed and un-reformed municipalities.

Thirdly, we have treated the effect of a change in size as discrete event that some municipalities experienced while other did not. We contend that the effect of such a change may depend on the magnitude of change in size. With our setup we were not able to provide a convincing test of this. It may even be argued that the effect of size is non-linear. We hope that future research will look further into this. Knowledge about how reforms of different sizes have different impact may be very valuable to reformers.

The study has pointed to a number of important elements of public management which vary with organizational size. We have found some elements to be generic across organizations of different sizes and others to vary. It would be interesting to see future studies that build on this research to further explore why this difference can be observed. It could be because requirements differ or because different managers work in different types of organizations. Studies of executive replacement patterns could illuminate such dynamics further. Besides this, we call on future studies
to explore how manager priorities map to the reality of their behavior. Our results suggest that managers of larger organizations assign higher priority to some tasks but do not seem to assign lower priority to any tasks. In order to get a fuller picture of how size effects management it would be interesting to understand how managerial priorities actually show in their behavior and managers of larger organizations simply perform more tasks and if so, how that is accomplished.

Finally, this study provides an example of how a quasi-experiment can illuminate our understanding of public management. We hope future studies will study antecedents as well as outcomes of public management using experimental techniques in order to improve our understanding of the mechanisms explaining how public organizations work.
References


Paper 4: Who gets promoted? The impact of former work experience on internal promotion in public sector companies

Author: Sarah M. L. Krøtel

Abstract

This paper explores the importance of former work experience for internal promotion at the highest managerial level in public sector companies in Denmark. Building on the argument of public and private sector distinctiveness, the paper addresses the influence of sectorial socialization on the likelihood of internal promotion in companies at the intersection between the two sectors. The introduction of private sector skills and experience into the public sector has long been recognized; however little is known about how this influx of private sector work experience actually affects internal priorities when promoting managers inside public organizations. Drawing on Danish register data, the influence of former work experience on promotion to the highest management level is tested in public sector companies. Contrary to expectations results suggest that the most recent job being in the private sector does not influence the likelihood of promotion in itself. However, results imply that the most recent job being in the private sector does indeed strengthen the effect of former public sector work experience and the likelihood of promotion.

Keywords: Internal promotion, public sector companies, sectorial socialization

1 The paper is currently in “revise and resubmit” in the Danish Journal of Management and Business.
Introduction
Throughout their work life individuals get socialized into norms, values and practices associated with their workplaces. This socialization imprints individuals with different values and knowledge from different sectors depending on their work experience (Boardman, Bozeman, & Ponomariov, 2010). As in many ways public and private sector workplaces differ regarding norms, values and expectations (Rainey, 2009; Rainey & Bozeman, 2000), individuals will be imprinted with these sectorial differences in the course of their career trajectory. Scholars have argued that the fit between former work experience and a new work organization is of importance when it comes to organizational performance (Petrovsky, James, & Boyne, 2015). Studies on sector switching have argued that shifts from the private to the public sector can be understood as a need for bringing in private sector experience into public sector organizations. Research has shown that among public managers a switch from the private to the public sector is positively related to current job being a promotion (Bozeman & Ponomariov, 2009). However, despite an increasing interest in employees switching from the private to the public sector for reasons of promotion, we know little about whether private sector work experience influences the future likelihood of internal promotion. In order to explore this, I focus on the relationship between former public and private sector work experience and internal promotion in public sector companies.

As of now, studies on promotion to the managerial level are quite rare within the public administration literature, and actual promotion remains difficult to study. This is a gap in the literature as research has pointed out that organizations are profoundly influenced by their top managers (Hambrick & Mason, 1984). Previous studies on executive succession have addressed the choice between promoting managers internally or hiring external managers. The choice between hiring internal or external managers has been linked to different organizational outcomes such as organizational performance (Hill, 2005) and organizational change (Villadsen, 2012). Previous studies have suggested that top managers in public
organizations are important actors in shaping organizational strategies as well as performance (Hill, 2005; Meier & O'Toole, 2002). However, despite an increasing amount of literature on the link between executive succession and performance, very little work has been done on assessing the importance of background when employees move into managerial positions.

The paper provides two contributions. First, it provides a rare study of internal promotion to the highest management level, which so far has received little attention in the literature. Second, by providing new knowledge about the actual impact of private sector work experience at the highest organizational level in public sector companies, it theorizes when and how private sector experience affects the likelihood of subsequent promotion in a public sector workplace. By illuminating the relationship between private sector work experience and the likelihood of internal promotion, the paper increases our understanding of the often argued influence of private sector skills and experience in the public sector.

In order to answer the questions, I make use of the Danish national register database with a specific focus on public sector companies. In 2010 110\(^2\) public sector companies were operating in Denmark. These companies are characterized by being state or local government owned but financially separated from national budgets. As the database contains information going back to 1980, it allows tracing individual career trajectories and exploring whether private sector experience increases the likelihood of promotion in public sector companies in Denmark.

**Internal promotion in public sector companies**

**Public sector companies**
Following the past decades of public sector reforms focusing on New Public Management and marketization, many countries have tried to construct organizations that are explicitly built to operate in between the public and private sector of the economy, bridging public

\(^2\) 110 companies with more than 10 employees were categorized by the Statistics Denmark.
administration with generic management (Pollitt & Bouckaert, 2004). These organizational forms are gaining an ever-increasing predominance in most public sectors throughout the western world (Greve, Flinders, & Van Thiel, 1999). Despite taking many different forms and labels such as state-owned enterprises (Toninelli, 2000), quangos (Bertelli, 2006), public private partnerships (Skelcher, 2005), partly privatized public companies (Gupta, 2005; Pack, 1987) and public-private hybrid organizations (Gulbrandsen, Thune, Brorstad Borlaug, & Hanson, Forthcoming; Joldersma & Winter, 2002; McGivern, Currie, Ferlie, Fitzgerald, & Waring, Forthcoming; Waring, Forthcoming; Wise, 2010), most organizations share the basic trait that they are at least partly controlled by the state but operate under some degree of market conditions. However, despite the common features of these types of organizations, there are still some differences across nation states as to how they operate and function (Greve et al., 1999). In this paper I refer to organizations as public sector companies, which is applicable in the Danish context.

In Denmark reform movements and politicians across the parliament have pushed for public sector modernization since the 1980s (Ejersbo & Greve, 2005) with the creation of public sector companies highly placed on the agenda from the 1990s. As part of this process a range of public agencies have been transformed into public sector companies with the government retaining control or ownership while the organizations have been taken out of the national accounts and left to operate on market conditions with a real failure risk. The companies in question were either newly created or transformed public agencies and it was all done in the quest for higher efficiency and performance often associated with private sector organizations (Greve, 1997). The changing Danish governments have all been progressive in proliferating public sector companies and these are now found within a range of areas (see table 1). Most of the public sector companies execute tasks either supporting core public functions (such as financial institutions, procurement organizations, and printing) or constitute public
monopolies separated from national accounts (such as postal service, public service television, and lotteries).

**Table 1:** Areas and industries for public sector companies

<table>
<thead>
<tr>
<th>Main area</th>
<th>Examples of public-sector companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility</td>
<td>Water and wastewater&lt;br&gt;Waste management&lt;br&gt;Gas production and supply&lt;br&gt;Electricity production&lt;br&gt;Heating</td>
</tr>
<tr>
<td>Transport</td>
<td>Railway service&lt;br&gt;Bus service&lt;br.Metro service&lt;br&gt;Airports&lt;br&gt;Harbors&lt;br&gt;Toll roads, bridges and tunnels</td>
</tr>
<tr>
<td>Postal Service</td>
<td>Postal service</td>
</tr>
<tr>
<td>Media</td>
<td>Television production&lt;br&gt;Television stations&lt;br&gt;Data analytics</td>
</tr>
<tr>
<td>Finance</td>
<td>Central banks&lt;br&gt;Credit institutions</td>
</tr>
<tr>
<td>Trade and service</td>
<td>Administration service&lt;br&gt;Technical support&lt;br&gt;Printing and publishers</td>
</tr>
</tbody>
</table>

This organizational form has been of increasing importance for the Danish economy. In 2012 public sector companies were responsible for 7.3 percent of gross investments in Denmark and they employ around 1.5 percent of the workforce (Statistics Denmark, 2013). Public sector companies provide an interesting setting for the study of promotion. Because they function in between the two sectors, they need to build competencies to relate to both. One way of managing that is by strategic employment of managers and staff with career backgrounds from each sector. Most of these companies grow out of the public sector and therefore attracting talents from the private sector may pose a particular challenge. In this paper I explore whether employees with private sector experience are rewarded in public sector companies by a higher likelihood of later promotion into the upper echelon ranks.
Internal promotion and former work experience
Factors associated with an employee’s likelihood of internal promotion are not widely illuminated within public administration. Former studies on executive replacement have explored the relationship between hiring internal or external managers and organizational effects such as degree of organizational change (Villadsen, 2012) or performance (Hill, 2005). Previous studies suggest that organizations are more likely to hire internal managers when they are performing well (Hill, 2005) and not in need of substantial changes. The choice of internal promotion as opposed to hiring external candidates is often related to prioritizing internal stability. Besides, promoting internal candidates helps the organization keep its best talents, and also it sends a message to its employees that there are incentives and possibilities for the future careers.

One type of employee qualification that could be of potential importance when exploring the likelihood of internal promotion is sectorial experience from former workplaces. Despite the emphasis placed on bringing in the private sector, the practice of hiring people with industry experience into the public and nonprofit sectors has received little attention (Su & Bozeman, 2009). Researchers’ interest in the importance of sector switching is on the increase, but we know little about how these different sectorial backgrounds influence future career opportunities. Drawing on the argument of distinctiveness between the public and private sector, scholars have begun to explore the role of sectorial socialization. As public and private organizations often are culturally diverse due to divergent motives, values and norms (Waring, Forthcoming), employees become socialized with different values and knowledge salient in the two sectors. Petrovsky, James and Boyne (2015) conceptualize the importance of publicness fit when assessing managerial performance. They argue for the importance of fit between the type of organization and the work history of the managers originating from their previous workplaces. This emphasizes the importance of a socialization effect within the two sectors. Further, studies have shown a discernible imprint of private sector work
experience (Boardman et al., 2010) and a tendency to adhere to NPM logics when having private sector work experience (Meyer & Hammerschmid, 2006).

**Internal promotion in public sector companies: Hypotheses**

As Su and Bozeman (2009) argue both policy makers and public managers have emphasized the importance of bringing private sector experience and skills into the public and nonprofit sectors. Especially with the intensified blurring of the sectors, the new organizational structures such as public sector companies at the intersection are likely to be more inclined to attract employees from industry. As public sector companies are faced with a growing focus on cost effectiveness and with having to deal with intensified competition, bringing in employees with knowledge and skills from more competitive environments and with a skillset on how to manage customers and private suppliers is one way of acquiring these competencies.

Traditionally, promotion in public agencies was a question of seniority (Bozeman & Ponomariov, 2009), whereas private sector organizations to a larger extent reward performance when considering promotion. Feeney and Rainey (2009) argue that public organization managers are heavily constrained by formal rules when dealing with personnel matters and have little room for reward and promotion based on individual performance. However, as public sector companies are created with a closer resemblance to private companies, personnel procedures are likely to be less stringent within these companies. Despite the likely influence of individual performance and tenure in the organization, internal promotion to the managerial level is likely to be contingent on some degree of experience obtained through prior careers of the individual.

When creating public sector companies, these new organizations are facing different financial challenges as they have to work partially on market conditions detached from the national accounts. As the pressure for higher efficiency increases, this might motivate bringing in talent and skills from the private sector in order to learn and draw on routines from
companies operating in the private sector (Bozeman & Ponomariov, 2009) as they are more familiar with these requirements. Individuals with private sector work experience are likely to be more experienced with working on market conditions and consequently have a better understanding of how to cope with the financial demands of working in a much more competitive environment. The longer the work experience from the private sector, the higher the level of knowledge and skills accumulated throughout the work life. Furthermore, considering individuals’ capability of promoting their own abilities, individuals with private sector work experience might be better at lobbying their own interest as they have greater knowledge and experience from the more competitive job market in the private sector, compared to traditional public organizations where promotion follows seniority.

On the other hand, despite an increased tendency for bringing in private sector experience, most public sector companies are still deeply embedded in the public sector with a need for understanding and responding to the political level. Working at the top level, managers must be able to negotiate and work in a political system where organizations are regulated within public authority (Petrovsky et al., 2015). This suggests that managers with a background from public agencies will have a better fit with and a better ability to cope with the political and regulative demands.

Summing up, the previous discussion suggests that work experience from either public or private sector organizations would greatly benefit managers of public sector companies. Since socialization is likely to increase over time, individuals will gather more knowledge and a higher skillset associated with the sector in which they are working the longer they work in the sector. Long experience is thus likely to boost the chances of promotion due to the knowledge and skills accumulated; also a better brand will be attached to the individual signaling the needed knowledge and potential. Following this, the baseline expectations are that both public sector and private sector experience can be important for internal promotion to the managerial level. The first two hypotheses read:
**H1a:** Employees with long work experience from the private sector will have a higher likelihood of promotion into managerial positions in public sector companies under control for tenure and individual performance.

**H1b:** Employees with long work experience from public sector will have a higher likelihood of promotion into managerial positions in public sector companies under control for tenure and individual performance.

Above I argued that former work experience is related to the likelihood of internal promotion to managerial positions. In the following I will argue that not only the length of experience but also the order of sector experience is of importance. Socialization happens as individuals throughout their work life become imprinted with values and practices tied to their workplaces. Changing jobs does not cancel out this socialization. Individuals carry with them values and past experience which in turn influence current beliefs and attitudes (Boardman et al., 2010). Addressing the influx of private sector experience in the public sector, research has shown an increased interest in sector switchers (Bozeman & Ponomariov, 2009; Su & Bozeman, 2009). Studies on sector switching have argued for an increased likelihood of switching to the public sector having a promotion in sight (Su & Bozeman, 2009). Bozeman and Ponomariov (2009) argue that having had a job in the private sector is positively associated with the current position being a promotion compared to if managers come from other public organizations. This supports the idea that public organizations tend to value private sector work experience when hiring managers. Also, if an individual’s most recent job was in the private sector, this might be considered to have a more profound influence, meaning that the private sector mindset and skills are recently acquired and likely to be top of mind. As public sector companies might be interested in attracting skills and experience from the private sector, putting previous private sector experience at the top of the curriculum vitae might increase the brand value of the individual and consequently affect the likelihood of
internal promotion. Following this, individuals whose most recent job was in the private sector will have a higher likelihood of internal promotion in public sector companies.

**H2: Employees whose most recent position was in the private sector will have a higher likelihood of promotion into managerial positions in public sector companies.**

Managerial promotion being more likely for individuals whose most recent job was in the private sector might not only constitute a direct relationship. The most recent job being in the private sector might equally influence the effect of the duration of former work experience. As attracting private sector skills and experience is likely to be of particular interest to public sector companies, individuals with longer work experience are likely to benefit from having had their most recent employment in the private sector. As argued above, the most recent job being in the private sector would mean that previous experience and skillsets from working in the private sector are much more prevalent. Besides, the most recent job being in the private sector gives a stronger indication that the employee has this experience and a stronger private sector orientation. For employees with a long private sector background this means that the likelihood of internal promotion will be higher if the most recent job was in the private sector compared to employees whose were not, as their mindset and skills are more recent.

For employees with long public sector work experience, having had previous private sector jobs will provide them with an attractive skillset from the private sector that employees who come from a public sector job do not have or at least not as fresh in mind. Moreover, as public sector companies are set up to work on market-like conditions, hiring managers who can draw on recent experience from private sector jobs is likely to be considered as more legitimate as they provide knowledge and skills from working in such conditions. The latest job being in the private sector thus rubberstamps the ability to cope with challenges from a more competitive environment, which will strengthen the importance of long public sector work experience.
Despite the different reasons, as the latest work experience is likely to carry greater weight, the latest job being in the private sector is likely to strengthen the positive effect of longer work experience from either private or public sector employment. Hence, the effect of private or public sector work experience on the likelihood of promotion will be stronger for individuals having worked in the private sector. The last two hypotheses read:

\( H3a: \text{The latest position being in private sector will strengthen the relationship between longer private sector work experience and managerial promotion in public sector companies.} \)

\( H3b: \text{The latest position being in private sector will strengthen the relationship between longer public sector work experience and managerial promotion in public sector companies.} \)

**Methods and data**

Testing the proposed hypothesis I draw on the Integrated Database for Labour Market Research (IDA), which contains information on all individuals having worked in Denmark since 1980. The database is a linked employer-employee database retrieved from numerous different governmental registers which are updated annually. The data allows me to isolate a specific group of public sector companies characterized as being publicly owned (majority of shares) and at the same time working on market-like conditions by being financially detached from national accounts. I have estimated the importance of work history for the likelihood of promotion for all individuals working in these companies from 2005 to 2009 tracing their work history back to 1980. In 2004 there was a data breach in the specific code provided by Statistics Denmark characterizing the public sector companies, which makes it difficult to identify this particular type of organization. As a consequence I start my window of analysis in 2005. As promotion to the highest managerial level is not very likely for young individuals working part-time, the models have been estimated on employees from the age of 30, working full-time (more than 30 hours weekly) with an hourly salary of minimum DKK 90. This creates a dataset with 138,398 individual year observations.
Measures

The dependent variable *managerial promotion* is coded as a dummy variable indicating whether or not an individual within each year moves from lower level (in present year) to managerial level (in the following year). The managerial level studied in this paper is the highest level in the organizations. This means that in large organizations it covers the top management teams and in very small organizations it only includes the top manager. Individuals already at the managerial level are excluded from the analysis, further career advancements cannot be observed. The independent variables on *work experience* are coded as the number of years each individual has spent in the given sectors (public or private) before entering into their current organization. As I can trace the individual work history back to 1980, this provides a maximum of 29 years for both public and private sector work experience for individuals entering a public sector company in the last year of my observation window. However, as less than five individuals have experience above 25 years receive internal promotion, I decided to make a cut off at 25 years in order not to make predictions with very little data. The variable *previous employment private sector* is a dummy indicating whether each individual’s previous position was in the private sector or not.

In order to control for other variables influencing likelihood of promotion, I included a number of control variables. Individual level controls include tenure, gender, education, age, skill level and a performance measure based on pay. The first control is tenure which counts the number of years at the current workplace. Gender is coded 1 for men and 0 for women. Age squared is included as promotion may have a peak sooner than at the age of retirement. In order to control for differences in educational level, I included two variables. Level of education specifies the number of months spent on education. The variable education administrative professional is a dummy indicating whether the individual holds a master degree in public administration, political science, economy or law, as these degrees are often found among top level managers. Skill level refers to the job category each individual is
employed in. It is coded as dummy variables with the categories white collar, technician, skilled worker and with unskilled worker as the reference category. The last individual level control is pay performance. As promotion within these types of companies is very likely to depend on how well each individual performs, I have calculated a financial performance measure in order to control for the influence of individual performance. The measure is specified as each individual’s deviance in pay from the mean pay conditioned on individual gender, age, educational level, skill level and tenure. This provides a financial measure of how well each individual performs compared to how he or she is being rewarded.

In order to control for differences across the organizations, I included a narrow number of organizational controls. Organizational size counts the number of employees within each year in the organization. The next control is a code indicating the type of industry for each organization. Industry was divided into six main areas and coded as dummy variables with utilities, postal services, media, finance, service and with transportation as the reference category. The last control is a dummy indicating whether or not the company is newly founded (or transformed). This is included to control for possible differences in the promotion pattern due to the age of the organization.

**Estimation**

In order to test the hypothesis I estimate a number of skewed logistic regression models. The preferred model is appropriate for rare events data where the number of successes (1) to the number of failures (0) is highly unevenly distributed. The data produced only 436 events of promotion out of a total of 138,398 observations. The estimation is made using STATA’s scobit function. The main reason for using scobit rather than logit is that the effects of the regressors on the probability of success are not constrained to the largest when the probability is 0.5. Rather, the independent variables might show their highest impact when the probability of success is different from 0.5 such as 0.3 or 0.6. The scobit function differs from the logit function as it can be skewed and is not constrained to be mirror symmetric about the
0.5 probability of success. Scobit allows the point of maximum impact to be determined by the data and is based on the Burr-10 distribution (Nagler, 1994). It can be estimated as:

$$\Pr(y_i = 1) = \pi_i = (1 + e^{-x_i\beta})^{-\alpha}$$

Where $y_i$ indicates the outcome for each individual taking the values of either 1 or 0, $\pi_i$ is the probability of $y_i$ being 1, $x_i$ a vector of covariates and $\beta$ is a vector regression coefficient. The logit model is nested in scobit and the model provides a test of whether the model significantly differs from a logit model ($\alpha = 1$). If not, the model is reduced to a logistic regression model. As the data is panel data the models have been estimated with clustered standard errors for each individual allowing dependence between the observations within each cluster. As one of the organizations deviates substantially on size, all models were run without the organization in order to ensure robustness. Results are slightly less significant but substantially the same. In addition to that, as selection into the private sector might be dependent on specific individual characteristics, the main model (without interaction terms) was run with a weight from propensity score matching on covariates gender, age, age squared, educational level, educational type and skill level as a robustness test. Results are substantially similar.
**Results**

Table 2 shows the descriptive statistics.

**Table 2: Descriptive statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>.003</td>
<td>.056</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Tenure</td>
<td>12.4</td>
<td>9.49</td>
<td>1</td>
<td>29</td>
<td>139,919</td>
</tr>
<tr>
<td>Gender</td>
<td>.662</td>
<td>.473</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Education admin. professional</td>
<td>.011</td>
<td>.104</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Pay performance</td>
<td>-3.06</td>
<td>90.04</td>
<td>-270.64</td>
<td>4,215</td>
<td>138,398</td>
</tr>
<tr>
<td>Organizational size</td>
<td>12.385</td>
<td>10.442</td>
<td>8</td>
<td>24,950</td>
<td>139,919</td>
</tr>
<tr>
<td>Age</td>
<td>46.57</td>
<td>8.78</td>
<td>31</td>
<td>74</td>
<td>139,919</td>
</tr>
<tr>
<td>Level of education</td>
<td>148.8</td>
<td>29.87</td>
<td>0</td>
<td>240</td>
<td>138,398</td>
</tr>
<tr>
<td>White Collar</td>
<td>.13</td>
<td>.333</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Technicians</td>
<td>.773</td>
<td>.419</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Skilled</td>
<td>.664</td>
<td>.472</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Organizational startup after 2005</td>
<td>.971</td>
<td>.168</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Age squared</td>
<td>2.246</td>
<td>825.6</td>
<td>961</td>
<td>5.476</td>
<td>139,919</td>
</tr>
<tr>
<td>Service</td>
<td>.023</td>
<td>.15</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Utilities</td>
<td>.128</td>
<td>.334</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Postal service</td>
<td>.446</td>
<td>.497</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Media</td>
<td>.11</td>
<td>.313</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Finance</td>
<td>.014</td>
<td>.117</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Previous employment private</td>
<td>.384</td>
<td>.486</td>
<td>0</td>
<td>1</td>
<td>139,919</td>
</tr>
<tr>
<td>Experience public (years)</td>
<td>11.19</td>
<td>7.89</td>
<td>0</td>
<td>28</td>
<td>139,919</td>
</tr>
<tr>
<td>Experience private (years)</td>
<td>6.65</td>
<td>6.51</td>
<td>0</td>
<td>28</td>
<td>139,919</td>
</tr>
</tbody>
</table>
Table 3: Skewed logistic regression predicting internal promotion in public sector companies

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenure in current org.</td>
<td>-.02 (.015)</td>
<td>-.02 (.016)</td>
<td>-.02 (.016)</td>
<td>-.019 (.015)</td>
</tr>
<tr>
<td>Gender</td>
<td>.718 (.25)**</td>
<td>.693 (.243)**</td>
<td>.694 (.245)**</td>
<td>.676 (.241)**</td>
</tr>
<tr>
<td>Age</td>
<td>-.024 (.111)</td>
<td>-.338 (.129)**</td>
<td>-.34 (.13)**</td>
<td>-.349 (.128)**</td>
</tr>
<tr>
<td>Age squared</td>
<td>.000 (.001)</td>
<td>.003 (.001)*</td>
<td>.003 (.001)*</td>
<td>.003 (.001)*</td>
</tr>
<tr>
<td>Level of education (years)</td>
<td>0.019 (.005)***</td>
<td>0.021 (.005)***</td>
<td>0.02 (.005)***</td>
<td>0.02 (.005)***</td>
</tr>
<tr>
<td>Education admin. professional</td>
<td>.767 (.636)</td>
<td>.816 (.626)</td>
<td>.818 (.627)</td>
<td>.816 (.619)</td>
</tr>
<tr>
<td>White Collar</td>
<td>1.98 (.445)***</td>
<td>1.84 (.421)***</td>
<td>1.84 (.421)***</td>
<td>1.82 (.415)***</td>
</tr>
<tr>
<td>Technicians</td>
<td>-.056 (.26)</td>
<td>-.202 (.259)</td>
<td>-.199 (.259)</td>
<td>-.191 (.256)</td>
</tr>
<tr>
<td>Skilled</td>
<td>-3.14 (.354)***</td>
<td>-3.02 (.342)***</td>
<td>-3.02 (.341)***</td>
<td>-3.05 (.346)***</td>
</tr>
<tr>
<td>Pay performance</td>
<td>.022 (.005)***</td>
<td>.021 (.005)***</td>
<td>.021 (.005)***</td>
<td>.02 (.005)***</td>
</tr>
<tr>
<td>Utilities</td>
<td>.054 (.382)</td>
<td>-.086 (.373)</td>
<td>-.089 (.373)</td>
<td>-.07 (.365)</td>
</tr>
<tr>
<td>Postal service</td>
<td>15.98 (2.37)***</td>
<td>15.86 (2.61)***</td>
<td>15.9 (2.64)***</td>
<td>15.64 (2.53)***</td>
</tr>
<tr>
<td>Media</td>
<td>-.524 (.447)</td>
<td>-.073 (.448)</td>
<td>-.08 (.447)</td>
<td>-.028 (.441)</td>
</tr>
<tr>
<td>Finance</td>
<td>-5.23 (.133)***</td>
<td>-4.58 (1.23)***</td>
<td>-4.61 (1.25)***</td>
<td>-4.41 (1.21)***</td>
</tr>
<tr>
<td>Service</td>
<td>.407 (.621)</td>
<td>.555 (.644)</td>
<td>.551 (.643)</td>
<td>.594 (.646)</td>
</tr>
<tr>
<td>Organizational size (std.)</td>
<td>-.001 (.000)***</td>
<td>-.001 (.000)***</td>
<td>-.001 (.000)***</td>
<td>-.001 (.000)***</td>
</tr>
<tr>
<td>Organizational startup after 2005</td>
<td>-2.34 (.505)***</td>
<td>-1.85 (.531)***</td>
<td>-1.84 (.53)***</td>
<td>-1.87 (.533)***</td>
</tr>
<tr>
<td>Experience private (years)</td>
<td>.137 (.031)***</td>
<td>.129 (.035)***</td>
<td>.129 (.035)***</td>
<td>.146 (.03)***</td>
</tr>
<tr>
<td>Experience public (years)</td>
<td>.156 (.034)***</td>
<td>.156 (.034)***</td>
<td>.156 (.034)***</td>
<td>.133 (.034)***</td>
</tr>
<tr>
<td>Previous employment private</td>
<td>.179 (.226)</td>
<td>.076 (.369)</td>
<td>.076 (.369)</td>
<td>-.51 (.347)</td>
</tr>
<tr>
<td>Experience private* Previous employment private</td>
<td>.013 (.035)</td>
<td>.013 (.035)</td>
<td>.013 (.035)</td>
<td>.013 (.035)</td>
</tr>
<tr>
<td>Experience public* Previous employment private</td>
<td>.074 (.03)*</td>
<td>.074 (.03)*</td>
<td>.074 (.03)*</td>
<td>.074 (.03)*</td>
</tr>
</tbody>
</table>

Log Likelihood   -2321  -2306  -2306  -2303  
lnalpha (α = 1)  -5.12*** -5.02*** -5.02*** -4.99***


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

Year dummies included, but output omitted.

Table 3 shows the results of the hypotheses test. The significant lnalpha tests in all four models suggest that the models deviate significantly from logistic regression models. The strong negative test of lnalpha suggests that the model introduces a considerable amount of skewness to cope with the uneven distribution of success (1) and failure (0).

Model 1 shows the results of the control variables. Assessing the result of the first hypothesis, results of model 2 show support for a positive relationship between years of private sector work experience and the likelihood of promotion. Transferring the scobit coefficient of 0.137 into odds
(exp\(^{0.137}\)), results suggest that the odds of promotion increases by \(((1.146 - 1) \times 100)\) 14.6 percent when the years of private experience increases by one year.

Model 2 provides the test of the second hypothesis. The positive significant coefficient indicates the positive relationship between years of public sector work experience and internal promotion. Transferred into odds ratio (exp\(^{0.156}\)) the coefficient of 1.169 indicates that the odds of promotion increases by \(((1.169 - 1) \times 100)\) 16.9 percent when the years of public sector work experience increases by one year.

In the third hypothesis a positive relationship between having had a job in private sector and the likelihood of promotion was expected. However, model 2 shows no significant relationship thus rejecting the hypothesized direct relationship of a previous private sector job and the likelihood of internal promotion.

Assessing the impact of having had a job in the private sector as a moderator on work experience, models 3 and 4 show the results of the two last hypotheses. However, as the hypothesized relationships are interaction terms, the results were plotted in order to provide a more accurate image of the interactions and to ease interpretation (Buis, 2010). The four graphs in figure 1 display the results of the interactions. The graphs on the left show results of the multiplicative difference in odds between the latest job being in the private sector compared to not being in the private sector for various levels of either private or public sector work experience. The bold line indicates the multiplicative effect whereas the dotted lines are the confidence intervals. At odds one, the odds are equal, where higher odds indicate that individuals whose latest job was in the private sector are more likely receiving promotion than individuals whose most recent job was not. The graph on the right shows the predicted probability for promotion for every year of work experience for individuals having had a job in the private sector.
**Figure 1:** Multiplicative difference in odds with confidence intervals (left) and predicted probabilities (right) of latest job in private sector and former work experience

Effect of previous job in private sector and private sector work experience on promotion

Private sector work experience (years)

Effect of previous job in private sector and public sector work experience on promotion

Public sector work experience (years)
Generally the probabilities for promotion are quite low. However, this is hardly surprising as the data is very unevenly distributed with only 436 promotions out of 138,398 observations.

Model 3 shows the results of the fourth hypothesis indicating no significant relationship. Assessing the results a bit further, the graphical presentation of the results in the first model in figure 1 indicates that there is a positive relationship as hypothesized. The two lines on the right hand side show the predicted probabilities for promotion for individuals with their latest job being in private sector and not being in the private sector at different degrees of private sector work experience. Results indicate that the likelihood of internal promotion is higher for individuals whose most recent job was in the private sector from about ten years of work experience in the private sector and onwards. However, despite a higher likelihood of promotion for individuals with a previous job in the private sector, the graph on the left hand side shows that two groups are not statistically significant from each other. The graph indicates that despite the odds for promotion increasing with experience, the difference in odds never significantly rises above one. This means that the effect of a previous job in the private sector has a very limited and no significant moderating effect on the relationship between work experience in the private sector and internal promotion. This rejects the expectation that holding a previous job in private sector will strengthen the relationship between previous work experience in the private sector and the likelihood of internal promotion.

Assessing the results of the last hypotheses, model 4 shows support for the moderating effect of a previous job in the private sector on the relationship between public sector work experience and the likelihood of internal promotion. The positive coefficient indicates that a previous job in the private sector strengthens the effect of public sector work experience on the likelihood of promotion as suggested. Evaluating the results more thoroughly, the lower two graphs in figure 1 plot the results of the hypothesis. The two lines in the graph on the right hand show the predicted probabilities of promotion for individuals in the two groups; latest job was in the private sector and latest job was
private sector, for different degrees of public sector work experience. As expected, results show that
the likelihood of internal promotion is higher for individuals having had a private sector job
compared to those who did not. From about ten years of public sector work experience and
onwards, the two groups start to deviate, and they become significantly different from each other
from 14 years of public sector experience, which is illustrated in the graph on the left hand side as
the multiplicative difference now becomes significantly different from one. At 20 years of public
sector work experience the probability of promotion is more than twice as large for individuals with
a previous job in the private sector compared to individuals who do not. This supports the
expectation that holding a previous job in the private sector will strengthen the relationship between
previous work experience in the private sector and the likelihood of internal promotion.

Assessing the results of the control variables, the models suggest that men have a greater likelihood
of promotion than women, which would be expected. Moreover these results indicate that
individuals with higher levels of education are more likely to be promoted than individuals with
lower levels of education. Likewise individuals who earn a higher pay compared to their age,
gender, skill level and education are equally likely to receive or apply for promotion. This suggests
a relationship between individual performance and the likelihood of promotion.

Discussion
In order to address the influx of private sector skills and experience in public sector companies, this
paper focuses on the interplay between former public and private sector work experience and
internal promotion to the highest managerial level. The main conclusion is that both long public and
private sector work experience are positively related to the likelihood of internal promotion under
control for tenure and individual performance. However, results do not support a direct effect of the
latest job being in the private sector on the likelihood of promotion. For individuals with long
public sector work experience, having had a job in the private sector increases their likelihood of promotion to the highest managerial level. This supports the idea that public sector companies are in want of managers with experience from both sectors. Public sector companies are situated between the public and private sectors and are faced with the requirements of dealing with both sides of the economy. With the increasing prevalence of hybrid forms of organizing (Gulbrandsen et al., Forthcoming; Waring, Forthcoming), the results suggest that organizations can develop diverse capabilities, but also that public sector specialists are still needed. The fact that a previous job in private sector only positively interacts with public sector work experience and not private might indicate that having had a job in private sector is not important for individuals who have already been working many years in the private sector building up skills and abilities. However, for individuals who have extensive work experience in the public sector, having had a job in the private sector provides them with a skillset that they did not possess before and consequently increases their likelihood of promotion. As one of the main arguments driving the setup of these companies is to become more efficient in service delivery through more professional management and exposure to market conditions, it is an interesting finding that having either long private sector experience or long public sector experience combined with previously having been in the private sector seems to increase the likelihood of promotion. The findings are further in line with the claim that both policy makers and public managers emphasize the importance of bringing private sector experience and skills into public organizations (Su & Bozeman, 2009).

There are a number of limitations to this study, which should be mentioned. Firstly, despite the register database being very rich in information in many respects, it is equally limited in information regarding personal opinions and perceived skills and abilities. Especially skills and ability might have been of particular interest when studying promotion; and as they are not included, they are potentially omitted variables causing problems with unobserved heterogeneity.
potentially biasing the estimates. Running a fixed effect specification of the models dealing with unobserved heterogeneity from omitted time-invariant variables would have been interesting. However, as all the independent variables in the analysis are time invariant, they would be dropped from the analysis making it impossible to test the variables of interest with such specifications. Secondly, in this study promotion to the highest management level is estimated out of every full-time employee in the organization. This means that I can only observe who gets promoted and not who is selected out of a potential pool of applicants. Thirdly, from the database it is only possible to retrieve information on being promoted into the highest management level. It would have been interesting to have more information on the underlying structure on the lower levels of management. It is likely that lower level managers have a higher likelihood of internal promotion to the highest managerial level; however, as of now I can only observe skill level as being white collar, technicians, skilled worker and with unskilled worker and not whether they had managerial responsibilities before the promotion.

Public sector companies are increasingly gaining foothold (Greve et al., 1999) and we know little about how they are managed and whether the influx of private sector skills and experience is of any consequence at the managerial level. The results of this paper contribute to the literature firstly by providing a rare study of internal promotion, which so far has received little attention in the literature, and secondly, by addressing the actual impact of the influx of private sector work experience in former public agencies. The results support the idea that long private sector experience increases the likelihood of promotion; however, it does not find support for a main effect of having had a previous job in the private sector. This suggests that private sector skills and experience are wanted in public sector companies but that long experience is most important.
References


Gulbrandsen, M., Thune, T., Brorstad Borlaug, S., & Hanson, J. Forthcoming. Emerging hybrid practices in public-private research Centres. Public Administration.


