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RESEARCH ARTICLE



Insourcing public services: Consequences for wages and employment

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Abstract

After decades of private companies delivering public services, governments are increasingly using a mix of outsourcing and insourcing to provide services. With insourcing, governments replace market competition with public monopoly and concentrated private ownership with more dispersed public ownership. Despite these fundamental changes in competition and ownership, little is known theoretically and empirically about how insourcing affects employees. This study uses high-quality, individual-level Danish register data to examine how insourcing affects employees overall and among employees of different gender and age. The analysis shows that insourcing significantly and positively affects short- and intermediate-term work income and employment. Moreover, moderation analyses suggest that insourcing is particularly beneficial for female, younger, and older employees. These findings have important implications for policy makers, as they provide insights into longstanding questions about insourcing in public administration and reveal how estimating total insourcing costs should include employee consequences, especially for female and younger/older employees.

Evidence for practice

- Insourcing is a policy measure whereby governments take back public services and jobs from the private sector.
- Insourced employees increase their work income and employment (i.e., number of working hours) 1 year and 3 years after insourcing.
- Female, younger, and older employees particularly benefit from insourcing.
- The positive impact on insourced employees suggests that governments should consider more than costs and quality when choosing service delivery modes.

INTRODUCTION

Public service delivery has undergone significant changes in recent decades (Albalade, Bel, & Reeves, 2021). From a situation characterized by privatization and outsourcing, governments are now concurrently returning services to the public sector—a process often referred to as insourcing (Clifton et al., 2019; Voorn, 2021). Insourcing replaces market competition with public monopoly and private ownership with dispersed public ownership without rights to appropriate benefits from cost reductions. Without competitive pressures and prospects of claiming profits, public sector officials have weaker incentives to

reduce salaries and increase productivity than private providers (Bel et al., 2010; Petersen et al., 2021). Thus, while outsourcing studies link cost reductions to deteriorating working conditions (Domberger & Jensen, 1997; Hansen et al., 2022; Jensen & Stonecash, 2005), insourcing could have positive employee effects and net welfare benefits due to the reversal of critical cost-related mechanisms.

Existing research has largely focused on outsourcing, while the literature on insourcing has only recently begun to coalesce (Clifton et al., 2019). Insourcing studies focus on its scope, with Kishimoto et al. (2019) identifying 924 cases of insourcing across 58 countries from 2000 to 2019. Studies also indicate that the insourcing of waste collection exceeds

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outsourcing in the Netherlands and Germany (Demuth et al., 2018; Gradus & Budding, 2018), while Warner and Hefetz (2012, 2020) and Campos-Alba et al. (2021) suggest that the insourcing trend may be flattening or waning. Research also centers on insourcing motives, showing that governments insource to realize pragmatic and/or ideological goals (Clifton et al., 2019; Voorn, 2021). However, despite attempts to encapsulate the complexity of insourcing, more research is needed to investigate the economic and social impact of insourcing (Albalade, Bel, Gradus, & Reeves, 2021). With this in mind, a crucial indicator of the net welfare benefit is whether insourcing affects employees positively or negatively. Thus far, only studies of outsourcing have used high-quality, individual-level data to examine how alterations in the employment sector influence employees (Hansen et al., 2022; Petersen et al., 2021; Smith, 2022), while no studies of insourcing have examined the consequences for employees using a similar approach.

This article addresses this theoretical and empirical gap by investigating how insourcing affects employees overall and how the consequences of insourcing are moderated by employee gender and age. Our conceptual approach draws on public choice theory and property rights theory, emphasizing crucial differences in public and private sector ownership and competition. These differences shape low-powered incentives for cost reductions in the public sector and high-powered incentives in the private sector (Jensen & Stonecash, 2005), influencing insourced employees when transitioning from the private to the public sector. The empirical analysis draws on high-quality, individual-level data from Denmark spanning the period 2011–2020, which pertains to insourced employees from various occupational groups, such as cleaning assistants, social and healthcare assistants, and waste collectors. By combining information about the private and public employers and the insourcing date, we identify a treatment group of insourced employees and uses matching to construct a control group of employees similar in job type, education, gender, age, and salary, yet still privately employed.

The empirical findings suggest that insourcing is associated with increasing wages and employment (i.e., the number of working hours) in the short- and intermediate-term. Thus, employee income increased by 8.9 percent 3 years after implementation of insourcing, and employment increased by 10.2 percent. In addition, the moderation analysis reveals that insourcing is particularly beneficial for female, younger, and older employees. In the short-term, female employees experience a 7.5 percent increase in income, young employees experience an 8.3 percent increase, and older employees experience a 10.1 percent increase. In contrast, there was no significant alteration in the income of male and middle-aged employees following insourcing.

This article contributes to the public administration literature by providing new theoretical and empirical insights into the mechanisms and outcomes of insourcing. By linking theoretical accounts of sector differences in ownership and competition to the employees involved,

we develop novel hypotheses about the employee consequences of reverting services back to public provision. In addition, this study is the first to empirically examine the influence of insourcing on employees using high-quality, individual-level data. Given that insourcing is a political measure with implications for employees and broader society, the article also offers insights of relevance to government in- and outsourcing practice. Our findings suggest that governments should consider more than costs and quality when choosing service delivery modes. The positive externalities of insourcing from an employee perspective add a new perspective to the outsourcing and privatization literature, which has traditionally been dominated by efficiency concerns (Domberger & Jensen, 1997; Jensen & Stonecash, 2005; Savas, 1987).

The article is structured as follows. We start by outlining public and private differences in ownership and competition, establishing an expected positive relationship between insourcing and employee outcomes. Next, we describe the institutional context, identification strategy, matching procedure, and estimation techniques. Hereafter, we present the empirical findings on how insourcing affects employee income and employment and how the consequences vary across employees of different gender and age. Then, we discuss the implications of our findings for public administration research and practice. Lastly, we offer a conclusion, outline limitations, and suggest future research.

THEORY AND LITERATURE

The decision to deliver publicly funded services through public or private production is dynamic, and research has demonstrated that governments have relied on both out- and insourcing over time (Hefetz & Warner, 2004; Warner, 2023). Understanding the consequences of a particular mode of service provision therefore necessitates a theoretical approach that incorporates the incentives of both governments and private providers in both insourcing and outsourcing contexts (Albalade, Bel, & Reeves, 2021; Hefetz & Warner, 2004). Following this argument, understanding how insourcing affects employees necessitates an account of the prior employment of insourced employees (i.e., the private sector) and their new employment (i.e., the public sector).

Public choice theory and property rights theory emphasize stark differences in competition and ownership between the private and public sectors. These mechanisms have been influential in forming expectations of employee outcomes in previous outsourcing and privatization research, which found negative consequences for employees overall (Petersen et al., 2021; Smith, 2022), and for female, younger/older, and low-skilled workers in particular (Hansen et al., 2022; Melly & Puhani, 2013). Contrary to these studies, we hypothesize that insourcing influences employees *positively* due to public ownership and monopoly, which dampen employers' incentives to decrease wages and increase work demands (Jensen & Stonecash, 2005).

Public ownership and monopoly

In the public sector, ownership is distributed across all citizens, whereas a single owner or a group of shareholders claim profits from business operations in the private sector (Bel et al., 2010). Public officials cannot claim residuals from cost reductions while having to account for quality-erosion from cost-reducing innovations and seek authorization before implementing such innovations (Bel et al., 2010; Hart et al., 1997). Conversely, the prospects of claiming economic residuals provide high-powered incentives for private owners to reduce costs and increase productivity. Additionally, private companies can go bankrupt, while public organizations have no “bankruptcy constraint” (Blom-Hansen, 2003, p. 419). With a shield against bankruptcy, public organizations are not sanctioned by the market if they overproduce public services and/or operate at low levels of productivity (Petersen et al., 2021). For insourced employees, the ownership mechanism implies that public organizations are less driven to optimize workflows and demand increased productivity, thereby dampening the high-powered incentives to reduce labor costs that characterize private contractors (Jensen & Stonecash, 2005).

Many public organizations are also monopoly providers in their jurisdiction (Bel et al., 2010; Blom-Hansen, 2003), thus eliminating market pressures and reducing incentives to increase productivity and decrease costs (Petersen et al., 2021). The lack of external competitive pressure allegedly allows public officials to pursue self-interested motives by maximizing the budgets and/or the task portfolio of their organizations (Niskanen, 1971). In contrast, private companies operate under market discipline, providing them with high-powered incentives to increase production and efficiency to remain competitive (Jensen & Stonecash, 2005). Thus, as insourcing takes services out of market competition and places them back under public monopoly, the incentives to reduce wages and increase productivity become more low-powered than under outsourced private provision.

These general expectations about ownership and competition are likely to be nuanced by the specific mechanisms at play during insourcing. When a service is taken back from market provision, politicians and citizens have a private sector counterfactual that offers a direct benchmark for employee productivity and salary. Thus, the public department is less able to report “a *total* output in exchange for a *budget*” (Niskanen, 1973, p. 14; original emphasis), which is the typical way to negotiate public budgets. Instead, the previous service standard forces the public department to report “*units* of output at a *price*” (Ibid.; original emphasis), such as the amount of garbage collected at a specific price. In addition, other public departments could also have claimed potential savings from the initial outsourcing (Boyne, 1998). If additional funds for higher salaries are not immediately

available, insourced employees will not experience the full benefit from public ownership and lower competition.

The curtailment of positive effects of insourcing on employees follows the difficulty of reallocating resources in public bureaucracies occupied by self-interested public officials (Boyne, 1998; Niskanen, 1973). Employees could, however, also be intrinsically motivated and/or motivated by the desire to serve the public interest (Andersen et al., 2018; Ritz et al., 2016; Vandenabeele, 2007). Employees with strong public service motivation may experience increased alignment with personal values when a public service is taken back from market provision, and vice-versa for employees with low public service motivation. The self-interested motives anticipated by property rights and public choice theory may therefore be nuanced by theories about person–environment fit, arguing that employees have a fundamental need to fit the skills requirements, leadership style, and values of their workplace (Ostroff et al., 2005; Van Vianen, 2018). Building on the person–environment fit approach, Petersen et al. (2021) suggest that the impact of public–private sector shifts may be contingent on the individual employee’s compatibility with the receiving employer.

While no studies have assessed the impact of insourcing on employees using individual-level data of transferring employees, research on outsourcing illustrates that private ownership and competition are essential to understand employee outcomes of sector shifts (Vrangbæk et al., 2015). For instance, Petersen et al. (2021) found that outsourcing had a negative effect on wages and employment (similar findings were reported by Hansen et al., 2022 and Smith, 2022). Other studies suggest that outsourcing has a detrimental effect on working conditions (Park, 2004), job satisfaction (Lee et al., 2019; Yang & Kassekert, 2010), and burnout (Hansen et al., 2009). Empirical studies thus suggest that employees experience higher wages and employment in a low-powered public incentive structure than in a high-powered private incentive structure, and that changes in employment sector is subject to significant intergroup disparities in wages and employment (Hansen et al., 2022).

Hypotheses

Based on the insourcing-specific mechanisms and the comparison of costs and productivity under private provision, public authorities have incentives to sustain wages and employment conditions that are comparable to those of private contractors. However, public choice theory and property rights theory predict positive outcomes for insourced employees through service monopoly and the absence of a profit maximization motive in the public sector, while extensive empirical studies indicate that wages and employment prospects are more favorable when services are publicly provided. Consequently, most theory

and empirical evidence suggest that insourced employees transfer from a more high-powered incentive structure in the private sector to a more low-powered incentive structure in the public sector. Accordingly, our first hypothesis is:

Hypothesis 1. Public sector insourcing increases work income and employment for employees.

This hypothesis concerns a direct relationship between insourcing and employees. However, many other factors likely explain the variation in the outcome for insourced employees. Following public choice theory and property rights theory, the private sector could have a stricter reward system, impacting the wage distribution and creating unfavorable outcomes for different subgroups (Melly & Puhani, 2013). On the contrary, insourcing transfers employees to the public sector and its more equalitarian wage structure (Rattsø & Stokke, 2019), which could positively affect specific groups of employees. The outsourcing and privatization literature indicates significant inter-group heterogeneity in salary and employment between public and private provision. For example, Mukhtarova et al. (2021), Mueller (2021), and Gornick and Jacobs (1998) find a higher public sector premium for women compared with men. Similarly, Melly and Puhani (2013) find more adverse effects on privatized women than men. Moreover, the public sector more strongly emphasizes equal pay and formal maternity leave while compensating for domestic tasks, predominantly carried out by women (Hansen et al., 2022; Tower & Alkadry, 2008). Likewise, given the frequent political discussion of the gender wage gap, the public sector is likely also doing more to minimize male–female discrepancies than is the private sector (Melly & Puhani, 2013). Consequently, insourcing likely has positive consequences for women.

The more equalitarian wage structure in the public sector could also benefit younger and older employees. Younger employees may possess equivalent education and training as middle-aged employees but fewer job-specific skills due to less work experience. More senior employees likely have accumulated job-specific skills; however, technological development or demands for new workflows sometimes render such skills obsolete (Hansen et al., 2022; Olsson & Tåg, 2021). Likewise, more senior employees are also less able to meet psychical job requirements compared with younger employees (Skirbekk, 2008), thus benefitting from relatively lower work intensity in the public than in the private sector (Jensen & Stonecash, 2005). Additionally, seniority-based wage scales also characterize employment in the public sector, thus shielding older employees from age-based pay cuts. Consequently, equalitarian wage structures could counteract the negative consequences incurred by younger and older employees throughout their work lives. This leads to our second hypothesis:

Hypothesis 2. Female employees and younger/older employees benefit in particular from public sector insourcing.

INSTITUTIONAL CONTEXT

The Danish public labor market consists of approximately 873,000 employees, constituting almost one-third of the entire labor market (Statistics Denmark, 2021). In Denmark, there are no formal rules governing wages and working conditions; instead, employer organizations and trade unions negotiate collective agreements that set wages and working conditions, a structure often referred to as the Danish Model (DA, 2020). Collective agreements typically run for 2–3 years and cover 100 percent of public and 73 percent of private employees (DA, FH, and UFM, 2021). While the private and public collective agreements are similar in many aspects, during the last two decades, the private sector has decentralized bargaining, making negotiations between companies and worker representatives more flexible (DA, FH, and UFM, 2021). Consequently, these local agreements can deviate from collective agreements, impacting critical working conditions such as salary and working hours.

Regarding insourcing and employees, three contextual and legal factors are essential. First, European Union (EU) and Danish legislation provide the legal right of insourced employees to maintain wages and rights until the end of the current private collective agreement period (Schaumburg-Müller & Werlauff, 2011). However, if certain economic, technical, or organizational circumstances are present, the law does not hinder the public employer from changing employees' employment (e.g., from part- to full-time) or productivity demands (Schaumburg-Müller & Werlauff, 2011).

Second, insourced employees are transferred to the public collective agreement when the private collective agreement expires (e.g., 1 year after the insourcing occurs), resulting in new wage structures, working hours, and working conditions. Public sector wages are generally based on seniority, whereas private sector wages are more individualized, and performance-related pay is more common. Public employees in Denmark have a 37-hour work week, including lunchbreaks, whereas private-sector employees commonly have a 37-hour work week without a paid lunchbreak. There may also be more on-call scheduling under private employment, resulting in weekly changes to working hours. Some public/private collective labor agreements also set a different work pace. In the service sector, for example, the work pace is 30 percent higher for private employees than public employees (Confederation of Danish Industry & 3F, 2020).

Third, governments are sometimes interested in transferring insourced employees on entirely different terms. In this case, public officials and trade unions can adapt wages and working conditions through negotiations

(Udbudsportalen, 2011). These negotiations can entail governments hiring insourced employees according to adapted agreements or directly on public agreements, resulting in new (oftentimes more attractive) terms of employment.

The institutional context of this study highlights the decisive impact of laws, collective agreements, and trade unions on whether insourcing affects employees positively or negatively.

IDENTIFICATION STRATEGY

To identify instances of public sector insourcing, we collected Danish insourcing data from publicfutures.org, which identifies insourcing instances through participatory surveys and questionnaires with, for example, civil society organizations and trade unions (Transnational Institute, 2021). Additionally, publicfutures.org uses desk-based research to expand its search for instances of insourcing. We carried out extensive desk-based research to validate this information, identify public and private employers, determine whether employee transfers were likely, and determine the month of the transfer. While this approach bolsters confidence that the study includes many instances of insourcing with employee transfers, it hardly contains all instances, as no authoritative insourcing registry is available.

After identifying instances of insourcing, we collected the IDs of insourcing-affected public and private employers from the Danish Central Business Registry (Det Centrale Virksomhedsregister, [n.d.](#)). We then coupled employer IDs and insourcing data with individual-level Danish registry data for all public employees and private employees who remained employed by the contractors. The final panel dataset contained monthly registrations of all employees' employer, which made it possible to track transfers from private to public jobs due to insourcing. This strategy identified 12 instances of insourcing from 2011 to 2020 and 383 insourced employees representing several services including cleaning, healthcare, and waste collection (for more individual-level information about the insourced employees, see Table A1). Most of these services were insourced due to contract expiration, while a minority were insourced due to contract termination and private withdrawal. Likewise, local governments took control of most services, while the remaining services became anchored at the intermunicipal or regional level.¹

MATCHING, ESTIMATION, AND VARIABLES

Insourcing occurs in specific services and affects certain employees. Therefore, our approach is to match insourced employees with private employees who remained employed by the same private contractor.² While the insourced and private employees are identical

in many ways, several matching procedures increase the similarities and create a control group indicative of the counterfactual development for the group of insourced employees. For the sake of brevity, while our approach is not based on random assignment to treatment and control groups, we hereafter refer to insourced employees as the treatment group and those who remained employed by the private contractor as the control group (for a similar approach in an outsourcing context see Hansen et al., 2022; Petersen et al., 2021).

First, we use coarsened exact matching (CEM) to match the treated and control individuals on job type, gender, education, age, and salary. CEM produces a list of strata with minimum one treated and one control individual and provides weights for each individual to account for differences in the number of treated and control individuals in each stratum (Blackwell et al., 2009). The job type variable (DISCO-code) contains more than 1200 unique job codes in the gross sample, differentiating, e.g., between employees cleaning at hospitals, offices, hotels, trains, and more. Next, we match the treated and control individuals on gender, nine education levels, and five age groups. Lastly, we match the two groups on pretreatment salary using Sturge's rule (Iacus et al., 2011). Additionally, treated individuals from one instance of insourcing could not become controls in another, thereby avoiding bias created from staggered treatment timing (Goodman-Bacon, 2018).

Next, we relativize time to adjust for differences in treatment timing, with T-3 signifying 3 years before the insourcing, T-2 2 years before the insourcing, and so forth, until T3 (3 years after the insourcing). Moreover, the data required an estimation strategy that takes into account that many services were insourced very recently (e.g., in 2019). Our approach is to conduct both short- and intermediate-term analyses, with short-term signifying the development 1 year after insourcing (T1), and the intermediate-term 3 years after insourcing (T3). Distinguishing between the short- and intermediate-term is based on the duration of the collective agreements (2–3 years), meaning that insourced employees in the short-term could still be employed on a private collective agreement, whereas all insourced employees had transferred to a public collective agreement in the intermediate-term.

For this reason, we only include individuals with complete observations from T-3 to T1 in the short-term analysis, and from T-3 to T3 in the intermediate-term analysis. This approach is similar to stacking, as used by Cengiz et al. (2019) to recover the true treatment path, even when staggered treatment timing and dynamic effects bias two-way fixed effects models (TWFE) (Baker et al., 2022). The final treatment group is 279 in the short-term analysis, and the size reduction is primarily due to trimming, which eliminated individuals where observations were not available one full year after insourcing. In the intermediate-term analysis, the treatment group is

reduced to 181 because data for the most recent instances of insourcing (e.g., in 2019) were not available three full years after their implementation (for an overview of the characteristics of the final treatment and control employees, see Table A1 in the appendix). In total, this approach creates a balanced panel dataset suitable for difference-in-difference (DiD) analysis. This procedure follows many previous studies that combine DiD and CEM to examine treatment effects, including Petersen et al. (2021), who specifically apply this method to study outsourced employees.

The study uses pooled ordinary least squares (POLS) to estimate the influence of insourcing, which is equivalent to TWFE without time-varying control variables. The model is:

$$Y_{i,t} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Time}_t + \beta_3 \text{Treatment}_i \times \text{Time}_t + u_{i,t}$$

Treatment indicates control or treatment, Time indicates the relativized time variable, and Treatment \times Time is the DiD-coefficient. The DiD-coefficient compares two groups' means before treatment (T-1) and after treatment (T1 or T3 depending on the analysis). When testing Hypothesis 2, the model contains a three-way-interaction between time, treatment, and, respectively, a variable for gender or age. To account for dependency over time, the model clusters standard errors on individuals. The model did not include a two-way clustering (Cameron et al., 2006) of individuals and municipalities because it did not produce a robust covariance matrix. Lastly, the analysis contains a Poisson model to obtain semi-elasticities and account for the different starting points, for example, the salaries in the group of male and female employees, while also offering a robustness check of the POLS model.

DiD-estimation requires fulfillment of certain assumptions. The parallel trends assumption is the primary assumption to fulfill. When parallel trends are assumed, the treatment and control groups display parallel trends had the treatment not occurred. The assumption of parallel trends requires inspection of the differences in the pretreatment trends between the two groups. The analysis (see below) shows that the treatment and control groups have parallel trends from T-3 to T-1, thus supporting the assumption.

The SUTVA-assumption requires that a unit is unaffected by the treatment assignment to the other units. Given the similarity on essential variables, this study constructs a control group using employees who remained employed by the private company where employees in each insourcing instance were employed. However, insourcing could influence the private company and the remaining employees, causing a violation of the assumption. Nevertheless, the outsourced employees are often only responsible for delivering the service in a particular district and for a certain period of time. Therefore, the outsourced employees largely operate independently from the regular private employees, thus supporting the

assumption of no spillovers between the treatment and control groups. Moreover, Figure 1 in the analysis shows that the control group does not trend downwards in T1. Given that the possibility of spillovers wanes over time, the T3 result reinforces the assumption. A robustness check with control group companies of different sizes further consolidates the assumption, as smaller companies should be more likely to restructure because the service constitutes a relatively larger fraction of their business operations. Figure A1 in the online appendix illustrates how the post-treatment development in the control group does not vary with company size.

Variables

Outcomes

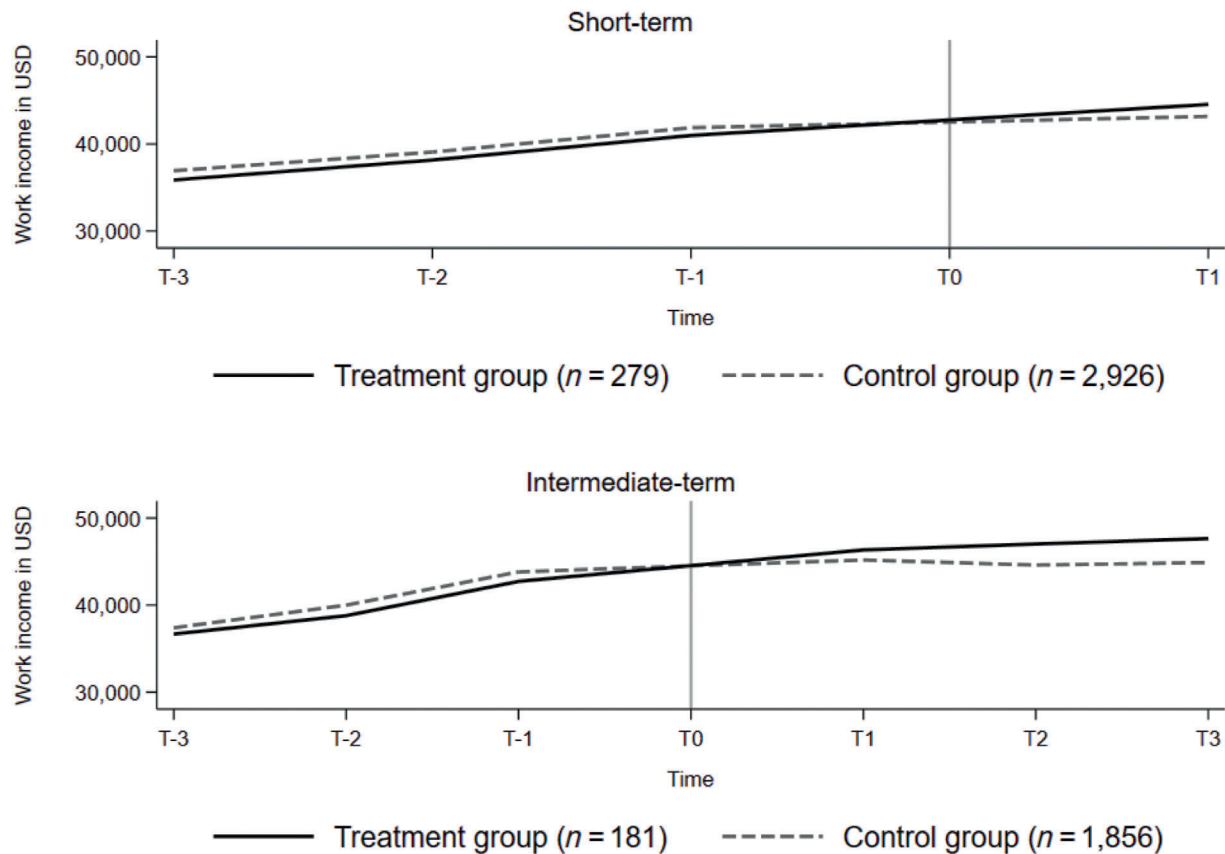
The outcomes are *work income* and *employment*. Work income is measured as the annual income adjusted for inflation, while employment is measured as the monthly working hours. The primary data source for these two variables is the Danish tax authority, which validates the data. The income variable measures all income and employee benefits but without pensions. Working hours are based on registrations and depend on whether employee contracts include lunch and sick days. Each month, a person can have more than one employer and thus additional income and working hours. In the main analysis, we focus on the primary employer. However, as robustness checks, we also include income and working hours from the primary, secondary, and tertiary employers (see Figures A2 and A3 in the Online Appendix).

Moderators

Moderators measure whether the influence of an independent variable is the same for all individuals or if it varies for specific groups (Aneshensel, 2013). Hypothesis 2 raises expectations toward the impact of insourcing across gender and age. The operationalization of gender has two employee categories: male and female employees. Three categories operationalize age: individuals aged 18–34, 35–51, and 52–68. Interacting the DiD-coefficient and respective moderator (gender, age) in three-way interactions provides the moderating effects.

EMPIRICAL FINDINGS

This section analyzes short- and intermediate-term changes in work income and employment after insourcing, testing Hypothesis 1. The moderation analysis then follows, where gender and age moderate the influence of insourcing to test Hypothesis 2. When we introduce these third variables (gender and age), the number of observations and thus



	Work income (p -value)	Percentage change (p -value)
Short-term (T-1 to T1)	2,269.5 (.014)	5.4% (.005)
Intermediate-term (T-1 to T3)	3,850.2 (.013)	8.9% (.003)

FIGURE 1 Insourcing and work income. The figure is based on an interaction between time and treatment. Cells contain DiD-coefficients (p -values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary.

statistical power are reduced in each analysis. Therefore, the test of Hypothesis 2 is limited to T-3 to T1, and we apply a 10 percent-significance level to avoid producing too many false negatives.³ To aid the interpretation of the interactions and visualize the pre-treatment trends, we visualize the results with figures and calculate DiD-coefficients.

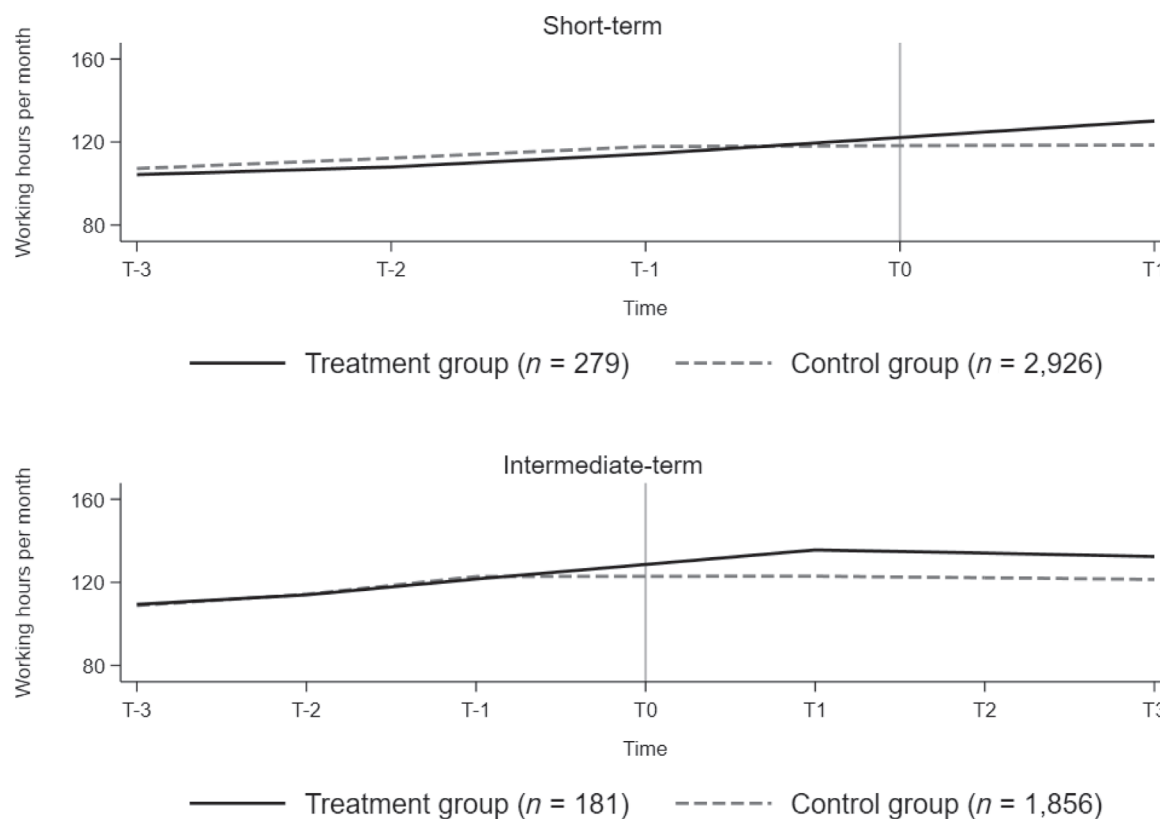
The influence of insourcing on employees

Figure 1 shows the overall short- and intermediate-term changes in work income. We see that insourced employees experience a significant increase of USD 2269.5 in the short-term (5.4 percent) and USD 3850.2 in the intermediate-term (8.9 percent). Figure 2 shows the

overall influence of insourcing on employment. Here, we see how employment significantly increases by 15.2 h per month in the short-term (13.3 percent) and 12.2 h per month in the intermediate-term (10.2 percent). We arrive at the same conclusion when considering primary, secondary, and tertiary income and employment (see Figures A2 and A3 in the online appendix). These findings support our Hypothesis 1: Insourced employees experience increased work income and employment.

The influence of insourcing across subgroups

Next, we examine the relationship between insourcing and outcomes across employees of varying gender and



	Working hours (p -value)	Percentage change (p -value)
Short-term (T-1 to T1)	15.2 (.000)	13.3% (.000)
Intermediate-term (T-1 to T3)	12.2 (.000)	10.2% (.001)

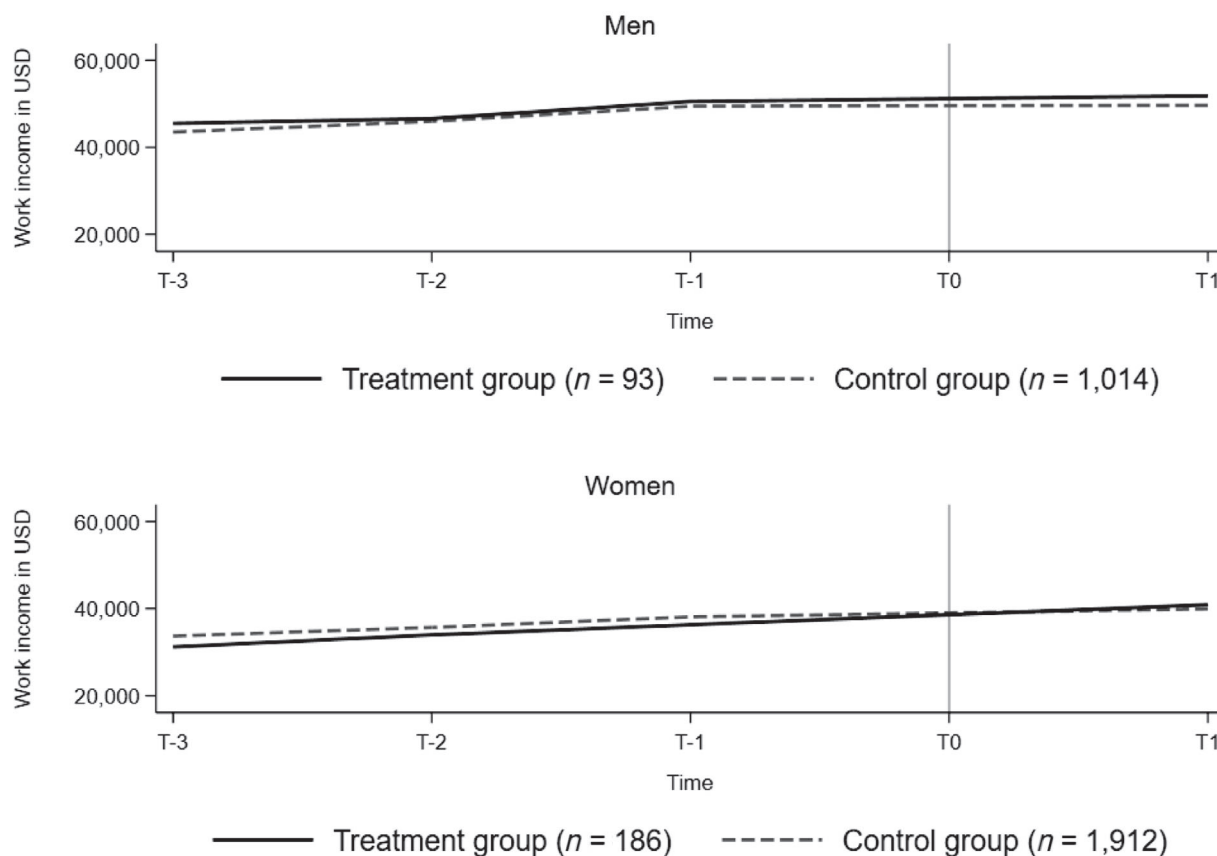
FIGURE 2 Insourcing and employment. The figure is based on an interaction between time and treatment. Cells contain DiD-coefficients (p -values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary.

age. Figure 3 shows the influence of insourcing on work income for men and women: The coefficient for men is insignificant, while women experience a statistically significant increase of USD 2773.5 (7.5 percent) 1 year after insourcing. Table A2 in the online appendix provides the detailed calculation of DiD-coefficients for the analysis moderated by gender. In addition, Figure 4 shows the development in employment after insourcing for men and women, the results indicating that men experience a significant increase of 14.4 working hours per month (11.6 percent), while women experience a significant increase of 15.7 working hours (14.3 percent).

Taken together, these findings suggest that both male and female workers experience an increase in employment, but that only female workers experience a significant increase in work income, which is consistent with our Hypothesis 2 that female workers particularly benefit

from public sector insourcing. A possible explanation for male employees' increases in working hours but insignificant development in work income is the more equalitarian wage structure in the public sector. The more equalitarian public wage structure may benefit female employees by reducing the gender wage gap (Hansen et al., 2022), while male employees work significantly more after insourcing without corresponding increases in their work income. We return to a discussion of the implications of these findings in the discussion section.

Figure 5 shows the influence of insourcing on work income for different age groups of employees. Here, we see that the youngest and oldest employees experience increases in income of, respectively, USD 3047.3 (8.3 percent) and USD 4175.6 (10.1 percent) 1 year after insourcing. In contrast, employees aged 35–51 do not experience a significant change in their work income after



	Work income in USD (p -value)	Percentage change (p -value)
Men (T-1 to T1)	1,105.6 (.483)	2.6% (.318)
Women (T-1 to T1)	2,773.5 (.015)	7.5% (.005)

FIGURE 3 Insourcing and work income moderated by gender. The figure is based on a three-way interaction between time, treatment, and gender. Cells contain DiD-coefficients (p -values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary. The difference between the DiD-coefficients for men and women is 1667.9 (p -value: .391).

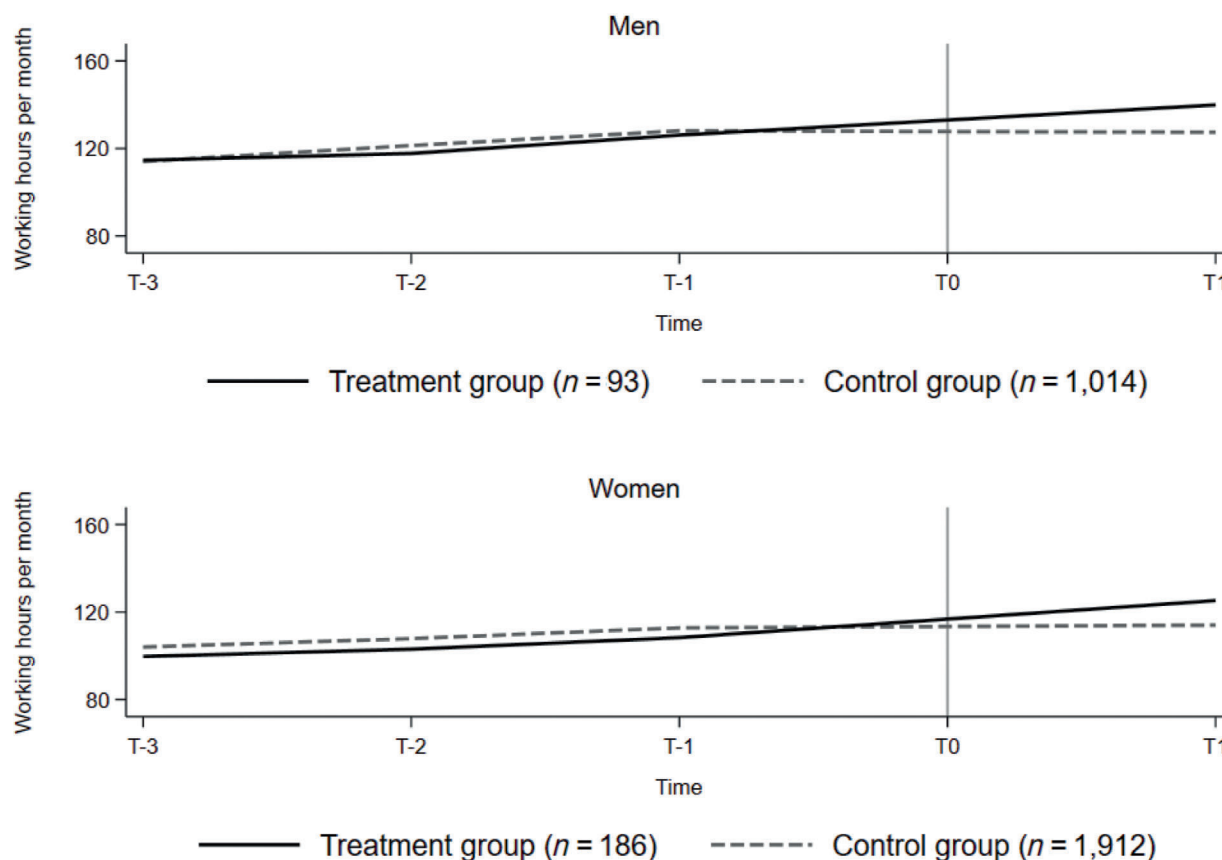
insourcing. Next, Figure 6 illustrates the development in employment for different age groups of employees. The results suggest that all groups significantly increase employment. Working hours for the youngest employees increase by 14.1 h (13.3 percent), middle-aged increase by 14.2 h (11.4 percent), and the oldest increase by 19.3 h (17.6 percent). Thus, combining insights from Figures 5 and 6 indicate that the youngest and oldest employees simultaneously increase income and employment, while the middle-aged only significantly increase employment. These results are consistent with our Hypothesis 2 that younger and older workers particularly benefit from public sector insourcing.

Summarizing these findings, the analysis suggests that insourced employees overall increase income and employment,

supporting our Hypothesis 1. In addition, the moderation analysis shows that female, younger, and older employees benefit in particular from insourcing, which supports our Hypothesis 2. These findings suggest that government insourcing benefits employees both in term of work income and employment, but also that these advantages are concentrated among female and younger/older employees. We discuss the implication of these findings for public administration research and practice below.

DISCUSSION AND CONCLUSION

Our study extends previous research by offering the first systematic account of the employee-related consequences



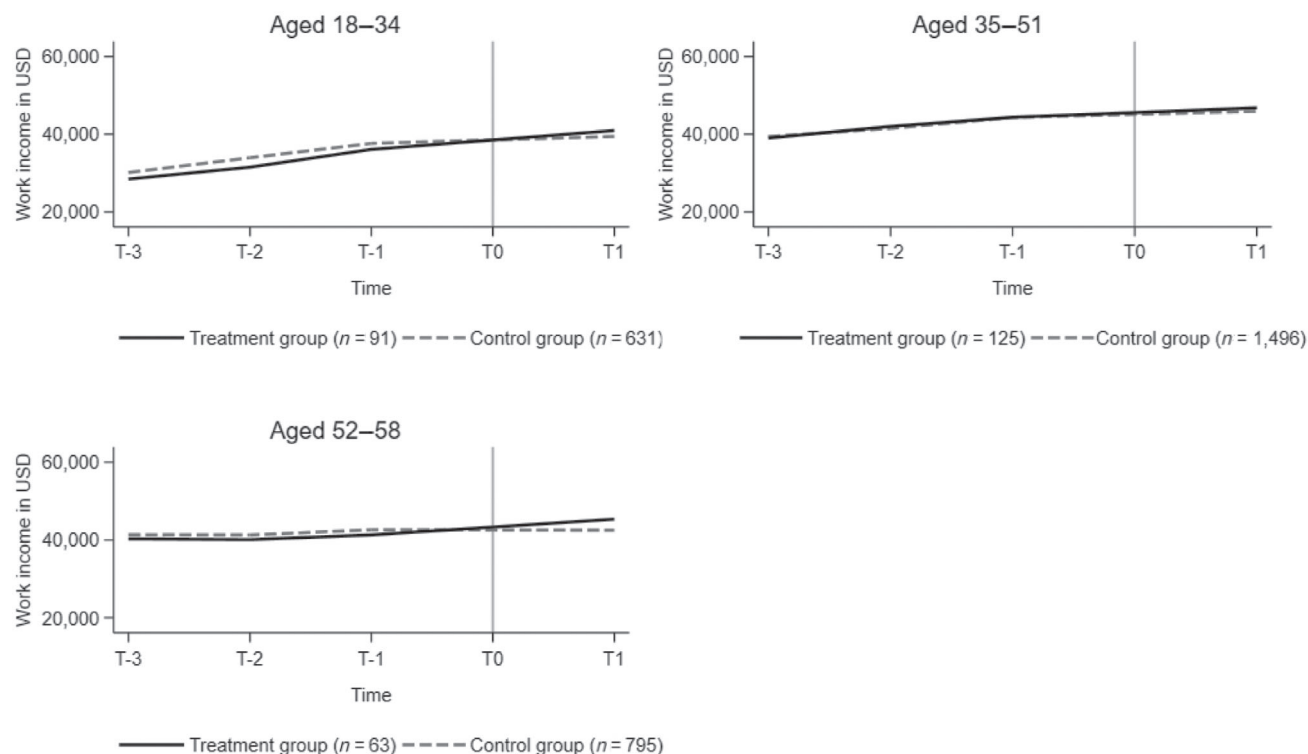
	Working hours (p -value)	Percentage change (p -value)
Men (T-1 to T1)	14.4 (.000)	11.6% (.000)
Women (T-1 to T1)	15.7 (.000)	14.3% (.000)

FIGURE 4 Insourcing and employment moderated by gender. The figure is based on a three-way interaction between time, treatment, and gender. Cells contain DiD-coefficients (p -values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary. The difference between the DiD-coefficients for men and women is 1.3 (p -value: .812).

of taking services out of market competition and placing them back under public provision. Drawing on high-quality individual register data, we examine how public sector insourcing affects employees' work income and employment. Our theoretical expectations were that the shift from private delivery characterized by high-powered incentives for cost reductions to public delivery characterized by low-powered incentives will positively affect employees in general, and female and younger/older employees in particular. The findings support these expectations. The analysis shows that work income increased by 5.4 and 8.9 percent 1 and 3 years after insourcing, respectively, while the increase in employment 1 and 3 years after insourcing was 13.2 and 10.2 percent, respectively. Moreover, our the findings suggest that insourcing is particularly beneficial for female,

younger, and older employees, who experienced the greatest increase in both work income and employment.

The research on public versus private service delivery has focused largely on privatization and contracting out, with much theoretical and empirical focus on the stronger incentives for efficiency gains and cost reductions under private provision (Blom-Hansen, 2003; Domberger & Jensen, 1997; Jensen & Stonecash, 2005; Petersen et al., 2021). Our application of these theoretical expectations to the reverse process of public sector insourcing suggests positive consequences for employees working under a more low-powered incentive structure. In particular, the beneficial outcomes for female and younger/older workers suggest that policy makers could use insourcing to reverse the decline in work income and



	Work income USD (<i>p</i> -value)	Percentage change (<i>p</i> -value)
18-34 aged (T-1 to T1)	3,047.3 (.063)	8.3% (.037)
35-51 aged (T-1 to T1)	804.7 (.575)	1.7% (.505)
52-68 aged (T-1 to T1)	4,175.6 (.012)	10.1% (.012)

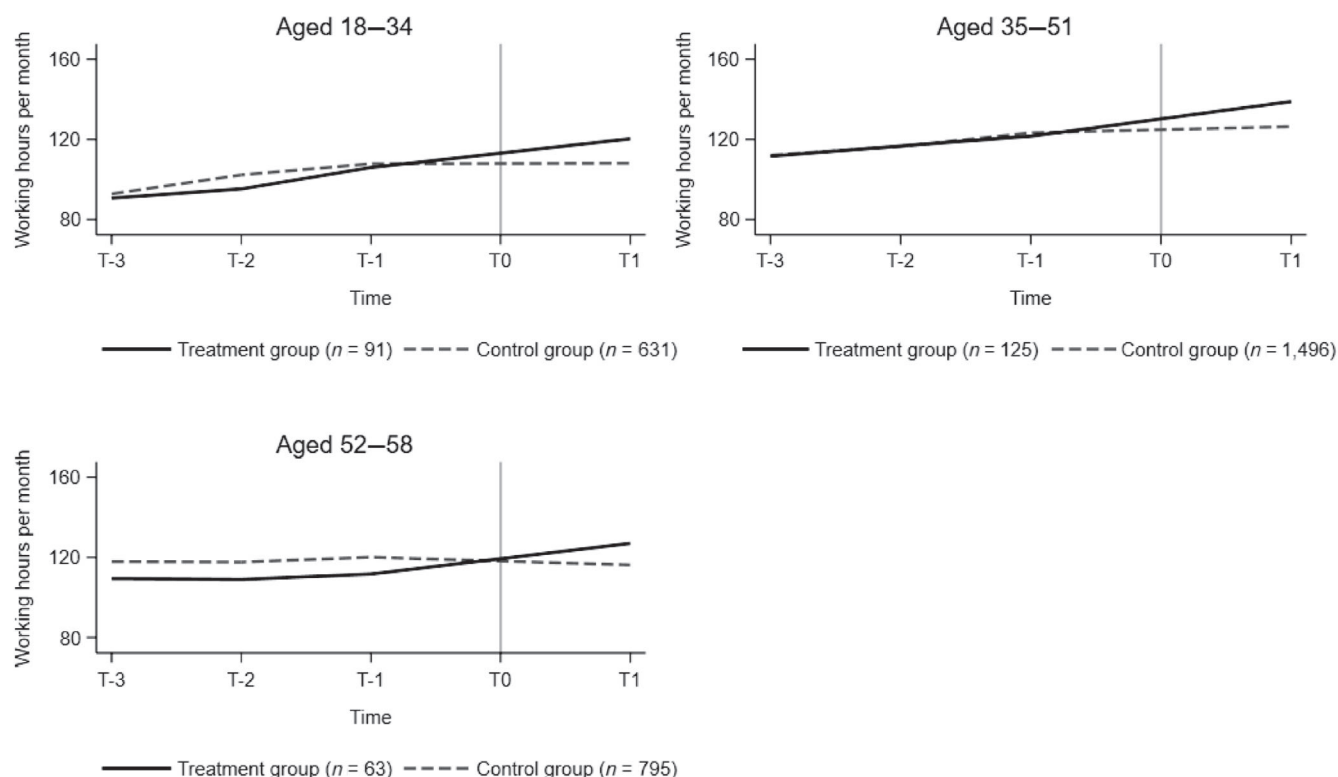
FIGURE 5 Insourcing and work income moderated by age. The figure is based on a three-way interaction between time, treatment, and age. Cells contain DiD-coefficients (*p*-values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary. The difference between the DiD-coefficients for 18-34 and 35-51 is 2242.6 (*p*-value: .303). The difference between the DiD-coefficients for 35-51 and 52-68 is 3370.9 (*p*-value: .125).

employment found in recent mirror-studies of outsourcing (Hansen et al., 2022; Petersen et al., 2021).

Productivity is a critical factor for the total expenditures incurred by insourcing public authorities. Our findings show that employees receive more pay and work more hours after insourcing. Thus, governments that insource services pay more salary, thereby incurring higher labor costs, but they might also receive more output per employee. Like this, the salary increase is potentially canceled out by productivity gains, enabling savings on other variables (e.g., transaction costs). However, positive effects from increased working hours are only genuinely realized if working practices are efficient. While this study does not measure efficiency gains, early proponents of privatization, such as Boycko et al. (1996) and Niskanen (1975), highlight government inefficiency, while later

accounts, like Bel and Costas (2006), note that governments have several options to maintain efficiency in public service delivery. Voorn et al. (2021) also suggest governments take corporatized form and business values when insourcing, signaling that governments could operate the service efficiently.

Another implication of our study is that insourcing may reduce the male-female wage gap. Shrinking the wage gap could lead to lower poverty rates and higher pensions for women (New Brunswick Advisory Council on the Status of Women, 1996; Transamerica Center for Retirement Studies, 2019), thus contributing to greater gender equality in the labor market. Our analysis suggests that women experience insourcing more positively whereas men do not experience any changes. As discussed in the theory and literature section, insourced



	Working hours (<i>p</i> -value)	Percentage change (<i>p</i> -value)
18-34 aged (T-1 to T1)	14.1 (.004)	13.3% (.001)
35-51 aged (T-1 to T1)	14.2 (.000)	11.4% (.000)
52-68 aged (T-1 to T1)	19.3 (.000)	17.6% (.000)

FIGURE 6 Insourcing and employment moderated by age. The figure is based on a three-way interaction between time, treatment, and age. Cells contain DiD-coefficients (*p*-values in parentheses). Standard errors clustered on individuals. Treatment and control groups are matched on job type, gender, education, age, and salary. The difference between the DiD-coefficients for 18–34 and 35–51 is .12 (*p*-value: .986). The difference between the DiD-coefficients for 35–51 and 52–68 is 5.07 (*p*-value: .429).

female employees are likely to benefit from the more equalitarian wage structure in the public sector. An additional theoretical explanation is that women experience a better person-environment fit (Van Vianen, 2018) in the public sector organizational culture than do men. The value congruence between women and the public sector also appears in the public service motivation literature, outlining a higher commitment to the public interest among women (Andersen & Serritzlew, 2010), which could influence their job satisfaction, performance, and commitment (Vandenabeele, 2007). Therefore, the public sector-women fit might also explain why insourcing affects women more positively than men.

While offering novel insights into an issue of increasing importance to public administration

scholarship and practice, our study on insourcing and employee outcomes also has several limitations. First, while we aimed for strong causal identification by using a quasi-experimental approach with exact matching of employees in the treatment group and control group, these groups may still be different on unobserved variables. Consequently, quasi-experiments cannot fully uncover the true counterfactual outcome. Second, as outlined earlier, the SUTVA assumption also presents a limitation, because spillovers could result in changed salaries or employment for the remaining private employees in the companies (i.e., the control group). While our robustness checks supported the SUTVA assumption, we cannot rule out spillover effects. Third, most insourced employees examined in this article

work as cleaning assistants, healthcare assistants, or waste collectors. Consequently, the results cannot be generalized outside these occupations. For instance, insourcing might positively affect employees from occupations with fewer resources (who can benefit relatively more from the equalitarian public wage structure) or more occupational resources, such as specialized knowledge (Andersen, 2009) and unionization (Fernandez & Smith, 2006).

We encourage future research to extend the scope of our study to other national contexts, thereby increasing the generalizability of this important line of inquiry. The comparatively flexible hiring and firing procedures in the Danish labor market make government jobs more exposed to market forces than in many other countries (Petersen et al., 2021, p. 413). Our estimates of the consequences of insourcing for employees are likely to be conservative, and we would expect larger positive employee consequences in countries where public employment is more shielded from the private labor market. Further research could also qualitatively examine public and private collective agreements to unravel the differences between, for example, hourly salary, payment for overtime work, productivity requirements, and paid maternity leave. This could provide richer insights into *why* we see these significant differences in work income and employment when services are delivered in the public and private sectors, respectively.

Finally, further research should also incorporate production costs and service quality to assess whether insourcing leads to net welfare gains. This focus could answer whether insourcing leads to quality-shading (Hart et al., 1997) and/or the redistribution of welfare from governments to employees (Jensen & Stonecash, 2005). Alternatively, future studies could focus on the motives behind insourcing to assess whether insourcing with ideological versus pragmatic motives affects employees differently. Such research could draw on the data gathered by publicfutures.org, which includes the motives for insourcing (Transnational Institute, 2021). However, since most insourcing instances have multiple motives, complementary qualitative inquiry would be necessary to disentangle the dominant motive(s) in each insourcing instance.

ENDNOTES

¹ This study cannot examine how these characteristics of insourcing authorities affect insured employees due to data anonymity rules set by the data provider (Statistics Denmark).

² Using “stayers” as a control group further means that the study cannot include insourcing cases involving bankruptcies as there are no available control group individuals. However, according to publicfutures.org, the Danish public sector only insourced three services due to bankruptcies, and it is unclear whether they entailed employee transfers.

³ The analysis excludes T0, as it both contains data from the previous and current employer.

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SUPPORTING INFORMATION

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