Public employees lining up at the polls—the conditional effect of living and working in the same municipality

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Abstract Do public employees vote more frequently than private employees? The turnout of public employees has been of central interest to public choice scholars for almost a century. Utilizing a government records dataset that is not subject to over-reporting and differential social desirability bias, we find that public employees voted 11–12 percentage points more than their counterparts in the private sector. In a multivariate analysis, however, the effect is only four to five percentage points greater for local government public employees, which is in the lower range of previous studies. We are able to distinguish between local government and central government employees and show that the latter vote two percentage points less than the former. Controlling for the specific type of educational background does not explain the public–private turnout differential. Finally, the effect of working and voting in the same municipality is larger for local government employees than other citizens. This is in accordance with their greater incentives as they elect their future employer, though the effect size is surprisingly small.

1 Introduction

Are public employees more likely to vote than their counterparts in the private sector? For almost a century, the turnout of public employees has been of central interest to public choice scholars and political scientists in general (e.g., Martin 1933; Wolfinger and Rosenstone 1980; Garand et al. 1991a, 1991b; Frey and Pommerehne 1982; Bennett and Orzechowski 1983; Jaarsma et al. 1986; Johnson and Libecap 1991; Corey and Garand 2002;

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Jensen et al. 2009). If bureaucrats maximize their self-interest (Niskanen 1971), this is likely to be reflected in their behavior in elections. According to the bureau voting model, public sector growth can partly be explained by the disproportional voting power of public employees at elections. First, public sector employees are expected to hold more pro-government opinions than other voters, and if they are voting they are more likely to support candidates or parties favoring government spending as this might advance their personal welfare (Bush and Denzau 1977; Garand et al. 1991a; Blais et al. 1991:205; Knutsen 2005; Jensen et al. 2009). Second, one would expect public employees to be more likely to vote in the first place, since they have higher benefits and smaller costs of voting. On average, they rationally have more incentive to vote than other eligible citizens (Downs 1957; Riker and Ordeshook 1968). If public employees are indeed more likely to vote than eligible citizens in general, they can potentially exert greater influence over electoral outcomes (Corey and Garand 2002), thus potentially leading to more public spending (Garand 1988; Garand et al. 1991a, 1991b).

In this article, we contribute to the literature by examining whether the theoretically compelling employment–turnout relationship holds in an empirical investigation. This article makes three main contributions. First, by utilizing a government records dataset of more than half of the eligible Danish citizens in the 2009 municipal elections, we are able to provide more reliable estimates than previously possible. The turnout data are based on government records and thus not subject to over-reporting and self-selection, which is especially a problem with survey data on turnout (Bernstein et al. 2001; Karp and Brockington 2005). This implies that we can preclude any possible correlation between public sector employment and turnout is due to differential social desirability bias. Second, all independent variables (including employment sector) are drawn from official government databases and are thus very reliable and detailed. The availability of information concerning the precise educational attainments of almost all employees allows us to test whether the public–private turnout differential is due to differential educational backgrounds, as public employees are more likely to have training in the social sciences than their private sector counterparts. Third, we are able to distinguish between different types of public employees who might possibly have dissimilar incentives. More specifically, we examine whether the effect of being a local government employee is greater for individuals living and voting in the same municipality compared to others, which one would expect if voting for your employer matters. We are also able to distinguish between public sectors workers employed by the central government as opposed to those holding jobs at the local level. The latter are likely to have stronger incentives to vote in local elections.[1]

The article proceeds with a brief description of the data and context followed by a summary of relevant theory and the main hypotheses. The next three sections are devoted to an empirical examination of the bivariate relationship between employment and turnout, the corresponding multivariate relationship, and whether voting and working in the same municipality matters more for local government employees than for others. The article ends with a concluding section.

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[1]Whereas there are to our knowledge no previous studies examining the interaction between residency and public employment, some studies distinguish between employees on the local/state and federal levels (Tingsten 1937; Frey and Pommerehne 1982:255; Johnson and Libecap 1991; Garand et al. 1991b).

2 Data and context

Our data are at the individual level and from the November 2009 Danish municipal elections, where elections were held simultaneously in 98 municipalities using a proportional electoral system.[2] The municipalities administer roughly 27% of the total Danish GDP (Mouritzen 2003) and provide most welfare services, e.g., child care, elderly care, elementary schools, libraries, and local roads. Previous studies find that local election results are highly consequential for the policy outcomes in the individual entities (Blom-Hansen et al. 2006).

Slightly less than two-thirds of the eligible population turned out for the municipal elections in 2009. Access to individual level voter data for a municipality required the consent of the administration in that specific municipality. Half of the 98 Danish municipalities complied and, after the elections, the entire individual-level electoral register was computerized in 44 municipalities and merged with official government data on employment, socio-demography, residency, family ties and other relevant variables. Although participation in the study was voluntary for the municipalities, almost all of the eligible individuals in the participating municipalities were collected and reported.[3] This enabled us to include individuals who usually do not respond to surveys, thereby avoiding self-selection.

One of the government register variables was sector of employment. A total of 293,815 respondents were registered uniquely as local government (regional and municipal) employees,[4] 87,409 of them were identified as central government (state) employees, whereas 585,796 were registered as private sector employees.[5] In addition to the sector variable, the registers included the usual suspects from the turnout literature, e.g., education, gender, age, income, marital status, ethnicity, citizenship, and residential patterns (see, for example, Wolfinger and Rosenstone 1980).

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[2]Along with the municipal elections, there were simultaneous elections for the five regional councils (the regions primarily control the public hospitals and, unlike the municipalities, regions are not able to collect taxes). Our focus exclusively is the municipal elections. Turnout is roughly identical in the two types of elections—very few individuals vote at one election and not the other (Elklit and Kjær 2009). It is therefore important to note that individuals who are mobilized for the regional elections are also likely to vote in the elections under study.

[3]In 39 municipalities there were no missing districts or voters at all. In Rudersdal, one district was missing, in Copenhagen one table in one district was missing (voters are assigned randomly to tables) and in Aarhus six districts were missing. In all cases the municipalities had lost the ballots after they were counted. Esbjerg participated only with those districts with electronic voting. In all four municipalities, there was no self-selection involved, and the missing districts/tables should therefore not pose a problem for the analysis. In one municipality, Odense, the electronic registration in district 4 broke down after a couple of hours. This resulted in 1,160 voters erroneously being coded as non-voters. Excluding district 4 in Odense does not alter any of the main conclusions (Bhatti and Hansen 2010).

[4]Though we are able to distinguish between central and local government employees, we cannot further divide local government employees into regional and municipal employees. This should not be a problem in the two first parts of the analysis as regional elections were held simultaneously with the municipal elections under investigation. Thus, regional and municipal employees faced roughly the same incentives to vote.

[5]More than 37,000 (in fact 37,426) individuals were registered as being employed in two sectors and 540 in three sectors. These individuals were excluded from the study to avoid duplication. If the individuals were included and results were clustered by individuals to take into account individuals appearing more than once due to multiple affiliations (i.e., if an individual was registered as both a private and local government employee, she would appear in the analysis twice but in one cluster), the results would be almost identical to those presented. Nearly 1.4 million (1,369,752, to be precise) individuals were either not employed or had no registered sector affiliation.

3 Theory and the existing literature

Public employees' rational incentives to vote at disproportionately higher rate have been of particular interest to public choice scholars working within the tradition of the bureau voting model. The model aims at explaining public sector growth (partly) from the voting power of public employees. It is suggested that public sector employees have more pro-government preferences and vote more pro-government (typically for parties on the left) than their private counterparts (Blais et al. 1990, 1991; Garand et al. 1991a). In other words, they desire to push policy in a pro-government direction in order to increase their budget. Additionally, a crucial part of the model is that public employees participate in greater numbers in elections. Their potentially higher turnout is what provides them with disproportionate leverage over election outcomes.

Why would public employees vote more than the rest of the eligible population? The expectations of the bureau voting model can easily be understood from the economic theory of voting. Following Downs (1957), the individual's utility of voting (U) is given by the expected benefit (B) minus the perceived costs (C), or:[6]

$$U = B - C$$

The benefit (B) of voting is likely to be greater for public employees than for other citizens, since the government is their employer. They are thus able to influence their own job security and working conditions by voting (Garand et al. 1991b:181). Public employees have an incentive to vote for bigger government (Johnson and Libecap 1991), as this may increase their personal standards of living by expanding their professional opportunities. The political system has less influence on the salaries and working conditions of private employees, and public employees therefore should have greater incentive to vote than the rest of the population.

In addition to the benefits of voting likely being higher, the costs (C) may be lower—at least for some public employees. When working in a political environment, public employees are typically provided with political information through their places of work. This renders an informed vote less costly (Garand et al. 1991b:181; Corey and Garand 2002). It should be emphasized, however, that not all public employees work in a political environment. Moreover, private bureaucrats working in organizations that cater to special interests in the political marketplace are also possibly working in a political environment. Thus, though there may be something to the cost argument for some public employees, the benefit side of the public employee–turnout link appears to be stronger.

Most of the existing literature finds a positive relationship between public employment and electoral turnout. Martin (1933) uncovers a 29 percentage point effect of public employment in a local election in Austin, Texas. Bennett and Orzechowski (1983) study US national elections between 1964 and 1978 and estimate the average public–private turnout differential for the eight elections to be 18%. Wolfinger and Rosenstone (1980) find a similar differential for the 1978 congressional elections. Jaarsma et al. (1986) criticize previous studies for not controlling appropriately for confounding socio-economic and demographic variables and discover a partial effect of less than 4% in five Dutch parliamentary elections

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[6]The B term is often divided into two components: (1) the benefit of the voter's preferred outcome (B) and (2) the probability of becoming the pivotal voter (P). However, this division is not so important in the present case, since the probability of deciding the outcome is expected to be roughly invariant (and infinitesimally small) across the employment groups. A separate term (D) for civic duty is also often included (Riker and Ordeshook 1968).

using a logit specification. Johnson and Libecap (1991) distinguish between different types of public employees using the 1984 and 1986 CPS and estimate a 6 to 10 percentage point marginal effect for local government employees and no effect for federal employees. Garand et al. (1991b) show that public employees vote from 8 to 15 percentages points more often than other citizens across different types of American elections through the 1980s.[7] Furthermore, state and local government employees were found to vote more often than federal employees. On the basis of ANES 1996, Corey and Garand (2002) find the turnout of government employees to be more than 12 percentage points higher than other citizens. This relationship is attenuated only by about 20% in a multivariate analysis, implying that the major part of the relationship is indeed causal. Jensen et al. (2009) find a much smaller effect of public employment than the other studies referred to—the marginal effect is only 1.3 percentage points. In sum, there is considerable evidence that public employment has a positive impact on turnout, but the exact magnitude of the effect varies from study to study.

4 Hypotheses

While the previous literature is extensive and thorough, it is not exhaustive. First, we reinvestigate the bivariate relationship between public employment and turnout. A possible bivariate association is interesting even if there is no causal relationship, because public employees would still have disproportionate voting power—as suggested by the bureau voting model—even if it is not due to their employment status.

Our re-investigation of the bivariate relationships enjoys two advantages over previous studies. First, we have government records for turnout and government register data for employment, for which reason a relationship between employment status and turnout cannot be due to different social desirability effects in the public and private sectors. Second, contrary to most studies (some notable exceptions are Tingsten 1937; Garand et al. 1991b; Johnson and Libecap 1991), we are able to distinguish between central and local government employees. At local level elections—such as the election under investigation in this study—we would expect local government employees to have a greater tendency to vote than central government employees, since they are affected more directly by local politicians' spending decisions.

Second, we reinvestigate the multivariate relationship between employment and turnout. Frey and Pommerehne (1982), Jaarsma et al. (1986) and others have noted how a bivariate relationship between employment status and turnout does not necessarily imply that employment is causally related to the voting decision. For instance, Danish public employees are predominately female, are older, and more highly educated than their private sectors counterparts. Hence, an important question is whether public employees vote more because of their sector of employment per se, controlling for other characteristics. In other words, we wish to eliminate any selection bias. Bivariately as well as multivariately we expect local government employees to have a higher probability of voting than other types of employees.

H1: *In local elections, local government employees are more likely to vote than private-sector and central government employees.*

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[7]Comparable results are found in a similar study by the same authors (Garand et al. 1991a) though the bivariate differential reaches 17 to 23 percentage points for the election year 1986.

The multivariate relationship is examined using a binomial logistic model. As previously argued, local government employees are expected to vote more than private employees. Additionally, they may also turn out more often than central government employees, as central government employees do not directly influence their job security and working conditions via local government elections. Hence, there would appear to be more at stake for local government employees.

We control for a range of factors commonly held to be causally related to turnout. Several studies indicate that gender is related to turnout (e.g., Leighley and Nagler 1992). Age and age squared are also included, since most studies find a curvilinear relationship between age and turnout (Wolfinger and Rosenstone 1980; Highton and Wolfinger 2001). We include four dummies for education, which is also often believed to be strongly causally related to turnout (Campbell et al. 1960; Wolfinger and Rosenstone 1980; for a different view, see Denny and Doyle 2009). The respondent's income is included, as greater resources possibly lead to increased political participation. We also add dummies for marriage and other personal conditions (Denver 2008; Wolfinger and Wolfinger 2008) as well as whether the respondent lives alone. The logic of both variables is that social encouragement possibly has a strong impact on voting. The number of children in the household is also included, as individuals with children use local government services, such as childcare and schools, more frequently and therefore may have a greater incentive to vote.

The existing literature states that immigrants and other minorities vote substantially less than the majority group in Denmark (Elklit et al. 2000) and elsewhere (e.g., Campbell et al. 1954; Xu 2005). Consequently, dummies are included for ethnicity and citizenship. A final, commonly used factor included in the present study is residential stability (Verba and Nye 1972:145; Milbrath and Goel 1977:113; Highton and Wolfinger 2001). Even though voting in Danish municipal elections does not require registration prior to Election Day, residential stability may imply strong community ties which may in turn increase the likelihood of voting (Highton 2000). As a supplement to the standard residential stability variable, we also include the number of days of residence in the current municipality, since moving from one municipality to another may be more complicated for voting than simply moving, since the political issues and candidates can differ geographically.

In addition to the usual suspects, we consider an additional factor which has not been investigated in the existing literature on public employment and turnout. Whereas several studies control for the level of education (e.g., Jaarsma et al. 1986; Corey and Garand 2002), the *type* of education is presumably also a relevant factor. For instance, public employees may be more likely to have a background in the social sciences, and such persons may in turn be more likely to vote (see, e.g., Hillygus 2005). In other words, controlling for the type of education will allow us to be more confident than previously that a partial relationship between public employment and turnout is not due to political interest (as proxied by prior educational training) determining public employment.[8] It should be noted that we include only objective variables in the models as our government records dataset by its design does not allow for attitudinal measures.[9]

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[8]Entirely ruling out this possibility would require panel data (or, even better, some sort of random assignment to employment). We return to this in the conclusion.

[9]The inability of including attitudinal variables is a downside of government records datasets. If there are attitudinal variables that are causally prior to our main variables of interest (sector of employment) and related to the dependent variable, we may obtain biased estimates. However, it should be noted that is not clear that it would be appropriate to include attitudes for the present purpose as commonly used opinions, such as attitudes towards the public sector, party identification, and party vote could partially be a consequence of sector of employment rather than a cause of it.

Table 1 Turnout by employment category[a]

	Private sector employees	Central government employees	Local government employees
Turnout (%)	62.8	75.0	74.0
N	585,796	87,409	293,815

[a]The 1,369,752 individuals who where eligible to vote but were unemployed or had no registered sector affiliation have a 61.9% turnout rate. Part of the explanation for the small difference between private sector employees and individuals who are not employed is age. The latter group is older, on average—a factor which normally contributes to a high turnout. It should be noted that some studies cited earlier compare public sector employees to all other citizens and not just private sector employees. As private sector employees' turnout is very close to that of non-employees, this distinction is not very important for the Danish case

All differences between the proportion voters in the employment categories are significant, $p < 0.0001$

The second hypothesis further explores the varying incentives of different public employees. In municipal elections, the local government employees who are registered in the same municipality as they work can influence their job security and work conditions more by voting than employees living and working in different municipalities (their benefits are higher—the B term in Downsian utility function). Only the local government employees living and working in the same municipality elect their own employer. Their costs (the C term) may also be lower, since the political information they obtain in their workplace is more relevant than the information provided to other public employees. In other words, the utility differentials from voting between public and private employees should be particularly significant for individuals living and working in the same government entity.

H2: *In local elections the effect of local employment is greater for individuals working and living in the same entity compared to eligible individuals in general.*

The varying incentives of public employees are modeled as a function of the interactions between living and working in the same entity and the different public employment groups. Interactions are the appropriate specification, since living and working in the same municipality may matter for all voters, as it can reduce the cost of voting due to the relative proximity between work and home.[10] Local government employees should gain disproportionately, however, as their benefit from voting increases, along with the gains from proximity. Thus, while everyone possibly benefits from living and working in the same place, local government employees ought to gain more than others.

5 Do public employees vote more?

Table 1 presents the turnout percentages for each of the three main categories of employees in our sample. There is considerable variation from category to category.

The two categories of public employees have a substantially higher turnout than private employees, the difference being 12 percentage points for central government employees and

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[10]Ideally, one should only investigate the municipal employees in H2, since regional employees vote for their employer as long as they live in the same region; however, this is not possible given the information available in the dataset. Thus, our results for this hypothesis (but not H1) could be attenuated slightly due to the noise from the regional employees.

11 percentage points for local government employees. These differences are very similar to Corey and Garand's (2002) survey-based study. The difference is, however, smaller than Martin's (1933) findings for local level elections. The findings support the claim of the bureau voting model that public sector employees have disproportionate leverage over election outcomes.

Interestingly, central government employees have a slightly higher turnout rate than local government employees. One would expect the opposite, since local politicians do not control the central government budget. Local government employees would thus be expected to have a more pronounced tendency to vote. However, this puzzling bivariate result may be due to the fact that central government employees tend to be more highly educated than local government employees. This calls for a multivariate analysis.

6 Does local employment matter?

A binomial logit model allows us to evaluate the partial influence of public employment. Table 2 presents two models (see Table A.1 in the Appendix for descriptive statistics). The only difference between the models is that Model 2, in addition to the usual suspects, includes multiple dummies to control for the specific type of education as well as its duration. The purpose is to control further for self-selection into employment sector. By including this factor we are not only comparing individuals with identical educational attainments but also identical educational types.[11]

Table 2 indicates that public employees have substantially higher turnout rates than private employees due to their employment status. For central government employees, the differential is two percentage points, while the corresponding percentage difference for local government employees is four. As argued above, the relative effects of central and local government employees make theoretical sense. One would expect local government employees are more likely to vote than central government employees, since central government employees are not affecting their working conditions and job security as directly as local employees, who are in fact voting for their future employer. Conversely, it makes sense that central government employees vote slightly more than their private sector counterparts. Even if central government employees had no rational incentive to vote disproportionately in local elections, they are likely to do so anyway due to their incentives in national elections, along with the effect of voting habit of one election on future elections (Plutzer 2002; Gerber et al. 2003; Franklin 2004; Denny and Doyle 2009).

One possible explanation for the public–private turnout differential could be that a disproportionate number of public employees have completed educations with a focus on public affairs. In Model 2, we account for the *type* of education in addition to its length by including dummies for education type. The model indicates that educational type does not account for the differences between employment groups. In fact, the effect of being a local government employee increases slightly.

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[11]There are substantial differences in the educational backgrounds of employees in the three sectors examined, so including the dummies can potentially be important. To take some examples: There are twice as many political scientists in the Danish local government sector as in the private sector (when taken relative to the sectors' sizes), while the distribution of individuals with law degrees is 2:1 in favor of the private sector. Biologists are an example of an educational group which approximately equally represented in local governments and in the private sector. The number of variables corresponds to the number of individual educational types registered (e.g., political science, medicine and economy at the university etc.). We include all as separate dummies to take the educational types into account in as a fine-grained way as possible.

Table 2 Predicting turnout using a binomial logistic model

	Model 1		Model 2	
	Logistic coef.	Change in %-points	Logistic coef.	Change in %-points
Employment (base = private):				
Central government employee	0.091***	2	0.080***	2
	(0.010)		(0.011)	
Local government employee	0.19***	4	0.23***	5
	(0.0060)		(0.0069)	
Male	−0.036***	−1	0.015**	0
	(0.0047)		(0.0055)	
Age in 1,000 days	0.023***	–	0.021***	–
	(0.0026)		(0.0026)	
Age in 1,000 days^2	0.0035***	–	0.0037***	–
	(0.00014)		(0.00015)	
Education, completed (base = primary school):				
High school	0.73***	14	0.95***	17
	(0.0091)		(0.091)	
Technical training	0.34***	7	0.75***	15
	(0.0069)		(0.16)	
Higher education (4 years or less)	0.96***	19	1.36***	25
	(0.0080)		(0.19)	
Higher education (5 years or more)	1.22***	21	1.07***	19
	(0.011)		(0.062)	
Income in DKK 100,000	−0.0033*	−0	−0.0027*	−0
	(0.0014)		(0.0013)	
Marital status (base = never married):				
Widow/widower	0.041	1	0.069**	1
	(0.024)		(0.024)	
Married	0.27***	6	0.27***	6
	(0.0079)		(0.0079)	
Divorced	−0.086***	−2	−0.066***	−1
	(0.0099)		(0.0100)	
Lives alone	−0.37***	−8	−0.37***	−8
	(0.0068)		(0.0068)	

It should be noted that though the effects of employment are in the expected direction, they are smaller than in most previous studies (Jaarsma et al. 1986 and Jensen et al. 2009 offer two exceptions). For instance, Corey and Garand (2002) find the multivariate effect to be only 20% lower than the 12 percentage point bivariate differential (in this study, the drop is more than 60% from a similar level). Why this decline from the bivariate to the multivariate analysis? The proportion of women is much larger among local government employees than private employees. The local government employees are also older, have

Table 2 (*Continued*)

	Model 1		Model 2	
	Logistic coef.	Change in %-points	Logistic coef.	Change in %-points
Number of children in household:				
1 child	0.062***	1	0.067***	1
	(0.0075)		(0.0076)	
2 children	0.21***	4	0.21***	4
	(0.0080)		(0.0080)	
3 children	0.27***	6	0.27***	6
	(0.012)		(0.013)	
4 or more children	0.23***	5	0.23***	5
	(0.027)		(0.026)	
Non-Danish, Western ethnicity	−0.47***	−11	−0.42***	−10
	(0.030)		(0.030)	
Non-Danish, non-Western ethnicity	−0.95***	−23	−0.91***	−22
	(0.014)		(0.015)	
Non-Danish, Western citizen	−0.54***	−13	−0.45***	−10
	(0.031)		(0.032)	
Non-Danish, non-Western citizen	−0.27***	−6	−0.25***	−6
	(0.021)		(0.022)	
Residential stability (in 1,000 days at current address)	0.049***	1	0.048***	1
	(0.0012)		(0.0012)	
Municipal stability (in 1,000 days in current municipality)	0.020***	0	0.022***	0
	(0.00077)		(0.00078)	
377 educational types included	NO	–	YES	–
Constant	−0.62***	–	−0.83***	–
	(0.011)		(0.014)	
N	952,256		952,241	
McFadden	0.11		0.12	
Log likelihood	−533,278.0		−528,161.6	
χ^2	82,941.7		89,342.2	

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors (in parentheses) are clustered by household. The sizes of the marginal effect sizes—calculated by the SPost package for Stata—in column 2 and 4 depicts the percentage point changes from as the dummy variable move from 0 to 1 on dummy variables. Using continuous variables, the value depicts the corresponding effect from changing the variable in question from a half unit below to a half unit above the mean with other variables held at their means (age^2 is held at the mean of age squared). In Model 2, 15 cases were omitted due to perfect prediction, and 13 categories for educational types were omitted due to collinearity (377 categories were included). A Wald test for the joint significance of the educational type dummies is significant, $p < 0.0001$. The income variable contains some potential outliers. We ran a robustness test on a subsample containing only individuals with incomes between 0 and 1 million DKK. The results were similar to the above—in both models private employees had the lowest turnout, then central government employees and local government employees (all differences between the groups were significant)

higher educational attainment, are more often married, and are more residentially stable. All of this leads the partial effect to be much smaller than the bivariate effect (see Table A.2 in the Appendix for more details on about the differences between the groups).

The control variables largely conform to our expectations. Education has a substantial positive impact on turnout (up to about 20 percentage points), as is being married (six percentage points). Living alone has a negative impact of about eight percentage points, i.e., living with someone means about the same as being married. Having children in one's household also contributes positively to the likelihood of turning out (four–six percentage points if there is more than one child), probably because children bring the individual into contact with a range of municipal services. Racial minorities have a substantially lower likelihood of voting than the majority of the population (ethnicity seems somewhat more important than citizenship), and there is a substantial positive effect of being residentially stable. The latter effect is interesting, as voting in Denmark does not require pre-election registration—all eligible citizens automatically receive a polling card by direct mail. Thus, the result supports Highton's (2000) finding that part of the typical residential stability/mobility effect is due to the influence of community ties. One apparent surprise is the positive coefficient of age squared, whereas most studies find a negative effect. However, this result is driven mainly by the fact that we only consider individuals in employment and thereby a limited age range, as the retired seniors are excluded from the sample.

7 The conditional effect of working and living in the same municipality

In addition to allowing us to distinguish between public and private employees as well as different types of public employees, the dataset contains information about the municipality in which each individual works and where she is eligible to vote. This allows us to test whether—as theoretically expected (H2)—there is a conditional effect of living and working in the same municipality, on the public–private turnout differential. In Table 3, we thus include a dummy for voting and working in the same municipality along with interactions between this variable and the two employment dummies from Table 2. Model 4 includes a control for the specific type of education, whereas Model 3 includes only the length of education. As the size and direction of the control variables remains similar to Table 2, we include only the main variables of interest in Table 3—the full regression table can be found in Appendix as Table A.3.

The main effect of working and living in the same municipality is positive. This is hardly surprising, since it may be less costly to vote if you work near your home due to shorter time spent on commuting (Dyck and Gimpel 2005). Thus even private employees benefit from living and voting in the same government entity. The question is whether local government employees benefit disproportionately. In Model 3, the interaction between the variable and employment dummies is not statistically significant at the 0.05 level. In Model 4, which is presumably the best specified, the interaction effect with local employment is strongly significant. Furthermore, the interaction involving central government employees is negative and insignificant. This reflects how local government employees gain disproportionately from living and working in the same municipality compared to other groups. This makes theoretical sense in accordance with H2, since working in the same municipality for this group implies electing their own employer, while the same is not the case for central government and private employees.

The magnitude of the effect of the interaction is modest, as should be clear from Table 4. In Model 4, the effect of being a local government employee compared to a private sector

Table 3 Predicting turnout using a binomial logistic model, including interactions

	Model 3	Model 4
Central government employee	0.071***	0.080***
	(0.013)	(0.014)
Local government employee	0.17***	0.19***
	(0.0093)	(0.010)
Work and vote in the same municipality	0.072***	0.068***
	(0.0064)	(0.0065)
Central government employee * work and vote	0.032	−0.0072
	(0.021)	(0.021)
Local government employee * work and vote	0.018	0.046***
	(0.011)	(0.012)
All control variables from Model 1 included	YES	YES
373 educational types included	NO	YES
N	894,056	894,030
McFadden	0.11	0.11
Log likelihood	−498,783.8	−494,026.1
χ^2	78,820.9	84,635.3

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The main coefficients are unstandardized logistic coefficients. Standard errors (in parentheses) are clustered by household. In Model 4, 26 cases were omitted due to perfect prediction and 13 categories for education types were omitted due to colline (373 categories were included). A Wald test for the joint significance of the educational type dummies is significant, $p < 0.0001$. The income variable contains some potential outliers. In a robustness test, we ran the analysis on a subsample containing only individuals with incomes between 0 and 1 million DKK. The results were similar to the above—the interactions were positive but insignificant in Model 3, and in Model 4 the local government interaction was positive and significant while the central government interaction was negative and insignificant

Table 4 Predicted probabilities based on Model 4

	Works and vote in different municipalities	Works and vote in the same municipality
Private sector employee	67.4%	68.9%
Central government employee	69.1%	70.4%
Local government employee	71.5%	73.7%

The predicted probabilities are calculated by the SPost package for Stata. The probabilities are calculated for a case where all other variables are held at their means (age^2 is held at the mean of age squared)

employee is $71.5 − 67.4 = 4.1$ percentage points when the individual is working and voting in different municipalities. When living and working in the same municipality, the corresponding effect increases to $73.7 − 68.9 = 4.8$ percentage points, resulting in an interaction effect of about 0.7 percentage points.

Though conforming to H2, the results contain a puzzle from the perspective of individual self-interest. The main effect of being a local government employee remains substantial (adding 4.1 percentage points to the turnout rate) and much larger than the interaction effect (0.7 percentage points). If voting for your employer was all that mattered, one would

have expected the main effect to be close to zero.[12] In other words, even though municipal employees vote more when they are able to elect their own employer, they in all cases vote much more than private employees. One possible explanation is that concern for local affairs rather than exclusive self-interest is part of what drives local employees to vote disproportionately. In other words, norms or motivation could be important in the *B* term of the calculus of voting, which also is recognized in large part of the literature (e.g. Riker and Ordeshook 1968:25; Blais 2000).

8 Conclusion

Public employee election turnout has been of great interest to public choice scholars for almost a century. The key assertion is that public employees can have a disproportionate influence over public policy due to their higher participation rate. If the employees have more liberal policy preferences, as predicted by the bureau voting model and as empirically indicated in numerous studies, this could bias public policy in an expansive direction (Blais et al. 1990, 1991; Knutsen 2005; Jensen et al. 2009).

The previous literature uniformly indicates that public employees are more likely than other voters to turn out. However, the magnitude of the turnout differential varies between 1.3 percentage points (Jensen et al. 2009) and 29 percentage points (Martin 1933), with a slight tendency toward smaller differences, as found in more recent studies. Here, we find a difference of 11 percentage points in turnout between local government employees and private employees. This is similar to recent research (e.g., Corey and Garand 2002) and indicates that public employees indeed have disproportionate leverage over election outcomes. The present estimates are likely to be particularly reliable, since they are based on government records data for both the independent and dependent variables. The descriptive difference is interesting, because it means that public employees indeed vote more regardless of whether or not this is due to their status as public employees per se.

In the multivariate analysis, the effect drops to about four percentage points. This is less than most previous studies (exceptions are Jaarsma et al. 1986 and Jensen et al. 2009). Thus, selection into public service accounts for a major part of the bivariate relationship. We also were able to distinguish between different types of public employees and found that—as expected—the multivariate public–private turnout differential is larger for local government employees than for central government employees who do not have the same incentive to vote in local elections. Our results were robust when controlling for the type of education. It thus seems as though the public–private differential is not due to the public sector having a different composition of educational types. The findings suggest that the differences in turnout might partly be due to selection before entering into the sector and partly due to socialization during employment in the public sector. Though this study takes a step further than existing work, taking advantages of access to government records including an extensive number of independent variables, panel data will undoubtedly be required to determine more definitely whether politically interested persons seek public service or whether public service transforms the individual into a likely voter owing to altered incentives or altered norms (Corey and Garand 2002).

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[12]One caveat is that the interaction could be slightly attenuated due to our inability to distinguish between municipal and regional employees.

Finally, in addition to considering central government and local government employees, we were able to distinguish between two groups of local government employees who have different incentives to vote: Those working and eligible to vote in the same municipality and those working and eligible to vote in different government jurisdictions. As it turns out, the effect of working and voting in the same municipality is greater for local government employees than for other groups, as theory would predict. However, the effect is substantively modest—around 0.7 percentage points. A substantial main effect remains, indicating that even local government employees who do not elect their employer directly vote more than average. This suggests that there is more to the public–private turnout differential than voting for one's own employer. Thus, there is certainly a need for further studies not only estimating the size of the public–private differential but also attempting empirically to distinguish between the different possible causal effects.

Appendix

Table A.1 Summary statistics

	Mean	SD	Min	Max	*N*
Voted	0.68	0.47	0	1	952,256
Central government employee	0.09	0.29	0	1	952,256
Local government employee	0.31	0.46	0	1	952,256
Work and vote in the same municipality	0.55	0.50	0	1	894,056
Gender (male)	0.49	0.50	0	1	952,256
Age in 1,000 days older than 18 years	8.77	4.65	0	28.7	952,256
High school	0.11	0.31	0	1	952,256
Technical training	0.34	0.47	0	1	952,256
Higher education (4 years or less)	0.26	0.44	0	1	952,256
Higher education (5 years or more)	0.11	0.31	0	1	952,256
Income in DKK 100,000	3.45	2.78	−322	1,224	952,256
Widow/widower	0.01	0.11	0	1	952,256
Married	0.50	0.50	0	1	952,256
Divorced	0.09	0.28	0	1	952,256
Lives alone	0.23	0.42	0	1	952,256
1 child	0.18	0.39	0	1	952,256
2 children	0.21	0.41	0	1	952,256
3 children	0.06	0.24	0	1	952,256

Table A.1 (*Continued*)

	Mean	SD	Min	Max	*N*
4 or more children	0.01	0.13	0	1	952,256
Non-Danish, Western ethnicity	0.02	0.14	0	1	952,256
Non-Danish, non-Western ethnicity	0.06	0.21	0	1	952,256
Non-Danish, Western citizen	0.02	0.13	0	1	952,256
Non-Danish, non-Western citizen	0.02	0.14	0	1	952,256
Residential stability in 1,000 days at current address	3.46	3.63	0	35.2	952,256
Municipal stability in 1,000 days in current municipality	6.06	4.35	0	35.2	952,256

Note: The table is based on the observations included in Model 1. The categories of educational types are omitted due to space considerations. Independent variables have the register date January 1, 2009. Exceptions are education (register date January 1, 2010 to ensure the correct school year is utilized), residency (register date 17 November, 2009), workplace (register date November 1, 2008), and income (register date January 1, 2008 as no newer income information is currently available)

Table A.2 Means of variables included in the analysis by employment group

	Mean		
	Private	Central government	Local government
Voted	0.63	0.75	0.74
Central government employee	0.00	1.00	0.00
Local government employee	0.00	0.00	1.00
Work and vote in the same municipality	0.51	0.46	0.65
Gender (male)	0.61	0.55	0.23
Age in 1,000 days older than 18 years	8.13	10.0	9.58
High school	0.13	0.07	0.07
Technical training	0.38	0.22	0.29
Higher education (4 years or less)	0.18	0.25	0.42
Higher education (5 years or more)	0.09	0.36	0.08
Income in DKK 100,000	3.50	3.95	3.20
Widow/widower	0.01	0.01	0.02
Married	0.46	0.57	0.55
Divorced	0.08	0.09	0.10
Lives alone	0.23	0.23	0.22
1 child	0.18	0.18	0.20
2 children	0.21	0.20	0.22
3 children	0.06	0.05	0.07
4 or more children	0.01	0.01	0.01
Non-Danish, Western ethnicity	0.02	0.02	0.02
Non-Danish, non-Western ethnicity	0.06	0.03	0.05
Non-Danish, Western citizenship	0.02	0.02	0.01
Non-Danish, non-Western citizenship	0.03	0.01	0.02

Table A.2 (*Continued*)

	Mean		
	Private	Central government	Local government
Residential stability in 1,000 days at current address	3.23	3.77	3.81
Municipal stability in 1,000 days in current municipality	5.84	5.99	6.51

Note: The table is based on the observations included in Model 1. The categories of educational types are omitted due to space considerations. Independent variables have the register date January 1, 2009. Exceptions are education (register date January 1, 2010 to ensure the correct school year is utilized), residency (register date 17 November, 2009), workplace (register date November 1, 2008), and income (register date January 1, 2008 as no newer income information is currently available)

Table A.3 Table 3 with coefficients all variables (except educational type categories) shown

	Model 3	Model 4
Central government employee	0.071***	0.080***
	(0.013)	(0.014)
Local government employee	0.17***	0.19***
	(0.0093)	(0.010)
Work and vote in the same municipality	0.072***	0.068***
	(0.0064)	(0.0065)
Central government employee ∗ work and vote	0.032	−0.0072
	(0.021)	(0.021)
Local government employee ∗ work and vote	0.018	0.046***
	(0.011)	(0.012)
Gender (male)	−0.024***	0.026***
	(0.0049)	(0.0057)
Age in 1,000 days	0.032***	0.030***
	(0.0028)	(0.0028)
Age in 1,000 days^2	0.0030***	0.0032***
	(0.00015)	(0.00016)
Education, completed (base = primary school):		
High school	0.71***	0.91***
	(0.0096)	(0.10)
Technical training	0.34***	0.76***
	(0.0072)	(0.17)
Higher education (4 years or less)	0.95***	1.41***
	(0.0083)	(0.20)
Higher education (5 years or more)	1.21***	1.07***
	(0.012)	(0.062)
Income in DKK 100,000	−0.0043*	−0.0039*
	(0.0018)	(0.0019)
Marital status (base = never married):		
Widow/widower	0.044	0.072**
	(0.025)	(0.025)

Table A.3 (*Continued*)

	Model 3	Model 4
Married	0.26***	0.27***
	(0.0081)	(0.0081)
Divorced	−0.086***	−0.066***
	(0.010)	(0.010)
Lives alone	−0.38***	−0.39***
	(0.0069)	(0.0070)
Number of children in household:		
1 child	0.062***	0.065***
	(0.0077)	(0.0078)
2 children	0.21***	0.21***
	(0.0081)	(0.0082)
3 children	0.27***	0.27***
	(0.013)	(0.013)
4 or more children	0.23***	0.23***
	(0.028)	(0.028)
Non-Danish, Western ethnicity	−0.45***	−0.40***
	(0.031)	(0.032)
Non-Danish, non-Western ethnicity	−0.94***	−0.90***
	(0.015)	(0.016)
Non-Danish, Western citizen	−0.56***	−0.47***
	(0.033)	(0.033)
Non-Danish, non-Western citizen	−0.29***	−0.26***
	(0.022)	(0.023)
Residential stability (in 1,000 days on address)	0.048***	0.047***
	(0.0012)	(0.0013)
Municipal stability (in 1,000 days in municipality)	0.017***	0.019***
	(0.00081)	(0.00081)
373 educational types included	NO	YES
Constant	−0.67***	−0.39***
	(0.012)	(0.095)
N	894,056	894,030
McFadden	0.11	0.11
Log likelihood	−498,783.8	−494,026.1
χ^2	78,820.9	84,635.3

$^*\,p < 0.05,\ ^{**}\,p < 0.01,\ ^{***}\,p < 0.001$. The main coefficients are unstandardized logistic coefficients. Standard errors in parentheses are clustered by household. In Model 4, 26 cases were omitted due to perfect prediction and 13 categories for education types were omitted due to collinearity (373 categories were included). A Wald test for the joint significance of the educational type dummies is significant, $p < 0.0001$. The income variable contains some potential outliers. In a robustness test, we ran the analysis on a subsample containing only individuals with an income between 0 and 1 million DKK. The results were similar to the above—the interactions were positive but insignificant in Model 3, and in Model 4 the local government interaction was positive and significant while the central government interaction was negative and insignificant

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