



## Different Paths to Job Satisfaction? Investigating Sector Differences using Representative Data

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Jesper Rosenberg Hansen and Anders Villadsen

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**Does salary have the same effect on job satisfaction in public and private sector:  
And does it matter? Investigating sector differences using representative data**

Jesper Rosenberg Hansen and Anders R. Villadsen  
Aarhus University

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**Abstract:**

Sector differences in job satisfaction is one of the most studied topics in the literature sector difference, yet, the empirical evidence is still showing mixed results. Most of these studies mainly look into whether there is a sector difference and whether especially public service motivation has an impact on this sector differences. Salary and the preference for salary are often argued to differ between the public and private sector, and more importantly, it is argued that salary has a different impact on employees in the two sectors. Understanding the impact of salary in the two sectors is also increasingly relevant as performance management and performance pay is an often used (and criticized) part of NPM reforms. While former studies have looked at this relationship these studies have either used single source data and often only data from single occupation. In this study, we use a representative survey (with a high response rate: 57 percent) combined with longitudinal register data. This allows us to look at salary, and also changes in salary, and its relationship to job satisfaction – and at the same time to check for the potential differences between education and sub-sectors/industries. We find that there is a positive impact of salary on job satisfaction – yet not very substantial. Furthermore, we find that the impact of salary seems very similar in both sectors – also we did not find differences across education length in the two sectors.

## INTRODUCTION

One of the classical argument about differences between public and private employees is that public employees are less motivated by salary compared to their private counterpart. Public employees have been suggested to be more motivated by other factor like job security or intrinsic or public service motivation (for example Houston 2000, Rainey 2014, for a review see e.g. Baarspul & Wilderom 2011). There are numerous studies looking into the sector differences in preference for salary, high-income other conceptualization of monetary reward (e.g., Houston 2000, Bullock, Hansen & Houston 2018). Most of these study find that salary is valued as less important for public sector employees compared to private sector employees, though, in recent studies, it is questioned whether this is the case if researchers take contextual factors like job occupation is taken into consideration (Bullock, Hansen & Houston 2018). The argument is not that salary is not important, yet, salary is still important for public employees just to a lesser extent than for private sector employees (Lee & Sabharwal 2016, Rainey 2014). However, most of these former studies look only the values or importance that employees place on salary. We know less about the real impact of salary on public employees compared to private employees (an exemption is Lee & Sabharwal 2016).

Salary is important to study to better understand performance pay and its increased use in the public sector. Yet, there is still a debate about the importance of salary impact on people attitudes, behaviors and performance. Salary is often argued to influence job satisfaction, though there most former studies show that the effect may be minor (Judge et al. 2010) and that this may be explained by that fact that changes in salary only influence job satisfaction in the short-term (Judge et al. 2010). In public administration literature, salary has also been argued to have an influence on job satisfaction though it has been argued that salary

effect is lower than in private sector, though there is also a discussion if the differences are due to different education length and differences in occupations (Lee & Sabharwal 2016).

In this study, we try to investigate the question of whether salary affects job satisfaction and explore potential sector differences. By using a unique design where we combine unique register data on salary and employment with representative survey data on job satisfaction, the study addresses a shortcoming in many existing studies. This deals with a major challenge in the literature on sector differences, which is the lack of representative data spanning more than one occupation (Rainey 2011). We use a representative survey of 4,334 Danish public and private sector employees, which we have merged with register-based labor market data containing detailed information on socio-demographic variables, job type, salary, industry, firm size, etc. This means that we use individual-level data where self-reported job satisfaction is merged with register data on salary, tenure, and workplace characteristics, including sector and organizational size. These data allow us to go beyond traditional studies in the literature and conduct a more solid investigating to understand sector differences salary and its impact on job satisfaction.

## **THEORY**

Job satisfaction is a strong indicator of employee well-being with potentially important implications for employee turnover and performance. Therefore, job satisfaction is a highly studied topic in both the public and private management literature. However, a recent literature review shows a lack of the comprehensiveness required to provide clear evidence on sector differences in job satisfaction (Baarspul & Wilderom 2011). Sector comparison research has illuminated how job satisfaction and its determinants differ across sectors. This is important knowledge as cross-sector employee mobility may be severely by a lack of

understanding about what makes individuals from the other sector satisfied at their work.

Results from this line of research are mixed.

Furthermore, most studies use simple methods such as bivariate correlations or regressions with a limited set of explanations and especially whether the findings can be found across different types of employees. Therefore, there is a need for more comprehensive studies. The objective of this paper is to gain more rigorous knowledge about how one specific factor – salary - influence job satisfaction and especially to understand if it has a similar influence in the two sector or if there are differences in the impact of salary in the two sector – and also whether the findings can be found across different job and educations.

### ***Salary and job satisfaction***

One of the traditional explanation of job satisfaction is that salary has a positive influence on people job satisfaction (Spector 1997). This has been argued in multiple studies yet the empirical evidence is not necessarily so strong. In a large meta-analysis of the literature on the relationship between pay and job satisfaction, the authors found only a modest impact of pay on job satisfaction (Judge et al 2010). They argued that there, in general, is multiple issues with most of the former studies e.g. most studies only used data from a common source, and several studies mainly focused on pay satisfaction instead of actual pay (Judge et al. 2010). Finally, they also argue that the weak results for the impact of pay can be due to that it is mainly the more recent changes in salary that influence job satisfaction (Judge et al. 2010). This is based on the adaption level theory where the argument that people get used to pay levels (Judge et al. 2010) so it is mainly when there is a change in salary it affects.

Also, in public sector literature, there is a large literature on job satisfaction especially focusing on explanations hereof (e.g., Wright & Kim, 2004, Wright & Davis 2003). Most of these studies the role of work environment and job characteristics like structure, red tape, bureaucracy, goal clarity etc. (Wright & Kim, 2004, Wright & Davis 2003, Hansen & Høst

2012), yet recently most of the literature focus on PSM and its influence on job satisfaction (e.g. Andersen & Kjeldsen 2013, Bright 2008, Kjeldsen & Hansen 2018). Salary is also considered in these analyses of job satisfaction in the public sector. It is often under concept like preference and value of income/salary or pay satisfaction (Wright & Davis 2003) yet often as a control (Kjeldsen & Hansen 2018). There are also in the public literature studies looking at the specific salary to understand its impact on job satisfaction (Lee & Sabharwal 2016). While we are not aware of studies looking at changes in salary impact on job satisfaction, there are papers that have similar logic looking at changes in salary (Esteve et al. 2017). The later, e.g. argue that change in salary also can have an impact on motivational aspects – e.g., Esteve et al. (2017) argue that cutback in the public sector including cutback in salary can hurt the motivational aspect.

So based on the general argumentation, our two baseline hypotheses are the following.

*H1a: Salary level has a positive influence on job satisfaction*

*H1b: Changes in salary level has a positive influence on job satisfaction*

### ***Sector differences in salary's influence on job satisfaction***

Moreover, we are interested in understanding the impact of salary, tenure, and bureaucracy have similar effects in both sectors. Understanding sector differences and explanations hereof may have important implications for how to improve job satisfaction in the public sector. For instance, does salary influence job satisfaction similarly in the public sector as in the private sector? Job is a highly studied topic in both the public and private management literature yet as argued, the results are mixed (Baarspul & Wilderom 2011). There have also been a few attempts to study if salary has the same influence on job satisfaction in the public and private sector.

One of the key articles looking into this Lee and Sabharwal (2016) that specific look into whether salary has a different impact in public and private sector and specifically if education-job match influences this. They show using a single source data from a survey of recent graduates in the US that in private sector salary has an impact in the private sector and that salary in the private salary in these first jobs can compensate for a lack education-job match (Lee & Sabharwal 2016). Another argument for this hypotheses is that the public sector also, in general, are argued to have lower salaries (Rainey 2014) – and therefore the public sector employees may also attract employees that are lesser interested in salary than people in the private sector. E.g., Hansen (2014) shows that one of the reasons for public employees to sector switch to the private sector.

*H2a: The positive relationship between salary level and job satisfaction is weaker in the public sector than in the private sector.*

*H2b: The positive relationship between changes in salary level and job satisfaction is weaker in the public sector than in the private sector.*

### ***Salary and job satisfaction: the impact of education and sector***

It has, for instance, been argued that people earning relatively less (like people with lower education) may be more likely to be positive about salary and changes in salary (Judge et al. 2010). On the other hand, higher educated people are in general often argued to be more intrinsic motivated compared to people with less education. This may be even more so in the public sector where former studies have shown that it is especially for higher educated the earning are lower in the public sector compared to the private sector (Rainey 2014). And, it is especially higher educated people, especially professionals, who value extrinsic factors like money less than people in general – e.g., a large international study Bullock, Hansen, and Houston (2018) find that both education and professional are negative related to the value of

money. As people with longer education are earning less money in the public sector and therefore more likely to have people employed where salary is lesser important.

*H3a: The positive relationship between salary level (and changes in salary level) and job satisfaction are weaker for people with longer education*

*H3b: The positive relationship between salary level (and changes in salary level) and job satisfaction are weaker for people in the public sector with longer education*

## **METHODS**

As described, the relation between salary and job satisfaction has studied in several previous studies. A few important methodological considerations often threat validity and make studies difficult to compare. Multiple of the former studies on salary and job satisfaction only use one common source of data (Judge et al. 2010), thereby risking potential common source bias (Jakobsen & Jensen 2015; Favero & Bullock, 2014). This is especially the case for the studies looking at the relationship between pay satisfaction or perceived importance of pay and job satisfaction.

Moreover, employees' salary can be difficult to measure precisely using self-reported measures. Respondents may overstate their salary and have difficulties establishing the elements that constitute the total salary such as bonuses and pension payments. This is especially the case if we ask about salary back in time to establish a development.

Job satisfaction is a perceptual measure. Here a problem may be external validity. When all respondents are in a specific workplace or belong to a certain type of occupation (e.g., teachers, or federal employees generally), results cannot be generalized, and there is a risk that findings are an artifact of workplace characteristics. These issues are especially relevant when comparing the public and private sector.



In this study, we combine two unique data sets in order to make a comprehensive comparison with high external validity. We designed a survey was sent out to a representative group of employees in Denmark. We merge these data with register data from Statistics Denmark to obtain valid information about salary and demographic factors. These data are compiled by various registers, e.g., the tax register, and are often used labor market research. The data shows where a person worked as well as salary etc. for each individual at the time they respond to the survey.

### *Survey data*

The sample for the survey was conducted by SFI Survey – which is allowed to collect data that later could be allowed to combined with register data. The selected sample was 4,334 persons. This sample was found using the DREAM register, which allowed to find a random sample of people whose main occupation is “employment” (and note semi-retired, students, etc.) and between 17-65 years. The register data which the sample was drawn from is not real-time data (as the register data on employment are first available after a period).

Therefore, in the paper, we analyze the data we use the employment data from the time point of the survey was sent out – so we get the specific employment of the person at that time point. We also use this in our analyses for non-respondents where we also use the register data information at the time of the survey (as we have employment data on the full sample also at the time of the survey). This allows us to have the specific employment at the time of the survey. The survey was sent out in November 2013. The procedure was first sending out a letter with a unique code to an electronic survey for all the respondents, this was followed by a physical letter with a reminder. Those not responding to these letters were called by telephone. Of the 4,334 in the sample 2,472 responded either electronically or per phone. So

57 percent responded on the survey. Yet, of these respondents, 325 responded that they were not employed at the moment of the survey. There were some different reason for not responding e.g. 100 for these it was not possible to get a phone number, 497 were not reached per phone.

**Table 1: Respondents**

	Number of people
The full sample	4,334
Responded to the survey electronically	1,188
Responded to the survey per phone	1,284
Respondent answered that they were unemployed at the survey time	325
Respondent answered that they working at the survey time	2,147

*Variables*

Our dependent variable, job satisfaction, is measured with a single item asking the respondent to indicate the respondent's general satisfaction with his/her job on a scale from 0 - 10.

The rest of our variables are obtained from the IDA registers of Statistics Denmark. Salary is measured as hourly wage to increase comparability if a person has not worked the full year in the present workplace. Salary development is an indication of this year's salary in relation to the previous year ( $t/t-1$ ).

Sector is measured with a dummy variable based on classification by Statistics Denmark based the authority that controls/owns a given work unit. We excluded employees of public sector companies and few other semi-public ownership forms.

Education is indicated by the minimum number of years required to obtain the highest degree a person has. In the Danish educational system this means that no high school is 10 years, high school is 13 years, master's degree is 18 years, and PhD 21 years.

From the same source, we also obtain information about gender and age as well as time of employment in the current workplace (tenure in years) and time since first employment in the (Danish) labor market.

To aid our sector comparison, we also include dummies indication occupation type following the standards of the International Labor Organization. These signify manager, work with highest skill level, middle skill level, low skill level, technical employment, and 'unknown'.

Finally, it is a concern for sector comparisons that jobs in the public sector might rarely be directly comparable to jobs in the private sector. This means that any difference could be caused by sub-sector characteristics rather than sector differences. To account for this, we utilize that Statistics Denmark divide all workplaces into different industries using a six-digit code following the NACE framework. To preserve degree of freedom and secure that both public and private workplaces are in each category we use the one-digit version of this, thus creating ten- industry dummies that each of both public and private workplaces.

In total, this setup enables us to compare an employee in the public sector with a counterpart in the private sector who is similar on a range of observable characteristics. We believe this is a very strong design, though we realize that selection into sector as well reverse causality may be validity threats.

## Estimation

With a dependent variable bounded between 0 and 10 we employ a two-limit Tobit model specified for these boundaries. The Tobit model is often used for censored data. Importantly, our data are not censored, i.e. there are no values below 0 and above 10 that we are not able to observe. Our data are only defined within these boundaries with no possible values below or above. This means that the often reported Tobit coefficients on a latent ('uncensored') variable are not valid. Instead, we obtain marginal effects and prediction on the original scale using Stata's margins command. This ensures that we stay within the relevant scale and that we are not assuming there are unobserved observations out there with values outside of it.

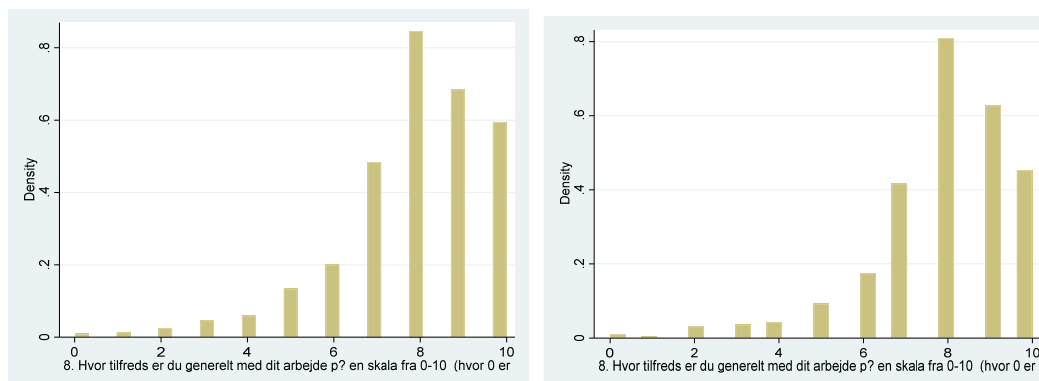
## RESULTS

As point of departure for our analysis, we compare job satisfaction in the public and private sector. Recall, that this is a representative sample meaning that we compare individuals in different organizations. Looking at the raw numbers without controls, we observe the distributions in figure 1:

**Figure 1: Job satisfaction ("Generally, how satisfied are you with your job?" - scale 0 - 10)**

*Private (mean: 7.93; n=1344)*

*Public (mean: 7.94; n=757)*



It can be seen that both the mean and the distribution is virtually identical in the two sectors. While this is interesting in itself, the similarity may hide selection mechanisms and that different people work in the two sectors and that salary and other work conditions are different. We try to dig deeper into this below. Table 2 presents the results of statistical tests.

**Table 2: Results of Tobit analyses. Marginal effects on the original scale reported.**

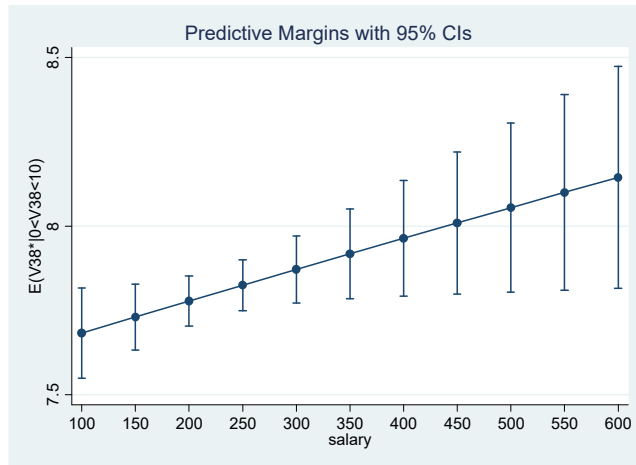
	Marginal effect	Exact p-value	Marginal effect	Exact p-value
Public	0.16	0.23	0.20	0.14
Salary			0.00	0.04
Salary development (t/t-1)			0.14	0.50
Female	-0.07	0.35	-0.06	0.48
Age	0.01	0.02	0.01	0.03
Education in years	-0.03	0.12	-0.04	0.05
Time since first employment	0.00	0.52	0.00	0.61
Tenure in organization	0.01	0.14	0.01	0.17
Occupation dummies	Included	Included	Included	Included

Industry dummies	Included	Included	Included	Included
N	1801		1785	

Six occupational category dummies are included following the occupational categories of the International Labour Organization. Nine 1-digit industry dummies are included following the NACE standard.

Two models are presented with the main effects. Public sector is reported to have slightly higher job satisfaction but with p-values above the normal threshold of statistical significance. Turning to salary, individuals with higher salary report slightly higher job satisfaction. Figure 2 below indicates that the effect is limited in size. For the lowest salary levels, job satisfaction is just below 8, for the highest levels at little above 8. For most values in between confidence intervals overlap. Overall, there is modest support for H1a and no support for H1b.

**Figure 2: Salary and job satisfaction**



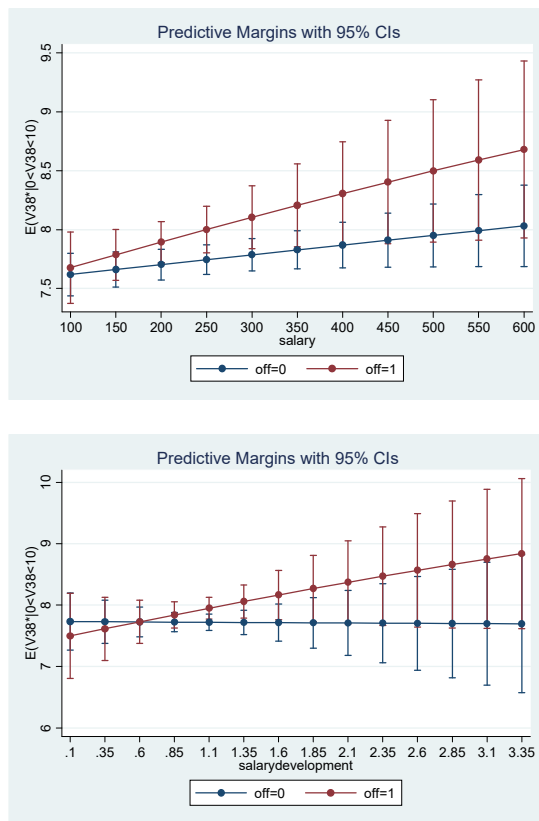
We speculated that salary would be a better predictor of job satisfaction in the private sector compared to the public sector. To explore this we ran Tobit models with interactions between the two salary variables and sector. Both interactions had confidence intervals overlapping zero. To avoid making conclusions based on the latent scale, we obtained predictions on the original scale depicted in the figure below. It is evident that confidence intervals for job

satisfaction in the public and private sector overlap for all salary levels. This indicates no support for H2a and H2b. With representative data we do not find employees in the private sector to have stronger link between higher salary and job satisfaction than counterparts in the public sector who are demographically similar.

**Figure 3: Salary, job satisfaction and sector**

*Panel A: Absolute hourly salary*

*Panel B: Salary change (t/t-1)*



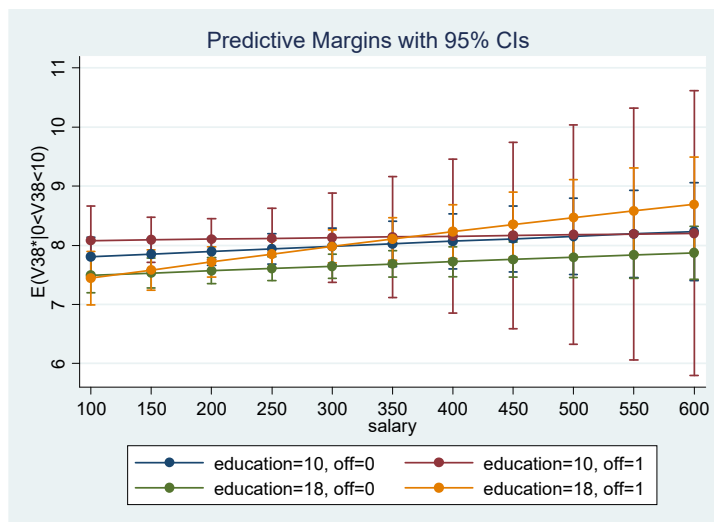
Blue line is private sector; redline is public sector

Finally, we were interested in the role of education. In table 2, we can see that when salary is controlled the is a slight negative effect of education. Note that the p-value is just below 0.05

yet the coefficient indicates the effect is diminutive. When an individual has one more year of formal education, job satisfaction is predicted to decline by 0.04 on a ten point scale. This means that the difference between a person with a high school diploma and one with a five-year master's degree is only 0.2 points ( $0.04 \times 5$ ).

We ran interactions between education and salary, and education, salary, and sector. None of these had confidence intervals not overlapping zero. We depict the interaction between education, salary and sector below on the original scale bounded by 0 and 10.

**Figure 4: Salary, sector, education, and job satisfaction**



The four lines reflect four combinations of education (low/high) and sector (public/private).

As can be seen all lines are fairly flat and with overlapping confidence intervals.

## DISCUSSION

**To be added...**



## CONCLUSION

Overall, the results suggest differences in individuals' job satisfaction not to be related to sector or salary. Contrary to our expectations job satisfaction is not different across the public and private sector and salary does not appear to a stronger determinant in the private sector.

This questions received wisdom that private sector employees are more motivated by pecuniary rewards that public sector employees.

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