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Working Paper

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Working Paper 03/2007

WIRTSCHAFTS UNIVERSITÄT WIEN

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The influence of volunteers, donations and public subsidies on the wage level of nonprofit workers[1]

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Vienna, December 2007

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[1] We are very grateful to Freda Donoghue for helpful comments.

Abstract

In this article we add to the literature analyzing wages in the nonprofit sector by estimating a wage function based on employer-employee matched data for Austria. We concentrate on the influence of voluntary contributions on the wage level of paid workers. By using a quantile regression approach we find that the existence of volunteers reduces the wages of paid employees in nonprofit organizations. The number of volunteers, however, does not have an influence on the wage level. Donations have a small but positive effect for higher income groups only. By contrast, public subsidies increase wages of all paid workers in a nonprofit organization.

Contents

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1. Introduction

Wages are a complex and important topic for every organization using paid labor inputs, since they affect both the well-being of workers and the success of the organization. They influence motivation, work satisfaction, productivity, worker fluctuation, cost and profit, to name just a few aspects. It is not only a worker's individual wage level that matters but also the wage dispersion or the change in wages over time.

In our analysis we want to focus on the wage level of workers in the nonprofit sector. We explore whether the idiosyncrasies of nonprofit organizations have an effect on the wage setting process which might serve to explain differences between the wage setting processes in nonprofit and for-profit organizations. Various studies have been undertaken already analyzing wage levels in the nonprofit sector. Most often, this work compares wages of nonprofit and for-profit workers, either generally or in specific fields such as child care or elderly care. The results of these comparative studies depend heavily on the set of control variables that are included in the wage equation. These variables have usually included individual workers' characteristics and/or organizational characteristics which are seen to co-determine the wage level of an individual. Previous studies have either used individual-level data (e.g. Goddeeris, 1988; Leete, 2001; Preston, 1989; Preston, 1990; Ruhm & Borkoski, 2003; Shackett & Trapani, 1987; Weisbrod, 1983) or data at the organizational level (e.g. Preston, 1988). This paper, by comparison examines nonprofit wages on the basis of matched employer-employee data combining both data categories in order to obtain a more comprehensive picture of wage determination (Borjas, Frech, & Ginsburg, 1983; Holtmann & Idson, 1993; Mocan & Tekin, 2003; Noguchi & Shimizutani, 2007), which few studies have done to date.

According to the suggested definition of the Johns Hopkins Comparative Nonprofit Sector Project a nonprofit organization can be defined as an organization that is (i) non-governmental in basic structure, (ii) self-governing, (iii) formally constituted, (iv) nonprofit distributing and (v) voluntary to some meaningful extent (Salamon & Anheier, 1992, p. 1). Nonprofit organizations differ from for-profit organizations especially with regard to the latter two characteristics. We argue that when adapting standard wage functions to a nonprofit specific context, these idiosyncrasies should be taken into account.

Interestingly, while many researchers find the non-distribution constraint of nonprofit organizations to be an important feature for the analysis of wages in that sector, the second idiosyncrasy of nonprofit organizations, namely the organization being voluntary to some meaningful extent, has widely been neglected in the modelling of wages in the nonprofit sector. The focus of our analysis lies, therefore, in the relationship between wages and the voluntariness of a nonprofit organization. We include voluntary contributions a) in time (i.e. volunteers) and b) in money (i.e. private donations and public subsidies) in the wage equation and analyze wages of workers in the nonprofit sector. We define public subsidies as voluntary contributions because organizations do not have to offer anything specific in return for the

public transfer they receive[2]. Our research questions are: Do voluntary contributions – in the form of the existence and the number of volunteers, donations and public subsidies – influence the wages of paid workers in nonprofit organizations? Furthermore, if they do in what way do they affect paid workers' wages?

To our knowledge, volunteering activity has not been accounted for in wage equations for nonprofit workers, so far[3]. We use a quantile regression approach in order to answer our research questions. Quantile regression enables us to implicitly account for the wage dispersion since we can test if the independent variables have a different effect on the various quantiles of the wage distribution. So far, nonprofit wages have not been analyzed with this method, although the quantile regression approach is quite common for wage estimations in other sectors (e.g. Blaise, 2005; Machado & Mata, 2005).

The remainder of the paper is structured as follows: Section 2 provides an overview of relevant theories and existing literature. Also, hypotheses about the effect of volunteers, donations and public subsidies on wages are proposed. In section 3, we describe the data and estimation method, before presenting our results in section 4. In section 5 we draw conclusions for the evidence presented in the preceding sections

2. Theoretical Considerations on Wages in the Nonprofit Sector and prior research

In this section we outline why we think that volunteers, donations and public subsidies influence the wage level of workers in the nonprofit sector and present relevant findings from prior research.

2.1 Volunteering and the Wages of Paid workers

Volunteers are often involved in the production of collective-type goods such as health and education and are particularly important for nonprofit suppliers of these goods (Menchik & Weisbrod, 1987, p. 159; Steinberg, 2003, p.289). The relationship between paid staff and volunteers is complex, since volunteers' roles are diverse and not necessarily distinctive from paid workers' roles (Netting, O'Connor, Thomas, & Yancey, 2005, p. 192)[4].

There are several arguments, why volunteers might influence wages of paid nonprofit workers. First, volunteers could serve as a **proxy for specific characteristics of paid workers** in the nonprofit sector[5]. The labor donation hypothesis states that workers in the nonprofit sector accept lower wages and hence "donate" part of their income because they are doing a socially desirable job (e.g. Hansmann, 1980).

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[2] Preston, who analyzes the effect of "donations", defines donations as "revenue originating from sources other than the recipient of the service" (Preston, 1988, p. 344) and thus adds public subsidies to the donations variable.

[3] There is, however a strand of literature about the motives for volunteering. Volunteering can be regarded as a means to increase the volunteer's human capital and consequently the volunteer's income from paid labor (see e.g. Day & Devlin, 1997, Day & Devlin, 1998, Hackl, Halla, & Pruckner, 2007; Menchik & Weisbrod, 1987).

[4] Volunteers can be regarded as either complements or substitutes to paid labor (see e.g. Emanuele, 1996).

[5] Paid workers in nonprofit organizations also work as volunteers in their free time more often than their counterparts in the public and the for-profit sector (Rotolo & Wilson, 2006).

Volunteers can, in fact, be viewed as the extreme case of the donative labor hypothesis where they donate all their working time to the organization (Leete, 2006, p. 166). The very existence of volunteers within an organization as well as their number might be an indicator of the high degree of social desirability of the organization's mission and thus of the jobs it offers. A relatively high number of volunteers would consequently predict a relatively low wage-level for paid workers. This effect should be particularly strong for higher wages (i.e. for the upper wage quantiles), since the labor donation hypothesis is presumed to be most realistic for executives and managers as they are most likely to perceive the social impact of the organization (Leete, 2006; Preston, 1989).

Second, volunteers might influence the **productivity** or the **labor cost** of paid workers depending on the relationship between the two groups of workers, which could either be described as complementary or substitutional: volunteers might reduce the need to pay efficiency wages[6] (e.g. Borjas, 2005, p.463ff.). In addition, through the presence of volunteers, paid workers might be less inclined to shirk because of higher social control. Furthermore, in contrast to organizations without volunteers, workers who have volunteer co-workers might have different responsibilities either because part of the work is performed by volunteer workers or because paid employees train, coach and supervise volunteers. Depending on the concrete work, paid workers might therefore need different levels of qualification or might have different work loads than workers in organizations without volunteers. So, for example, in comparison with paid workers in organizations without volunteers, those working alongside volunteers may have higher or lower qualifications or work loads. This would result in a correlation between the incidence and extent of volunteering and wages of paid workers. Volunteers may also reduce the cost of fluctuation, since they can act as "buffers" when a paid employee leaves the organization, which also reduces the need to pay efficiency wages. If volunteers are complements to rather than substitutes for paid workers they may reduce the stress of paid workers so that there is less need to pay compensating wage differentials (e.g. Borjas, 2005, p.206ff.).

The third argument on the ways in which volunteers can influence paid employees' wages concerns **rent-sharing** and **property rights theories**[7]. According to the former nonprofit organizations might pay higher wages due to the non-distribution constraint, to which they are subject. Managers of a nonprofit organization have no profit-led incentive to lower wages in order to increase the profit margin, because a nonprofit organization must not distribute these profits to owners. The property rights theory on the other hand, states that if ownership is separate from control of an organization, managers might not minimize costs since they might derive utility from paying their employees and themselves higher wages. It could be argued, as a consequence of both theories, that profits might be (partly) channeled to employees through wages. Feldstein (1971) calls this phenomenon 'philantropic wage setting`, Borjas et al. (1983) call it 'attenuated property rights`.

[6] The efficiency wage is a "wage rate where no shirking takes place" (Mansfield, 1997, p.556). It is higher than the perfectly competitive wage and is seen as an instrument to influence motivation and productivity of employees.

[7] For an explanation of both concepts in a nonprofit specific context see e.g. Borjas et al (1983) and Preston (1988).

One could interpret this as a charitable act of a nonprofit organization to its employees since in this way it can pay above-market wages. By not having to pay some workers at all (namely volunteers), nonprofit rents[8] increase, which allows for higher rent sharing with paid workers. Thus, volunteers might again augment the wages of the paid workers.

Fourth, the literature suggests that volunteers might have a direct or indirect influence on the **wage setting process** of paid workers. On the one hand, volunteers on governing boards of a nonprofit organization might take part in wage setting negotiations on behalf of the nonprofit organization as the employer. Here, it is a priori not clear, if this affects the wages of paid workers in a positive or negative way. On the other hand, volunteers might influence the wage setting process indirectly since they reduce the bargaining power of employees. If the relationship between volunteers and paid employees is complementary, paid employees could be substituted by volunteers more easily so that the bargaining power of the employees in wage negotiations decreases.

Finally, one could also argue that volunteers raise the **size of an organization**. Usually, the size of an organization is included in wage equations since it is positively correlated with wages for a variety of reasons, one of them being inferior working conditions (such as more monotonous work) in larger firms (for further reasons see e.g. Lallemand, Plasman, & Rycx, 2005, 2007; Medoff & Brown, 1989; Oi & Idson, 1999). Very often the size is measured by the number of employees in full-time equivalents[9]. By only including paid employees in order to measure the size of a nonprofit organization, one would underestimate the true size of the organization. Thus, a positive correlation of the number of volunteers and wages might be interpreted as a size effect caused by the higher number of organizational members (i.e. volunteers).

Summarizing there are five arguments why volunteers could influence the wage level of paid workers. Volunteers could either be an indicator for the existence of labor donations or could change the productivity or labor cost of paid workers. They could raise rent-sharing possibilities for paid workers, could have an influence on the wage setting process or could increase the size of an NPO. In the following, reasons why also donations and public subsidies influence wages are presented.

2.2 Type of Funding & Wage Levels

Nonprofit organizations often operate in industries that produce goods and services with public goods characteristics (Weisbrod, 1977; Weisbrod, 1988). As a consequence, goods or services of organizations in these industries may receive either public funding or donations. Dependence on outside funding through donations and subsidies can have an influence on wages.

[8] A rent can be defined as return over and above the cost of supply or "the return paid to an input that is fixed in supply" (Mansfield, 1997, p.A10).

[9] In the nonprofit context alternative measures for organization size can be found, e.g. the number of enrolled children in child care centers (Mocan & Tekin, 2003; Preston, 1988).

If an organization is publicly funded through subsidies it could either mean that it has additional rents to distribute or public funding could signify a steady and more secure income for an organization in contrast to organizations that depend heavily on more volatile types of funding such as donations or sales income. Consequently, public subsidies would have a positive influence on the wage level. On the other hand, it could also be that the funding body has some control over the employment structure and on the wage setting procedure of a nonprofit organization. In the field of long-term care in Austria, as an example, service contracts between public authorities and service providers (i.e. nursing homes, home care agencies) fix client-staff-ratios. Very often, contracts also specify upper limits for refunds on expenditure on personnel. As a consequence wage premiums would have to be cross-subsidized from other funding sources. Therefore, higher public subsidies could lead to lower wages.

Donations are voluntary contributions from private and corporate donors[10]. A priori it is also not immediately evident how donations might influence the wage level of nonprofit employees. On the one hand, donations could – as in the case of subsidies - present additional income that raises rents for nonprofit organizations. Again, these rents could at least be partly distributed among employees through wage premiums. Consequently, higher donations might positively influence the workers' wage level. At the same time high wages could signal high quality goods or services. If donators value quality highly, donations might then be channeled to organizations with high wages.

On the other hand, nonprofit organizations could be subject to public scrutiny. In particular, may be held accountable on their wage bills and overhead cost. According to Preston (1988, p. 339), donations are modelled as a positive function of the efficiency of the organization and the public benefit that the nonprofit organization produces. High efficiency and a high social benefit are rewarded with more donations. Tinkelman and Mankaney (2007), in fact, find that donations and administrative efficiency are positively correlated especially when the organization is donation dependent. Additional donations are spent on providing additional goods or services, thus augmenting the public benefit. In this case, wages and donations would be negatively correlated if low wages 'indicate' a focus on the mission of the organization, while high wages are perceived as a waste or as an indicator for goal deflection (Preston, 1988, p. 344f.). High dependence on donations should increase this phenomenon viz. that higher donations lead to lower wages especially for the upper wage groups (Oster, 1998). However, any relationship between wage expenditures and donations either requires that information about the wage bill of a nonprofit organization is available for potential donors or that the management of a nonprofit organization is anticipating donor scrutiny with regard to expenditure on personnel. In Austria, the majority of nonprofit organizations do not have to disclose their financial statements to the general public.

[10] Unfortunately our data does not permit us to separate corporate donations from private donations, although a differentiation would be interesting when analyzing the effect of donations on wages.

Subsidies and donations may especially influence the wage level at the top end of wage distribution. Significant revenues from subsidies and donations could be taken as a signal for good managerial ability and performance, so that higher donations and subsidies lead to higher wages for the higher wage quantiles (Hallock, 2002: p. 399f). On the other hand, revenues from subsidies or donations could also have a negative influence on the upper wage quantiles, because they signify outside monitoring of the managers by various stakeholders (Hallock, 2002).

In summary, public subsidies and donations could increase rents to distribute on the one hand, but also could also increase pressure on the organization to keep wages at a low level because they are subject to public scrutiny on the other hand.

2.3 Previous research

These possible three influences – volunteers, donations and public subsidies - on wages have so far widely been neglected when estimating the wage level in the nonprofit sector although they might give interesting insight into the management of nonprofit organizations. Notable exceptions are Borjas et al. (1983), who analyzed the effects of various financing structures, Mocan and Tekin (2003) and Mocan and Viola (1997), who included a 'publicly supported' dummy in the wage function, and Preston (1988), who included donations and public subsidies as relevant exogenous variables. To our knowledge, volunteering has so far not been included in wage functions of workers in the nonprofit sector. Possibly, the reason for this is the absence of relevant or appropriate data on volunteers. Borjas et al. (1983) suggest that in the field of nursing homes if wages react to changes in public reimbursement schemes for-profit homes are more vulnerable to these changes than nonprofit homes. Flat rate reimbursement as a cost-minimizing incentive therefore is much more effective in for-profits than in the other two categories of nursing homes (Borjas et al., 1983, p. 239f.). Mocan and Tekin (2003) analyzed the wages of workers in child care centers and found there were lower incomes for full-time workers in nonprofit organizations and higher incomes for part-time workers if a child care center was publicly supported (p. 44), but by contrast in an earlier study Mocan and Viola (1997) found no statistically significant results in support of this (p. 42). Preston analyzes the effect of donations and uses a two-stage approach since she assumes donations to be endogenous (Preston, 1988, p. 344f.). She finds a small, but positive influence of donations on wages (Preston, 1988, p. 348). Hallock (2002) explores CEO wages and finds that organizations with government subsidies pay higher wages to managers compared to organizations without grants (p. 399f.).

Summarizing the existing research, there are no studies that take volunteers into account when analyzing the wage level of paid nonprofit workers, the findings about the effect of subsidies are mixed, while donations are found to influence wages in a positive way.

2.4 Hypotheses

A priori the influence of the variables of interest on the wage level is ambiguous.

Summarizing all arguments outlined above, volunteers in the organization could be **positively** correlated with paid workers' wages because rents which are distributed are divided among fewer paid employees compared to organizations without (or with fewer) volunteers, because paid employees need a higher qualification or take on higher responsibilities and because volunteers augment the size of the organization. Volunteers could have a **negative** influence on the wages of paid employees in nonprofit organizations because they indicate the degree to which the organization performs a socially-desirable job. The more volunteers there are within an organization, the more working time paid employees will probably donate to the organization because of higher moral satisfaction. Also, wages might be lower compared to wages of workers in organizations without or with fewer volunteers because of their lower than average qualification or responsibilities and because of a smaller need to pay efficiency wages. Furthermore volunteers might negatively influence wages because they may decrease the bargaining power of paid workers in the wage setting process.

Donations and public subsidies might be positively correlated with the wage level because of rent sharing possibilities or because they might be a sign of the ability of the employees, especially the managers. They might be negatively correlated with wages because the funding body has some influence over labor inputs and wages or because wages are at a lower level in order to secure or signal efficiency.

3. Data and econometric specification

3.1 Data

For the estimation of wage levels we use a unique matched employer-employee data set for Austria. It comprises data on employees working in nonprofit organizations and information on their employers. This implies that all nonprofit organizations in our data employ at least one paid worker. Matched employer-employee datasets contain information on employees and employers and have the advantage of allowing us to test factors influencing wages on both the supply and on the demand side. To date the nonprofit sector matched employer-employee data have been used only for the analysis of wages in certain industries, such as the child care sector (Mocan & Tekin, 2003).

The organizational-level data were gathered in 2006 by a postal survey that was sent to all Austrian nonprofit organizations with at least one employee. In total 5,104 organizations were contacted, and 947 questionnaires were returned, representing a response rate of 18.55 per cent. We have information for diverse industries that are relevant to the nonprofit world, but the postal survey was not sent to schools. The questionnaire, while touching on a variety of issues, placed particular emphasis on employment, income, expenditure and organizational activities.

The employee data used in this analysis are for the year 2005 and are taken from the Austrian tax statistics. Using the numerical identifier for the employer, organizational-level data were merged with the employee records[11]. The data refer to 39,613 individuals working in 421 nonprofit organizations that were covered by our organizational study. The individual-level data provide information on income, sex, age, length of employment, working hours and whether the person was a blue-collar or white collar worker. Overall, therefore the data in this paper cover 8.25 per cent of the organizations addressed in the postal survey.

As an income variable, we use the yearly total labor income before tax divided by the days of employment within the organization (max. 365 days). The mean daily income is €51.45 with a standard deviation of €29.97. We use the log of daily income, as is common in most wage regressions because of theoretic and econometric reasons (e.g. Lemieux, 2006). On the one hand, results are more easily interpretable and problems like heteroskedasticity or non-normality of the residuals can be solved by logit transformation. On the other hand, Lemieux describes the log-linearity of the wage variable as "very accurate for most of the range of the wage distribution" (Lemieux, 2006, p. 130).

All full-time workers earning less than €20 per day and all part-time workers with less than €5 daily income were excluded from the data set for plausibility reasons. Unfortunately the data only contain a dummy variable if a person works full-time or part-time and not the exact working hours per week. Consequently, the part-time workers are a very heterogeneous group since an individual in this group could work as little as one hour per week or as much as 34 hours per week.

Table 1: Descriptive statistics of the main variables

Variable	N of cases	Mean	Standard deviation
log. daily income	39,613	37.6441	0.6396704
Volunteer Dummy	39,613	0.7137303	0.4520227
Number of volunteers/FTE	32,483	3.781148	107.5803
Donations in €/FTE	29,762	5629.851	19499.49
Subsidies in €/FTE	29,762	31807.75	32303.89

Source: Matched NPO-tax data 2006, own calculations

The data gathered from nonprofit organizations by postal survey contain missings for a number of items. The number of volunteers has 18 per cent missing values, while donations and subsidies have 24.87 per cent missing values. We addressed this problem by trying various corrections and comparing

[11] The data in this article are cited as "Matched NPO-tax data 2006" ("Matched NPO-tax data 2006: NPO postal survey by Statistik Austria & Wirtschaftsuniversität Wien and Statistik der Lohnsteuer (income tax statistics) by Statistik Austria," 2006)

the results. We conducted a complete-case analysis, one with missing dummies and a single imputation via the impute command of STATA 9.2 (see e.g. Greene, 2003, p. 59f. and Little & Rubin, 2002). A comparison shows that – with one statistically insignificant exception - the coefficients of the three regression analyses all bear the same signs and are similar in size. Thus, we chose to present results with missing value correction through missing dummies (see Greene, 2003, p.60).

3.2 Econometric specification

The effect of volunteers and donations on wages is investigated with a standard wage equation. Wages are modeled as:

$$\ln(wage) = \alpha + X\beta + Y\gamma + \varepsilon$$

ln(wage) is the log of the daily wage before tax, X is a vector that contains variables on the individual level, Y is a vector that contains organizational level variables and is the same for all individuals working within one and the same organization.

More specifically, X includes age, age squared, sex, a blue-collar/white-collar dummy, and two dummies indicating two specific Austrian contract types as well as a full-time/part-time dummy. Y comprises the three variables of interest – a dummy variable whether the organization has volunteers, the number of volunteers per paid full-time equivalent, donations per paid full-time equivalent and subsidies per full-time equivalent as well as 9 region dummies, 32 sector dummies on a 6-digit level, two collective agreement dummies, log full-time equivalents and three variables containing information about the staff composition within an organization such as part-time workers, marginal workers and women per full-time equivalent. Donations, subsidies, the number of employees as well as the variables describing the staffing composition are all divided by the number of full-time equivalents in order to take out the size effect in these variables. There are two collective dummies, one that states if an organization does not pay according to a collective agreement, but orientates itself on an existing collective agreement. A second dummy is included if an organization has no collective agreement. Organizations having one or more collective agreements form the reference category.

Table 2: Description of control variables

Variable names	Description
age	Age in years
age squared	Age in years squared
female	Dummy variable, 1 if female, 0 otherwise
white collar	Dummy variable, 1 if white-collar worker, 0 otherwise; **reference group: blue-collar workers**
apprentice	Dummy variable, 1 if apprentice, 0 otherwise
public contract agent	Dummy variable, 1 if public contract agent, 0 otherwise
Full-time dummy	Dummy variable, 1 if full-time workers, 0 otherwise
Volunteer Dummy	Dummy variable, 1 if NPO has volunteers, 0 otherwise
Number of volunteers/FTE	Volunteers per full-time equivalent
Volunteer Missing Dummy	Dummy variable, 1 if answers are missing, 0 otherwise
Donations/FTE	Donations (including income from sponsoring) per full-time equivalent
Subsidies/FTE	Subsidies (including income from service level contracts) per full-time equivalent
Missing dummy: Donations, subsidies	Dummy variable, 1 if answers are missing, 0 otherwise
Industry dummies (32)	Dummy variables for 32 industry classifications, **reference category: social services**
collective agreement	Dummy variable, 1 if organization has collective agreement: **reference category**
no collective agreement (1)	Dummy variable, 1 if organization has no collective agreement but pays according to a scheme voluntarily, 0 otherwise
no collective agreement (2)	Dummy variable, 1 if organization has no collective agreement, 0 otherwise
collective agreement missing dummy	Dummy variable, 1 if collective agreement questions are missing, 0 otherwise
part-time workers/FTE	proportion of part-time employees (earning more than €323.46* per month) within an organization
marginal workers/FTE	proportion of marginal workers (earning less than €323.46* per month) within an organization
female workers/FTE	proportion of female employees within an organization
log. FTE	log. full-time equivalents within an organization
Region dummies	Dummy variables for 9 Austrian federal states, **reference group: Vienna**

**an employee earning less than €323.46 per month is by Austrian law a "marginal worker"*

Source: Matched NPO-tax data 2006

We use a semi-logarithmic approach, consequently the results can be interpreted as semi-elasticities. This means that if the independent variable increases by one unit, the coefficient indicates the percent change of the daily wage.

3.3 Method

For analyzing the wage level of employees in the nonprofit sector we use quantile regression. So far, quantile regression analysis has not been applied to nonprofit workers' wages. It permits a more detailed understanding about the relation between the exogenous variables and the wage level. While ordinary least squares (OLS) regression focuses on the mean effect of variable on the wage level, quantile regression assumes that the conditional distribution of the wage level, given a set of exogenous variables, is heterogeneous. It allows estimating the marginal effect of an independent variable at different points of the distribution of the dependent variable. Quantile regression is advantageous to use whenever we can assume that an exogenous variable has a different influence on higher incomes than on lower ones. We can, for example, assume that a collective agreement reduces the wage spread so that the coefficients for the "collective dummy" are higher for the the lower wage quantile than for the higher wage quantiles.

Usually, quantile regression is attributed to Koenker and Bassett (1978) and can be, in brief, described as follows[12].

Let y_{ij} be the log wage of a worker i in organization j. X_{ij} is a vector of regressors. θ refers to the $\theta - th$ quantile of the conditional distribution function of y_{ij}. The relationship between X_{ij} and y_{ij} is given by (Buchinsky, 1998, p. 94):

$$Q_\theta\left(y_{ij} \mid X_{ij}\right) = X_{ij}\beta_\theta, \theta \in (0,1)$$

The estimator for β_θ of the $\theta - th$ quantile regression is obtained by solving (Koenker & Bassett, 1978, p. 38):

$$\hat{\beta}_\theta = \min_\beta \left[\sum_{i: y_{ij} \geq X_{ij}\beta} \theta \left| y_{ij} - X_{ij}\beta \right| + \sum_{i: y_{ij} < X_{ij}\beta} (1-\theta) \left| y_{ij} - X_{ij}\beta \right| \right]$$

where $0 < \theta < 1$. The estimator $\hat{\beta}_\theta$ is consistent and asymptotic normally distributed. In contrast to the OLS estimator it is not efficient (Buchinsky, 1998, p. 95 and p. 98).

The coefficients can be interpreted as the marginal change of the $\theta - th$ quantile of the conditional distribution by a marginal change of the relevant covariate (Buchinsky, 1998, p. 98).

In contrast to OLS regression quantile regression does not minimize the sum of squared errors but absolute errors and is thus less sensitive to extreme outliers (Koenker & Bassett, 1978). Quantile regression is more advantageous if the error terms are heteroskedastic or not normally distributed.

[12] For a more detailed overview over the method see for example Koenker (2005) and Buchinsky (1998).

By varying θ it is possible to obtain results for the whole conditional distribution function. Standard errors are estimated by bootstrapping[13]. The method is used when the assumption of heteroskedasticity of the residuals is violated. In this case, bootstrapped standard errors are more accurate (Gould, 1992; Gould, 1997). In our estimation we estimate the coefficients for the 10th, 25th, 50th, 75th and 90th quantile and use 100 replications for the bootstrap. All estimations are carried out with the STATA 9.2 statistical package.

4. Empirical Results and Discussion

In this section we present the results from the quantile regression analysis. Table 3 displays the coefficients and standard errors for the variables of interest only, the results for the other regressors can be found in the Appendix (Table 4). The last column comprises the results from an OLS regression with robust standard errors for reasons of comparability.

Table 3: Selected estimation results from quantile regression and OLS regression
Individual and organizational control variables included

Dependent Variable: log. daily income before tax						
	N=39,613					
	Quantile regression estimates					**OLS estimates Coefficient (Robust std.err.)**
	0.1	**0.25**	**0.5**	**0.75**	**0.9**	
Variable	**Coefficient (Bootstrap standard error)**					
Volunteer dummy	-0.0740044*** (0.0151079)	-0.0930629*** (0.0130728)	-0.1069088*** (0.0118074)	-0.1008387*** (0.0120302)	-0.0671784*** (0.013088)	-0.1046794** (0.044842)
Number of volunteers /FTE	0.000032 (0.0001144)	-0.0000147 (0.0001444)	-0.00000946 (0.0002351)	-0.0000256 (0.0000263)	-0.0000503 (0.0000921)	-0.0000124 (0.0000105)
Donations /FTE	-0.0000012 (0.000000766)	-0.000000677 (0.000000929)	0.000000268 (0.000000249)	0.000000395** (0.0000002)	0.000000635 *** (0.000000247)	0.000000242 (0.000000302)
Subsidies /FTE	0.000000708** (0.000000292)	0.00000105*** (0.000000208)	0.00000111*** (0.000000238)	0.00000138*** (0.000000214)	0.00000114*** (0.000000208)	0.00000113** (0.000000469)
	Pseudo-R^2=0.2949	Pseudo-R^2=0.2494	Pseudo-R^2=0.2643	Pseudo-R^2=0.2670	Pseudo-R^2=0.2655	R^2=0.4035

**** (**) on the 99%-(95%-) level statistically significant*

Source: Matched NPO-tax data 2006, own calculations

[13] For an overview of the method of bootstrapping see e.g. Efron and Tibshirani (1993).

Two variables have statistically significant results for all quantiles – the volunteer dummy and the subsidies variable. The number of volunteers per FTE has insignificant results for all quantiles, the donations variable is mixed. The coefficient of the volunteer dummy variable has a negative sign, thus the expected wage is lower if an organization has volunteers compared to organizations without volunteers. It is, however, irrelevant how many volunteers the organization has as the number of volunteers/FTE variable has no significant results. The effect of volunteering is lower at the margins of the wage distribution, as the coefficient for the 0.1 and 0.9 quantiles are lower than at the other three quantiles. Consequently, the hypothesis that the labor donation effect is particularly strong for the upper quantiles because managers and executives can best perceive the social impact cannot be confirmed here. An individual working in an organization with volunteers earns between 6.7 per cent and 10.6 per cent less than an individual in a nonprofit organization without volunteers. The negative sign of the coefficient of the volunteer dummy suggests that the labor donation hypothesis might be of some relevance. Individuals working as volunteers might be an indicator for the social desirability of the good the nonprofit organization produces. If there are volunteers, the paid workers are also willing to donate a part of their income, thus accept lower wages. Another explanation might be the comparatively lower job requirement profiles or lower job responsibilities. Unfortunately, our data do not include more specific information about experience and education, so we cannot control for this. Other explanations might be the lower need to pay efficiency wages or the lower bargaining power of paid workers due to the presence of volunteer workers.

Donations have a very small, but positive coefficient at the upper end of the wage distribution. For high incomes the expected wage increases with rising donations. Donations here could be interpreted as a sign of the special ability of the managers. Larger donations are positively correlated with the high quality of managers in the organization. Subsidies also increase the expected wage. In contrast to the donations variable, it is statistically significant for all quantiles of the wage distribution. The coefficient of both variables is very small, however for the public subsidy variable one additional Euro leads to a 0.0000708 per cent increase of the income in the 0.1 wage quantile and to a 0.000114 per cent wage increase for the 0.9 quantile. While this seems small, when we take into consideration the beta coefficients, these effects do not seem as small any more. For example, an increase of public subsidies by one standard deviation (amounting to about 32,300€) will increase the daily wage by 2.3 per cent on the 0.1 wage quantile and by 3.7 per cent for the 0.9 quantile. An increase of donations by one standard deviation (about €19,500) will increase the daily wage by 0.8 per cent on the 0.75 wage quantile and by 1.2 per cent on the 0.9 wage quantile. Higher wage groups seem to profit more from higher subsidies and also from higher donations. The results can be interpreted using the rent sharing theory. Higher donations and subsidies lead to higher rent sharing possibilities, although the effect is very small. This result corresponds to that found by Preston (1988) who also noted the small, but positive influence of donations on the wages of workers in NPOs.

Summarizing the findings we see that the existence of volunteers lowers the wage level of paid nonprofit workers by about 10 per cent compared to workers in nonprofit organizations without volunteers. The number of volunteers, however, does not have a significant influence.

Donations have a positive effect on wages of high income groups only, while public subsidies have a small, but positive effect for all income groups. This result is valid for nonprofit organizations engaging in all kinds of activities.

In the Appendix the results for all the control variables can be found, among them the coefficients for our missing dummy variables. When looking at the missing dummies we see that some coefficients are significant at some quantiles. The number of volunteers missing dummy is not of much interest since we do not have any significant results for the number of volunteers variable. The donations and subsidies missing dummy has two significant results for the 0.1 and the 0.25 wage quantile. This indicates that these data have missing values to a meaningful degree and we should be cautious about the interpretation of the results for the donations and subsidies variable for these two quantiles since they might be biased.

5. Conclusion

In this paper we adapted a standard wage equation for one idiosyncrasy of NPOs, namely the organization being voluntary to some meaningful degree. This includes donations in the form of time and money. Furthermore, we investigated the impact of public subsidies on the wage level of nonprofit workers. In addition, we added a volunteers dummy, the number of volunteers as time contributions as well as the donations and public subsidies as monetary contributions to the wage equation of paid employees. For the estimation we used an employer-employee matched data set comprising 39,613 paid workers in 421 Austrian nonprofit organizations of diverse industries. By using a quantile regression approach we could inspect the relationship between wages and the variables of interest on different quantiles of the wage distribution. We found that the volunteers dummy had statistically significant results for all quantiles. The expected wage for workers in nonprofit organizations that also have volunteer workers is lower for all quantiles, wages at the lower and upper end of the distribution are less affected than the middle quantiles. The number of volunteers has no influence on the expected wage.

One explanation of the results could be the labor donation hypothesis, which posits that the presence of volunteers indicate the high social desirability of the activity of a nonprofit organization. In organizations where volunteers are willing to work, paid workers are also willing to donate part of their income. Donations have a small but positive effect for higher incomes. Public subsidies increase wages, although the coefficients of this variable are also small. These results might be interpreted with the rent sharing theory. Higher donations and public subsidies enable the organization to pay higher wages.

Further research could include a separate analysis for full-time and part-time workers since workers of the two categories might nonrandomly select into full-time and part-time work and wages might be affected by the regressors differently (see e.g. Mocan & Tekin, 2003).

It would also be interesting to distinguish volunteers in our equation by their job tasks in order to analyze if for instance volunteers acting as board members have a different effect on the wages of paid workers compared to the effect of other volunteers in the organization.

In our paper we offered various explanations for our findings but we could not single out one concrete explanation to explain why the existence of volunteers negatively influences the wages of paid workers. It would also be interesting to further investigate these reasons with more detailed data that allow for more specific explanations.

Appendix

Detailed results from the quantile regression:

Table 4: *Further estimation results from quantile regression and OLS regression*

	q10 coef.	bootstr. std.err.	q25 coef.	bootstr. std.err.
age	0.0709634***	(0.0036243)	0.0611012***	(0.0031709)
age squared	-0.000755***	(0.0000472)	-0.0006514***	(0.0000381)
female	-0.0245387**	(0.0110555)	-0.0467528***	(0.0075574)
apprentice	-0.1949098***	(0.0478761)	-0.2532849***	(0.0359928)
white collar	0.3675762***	(0.0101997)	0.4553715***	(0.008832)
public contract agent	0.6040969**	(0.3049092)	0.4493911**	(0.225012)
Full-time dummy	1.018247***	(0.0151079)	0.7200578***	(0.0077195)
Number of volunteers missing dummy	-0.0001082	(0.0424189)	-0.0914931***	(0.0247463)
Donations & subsidies missing dummy	0.1309476***	(0.0261275)	0.095974***	(0.0176314)
Other hostels	0.2804564***	(0.0568653)	0.1478012***	(0.0409011)
Restaurants ans guest houses	0.0598752	(0.0175747)	-0.0342821	(0.0485982)
Buffets	-0.3680127***	(0.1233865)	-0.5761164***	(0.194474)
R&D in medicine/natural science/agriculture	-0.0292463	(0.1457458)	-0.1947429	(0.3120945)
R&D in law/humanities/social sciences	0.3673849***	(0.2249689)	0.2452186***	(0.0812916)
Legal advice	-0.5043546	(0.4083656)	-0.7003895	(0.5075182)
Architectural offices	0.9682833***	(0.1756219)	0.6965897***	(0.1369819)
Technical, physical and chemical analyses	0.1382456	(0.2178779)	0.1411198	(0.2493863)
General public administration	0.5490817***	(0.0317764)	0.208441***	(0.0784453)
Play schools	-0.1680372***	(0.0293377)	-0.1175524***	(0.0228164)
Elementary schools	-0.5760617	(0.570697)	0.1597315	(0.6500859)
Vocational secondary school	-0.7118492***	(0.064686)	-0.7410888***	(0.1213967)
Universities	0.1055714	(0.2068243)	-0.0431388	(0.2404936)
Adult education	0.1850439	(0.042379)	0.039423	(0.0326409)
Hospitals	0.3796795***	(0.0281538)	0.189865***	(0.0287265)
Dentists	0.4172557***	(0.1452956)	0.4989551***	(0.181214)
Rescue services	0.3582262***	(0.0605905)	0.3313358***	(0.0401527)
Home-based care	-0.0993849***	(0.0361006)	-0.1002073***	(0.0187302)
Psychotherapists	-0.0631108	(0.274622)	0.0897561	(0.3259346)
Other health care	0.4273304**	(0.2916378)	0.367639**	(0.1621304)
Nursing homes	0.2382001***	(0.0183125)	0.1482295***	(0.0167431)
Other asylums/homes	0.0706911***	(0.0394701)	0.0961421***	(0.0199572)
Professional associations	0.0601519	(0.2137002)	0.0086186	(0.2045902)
Religious associaions	-0.0294405	(0.0450731)	-0.0257569	(0.0328029)
Other associations	-0.0551339**	(0.0326622)	-0.0522737**	(0.0212954)
Arts	-0.4349965***	(0.1321819)	-0.9583845***	(0.09755)
Operation of cultural performances	-0.0617868*	(0.1491233)	-0.2454167*	(0.1370323)
Libraries and archives	-0.2608886	(0.3703826)	0.1483785	(0.1576169)
Museums and monument protection	0.0529544*	(0.1516932)	-0.1855689*	(0.1000475)
Parks, botanic gardens	0.6972827***	(0.3822291)	0.7730453***	(0.1594409)
Operation of sports facilities	0.3858831	(0.0895855)	0.1968457	(0.1547042)
Other services for sports	0.039419***	(0.0720741)	0.1981338***	(0.0545958)
no collective agreement, but orientation	-0.1353514***	(0.028618)	-0.125325***	(0.0184187)
no collective agreement	-0.0478227***	(0.0346745)	-0.1033924***	(0.0323955)
collective agreement missing dummy	0.2265478***	(0.0197531)	0.192956***	(0.0157198)
part-time workers/FTE	-0.0355221**	(0.0175871)	0.0312736**	(0.0129796)
marginal workers/FTE	-0.0522594***	(0.045845)	-0.1277113***	(0.0446447)
female workers/FTE	-0.1326335	(0.020003)	-0.0181544	(0.0149305)
log. FTE	0.0437373***	(0.0061363)	0.0303552***	(0.0039119)
Lower Austria	0.1233522***	(0.0244257)	0.0555961***	(0.0189759)
Burgenland	0.0456895	(0.031251)	-0.0252269	(0.0248755)
Styria	0.1237982***	(0.0493441)	0.1321869***	(0.032195)
Carinthia	-0.007376	(0.0475141)	0.0030275	(0.0519924)
Upper Austria	0.2174186***	(0.025946)	0.084321***	(0.016834)
Salzburg	-0.0551007***	(0.0470875)	-0.1978308***	(0.0481402)
Tyrol	-0.0340743***	(0.0341622)	-0.0859839***	(0.0335196)
Vorarlberg	0.2218309***	(0.0424429)	0.1084892***	(0.0289283)
constant	0.6576118***	(0.0880248)	1.400104***	(0.0710633)

	q50 coef.	bootstr. std.err.	q75 coef.	bootstr. std.err.
age	0.033018***	(0.0014261)	0.0329468***	(0.0014866)
age squared	-0.0003213***	(0.0000179)	-0.0003137***	(0.0000195)
female	-0.0751558***	(0.0069995)	-0.1216715***	(0.0075849)
apprentice	-0.4648869***	(0.0460874)	-0.4460233***	(0.0449167)
white collar	0.4527768***	(0.0066169)	0.4569***	(0.0068241)
public contract agent	0.3341648	(0.2312994)	0.2753395*	(0.1475907)
Full-time dummy	0.5434035***	(0.0047006)	0.444844***	(0.0051438)
Number of volunteers missing dummy	-0.0868182***	(0.017506)	-0.0666873***	(0.0156751)
Donations & subsidies missing dummy	0.0095514	(0.0119662)	-0.0184786	(0.0118556)
Other hostels	-0.0227446	(0.0295318)	-0.0447477*	(0.0260756)
Restaurants ans guest houses	-0.1323998***	(0.035371)	-0.2422704***	(0.0313026)
Buffets	-0.6747009***	(0.222024)	-0.3500967	(0.4610984)
R&D in medicine/natural science/agriculture	0.1840946	(0.12617)	0.1037766*	(0.0578153)
R&D in law/humanities/social sciences	0.175684***	(0.0685332)	0.1417632***	(0.0472402)
Legal advice	0.2948026	(0.7612071)	0.1527561	(0.7155997)
Architectural offices	0.4313948***	(0.0908512)	0.2350903***	(0.0673721)
Technical, physical and chemical analyses	0.1150203	(0.1934897)	0.0882013	(0.2651614)
General public administration	0.0711306	(0.1069993)	0.0128088	(0.1446564)
Play schools	-0.0691582***	(0.0106172)	-0.0900203***	(0.0067675)
Elementary schools	0.0280276	(0.1813369)	-0.1595919**	(0.0759584)
Vocational secondary school	-0.2258014***	(0.0520482)	-0.0284394	(0.0379667)
Universities	0.0843272	(0.2061506)	0.3645732	(0.2325864)
Adult education	0.0538409**	(0.0231637)	0.1033805***	(0.0269559)
Hospitals	0.0317194	(0.0210712)	-0.0224461	(0.0220672)
Dentists	0.2850962***	(0.1001125)	0.1693635***	(0.0582541)
Rescue services	0.2960692***	(0.0333996)	0.2424267***	(0.0275427)
Home-based care	-0.0541969***	(0.0118016)	-0.0870714***	(0.0143258)
Psychotherapists	0.3350661**	(0.1658858)	0.183077***	(0.0669742)
Other health care	-0.0300722	(0.0546533)	-0.1075836	(0.102757)
Nursing homes	0.1131722***	(0.0119735)	0.0875479***	(0.0131834)
Other asylums/homes	0.0887874***	(0.0166674)	0.0803906***	(0.0123177)
Professional associations	0.2232718**	(0.1035992)	0.1621569***	(0.0633483)
Religious associaions	0.0662644***	(0.0196102)	0.028586	(0.0184629)
Other associations	0.0286563*	(0.0173077)	0.0714297***	(0.0170783)
Arts	-1.441326***	(0.1923081)	-0.3894255	(0.5027552)
Operation of cultural performances	-0.4485841***	(0.1690633)	0.0142347	(0.1122221)
Libraries and archives	0.0913159	(0.0667657)	0.0580376	(0.080493)
Museums and monument protection	-0.0258673	(0.0955308)	0.1514113***	(0.0585117)
Parks, botanic gardens	0.6130616***	(0.0683545)	0.3778719***	(0.065145)
Operation of sports facilities	0.2423101	(0.2332826)	-0.007248	(0.2398116)
Other services for sports	0.2895202***	(0.0551066)	0.4969226***	(0.0814133)
no collective agreement, but orientation	-0.0887967***	(0.0136284)	-0.1243671***	(0.0165015)
no collective agreement	-0.1004739***	(0.0222014)	-0.1025358***	(0.0196175)
collective agreement missing dummy	0.1321309***	(0.0105145)	0.0678232***	(0.0123782)
part-time workers/FTE	0.0581447***	(0.0091442)	0.0764883***	(0.0105816)
marginal workers/FTE	-0.1775413***	(0.0217616)	-0.2079252***	(0.0183048)
female workers/FTE	0.0462123***	(0.0116272)	0.0916107***	(0.0103454)
log. FTE	0.0070196**	(0.0033642)	-0.0020564	(0.0032403)
Lower Austria	-0.0890676***	(0.0141577)	-0.1175814***	(0.016161)
Burgenland	-0.1627419***	(0.0209776)	-0.2037352***	(0.0183336)
Styria	-0.0255534	(0.0227208)	-0.0724353***	(0.0257545)
Carinthia	-0.113525***	(0.0281868)	-0.1776721***	(0.0287011)
Upper Austria	-0.0082775	(0.0121349)	-0.0231784*	(0.0123415)
Salzburg	-0.2167543***	(0.0324756)	-0.039866	(0.0297257)
Tyrol	-0.1148751***	(0.0207869)	-0.1177497***	(0.0164163)
Vorarlberg	-0.0247537	(0.022079)	-0.0684922***	(0.0213093)
constant	2.519647***	(0.0408035)	2.850809***	(0.0349628)

	q90 coef.	bootstr. std.err.	OLS coef.	robust std.err.
age	0.0327851***	(0.0020902)	0.0515657***	(0.0061229)
age squared	-0.0002805***	(0.0000271)	-0.0005328***	(0.0000766)
female	-0.1468218***	(0.009389)	-0.0704764**	(0.0315922)
apprentice	-0.4998354***	(0.0402272)	-0.3542278***	(0.0717919)
white collar	0.4346584***	(0.008346)	0.4163256***	(0.067687)
public contract agent	0.1395793*	(0.0839925)	0.2950531**	(0.1255232)
Full-time dummy	0.3861712***	(0.0064844)	0.6420037***	(0.0212326)
Number of volunteers missing dummy	-0.0070317	(0.0222128)	-0.0715329	(0.0582301)
Donations & subsidies missing dummy	0.0052763	(0.0149961)	0.067166	(0.0507797)
Other hostels	-0.1349799***	(0.0438502)	0.048158	(0.0870865)
Restaurants ans guest houses	-0.3103948***	(0.0790808)	-0.0124857	(0.1138919)
Buffets	0.1139685	(0.6069099)	-0.4744827***	(0.1313139)
R&D in medicine/natural science/agriculture	0.0933926	(0.0698811)	0.0735015	(0.1326757)
R&D in law/humanities/social sciences	0.1663783*	(0.0903073)	0.227134**	(0.0996481)
Legal advice	0.5642287	(0.5123111)	-0.2311299**	(0.1054688)
Architectural offices	-0.0650352	(0.0708536)	0.4744472***	(0.1286225)
Technical, physical and chemical analyses	0.2599729	(0.2227593)	0.1320537	(0.1336315)
General public administration	0.0425573	(0.0642264)	0.1775347***	(0.0335189)
Play schools	-0.0900196***	(0.0090222)	-0.1403148	(0.1037913)
Elementary schools	-0.3180986***	(0.0779555)	-0.2239386***	(0.0816939)
Vocational secondary school	0.0027655	(0.0313001)	-0.3302296***	(0.014966)
Universities	0.2103067	(0.1702777)	0.1763188**	(0.0727681)
Adult education	0.0454922	(0.0337467)	0.0724574	(0.0465395)
Hospitals	-0.0036173	(0.0425833)	0.1228015	(0.0815524)
Dentists	0.0997963	(0.0761796)	0.3228848***	(0.0880584)
Rescue services	0.0368524	(0.0351457)	0.2745897**	(0.1271579)
Home-based care	-0.116195***	(0.015576)	-0.0740871	(0.0715429)
Psychotherapists	0.1979255	(0.1287766)	0.1094711	(0.1416253)
Other health care	-0.1302533	(0.1644855)	0.1006002	(0.1126948)
Nursing homes	0.046987***	(0.0162748)	0.1505082***	(0.054067)
Other asylums/homes	0.0312403**	(0.0146313)	0.0840161*	(0.0472769)
Professional associations	0.0745126	(0.0858506)	0.0676522	(0.1495369)
Religious associaions	-0.0472645*	(0.0270874)	-0.0068617	(0.1073575)
Other associations	0.0044601	(0.0236955)	0.0142912	(0.0734108)
Arts	-0.097337	(0.401774)	-0.8078553***	(0.1242089)
Operation of cultural performances	-0.103202	(0.1021457)	-0.2348805***	(0.0791758)
Libraries and archives	0.0548821	(0.1239459)	0.0726302	(0.0785832)
Museums and monument protection	0.0143811	(0.0541974)	-0.0309041	(0.1531597)
Parks, botanic gardens	0.3077502	(0.1987393)	0.5104184***	(0.1284764)
Operation of sports facilities	-0.0396018	(0.1398428)	0.1711383*	(0.0982121)
Other services for sports	0.3601792***	(0.0436732)	0.2646822**	(0.1207688)
no collective agreement, but orientation	-0.1098597***	(0.0205356)	-0.103227*	(0.0579006)
no collective agreement	-0.0769206***	(0.0248978)	-0.0943734	(0.0634599)
collective agreement missing dummy	0.0533725***	(0.0167151)	0.1307722*	(0.0699237)
part-time workers/FTE	0.0266118**	(0.0125004)	0.051487	(0.0385091)
marginal workers/FTE	-0.1574318***	(0.0199518)	-0.1461105**	(0.0703201)
female workers/FTE	0.0636666***	(0.0132085)	0.0127661	(0.058805)
log. FTE	-0.0143002***	(0.0040524)	0.0130282	(0.0107651)
Lower Austria	-0.1170853***	(0.0262823)	-0.0437185	(0.0667205)
Burgenland	-0.2211533***	(0.0275624)	-0.0951244*	(0.052885)
Styria	-0.0396408	(0.028818)	0.017078	(0.0614581)
Carinthia	-0.2072511***	(0.032603)	-0.1064228	(0.0923848)
Upper Austria	-0.0219261	(0.0158848)	0.0323082	(0.0649225)
Salzburg	-0.0157226	(0.0304673)	-0.1333927	(0.1195829)
Tyrol	-0.0964532***	(0.0237695)	-0.1088763	(0.0763741)
Vorarlberg	-0.070173***	(0.0234534)	0.0276405	(0.0742718)
constant	3.18424***	(0.0558668)	2.006894***	(0.1577107)

****(**)[*] on the 99%-(95%-)(90%-) level statistically significant*

Source: Matched NPO-tax data 2006, own caluculations

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