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Qvist, Hans-Peter; Munk, Martin David

Published in:
European Sociological Review

DOI (link to publication from Publisher):
[10.1093/esr/jcy004](https://doi.org/10.1093/esr/jcy004)

Publication date:
2018

Document Version
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Qvist, H-P., & Munk, M. D. (2018). The Individual Economic Returns to Volunteering in Work Life. *European Sociological Review*, 34(2), 198-210. Advance online publication. <https://doi.org/10.1093/esr/jcy004>

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The Individual Economic Returns to Volunteering in Work Life

Hans-Peter Y. Qvist*, Department of Sociology and Social Work, Aalborg University

Martin D. Munk, Centre for Mobility Research, Department of Political Science, Aalborg University

This is a pre-copyedited, author-produced version of an article accepted for publication in *European Sociological Review* following peer review. The version of record Qvist, H.-P. Y. and Munk, M. D. (2018). The Individual Economic Returns to Volunteering in Work Life. *European Sociological Review*, 34(2), 198-210 is available online at: <https://doi.org/10.1093/esr/jcy004>

Abstract

This article examines the individual economic returns to volunteering during different stages of working life. The article uses a unique panel dataset created by combining rich survey data from Denmark with information on wages from administrative registers covering the period from 2004 to 2012. Applying a two-way fixed effects regression model that controls for both period-specific and individual-specific effects, the article finds that for labour market entrants and for people in the early stages of their working life, an additional year of volunteer work experience yields a significant positive return. However, the economic returns to volunteer work experience decrease as a function of professional labour market experience. For people with more than six years of professional labour market experience, the economic returns to volunteer work experience are insignificant. On these grounds, the article argues that the economic returns to volunteer work experience depend on the current stage of people's work lives.

Keywords: economic returns, fixed effects regression, volunteering, wages, work life

*Corresponding author email: hpq@socsci.aau.dk

Introduction

The individual economic returns to volunteering, referring to the degree to which the average wages of individuals with volunteer work experience exceed those of non-volunteers, are currently attracting considerable attention from social scientists (Day and Devlin, 1997, 1998; Wilson and Musick, 2003; Prouteau and Wolff, 2006; Hackl, Halla and Pruckner, 2007; Ruitter and De Graaf, 2009; Paine, McKay and Moro, 2013; Bruno and Fiorillo, 2015; Sauer, 2015). The *ceteris paribus* difference between the average wages of individuals with volunteer work experience and the wages of non-volunteers is referred to as a wage premium for volunteer work experience.

In light of the increasingly competitive labour markets that characterize Western societies (Barbieri, 2009; Prosser, 2016), many studies today conceptualize volunteer work as a means of improving people's opportunities in the paid labour market. The focus on individual economic returns to volunteering can be attributed to the recognition that although volunteer work is unpaid, it is a *productive activity* (Tilly and Tilly, 1994; Wilson and Musick, 1997; Musick and Wilson, 2008; Kelemen, Mangan and Moffat, 2017). Prior to this realization, scholars did not consider volunteer work to be something with potential economic benefits for the participants; instead, it was seen as an act of pure altruism or as an unproductive leisure pursuit (Taylor, 2004, 2015). However, when volunteer work is viewed as a productive activity, it is reasonable to assume that volunteer work can be economically rewarding for the individual because, like paid workers, volunteers may gain human capital through informal work experience, extend their social networks, or send positive signals to potential employers. This acquisition of capital (human and social) and the value of this signal should, in turn, allow volunteers to see economic returns in the form of higher wages in the labour market. This study empirically investigates whether and to what

extent such economic returns to volunteering exist and, if so, whether the economic returns vary across different stages of working life.

Previous empirical studies provide mixed results. A number of previous studies find evidence in favour of economic returns to volunteering (Day and Devlin, 1997, 1998; Hackl, Halla and Pruckner, 2007; Bruno and Fiorillo, 2015; Sauer, 2015). However, with the exception of the study by Sauer (2015), these studies are all based on cross-sectional data, which do not offer the opportunity to study how the economic returns to volunteer work undergo changes over the course of the working life. Moreover, cross-sectional data offer limited possibilities for addressing unobserved individual heterogeneity. This is a serious shortcoming, since unobserved individual characteristics that increase productivity, such as motivation or innate ability, may lead to an upward-biased association between volunteer work experience and wages. This upward bias arises because highly motivated or highly able individuals are both more likely to volunteer and more productive in the labour market, regardless of whether they have done volunteer work (Freeman, 1997).

Improved means of addressing unobserved heterogeneity might explain why previous longitudinal studies to a lesser extent support the existence of economic returns to volunteering compared to their cross-sectional counterparts (Wilson and Musick, 2003; Ruiter and De Graaf, 2009; Paine, McKay and Moro, 2013). However, previous longitudinal studies are subject to other shortcomings. First, none of the existing longitudinal studies examines whether economic returns to volunteer work vary across different stages of people's work lives at the individual level. Second, previous longitudinal studies use simple binary indicators of group membership or volunteering (participation or not). However, if the mechanisms that bring about economic returns to volunteering involve the accumulation of capital (human or social) over time, it is inadequate to include a binary indicator of participation in volunteer work at one point in time. Third, the wage measure used in all of

these studies is self-reported, and it is well-known from the methodological survey literature that self-reported wages are susceptible to underreporting and/or selective non-response, owing to issues of confidentiality and/or lack of knowledge of actual wages (Moore, Stinson and Welniak, 2000). If self-reported wage measures are combined with retrospective survey designs, the non-response problem is exacerbated, as respondents will often fail or refuse to recall past wages, which results in selective non-response (Ferber and Birnbaum, 1979).

This study addresses the abovementioned shortcomings of previous research through use of a unique panel dataset created by combining rich survey data from Denmark with information on wages from Danish administrative registers. These exceptionally rich data allow us to track the wages of a representative sample of 1,550 individuals aged 18-50 years for nine consecutive years, from 2004 to 2012. Because the wage variable is based on administrative register information, we can minimize measurement errors and eliminate the missing data problems associated with self-reported wages. Moreover, years of volunteer work experience are measured as a continuous variable rather than as a simple indicator of participation at one point in time.

The main contribution of this study is that it shows that individual economic returns vary across different stages of people's work lives. The economic returns to an additional year of volunteer work experience are greatest for labour market entrants and during the early stages of working life, but they level off as people gain professional labour market experience.

Possible Mechanisms Linking Volunteering and Wages

The literature contains several theories that aim to explain how volunteer work experience can yield economic returns in the labour market. The theories all predict positive economic returns to volunteer work experience but differ in the identity of the underlying social

mechanisms that bring about this effect. Broadly speaking, a distinction can be made between theories that propose that volunteers gain real resources, either in the form of human or social capital, and theories that propose that volunteers only gain symbolic value that enables them to send a positive signal to potential employers (for a discussion on the distinction between real and symbolic resources, see Krarup and Munk, 2016).

Most sociological studies emphasize that volunteers gain real resources in the form of human and/or social capital from their engagement in volunteer work. It is argued that informal work experience and practical on-the-job training increase human capital in a manner similar to paid work. Human capital can be converted into higher wages in the labour market if it is used to raise individual productivity (Day and Devlin, 1997, 1998). Social capital gains may accrue because voluntary organizations provide important settings for social interaction (McPherson and Smith-Lovin, 1982, 1986; Marsden and Hurlbert, 1988; Beggs and Hurlbert, 1997; Ruiter and De Graaf, 2009). Thus, voluntary organizations may represent an opportunity structure for building important social ties that may provide valuable information, potentially creating a comparative advantage in the labour market (Granovetter, 1995). Lin (1999, 2001) makes the distinction between access and mobilization of social capital, or put differently, having social ties and getting returns from them. This is an important distinction because the returns to social ties is not only a question of amount, but also about knowing influential people at the right time, maybe being most valuable in the beginning of working life.

Complementing the theories that propose that volunteers gain real resources, other theories suggest that volunteers only gain symbolic value. Symbolic value theories propose that individuals use the signalling value of volunteering to enhance their labour market opportunities. It is argued that voluntary work experience boosts one's résumé, improves one's employability and, as a result, boosts one's wages because it sends a signal to

potential employers of ability, high productivity and a willingness to cooperate (Katz and Rosenberg, 2005; Handy *et al.*, 2010).

The Returns to Volunteering during Different Stages of Working Life

Previous studies have acknowledged that volunteer work experience might yield greater economic returns for young people than for older people (Handy *et al.* 2010; Souto-Otero and Shields, 2016; Petrovski, Dencker and Holm, 2017). However, due to a lack of suitable longitudinal data for the same individuals over time, this question has been underexplored empirically. Moreover, previous studies overlook an important insight from career development theorists, namely, that people's work lives pass through a sequence of stages, including exploration, establishment, maintenance, and decline/disengagement (Super, 1957). However, these stages are not defined by people's age but by the development tasks that characterize each stage (Super, Savickas, and Super, 1996; Pavlova and Silbereisen, 2014). On these grounds, we argue that the most important factor to consider when examining the economic returns to volunteer work experience across people's work lives is not age *per se* but the individual's amount of professional labour market experience. Of course, age and the amount of professional labour market experience will correlate strongly, but they do not correspond perfectly to each other because people enter the labour market at different ages, and some people experience periods of unemployment during their working life.

This idea has not previously been tested directly, but an earlier study on the effects of volunteer work experience during graduate studies found that volunteer work experience was only beneficial in terms of finding a job more quickly; it did not result in higher wages five years after graduation. The authors attribute the latter result to the effects of volunteer work experience being overshadowed by actual work experience and fading away over the working life (Weiss, Klein, and Grauenhorst, 2014). We argue that such

overshadowing of volunteer work experience by professional work experience is likely to occur for a number of reasons.

First, most people spend much greater amounts of time on their paid work than on their volunteer work. This leads to the question of whether people with substantial professional labour market experience can gain additional capital (human or social) or signal value through volunteer work beyond what they have already gained through their professional work.

Second, as people gain professional experience, they need occupation-specific or advanced skills to increase their human capital and, in turn, their productivity (Ben-Porath, 1967). However, the skills that people typically gain from volunteering are not occupation-specific or advanced but are instead basic organizational skills such as the ability to organize and run a meeting (Brady, Verba, and Schlozman, 1995). This is not to state that volunteers never engage in activities that require occupation-specific or advanced skills, but volunteers who engage in volunteering requiring these skills often bring them to organizations.

Third, several studies have found that the use of informal social ties declines with age or labour market experience (for a review; see Marsden and Gorman, 2001). This decline is likely reflecting that even though people in the middle of their labour market careers have many social ties, young people with little professional experience are likely to benefit more from ties to influential and resourceful people (Lin, 1999, 2001).

Fourth, signal value is not an isolated individual asset that can readily be converted into economic resources (Spence, 1973). From a signalling theory perspective, the rate of conversion of volunteer work experience into economic resources in the labour market is contingent on how employers value volunteer work experience (Katz and Rosenberg, 2005; Rodell and Lynch, 2016). It is plausible that when employers evaluate labour market entrants or workers in the early establishment phase of their work lives, employers will likely be

favourably disposed towards candidates who have made an effort to gain experience through volunteer work. However, for people with substantial professional experience, the positive signal value of volunteer work experience in a wage negotiation situation is probably negligible because employers will focus on professional achievements. In some cases, employers could even interpret engagement in volunteer work negatively, as a distraction or as signalling a lack of dedication to paid work responsibilities (Rodell and Lynch, 2016).

Fifth, young people in the beginning of their careers are more aware of the benefits of advertising skills learned from volunteer work (Okun and Schultz, 2003; Handy et. al. 2010; Holdsworth and Quinn, 2010). Thus, people with little professional experience are more likely to view volunteer work experience as an asset they can advertise in a wage negotiation situation.

Based on all these observations, this article predicts a positive economic return to an additional year of volunteer work experience for labour market entrants and people in the early stages of their working lives, but we expect the returns to an additional year of volunteer work experience to decrease as a function of professional labour market experience. Accordingly, the empirical hypothesis we test in this paper is as follows:

Hypothesis: The individual economic returns to an additional year of volunteer work experience are greatest during the early stages of working life but decrease as a function of professional labour market experience.

Volunteer Work and Wages: Evidence to Date

In this review of the evidence to date, studies from both sociology and economics are included. The review of the literature shows that empirical evidence regarding the economic returns to volunteering is mixed. In particular, there is evidence to date both for and against

economic returns to volunteering. However, the results appear to strongly depend on the methods and data used in particular studies. Most notably, studies that support the existence of positive economic returns are mainly cross-sectional in nature, while studies that provide evidence against the existence of economic returns are mainly longitudinal in nature. The difference between the results of cross-sectional and longitudinal studies might reflect the better opportunities for addressing unobserved heterogeneity in longitudinal data. In the following paragraph, further details about previous research are provided.

Evidence in Favour of Economic Returns to Volunteer Work Experience

In their seminal study of volunteer work as an investment in human capital, Day and Devlin (1998) used cross-sectional data from Canada, to which they applied standard log-OLS models, and found that volunteers receive a wage premium of approximately 6-7 % compared to non-volunteers. However, in another study, the same authors found a wage premium of 10 % for men but no significant return for women (Day and Devlin, 1997).

A study based on Austrian data that included 421 respondents took self-selection and potential reverse causation into account by using an instrumental variables strategy; this study found a rather large wage premium for volunteers of 18.5 % (Hackl, Halla and Pruckner, 2007). Another study, based on Italian data for 14,567 respondents, used Heckman selection models to take selection in the labour market into account and provided evidence of a positive but small wage premium of 2.7 % (Bruno and Fiorillo, 2015). A study based on French data that included 6,026 observations used switching regression to control for selectivity and estimated separate models for the public and the private sectors; it found a small and insignificant positive wage premium in the public sector and a small and insignificant negative wage premium in the private sector (Prouteau and Wolff, 2006).

The five abovementioned studies all reveal evidence in favour of economic returns to volunteer work experience, but they are all based on cross-sectional data. To date, only one longitudinal study provides evidence of positive economic returns to volunteering. This study used a sample of 2,479 women from the Panel Study of Income Dynamics to estimate the economic returns to volunteering for women in the US, finding that an additional year of volunteer experience increased wage offers in part-time work by 8.5 % and full-time offers by 2.5 %. Mean lifetime earnings were found to increase by 16.7 % (Sauer, 2015).

Evidence against Economic Returns to Volunteer Work Experience

The longitudinal evidence is less conclusive about the existence of positive returns to volunteer work experience. First, a study that used panel data from the Netherlands supported the existence of economic returns to voluntary association involvement measured by both occupational status and earnings but found no evidence of an additional effect of volunteer work experience (Ruiter and De Graaf, 2009). Second, two longitudinal studies provide evidence against economic returns to volunteer work experience. The first study used US panel data to examine occupational attainment and status among women, finding that for young adults, volunteer work experience had no effect on the probability of working for pay or on wages 18 years later (Wilson and Musick, 2003). The second study used the British Household Panel Study to investigate how volunteer work experience affected employability and earnings (Paine, McKay and Moro, 2013). This study, which is the only one to use a fixed effects regression to control for unobserved individual characteristics, found that volunteer work experience yields a negative wage premium of approximately 2-4 %. Table 1 summarizes the results of previous research on the economic returns to volunteering.

In sum, the longitudinal evidence suggests that previous cross-sectional evidence is upward biased. In cross-sectional studies that do not attempt to address selection

or reverse causality issues, this upward bias is probably the result of selection based on unobservable factors such as ability or motivation. It could also reflect reverse causation, in the sense that people with higher wages and social status are more likely to participate in volunteer work. Some of the previous cross-sectional studies have attempted to address self-selection and reverse causation by using instrumental variables, Heckman selection models, or switching regression, but these econometric techniques rely on untestable and more restrictive assumptions than those required in longitudinal studies.

The previous longitudinal studies are based on less restrictive assumptions, but they suffer important shortcomings if the returns to volunteer work experience are heterogeneous across different stages of people's work lives, as we expect. First, the study by Ruiters and De Graff (2009) aims to estimate the causal effect of volunteer work experience on earnings by using information on earnings in the individual's current job while controlling for job characteristics and earnings in the individual's previous job. This is a clever identification strategy in terms of ruling out selection on unobservable factors and reverse causality, but it runs the risk of throwing the baby out with the bathwater because the study only uses information on later stages of people's work lives, when the economic returns to volunteer work experience are probably negligible. Second, Wilson and Musick (2003) study whether volunteer work experience for young adults has a positive effect on wages 18 years later. This strategy is well suited to guard against reverse causality issues, but the study might not reveal an effect of volunteer work experience on wages during the early stages of people's work lives because the period until the follow-up is 18 years. Finally, the study by Paine, McKay, and Moro (2013), which controls for unobserved factors by using a fixed effects strategy, did not examine whether the returns to volunteer work experience are heterogeneous across different stages of people's working lives.

[TABLE 1 here]

Data, Measures, and Method

Data

The present study draws on data from Danish administrative registers, which were merged with the second wave of the Danish Volunteer Survey¹, conducted in 2012, and are representative of the Danish population aged 16 to 86 (Fridberg and Henriksen, 2014). We only rely on the second wave of the Danish Volunteer Survey, because the second wave introduced new retrospective questions about how long the respondents have volunteered within different areas, which we use to construct our measure for volunteer work experience (we describe the construction of this measure in detail in the measures section). The Danish Volunteer Survey is a repeated cross-sectional survey that was first carried out in 2004 and includes a longitudinal component. The 2012 wave consists of 1981 respondents who participated in both waves, supplemented with 828 respondents from a random sample of new cohorts, as well a random sample of other cohorts. In total, 4,180 individuals were selected for interviews (2,785 individuals in the panel; 1,395 individuals in the supplement), out of whom 2,809 agreed to participate (a response rate of 67 %). The survey was supplemented to ensure that it is representative of the population. Comparisons with population data from Statistics Denmark suggests that the 2012 wave including the panel and supplement can be used a representative cross-section of the Danish population in 2012 (Fridberg and Henriksen, 2014). The exceptionally high response rate is the result of meticulous data collection, which was carried out through telephone interviews and included personal follow-up interviews with respondents who could not be reached by telephone.

In Denmark, all residents are required to hold a unique personal identification number. This number is used by government institutions to store information about individuals in administrative registers. Many of these administrative registers are collected by Statistics Denmark and other institutions. Upon ethical approval from the Danish Data Protection Agency of a specific project at the former Centre for Survey and Survey/Register Data in collaboration with Statistics Denmark, the relevant variables are continuously made available to researchers in anonymised form through remote access servers. Because of the uniqueness of the personal identification number, information from administrative registers can be merged with survey data at the individual level. This powerful combination of survey and register data was used to create a panel dataset. First, wages were drawn from the registers for the period from 2004 to 2012. The information on wages was then merged with data on years of volunteer work experience, which are unfortunately only based on retrospective information from the survey in 2012 (see section: measures).

Because this study focuses on wages, only people of working age were included. To avoid explicit modelling of retirement decisions, the sample was limited to people aged 18 to 50 years in 2004. This resulted in a sample of 1,570 individuals whose wages could be followed for nine years in the administrative registers. Thus, the oldest respondents were 58 years old at the end of the period of investigation in 2012. The panel dataset suffers almost no attrition because wages were drawn from administrative registers. When observations with missing data were removed because information could not be obtained from registers, the resulting sample consisted of 13,852 observations from 1,550 individuals.

Of these 1,550 individuals, approximately 3.6 % were out of the labour force during the whole period of investigation, so their wages were never observed. At the other end of the spectrum, 61.7 % of the individuals were in the labour force during the whole

period of investigation, while the remaining individuals were in the labour force at some point during the period of investigation. In total, we obtained 11,607 valid observations from 1,550 individuals during the period of investigation, but since we use a lagged explanatory variable, we lose the first wave of data. The final analysis sample is 10,080 observations from 1,454 individuals.

Measures

The outcome variable was operationalized as the yearly individual wage in Danish Kroner (DKK), with an inflation adjustment to 2012 real values.² The measure of the yearly individual wage was based on information from administrative registers and calculated from annual tax returns. Because the wage measure was calculated from tax returns, bias caused by measurement error due to self-reporting, was eliminated. To address the skewness common to wage measures, the natural logarithm of wages was used in the analysis. Because the natural logarithm of zero is not defined, we do not include observations of zero wages in the analysis. Accordingly, our results provide conservative estimates of the economic returns to volunteering in the sense that we do not conflate the effect of wage progression with the effect of entering the labour market from unemployment on wages. However, as a robustness check, we re-ran the models reported in Table 3 with a small amount added to the logarithm of wages (we add 1 to all wage observations). These estimations led to similar conclusions as inferred from Table 3, but the magnitude of the effect sizes are substantially larger (see Table A1 in the online supplement). This suggests that the economic returns to volunteer work experience are substantially larger than what we report in Table 3, if the effect of entering the labour market from unemployment on wages is included in the analysis. This is in with previous research that suggests that volunteer work experience may have a positive influence on re-entry chances from unemployment (Strauß, 2009).

The key explanatory variable was years of volunteer work experience, based on retrospective survey information from 2012 only. In the survey, respondents were asked whether they had volunteered in 14 different areas within the previous year. The different areas corresponded to the International Classification of Nonprofit Organizations (Salamon and Anheier, 1992).³ If the respondent indicated that he or she had volunteered in a particular area, he or she was subsequently asked: ‘How long have you volunteered in this area? (In years)’. To calculate years of volunteer work experience, the maximal number of years each respondent reported to have volunteered across areas was used. Finally, we calculated each respondent’s years of volunteer work experience in each year from 2004 to 2012, which allows the use of fixed effects regression in the analysis, because we can relate the timing of changes in the individual's years of volunteer work experience to subsequent changes in wages. For example, if a respondent reported having five years of volunteer work experience in 2012, we assume that the respondent have volunteered continuously from 2008 to 2012. Accordingly, we assume that the respondent has zero years of volunteer work experience in the period from 2004 to 2007, one year of volunteer work experience in 2008, two years of volunteer work experience in 2009, and so forth, up to five years of volunteer work experience in 2012.

The time-varying control variables were educational level and labour market experience. The measure for educational level was operationalized as the highest completed educational level, drawn from the administrative registers in each year from 2004 to 2012. The measure of educational level available in the administrative registers is based on reporting by educational institutions. The variable was coded in eight levels, in accordance with International Standard Classification of Education (ISCED) standards for educational level. The measure for labour market experience was operationalized as an approximation of actual labour market experience, based on administrative registers. In the administrative

registers, it was calculated for each year in the period from 2004 to 2012 using information on mandatory pension payments from employers. Importantly, the variable measures *actual* labour market experience, as opposed to potential labour market experience or age, which are often used as proxies for labour market experience in studies where actual labour market data are not available (Miller, 1993). The original labour market experience variable from Statistics Denmark was scaled from 0 to 1,000. A total of 750 is the equivalent of a year of half-time employment, and 1,000 is the equivalent of a year of full-time employment. This measure was divided by 1,000; accordingly, a number of 5.5 is equivalent to five and a half years of effective full-time employment. Table 2 presents descriptive statistics for all variables included in the analysis.

[TABLE 2 here]

Method

The point of departure for the analysis of the economic returns to volunteer work experience was the standard Mincer wage equation, which specifies that wages can be predicted from education, labour market experience, and labour market experience squared (Mincer, 1958, 1974). To study the returns to volunteer work experience, the standard Mincer equation was augmented to include volunteer work experience. We used volunteer work experience lagged by one year to prevent reverse causation, which could arise because people who receive a wage increase could become more likely to volunteer due to an increase in their social status (Smith, 1994). However, since we predict this year's change in wage as a function of last year's change in volunteer work experience, we eliminate problems of reverse causation, because last year's change in volunteer work experience cannot be predicted by this year's change in wage (for details on the use of lagged independent variables; see Studenmund, 2014). Moreover, to account for possible period-specific and individual-specific effects, two-

way fixed effects regression models were estimated.⁴ Thus, as a point of departure, an equation of the following form was estimated:

$$\ln(\text{wage}_{it}) = \alpha_t + \beta_1 \text{volexp}_{it-1} + \beta_2 \text{educ}_{it} + \beta_3 \text{exp}_{it} + \beta_4 \text{exp}_{it}^2 + v_i + u_{it} \quad (1)$$

where $\ln(\text{wage}_{it})$ is the natural logarithm of wages for individual i at time t , α_t is a time fixed effect that captures period-specific year-to-year fluctuations in wages caused by general economic developments during the period of investigation, volexp_{it-1} is years of volunteer work experience lagged by one year, educ_{it} is educational level, and exp_{it} is years of professional labour market experience.⁵ The years of professional labour market experience variable is additionally included as a squared term to allow the rate of return to an additional year of professional labour market experience to decrease. Because we estimate the equation by fixed effects regression, the parameter of interest β_1 captures how a *change* in years of volunteer experience in time $t - 1$ is related to a *change* in wage in time t at the individual level.

The error term is decomposed into a fixed individual-specific part, v_i , which was assumed to vary over individuals but not time, and a purely random part, u_{it} , which was allowed to vary over both individuals and time. By estimating the wage equation using a fixed effects regression, the time-invariant individual-specific part, v_i , which may contain unobserved individual characteristics, such as ability or motivation, was eliminated (see Halaby, 2004). Furthermore, it is important to recognize that by removing the time-invariant individual-specific part, v_i , any potential selection into employment based on time-invariant unobserved individual characteristics was also removed.

The major advantage of the fixed effects model is that it replaces the restrictive assumption that measured causes of wages are uncorrelated with unobserved individual

characteristics with the less restrictive assumptions that the unobserved individual characteristics are time-invariant and that their effects are stable (Firebaugh, Warner and Massoglia, 2013). The two-way fixed effects strategy, in combination with a lagged independent variable, thus makes it more credible that an association between volunteer work experience and wage can be given a causal interpretation.

To test whether the returns to volunteer work experience vary as a function of professional labour market experience, equation 1 was extended to include interaction terms between volunteer work experience and professional labour market experience. Accordingly, the following equation was estimated:

$$\ln(\text{wage}_{it}) = \alpha_t + \beta_1 \text{volexp}_{it-1} + \beta_2 \text{educ}_{it} + \beta_3 \text{exp}_{it} + \beta_4 \text{exp}_{it}^2 + \beta_5 \text{volexp}_{it-1} \times \text{exp}_{it} \quad (2) \\ + \beta_6 \text{volexp}_{it-1} \times \text{exp}_{it}^2 + v_i + u_{it}$$

where the interaction term between volunteer work experience and professional labour market experience, $\text{volexp}_{it-1} \times \text{exp}_{it}$, identifies how the individual economic returns to an additional year of volunteer work experience change as people gain an additional year of professional labour market experience. Because the timing of the stage in people's labour market careers at which wages reach their highest level might depend on volunteer work experience, an interaction term between volunteer work experience and professional labour market experience squared, $\text{volexp}_{it-1} \times \text{exp}_{it}^2$, is also included.⁶

To aid interpretation of the interaction effect, estimates from equation 2 were used to graph the estimated average marginal effects (AMEs) of an additional year of volunteer work experience by the number of years of professional labour market experience that the individual has.

Results

Table 3 reports the results of the estimations of the individual economic returns to volunteer work experience using two-way fixed effects regression models.

[TABLE 3 here]

Model 1 reports the results of a simple model that predicts the logarithm of wages based on years of volunteer work experience lagged by one year to provide a baseline estimate of the linear effect of volunteer work experience on wages. Because the wage variable is in logarithmic form, the estimated coefficients approximate the percentage change in wages as the independent variables increase by one unit. The model suggests that each additional year of volunteer work experience is related to a 1 % decrease in wages.

Model 2 additionally includes controls for education, labour market experience and labour market experience squared. In model 2, the volunteer work experience coefficient is still slightly negative but is insignificant and smaller in magnitude than the estimate obtained in model 1. The reduction in magnitude of the volunteer work experience coefficient from model 1 to model 2 indicates that the coefficient in model 1 was confounded by differences in labour market experience: the returns to professional labour market experience peak in the later stages of working life (before they eventually decline in the final stages), but this is not the case with the returns to volunteer work experience. As we will see below, the returns to volunteer work experience are greatest during the earliest stages of working life. Accordingly, the negative wage premium for volunteer work experience in model 1 arises because positive economic returns to volunteer work experience during the early stages of people's work lives are cancelled out by small or negative economic returns to volunteer work experience for people in the middle or later stages of working life.

In model 3, interaction terms between volunteer work experience and professional labour market experience are added, allowing the returns to volunteer work experience to vary depending on professional labour market experience. Model 3 provides a very different picture of the economic returns to volunteer work experience from the previous models. First, the main effect of volunteer work experience indicates that for labour market entrants, an additional year of volunteer work experience is related to a 3.7 % increase in wages. Second, the negative and significant interaction term between volunteer work experience and professional labour market experience indicates that the magnitude of the positive effect of an additional year of volunteer work experience on wages *declines* for each additional year of professional labour market experience. Third, the positive and significant interaction term between volunteer work experience and professional labour market experience squared indicates that the magnitude of the positive effect of volunteer work on wages only decreases to a certain point.

To aid an intuitive interpretation of the results, the AME of an additional year of volunteer work experience on wages by years of professional labour market experience is graphed in Figure 1 (the estimated AMEs are also available in Table A5 in the online supplement). Figure 1 suggests that for people with up to six years of professional labour market experience, an additional year of volunteer work experience yields a significant positive wage premium. As already stated, the estimated economic return to an additional year of volunteer work experience is 3.7 % for labour market entrants, declining to approximately 1.7 % for people with six years of professional labour market experience, after which it becomes insignificant for the rest of people's work lives.

In sum, the empirical analysis supports our research hypothesis: The individual economic returns to an additional year of volunteer work experience are greatest during the

early stages of working life, but they decrease as a function of professional labour market experience.

[FIGURE 1 here]

Conclusion and Discussion

This article set out to examine the individual economic returns to volunteering. The article hypothesized that the individual economic returns to volunteer work experience vary across different stages of working life. The article used a unique panel dataset created by combining rich retrospective survey data from Denmark with information on wages from registers covering the period from 2004 to 2012. Using two-way fixed effects regression models that controlled for period-specific and individual-specific effects, the article suggests that the economic returns to an additional year of volunteer work experience are greatest for labour market entrants and during the early stages of working life, but level off as people gain professional labour market experience.

Previous longitudinal studies of the economic returns to volunteer work experience have arrived at mixed conclusions (Wilson and Musick, 2003; Ruiter and De Graaf, 2009; Paine, McKay and Moro, 2013; Sauer, 2015). Regardless of the results of these particular studies, our analysis suggests that assuming a homogenous effect across different stages of working life is misleading because the economic returns to volunteer work experience vary across these stages. If a homogenous effect is assumed, positive economic returns for labour market entrants and people in the early stages of their work lives are cancelled out by small or negative economic returns to volunteer work experience for people in the middle or later stages of working life.

Based on our results, we argue that people in the early stages of their working lives acquire capital (human and social) and signalling value through volunteer work experience, which in turn allows them to command a higher wage. We also argue that this is not the case for people in the middle or later stages of their working lives. However, one limitation of our study is that we are not able to disentangle the mechanisms by which volunteer work experience yields economic returns for labour market entrants and people in the early stages of their working lives. Accordingly, we cannot estimate the relative return to human capital, social capital, and signal value, respectively. Similarly, we cannot determine whether the absence of economic returns to volunteer work experience for people in the middle or later stages of working life occurs because no capital is gained, because the value of gained capital declines with labour market experience, or because employers do not value this capital. The disentanglement of these different mechanisms would require additional sources of data – for example, data on different employers’ perceptions of the value of volunteer work experience for people in different stages of their working life – and is an important topic for further research.

Another limitation of our study is that the measure for years of volunteer work experience is based on retrospective survey information, which to some degree might suffer from recall bias, which could potentially be more severe for older people. However, because time was measured in whole years – not months or weeks – problems associated with recall bias were probably limited. Another important limitation of the measure of volunteer work experience is that because of the survey design we have to make the assumption that we only have unbroken spells of volunteer work in order to give each respondent a score for each year between 2004 and 2012. Finally, the measure only contains the number of years of experience volunteering but not the frequency or hours of volunteering within these years. Due to the latter limitation, we cannot rule out that some people with substantial amounts of

professional experience might experience economic returns to volunteering if they volunteer with high frequency. Nevertheless, it is unlikely that even high-frequency volunteers can gain occupation-specific or advanced skills that would allow them to command higher wages in the later stages of their working careers.

Regardless of these limitations, our results contribute to important social scientific and public debates about the economic returns to volunteering. In various contexts, including the US, Canada, and Europe, it is widely believed that experience with volunteer work is helpful in terms of career advancement (Handy *et al.*, 2010; Souto-Otero and Shields, 2016). Our results suggest that volunteer work experience can be helpful in terms of career advancement for labour market entrants and people in the early stages of their careers but that it is of no consequence for people with substantial professional labour market experience. Moreover, by showing that the returns to volunteer work experience depend on labour market experience, and not on age per se, our study advances the debate about economic returns to volunteering because the result implies that volunteer work experience may yield economic returns not only for young people who are entering the labour market but also in general for those who lack professional labour market experience.

Notes

1. The data used in this study can be obtained free of charges at request from the Danish Data Archive (<https://www.sa.dk/en/services/dda-danish-data-archive/>).
2. For inflation adjustment to 2012 prices, we use the official consumer price index that is published by Statistics Denmark (<http://www.statistikbanken.dk/PRIS8>). Retrieved 10th of June 2016.

3. Following the International Classification of Nonprofit Organizations, the areas include culture, sports, hobbies, education, health, social services, environment, housing and community, unions and work organizations, advice and legal counselling, political parties, international organizations, religious or church organizations, and other.
4. A Hausman test confirms that the estimated two-way fixed effects model is more appropriate than the random effects model. The results from random effects models and the Hausman tests are available in the online supplement; see Table A2 in the online supplement.
5. To avoid multicollinearity, our models do not include controls for age. Rather, we include both period dummies and labour market experience because we hypothesize that the returns to volunteer work experience depend on labour market experience – not age per se. However, it might be argued that people select into different types of volunteer work and with different motives depending on their age rather than their labour market experience. Therefore, as a robustness check, we estimated model 3 in Table 3 with controls for age rather than period dummies. The results suggest that the returns to volunteer work experience decrease as a function of professional labour market experience and also when controlling for age; see Table A4 in the online supplement.
6. It might be argued that, similar to professional labour market experience, the rate of return to an additional year of volunteer work experience might decrease for each additional year of volunteer work experience. Therefore, we have estimated a more complex model with a four-way interaction term between volunteer work experience, volunteer work experience squared, labour market experience, and labour market experience squared (these estimates are available in Table A3 in the online

supplement). However, the four-way interaction term proved insignificant. Therefore, we prefer the more parsimonious specification found in equation 2.

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Table 1. Summary of previous research on economic returns to volunteering

Study	Context	Data	Dependent variable	Methods	Conclusion
<i>Evidence in favour of individual economic returns to volunteering:</i>					
(Day and Devlin 1997) ^a	Canada	Cross-sectional	Log earnings. Midpoint of range of seven self-reported income classes.	OLS with decomposition technique	Wage premium of 10 % (see note) for males. No wage premium for women (see note).
(Day and Devlin 1998) ^b	Canada	Cross-sectional	Log wage. Household income in ranges. Single earners only.	OLS	Wage premium of 6-7 %.
(Hackl, Halla, and Pruckner 2007)	Austria	Cross-sectional	1)P(y > 0) 2) Log wage Calculated as household income divided by work hours, but only single wage earners.	2S probit 2S Tobit	Wage premium of 18.5 %. Larger returns for high-intensity volunteers.
(Bruno and Fiorillo 2015)	Italy	Cross-sectional	Log of hourly wages calculated as income divided by work hours.	Heckman selection to account for selection into labour market.	Wage premium of 2.7 %.

(Sauer, 2015) ^{bc}	US	Longitudinal	Log wage.	Simulated maximum likelihood	Wage premium of 8.5 % for people in part-time jobs and 2.5 % for people in full-time jobs. Mean lifetime earnings increase by 16.7 %.
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Evidence against economic returns to volunteering

(Ruiter and De Graaf 2009)	Holland	Longitudinal	Monthly net earnings	GLM and Mixed models	Wage premium of 5 % for voluntary involvement (but no additional effect of volunteering).
(Wilson and Musick 2003) ^{bd}	USA	Longitudinal	Wage	OLS with volunteering in T1 predicting wage in T2.	No significant wage premium.
(Prouteau and Wolff 2006)	France	Cross-sectional	Hourly wage	Switching regression	No significant wage premium.
(Paine, McKay, and Moro 2013)	Britain	Longitudinal	Wage	Fixed effects	Negative effect on wage.

Note:

^a Day and Devlin (1997) report that without controls, the wage difference between volunteers and non-volunteers is 21.5 % for men and 11.1 % for females.

^b The studies by Day and Devlin (1998), Wilson and Musick (2003), and Sauer (2015) are confined to women

^c In addition to log wage, the study reports results for several dependent variables.

^d Wilson and Musick (2003) do not report the results of their analysis of volunteering and wages because they found no statistically significant relationships between them.

Table 2. Descriptive statistics

	Mean	SD
Ln(wage in 2012 DKK)	12.58	0.82
Volunteer work experience (in years)	2.51	6.16
Educational level (in levels: 1-8)	4.09	1.73
Labour market experience (in years)	14.26	8.53

Table 3. Two-way fixed effects regression models predicting ln(wage)

	Model 1	Model 2	Model 3
Volunteer work experience ₋₁	-0.0113* (0.0048)	-0.0049 (0.0047)	0.0373** (0.0120)
Educational level		0.2217*** (0.0118)	0.2181*** (0.0118)
Labour market experience		0.1035*** (0.0082)	0.1130*** (0.0085)
Labour market experience × labour market experience		-0.0016*** (0.0001)	-0.0017*** (0.0001)
Volunteer work experience ₋₁ × labour market experience			-0.0039*** (0.0010)
Volunteer work experience ₋₁ × labour market experience × labour market experience			0.0001*** (0.0000)
Constant	12.5351*** (0.0147)	10.7230*** (0.1067)	10.6239*** (0.1095)
Time fixed effects (α_t)	YES	YES	YES
Individual fixed effects (v_i)	YES	YES	YES
Observations	10080	10080	10080

Note: standard errors in parentheses. * 0.05, ** 0.01, *** 0.001.

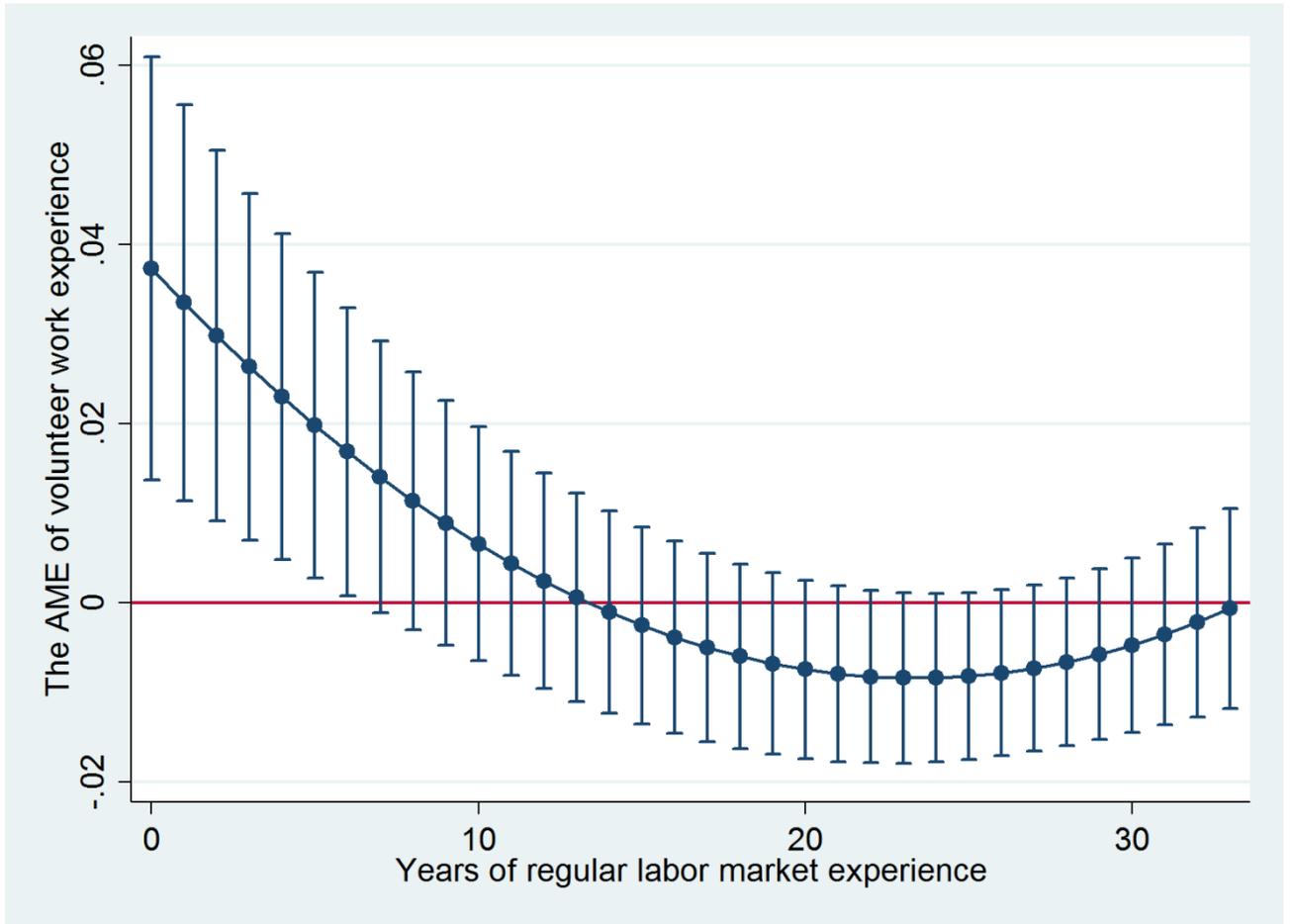


Figure 1. The average marginal effect (AME) of volunteer work experience on ln(wage) by years of labour market experience with 95 % confidence intervals.

Online supplement to the article ‘The Individual Economic Returns to Volunteering in Work Life’, *European Sociological Review*.

Table A1. Two-way fixed effects regression models predicting $\ln(\text{wage} + 1)$.

	Model 1	Model 2	Model 3
Volunteer work experience ₋₁	0.0343	0.0387	0.1940 ^{***}
	(0.0216)	(0.0214)	(0.0486)
Educational level		0.5512 ^{***}	0.5363 ^{***}
		(0.0481)	(0.0483)
Labor market experience		0.4325 ^{***}	0.4619 ^{***}
		(0.0311)	(0.0325)
Labour market experience × labour market experience		-0.0036 ^{***}	-0.0038 ^{***}
		(0.0007)	(0.0007)
Volunteer work experience ₋₁ × labour market experience			-0.0154 ^{***}
			(0.0042)
Volunteer work experience ₋₁ × labor market experience × labor market experience			0.0003 ^{**}
			(0.0001)
Constant	11.1093 ^{***}	4.8129 ^{***}	4.5483 ^{***}
	(0.0651)	(0.3472)	(0.3546)
Time fixed effects (α_t)	NO	NO	NO
Individual fixed effects (v_i)	YES	YES	YES
Observations	12269	12269	12269

Note: standard errors in parentheses. * 0.05, ** 0.01, *** 0.001.

Table A2. Random and fixed effects estimates.

	Random effects	Fixed effects
Volunteer work experience-1	-0.0055* (0.0025)	-0.0049 (0.0047)
Educational level	0.1542*** (0.0077)	0.2217*** (0.0118)
Labour market experience	0.0928*** (0.0041)	0.1035*** (0.0082)
Labour market experience × labour market experience	-0.0018*** (0.0001)	-0.0016*** (0.0001)
Constant	11.0982*** (0.0477)	10.7230*** (0.1067)
Time fixed effects (α_t)	YES	YES
Individual fixed effects (v_i)	NO	YES
Hausman-test		175.42***
Observations	10080	10080

Note: standard errors in parentheses. * 0.05, ** 0.01, *** 0.001.

Table A3. Two-way fixed effects regression models predicting ln(wage) (including four-way interaction)

	Model 1
Educational level	0.2178*** (0.0118)
Volunteer work experience	0.0310 (0.0198)
Labour market experience	0.1172*** (0.0087)
Volunteer work experience ₋₁ × Volunteer work experience ₋₁	-0.0000 (0.0001)
Volunteer work experience ₋₁ × Labour market experience	-0.0053** (0.0019)
Volunteer work experience ₋₁ × Volunteer work experience ₋₁ × Labour market experience	-0.0000 (0.0001)
Labour market experience × Labour market experience	-0.0018*** (0.0002)
Volunteer work experience ₋₁ × Labour market experience × Labour market experience	0.0001** (0.0000)
Volunteer work experience ₋₁ × Volunteer work experience ₋₁ × Labour market experience × Labour market experience	-0.0000 (0.0000)
Constant	10.5944*** (0.1115)
Time fixed effects (α_t)	YES
Individual fixed effects (v_i)	YES
Observations	10080

Note: standard errors in parentheses. * 0.05, ** 0.01, *** 0.001.

Table A4. Two-way fixed effects regression models predicting ln(wage) with control for age rather than time fixed effects.

	Model 1	Model 2	Model 3
Volunteer work experience ₋₁	-0.0124* (0.0048)	-0.0064 (0.0047)	0.0258* (0.0120)
Educational level		0.2109*** (0.0117)	0.2073*** (0.0117)
Labour market experience		0.0760*** (0.0068)	0.0818*** (0.0070)
Age	0.0302*** (0.0023)	0.0021 (0.0046)	-0.0006 (0.0047)
Labour market experience × labour market experience		-0.0016*** (0.0001)	-0.0017*** (0.0001)
Volunteer work experience ₋₁ × labour market experience			-0.0031** (0.0009)
Volunteer work experience ₋₁ × labour market experience × labour market experience			0.0001** (0.0000)
Constant	11.4655*** (0.0854)	11.0502*** (0.1166)	11.0997*** (0.1195)
Time fixed effects (α_t)	NO	NO	NO
Individual fixed effects (v_i)	YES	YES	YES
Observations	10080	10080	10080

Note: standard errors in parentheses. * 0.05, ** 0.01, *** 0.001.

Table A5. The AMEs of an additional year of volunteer work experience by regular labor market experience

Labour market experience (years)	AME	95 % confidence interval
0	0.0373	[0.0137,0.0609]
1	0.0335	[0.0114,0.0556]
2	0.0298	[0.0091,0.0505]
3	0.0263	[0.0069,0.0457]
4	0.0230	[0.0048,0.0412]
5	0.0198	[0.0028,0.0369]
6	0.0168	[0.0008,0.0329]
7	0.0140	[-0.0012,0.0292]
8	0.0114	[-0.0030,0.0257]
9	0.0089	[-0.0048,0.0225]
10	0.0065	[-0.0065,0.0196]
11	0.0044	[-0.0081,0.0169]
12	0.0024	[-0.0096,0.0144]
13	0.0006	[-0.0111,0.0122]
14	-0.0011	[-0.0124,0.0102]
15	-0.0026	[-0.0136,0.0084]
16	-0.0039	[-0.0146,0.0069]
17	-0.0050	[-0.0156,0.0055]
18	-0.0060	[-0.0163,0.0043]
19	-0.0068	[-0.0170,0.0033]
20	-0.0075	[-0.0174,0.0025]
21	-0.0080	[-0.0178,0.0018]
22	-0.0083	[-0.0179,0.0014]
23	-0.0084	[-0.0179,0.0011]
24	-0.0084	[-0.0178,0.0010]
25	-0.0082	[-0.0175,0.0011]
26	-0.0079	[-0.0171,0.0014]
27	-0.0073	[-0.0166,0.0020]
28	-0.0066	[-0.0160,0.0027]
29	-0.0058	[-0.0153,0.0037]
30	-0.0048	[-0.0145,0.0050]
31	-0.0036	[-0.0137,0.0065]
32	-0.0022	[-0.0128,0.0084]
33	-0.0007	[-0.0118,0.0105]
<i>N</i>	10080	

Note: 95% confidence intervals in brackets.