

# **Volunteering for work and pleasure?**

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## **Abstract**

*Since Putnam's theory of social capital, governments have looked for ways to try and encourage participation in volunteering. The aim of this paper is to contribute to the literature on the motivations for volunteering. Using the HILDA database and a discrete choice modelling approach, a positive correlation between volunteering and being in labour market transition, either into the workforce, into a job or between jobs was found. This finding supports the hypothesis that as well as volunteering for pleasure, people volunteer for greater short-term labour market mobility. Results presented do not support the hypothesis that people volunteer to increase their future earnings.*

**Key Words:** voluntary labour, ordered outcomes, labour market mobility, generalised extreme value models, discrete choice data.

JEL Classification: J63, L30, C25

## **1. Introduction**

In broad terms, volunteers are people who perform unpaid work ‘without coercion’ for the benefit of the community (United Nations 1999). Volunteers provide community services, such as welfare, remedial education, sporting and recreational programs and health services, that the formal sector is unwilling, or unable, to provide effectively.<sup>1</sup> Although the value of these services to the community is difficult to quantify, one study by the Australian Bureau of Statistics (2000) estimates the imputed value of voluntary labour in Australia to be between \$24 and \$31 billion in 1997 (between 7 and 9 per cent of GNP).

As impressive as this figure is, the contribution of volunteering goes beyond the value of the services provided. Volunteering has been linked with the formation of social capital: social connections that help to build trust and collective action within the community (Putnam 1995). According to Putnam (1995), a community that is more connected is likely to have a greater level of trust and reciprocity among its citizens, leading to a more cohesive and stable society and flow-on economic and social benefits. For example, high levels of connectivity and trust can reduce transaction costs, improve information flows and enhance workplace co-operation (Productivity Commission 2003).

The linking of volunteering to social capital and the trend towards outsourcing community services to the not-for-profit sector has heightened government interest in promoting volunteering. However, to effectively promote volunteering, it is imperative that governments understand the motivations and potential impediments to volunteering. The aim of this study is to contribute to the literature on motivations for volunteering; in particular, to test the theoretical ‘investment model of volunteering’ that people volunteer for potential workplace benefits.

Previous studies have tested workplace motivations by examining whether those who may derive pecuniary benefits from volunteering in the longer-term volunteer at a higher rate than those who do not. In the main, these studies examine whether volunteering rates are higher among low-income earners and the young, who are assumed to benefit most from higher future income. However, none of these studies have found evidence in support of the investment model.

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<sup>1</sup> There is no distinction made between types of volunteering in this paper. It includes formal volunteering (work performed through not-for-profit organisations), corporate volunteering (performed through for-profit organisations) and informal volunteering (not performed through an organisation).

The aim of our study is to fill a hole in the literature by testing whether people are motivated by ‘short-term’ workplace benefits that may be pecuniary and/or non-pecuniary, such as such as greater job satisfaction and more employment options. This hypothesis is tested by examining whether people who stand to gain from improved short-term labour market mobility are more likely to volunteer than those who do not.<sup>2</sup> Although there are many groups of people that may benefit from short-term improvements in labour market mobility, the ones we have focussed on in this study are those who are currently in, or are about to be in, labour market transition: people about to enter the workforce; jobless people looking for work; people at risk of loosing their jobs and people looking to change jobs.

Our modelling approach differs from previous studies in two key ways. First, we use a discrete choice model of hours volunteered, which allows the effects of explanatory variables and hence motivations to vary with the level of volunteering. All else being equal, it is likely that someone who volunteers for a few hours per week will have different motivations to someone who volunteers 10 hours. Second, we account for the potential endogeneity of workplace variables by using a two-stage estimation process.

## **2. Literature review**

### ***Theoretical models of volunteering***

There are two theoretical models that explain motivations for volunteering in the literature, consumption and investment models. Under the consumption model, individuals divide their time between volunteering and paid work to maximise their utility subject to a budget constraint. The utility derived from volunteering is assumed to be from improved social networks and from the ‘warm glow’ of contributing to a worthwhile cause (Andreoni 1990, Freeman 1997a and Fengler 1984).

The decision of how many hours to volunteer is assumed to be made either simultaneously with hours of paid work (Gomez and Gunderson 2003, Banks and Tanner 1998, Freeman 1997a, Andreoni, Gale and Scholz 1996 and Menchik and Weisbrod 1987) or conditional on the decision of paid work hours (Carlin 2001, Brown and Vaillancourt 1994 and Lankford 1992). Brown and Lankford (1992) argued that the sequential consumption model is more realistic because in practice hours of paid work is constrained so that workers have little scope for substituting between paid and voluntary work. Further, they argue that people select hours

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<sup>2</sup> In broad terms, improved short-term labour mobility means it is made easier for an individual to move into a job, between jobs or to gain a promotion.

in paid labour before hours in voluntary work because of the higher search costs involved in finding paid employment. The sequential approach is also favoured by Freeman (1997b), who claims that in practice people more accurately report their working hours than their wage rate.

Under the investment model, which is based on Becker's (1962) human capital investment model, individuals are assumed to volunteer to develop new skills and contacts that can be transformed into workplace benefits. In a given period, individuals are assumed to divide their time between volunteering and work to maximise their discounted expected future net returns from volunteering.

### ***Volunteering and labour market mobility***

In the literature on the investment model, expected future net returns from volunteering is mainly canvassed in terms of higher expected future income. A more general (albeit more difficult to measure outcome) may be improved labour market mobility, which encompasses pecuniary and non-pecuniary benefits. Drawing on a range of labour market and sociology studies, we have identified four ways in which volunteering may improve labour market mobility:

*Network benefits:* volunteering is a way of developing a well-connected network that includes people from across a range of professions. Embedded in a well-connected network is workplace information which volunteers can use to help choose career paths, find work or find a new job (Aguilera 2002, Beggs and Hurlbert 1997 and Rosenbaum *et al.* 1990). The bonds of trust within the network also help employers gather reliable information on job seekers, much of which may come from referral from existing employees (Montgomery 1991).

*Training opportunities:* many of the tasks performed by volunteers are similar to tasks performed in the workforce, especially jobs in the service sector. Volunteers, either through 'on-the-job' experience or through formal training, may broaden their skill base which may help them find work or move between jobs. Training opportunities is the most widely quoted workplace benefit from volunteering in the literature (see for example, Hackl, Halla and Pruckner 2005, Prouteau and Wolf 2002, Day and Devlin 1998 and Day and Devlin 1997).

*Volunteering as a signal:* people in transition may volunteer to signal that they possess important unobservable characteristics, such as self-motivation, that are important to an employer (Spence 1973).

*Improved psychological well-being:* it is well documented that volunteering, by providing social engagement, helps to improve well-being (Van Willigen 2000, Moen *et al.* 1992 and

Moen *et al.* 1989). For those in labour market transition who may be under duress, volunteering may help them maintain their psychological well-being and shorten their transition. For example, psychological well-being has been estimated to shorten unemployment spells (Hannan 1999).

### ***Evidence to date***

In the main, empirical studies have only given cursory attention to workplace benefits from volunteering. Gomez and Gunderson (2003), Carlin (2001), Banks and Tanner (1998), Freeman (1997a), Vaillancourt (1994) and Brown and Lankford (1992) either explicitly, or implicitly, have followed the approach used by Menchik and Weisbrod (1987). The latter is a headland study that simultaneously allows for investment and consumption motivations by including age and income as explanatory variables in a model of hours volunteered.

Under the Menchik and Weisbrod (1987) approach, proof of the investment model is found if the marginal effects of age and income are significant and negative. This is based on the assumption that low-income earners and the young are groups likely to benefit from higher future wages from volunteering. At the other extreme, if people volunteer for pleasure, it can be expected that the marginal effect of age is insignificant and the marginal effect of income is positive.

Results from the above studies suggest that although neither model dominates, the weight of evidence is in favour of the consumption model. For all of these studies, volunteering rates are estimated to rise from school-age until middle-age and then decline. Menchik and Weisbrod (1987) claim that this may be evidence of an investment model, but could not explain why volunteering peaks in middle-age. Brown and Lankford (1992) claimed that rather than investment motivations, this relationship may represent parent involvement in child sporting and recreational activities that peak in middle-age. For income, a significant positive effect is estimated in all of the above studies except for Carlin (2001), who estimated a significant negative effect.

The problem with the Menchik and Weisbrod (1987) approach is that the estimated effects of age and income may represent preferences for volunteering, rather than pure investment motivations. For example, young people may volunteer for social reasons rather than workplace benefits. That aside, it is difficult to draw conclusions from the above studies because the results suggest only that an investment model does not dominate.

Instead of testing whether people are motivated by higher future wages, some studies have examined whether volunteers earn a wage premium. Studies to date, (Hackl, Halla and Pruckner 2005, Prouteau and Wolf 2002, Day and Devlin 1998 and Day and Devlin 1997) have all found evidence of a wage premium for volunteers, but only Prouteau and Wolf (2002) tested whether this entices people into volunteering. Using a two-stage process, they found that their estimated wage premium had no significant effect on rates of volunteering.

Other studies have tried to find evidence of investment motivations within a specific demographic. Schram and Dusing (1981), using a linear regression model of hours volunteered found that housewives who intend to return to work in 12 months time spent no more time volunteering than housewives who had no intention of returning to work. This finding contradicts results from an earlier study by Mueller (1975) who found, again using a linear regression model of hours volunteered, that housewives intending to rejoin the labour force spent more time volunteering than housewives who had no such intention. However, results from the Schram and Dusing and Mueller studies are likely to be erroneous because they do not account for potential sample selection into volunteering.

Prouteau and Wolf (2002) looked for investment motivations within more demographic groups than Schram and Dusing and Mueller. Using a probit model of participation, they found that people involved in job-search, the unemployed and mothers intending to return to work were no more likely to volunteer for positions of management than those not involved in job-search, the employed and people who were not mothers returning to work, respectively. Again, conclusions from this study must be tempered because it only examines the potential motivations for volunteering for a specific type of position.

A potential problem with the above studies that have examined both consumption and workplace motivations (excluding Prouteau and Wolf 2002, and Banks and Tanner 1998) is that they do not take into account the problem of modelling both investment and consumption motivations simultaneously. In a well-functioning labour market, if volunteering increases workplace skills, wages will be endogenous in a model of voluntary labour. The problem may even be present if there is a lag between the accumulation of skills and higher wages because volunteering and wages in the current period may both be correlated with volunteering from the previous period. Without taking measures to control for the simultaneity of wages and volunteering, estimated model parameters in these studies may be biased and inconsistent (Greene 2003).

### 3. Modelling Approach

We consider a conditional model where an individual decides on a level of volunteering after he/she has decided on the hours of paid labour (Brown and Lankford 1992, Vaillancorut 1994, Carlin 2001). Conditional on hours of paid labour  $h$ , wage rate  $W$ , and other exogenous determinants  $Z$ , the hours volunteered  $v$  and the consumption of all other goods and services  $c$  are determined by the following maximisation problem:

$$\begin{aligned} \max \quad & U(v, c \mid h, W; Z) \\ \text{s.t.} \quad & P_v v + P_c c = Wh + m \\ & v \leq T - h \end{aligned} \tag{1}$$

where  $T$  is total time available,  $P_v$  is the private cost per hour of volunteering,  $P_c$  is the price of all other goods and services, and  $\mu$  is non-waged income, all of which are exogenous. The budget constraint implies that  $c = c(v; P_v, P_c, W, h, \mu, Z)$  so the problem in (1) becomes one of choosing  $v$  to maximise the utility function conditional on all exogenous variables.

Instead of treating hours volunteered as a continuous variable, it is assumed in this paper that people choose between discrete blocks of time, which is the approach commonly used for modelling choice of work hours (for example, Creedy and Kalb 2005, Flood and Islam 2005, Creedy *et al.* 2002 and Keane and Moffit 1998). Like the formal sector, voluntary jobs generally require a minimum level of performance which means that people are generally not free to determine their level of commitment (Flick *et al.* 2002). There are two advantages of this approach: the marginal effects of explanatory variables are able to vary with the commitment of time and the risk of bias due to error in the dependent variable is reduced. Without a time-use diary, it is difficult for volunteers to accurately record the time they spend volunteering, especially when they are asked to report an average figure over a year or more (which is most often the case). Error in the dependent variable can bias results if the error is non-random (Greene 2003).

To formalise our model, it is assumed that people choose among  $J + 1$  discrete levels of volunteering, defined by truncations of continuous hours of voluntary labour:

$$y_v = \begin{cases} 0 & \text{if } v = 0 \\ 1 & \text{if } v \leq v^1 \\ j & \text{if } v^{j-1} < v \leq v^j \quad (j = 2, \dots, J - 1) \\ J & \text{if } v > v^{J-1}, \end{cases}$$

where  $v^j (j = 1, \dots, J - 1)$  are cut-off values. Assume that the utility for individual  $i$  choosing voluntary labour participation level  $j$  can be represented by:

$$U_{ij} = U_i(y_v = j) = x_i' \beta_j + \varepsilon_{ij} \quad (i = 1, \dots, N; j = 0, \dots, J), \quad (2)$$

where  $x_i' \beta_j$  is the observable part of utility, which in this case is made up of individual specific characteristics and alternative specific parameters, and  $\varepsilon_{ij}$  is a random error term embodying unobserved individual heterogeneity. An individual is assumed to choose the level of voluntary labour participation that has the highest utility out of the  $J + 1$  alternatives; that is,  $y_{v,i} = k$  if  $U_{ik} > U_{ij}$ ,  $\forall j \neq k$ . The random utility maximisation (RUM) model given in (2) is the discrete version of the maximisation problem in (1) and  $x_i$  is the vector for all exogenous variables in (1) including labour market status variables and individual characteristics.

If the marginal distributions for  $\varepsilon_{ij}$  are Extreme Value distributions, equation (2) represents the class of Generalised Extreme Value (GEV) models (McFadden 1978). As a special case, if  $\varepsilon_{ij}$  are assumed to *independently* (for all  $i$  and  $j$ ) and identically follow a Type I Extreme Value distribution, equation (2) is the commonly used Multinomial Logit (MNL) model (Maddala 1986).

Compared to an ordered probit model, the MNL model is more flexible because it has different latent equations for different choices. However, the MNL model is restricted by the unattractive property of Independence from Irrelevant Alternatives (IIA), which limits the probability ratio of any two choices to be related only to the characteristics of the two choices to be compared. Moreover, given the inherent ordering in the choice of voluntary labour hour, we relax the restrictions of the MNL model by using an Ordered Generalised Extreme Value (OGEV) model (Small 1987), which allows for the error terms of different choices to be correlated. In particular, the strength of the correlation between any two choices is determined by the closeness of the two choices in the ordering. We consider a standard OGEV model that allows the adjacent outcomes only to be correlated. The correlation of the disturbances of any adjacent choices is inversely related to the parameter  $\rho$  (Small 1987). For the standard OGEV model, the probability that individual  $i$  chooses alternative  $j$  is given by:

$$P_{ij} = \frac{\xi_{ij} \left( (\xi_{i,j-1} + \xi_{ij})^{\rho-1} + (\xi_{ij} + \xi_{i,j+1})^{\rho-1} \right)}{\sum_{r=1}^{J+1} (\xi_{i,r-1} + \xi_{ir})^{\rho}}, \quad (3)$$



where,

$$\xi_{ij} = \exp\left(\frac{x_i' \beta_j}{\rho}\right), \quad (i = 1, \dots, N; \text{ and } j = 1, \dots, J), \quad (4)$$

with  $\xi_{i0} = \xi_{i,J+1} = 0$  and  $0 \leq \rho \leq 1$ .

When  $\rho = 1$ , adjacent categories of the dependent variable are independent and the OGEV model collapses to the MNL model. Alternatively, if  $\rho$  is significantly different from one, correlation across neighbouring categories exists and the OGEV model is preferred to the MNL model.

Estimating the RUM model is conditional on labour market outcomes ( $W$  and  $h$ ) that are assumed to be determined prior to the choice of the level of volunteering. If the unobserved characteristics in an individual's volunteering decision are correlated with the unobserved effects in their wage rate or choice of work hours, then coefficients in the RUM model will suffer from endogenous variable bias. From the results of a Hausman test, it was concluded that while there is no evidence that work hours is endogenous, the null hypothesis that wage rate is exogenous was rejected. The latter is consistent with the investment model of volunteering (refer to appendix A for details of the Hausman test).

To account for the endogeneity of the wage rate, we use a two-step maximum likelihood approach. In the first step we estimate a Heckman (1976) wage model and use the predicted wages together with observed hours of work to estimate household income.<sup>3</sup> In the second step we incorporate estimated household income, along with other demographic and work related variables, into an OGEV model of volunteering.

The standard errors of the marginal effects of the volunteering probabilities are obtained via the Delta method using the corrected variance-covariance matrix for the OGEV coefficients. Although the two-step estimator provides consistent estimates for the OGEV coefficients, the covariance matrix for the OGEV coefficients must be adjusted to also take into account the uncertainty in the parameters used to generate household income. The method used to correct the variance-covariance matrix is based on the approach developed by Murphy and Topel (1985) (see appendix B).

#### 4. Data and description of variables

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<sup>3</sup> The Heckman model included a wide range of work related variables including occupation, industry, education, employment history, type of tenure, union membership; as well as a range of demographic variables. Results are available from the authors upon request.

The data used for this study were from wave 1 and 2 (2001 and 2002) of the Household, Income and Labour Dynamics (HILDA) survey (HILDA 2004)<sup>4</sup>. HILDA is Australia's first large-scale household panel survey and is based on similar surveys conducted in Germany and the UK (the German Socio-Economic Panel and the British Household Panel Survey respectively).

For the initial survey in 2001, 11 693 households were selected at random from 488 census collection districts across Australia (between 200 and 250 households were selected from each district). Of the 11 693 eligible households, 66 per cent of households participated, which compares favourably with other panel surveys (Wooden *et al.* 2002). In total, 13 969 of the 15 127 eligible people (over the age of 15) from the selected households were interviewed. In the following year, around 90 per cent of the 13 969 respondents from wave 1 also participated in wave 2.

Of all of the survey respondents in wave 1 and wave 2 (2001 and 2002), 22 per cent indicated that they had participated in volunteering, defined as freely giving time to the community in the past year. This rate compares favourably with the rate of volunteering reported in 1995 by the Australian Bureau of Statistics' (ABS) (1996) (19 per cent).

Respondents to the HILDA survey who had volunteered in the past year were asked the number of hours per week that they gave on average over the year. For the purposes of this study, volunteers were grouped into three broad categories according to time they reported volunteering:

1. low commitment, 0.1–2 hours per week;
2. medium commitment, 2.1–6 hours per week; and
3. high commitment, greater than 6 hours per week.

The choice of these categories is based mainly on the distribution of reported time spent volunteering (Figure 1), which resembles a J-distribution. Overall, low levels of volunteering are set at 2 or fewer hours per week because they make up the highest frequency groups. The border between medium and high levels of volunteering is set at 6 hours to provide enough density in the tail to allow for maximum likelihood estimation and also because it has been used in the past to identify highly committed volunteers (Lyons and Hocking 2000).<sup>5</sup> Under

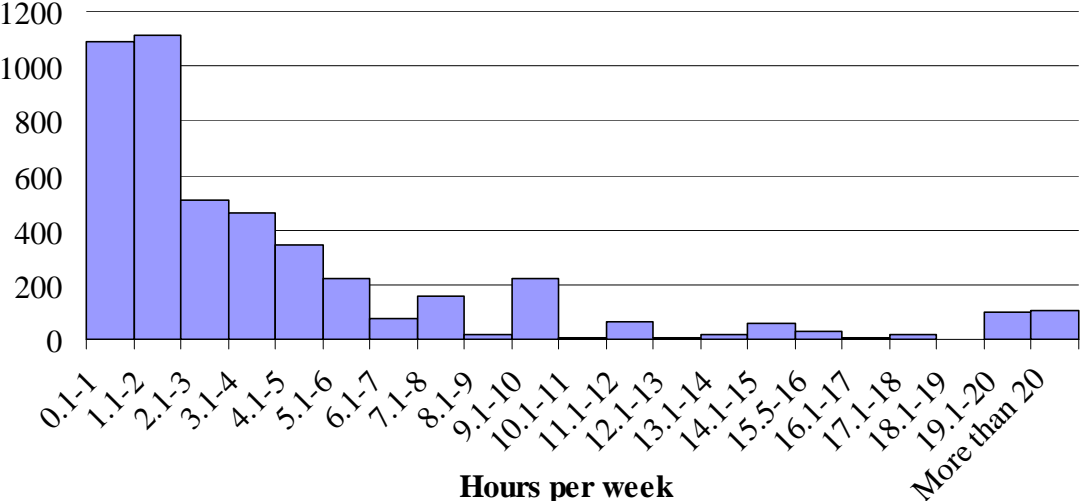
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<sup>4</sup> These were the only waves available at the time of writing.

<sup>5</sup> An OGEV model for 4 categories of volunteering (medium level was split in two) was also estimated without changing the nature of the results. Results are presented for 3 categories for ease of interpretation.

these categories, 11 per cent of people were grouped as low-commitment volunteers, 7 per cent were medium-commitment and 4 per cent high-commitment.

**Figure 1: Histogram of hours volunteered per week on average for volunteers in Australia**



Source: HILDA 2004, wave 1 and wave 2.

Besides the large sample size and information on hours volunteered, the main advantage of using the HILDA database is that it contains detailed workplace information. In particular, a number of groups that are in, or are about to be in, workplace transition could be identified. These include people who want to gain employment in the short-run — students, the marginally attached and unemployed — and those who are looking to change jobs or are at risk of losing their job (self-reported low job security). Other workplace control variables are occupation type and hours available for volunteering outside work hours (see appendix C for a description of all explanatory variables).

As well as workplace variables, a number of socio-demographic variables are controlled for and reflect differences in peoples’ preferences for volunteering and/or the demand for their voluntary services. For example, by including a variable on whether people live in a capital city or not, we can control for differences in preferences that are associated with the size of the community of residence.

Although demand for voluntary labour is not explicitly modelled; age, education, occupation, nationality and whether a person has dependent children represent characteristics that may proxy this. Freeman (1997a) has shown that being asked to volunteer is an important determinant in participating in voluntary activities.

## 5. Results

**Table 2: OGEV marginal effects and standard errors for voluntary labour supply**

	<b>Total</b>		<b>Low</b>		<b>Medium</b>		<b>High</b>	
<b>Socio-demographic</b>								
Constant	-2.373	0.488**	-0.818	0.312**	-1.121	0.282**	-0.434	0.154**
Female	0.020	0.007**	0.012	0.004**	0.010	0.004**	-0.002	0.003
Married/Defacto	0.004	0.006	0.009	0.004**	-0.001	0.004	-0.003	0.003
Dependent child	0.074	0.007**	0.053	0.005**	0.023	0.005**	-0.002	0.003
Home owner	0.041	0.008**	0.032	0.006**	0.010	0.004**	-0.001	0.003
Born in Australia	0.052	0.007**	0.028	0.005**	0.012	0.004**	0.013	0.003**
Religiosity	0.013	0.006**	0.004	0.004	0.005	0.004*	0.003	0.003*
Capital city	-0.048	0.006**	-0.027	0.005**	-0.014	0.004**	-0.007	0.003**
Age	1.168	0.252**	0.359	0.153**	0.529	0.132**	0.280	0.077**
Age squared	-0.139	0.034**	-0.041	0.021**	-0.063	0.018**	-0.034	0.010**
HH Income	0.020	0.003**	0.013	0.002**	0.006	0.002**	0.000	0.001
Finished school	-	-	-	-	-	-	-	-
Didn't finish school	-0.044	0.011**	-0.027	0.008**	-0.018	0.007**	0.001	0.005
Higher Education	0.020	0.010**	0.009	0.007*	0.001	0.006	0.010	0.005**
<b>Workplace</b>								
Hours available	-0.547	0.130**	-0.212	0.082**	-0.179	0.082**	-0.156	0.037**
Hours avail. squared	0.085	0.017**	0.033	0.010**	0.030	0.010**	0.023	0.005**
Not in labour force	-	-	-	-	-	-	-	-
Marginally attached	0.018	0.012*	0.005	0.009	0.003	0.007	0.011	0.005**
Unemployed	0.047	0.017**	-0.002	0.012	0.024	0.009**	0.025	0.006**
Studying secondary	0.114	0.030**	0.077	0.020**	0.048	0.020**	-0.011	0.016
Studying H.E.	0.067	0.018**	0.029	0.011**	0.023	0.010**	0.015	0.007**
Employed	0.061	0.014**	0.026	0.009**	0.023	0.008**	0.012	0.006**
White collar	0.031	0.009**	0.019	0.006**	0.009	0.006*	0.003	0.004
Reported job security	-0.004	0.001**	0.000	0.001	-0.002	0.001**	-0.002	0.001**
Reported job hunting	0.024	0.011**	0.014	0.007**	0.001	0.007	0.009	0.005**
Rho	0.392	0.105**	-	-	-	-	-	-

\*Significant at 10 per cent. \*\*Significant at 5 per cent.

The coefficients for the model in equations (1)-(4) are estimated using the two-step maximum likelihood estimator described earlier. As our interest lies in the choice of participation and levels of volunteering, we do not present the results for the Heckman wage model, except noting that all results for the two equations are consistent with expectations. Marginal effects for the probabilities of choosing each of the three levels of volunteering and the those for the overall probability of participating in volunteering are presented in Table 2 together with the

estimated coefficient for  $\rho$ . Given that the estimated  $\rho$  is significantly different from 1, it can be concluded that the data is ordered and the OGEV model is more appropriate than the MNL in this setting.

Overall, it is estimated that an individual with average characteristics has a 19 per cent chance of volunteering, with a 9 per cent chance of committing to low level volunteering, a 7 per cent chance of committing to medium level volunteering and a 3 per cent chance of committing to high level volunteering. This compares favourably to the observed shares across all observations of 22 per cent, 11 per cent, 7 per cent and 4 per cent, respectively.

The marginal effects in Table 2 are estimated for an individual with average characteristics and represent the change in the probability of volunteering (for low, medium, high and in total) relative to the probability of not volunteering for a one unit change in each variable. For participation (total), the marginal effects of all variables are significant at 5 per cent, except for being marginally attached to the workforce (significant at 10 per cent) and being in a marriage or a defacto relationship (insignificant).

#### *Marginal effects of workplace variables*

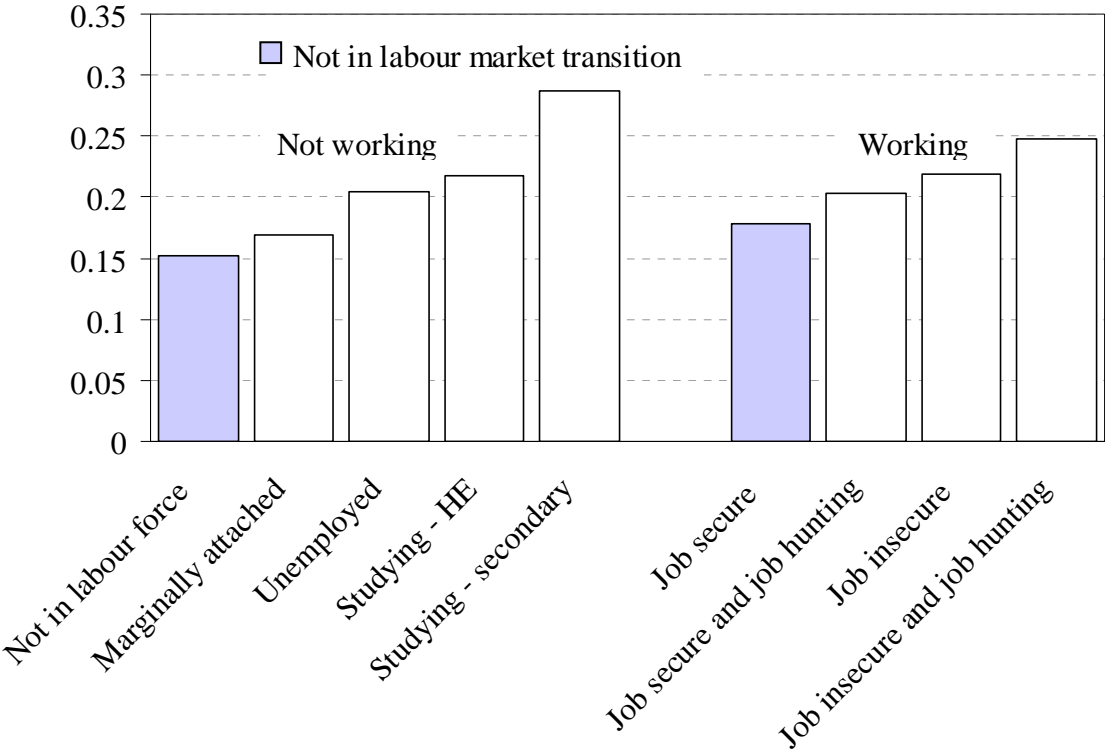
For a person with otherwise average characteristics, the predicted rate of participation in volunteering is estimated to be higher if they are in labour market transition than in they are not (Figure 2). This result is consistent with theory that people volunteer for workplace benefits, in particular, for improvements in short-term labour market mobility.

For groups not currently working, the jobless who would like to work and those who are about to join the workforce are more likely to volunteer than those who are not in the labour force (mostly retirees and stay-at-home mothers). Not only are the jobless who want to work more likely to volunteer, but they are also more likely to be highly committed volunteers (Table 2), possibly because they benefit more from training opportunities that are positively related with the commitment of time.<sup>6</sup>

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<sup>6</sup> Faced with a limited budget for training, not-for-profit organisations may give priority to highly committed volunteers who are more likely to perform complex tasks.

**Figure 2: Predicted probabilities for volunteering for an individual with average characteristics**



For students, volunteering may provide a number of advantages over casual part-time work. In general, students perform jobs in segments of the services sector in which they have no ambition of working in the future. Compared to volunteering, these jobs may offer fewer training opportunities, have fewer networking opportunities and may not be viewed as highly by potential employers.

For groups who are currently working (Figure 2), those who are totally dissatisfied with their job security and those who are job hunting are more likely to volunteer than those who are in secure employment and not job hunting. As well, those dissatisfied with their job security are more likely to be highly committed volunteers, possibly because they use volunteering to make-up a short-fall in employer-sponsored training (Table 2). Workers with low job security are known to receive less formal training than those with secure tenure (Arulampalam and Booth 1998, Wooden 1996 and Baker and Wooden 1992).

For people who work, the longer their working hours, the less time they have for available and the lower their estimated rate of volunteering. This result is consistent with the findings of Brown and Lankford (1992) and Carlin (2001). However, we estimate that for an average individual, the rate of decline in participation is greater if they move from part-time to standard

full-time work (40 hours per week) than if they move from standard hours to long hours (more than 50 hours). A possible explanation for this is that people who work long hours are highly motivated volunteers and are less likely to stop volunteering due to work pressures.

Although the results above demonstrated a positive correlation between being in transition and volunteering, results suggest that possible improvements in workplace mobility depend on an individual's occupation. Many jobs performed by volunteers, such as counselling, aged-care, health, education and administration are comparable to white-collar jobs in the formal sector (especially in the public sector). Hence the benefits from new skills, information and contacts developed by white-collar workers through volunteering may be more readily realised in the job market.

### ***Marginal effects of socio-demographic variables***

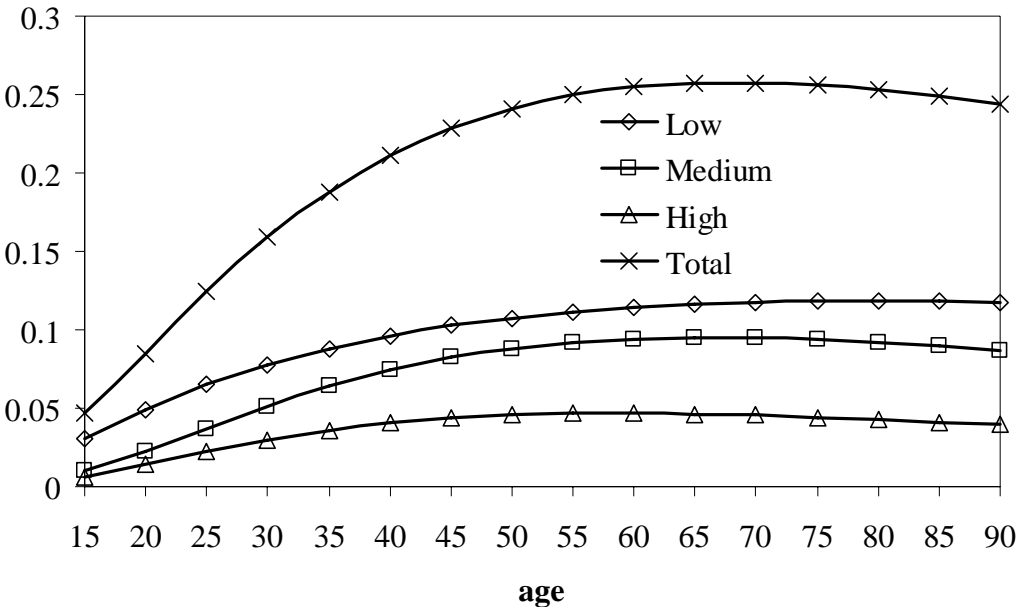
Marginal effects of the socio-demographic variables are broadly consistent with the literature. The presence of dependent children, living outside capital cities, being a female and the importance of religion have significant positive effects on participation in volunteering. A person with otherwise average characteristics is 5.2 percentage points more likely to volunteer if they were born in Australia than if they were born overseas, which may be because of language and cultural barriers.

As found in previous studies, education has a positive effect on volunteering after controlling for occupation and other factors. People with post-school education are 2 percentage points and 6.4 percentage points respectively, more likely to volunteer than those who only completed school and those who didn't complete school. Those with a post-school qualification are also more likely to be highly committed volunteers. One explanation why educated people volunteer at a higher rate, especially for high commitment positions, is that they are seeking training opportunities. It is well known that highly educated people are more likely to participate in training programs than those without post-school qualifications (see Blundell *et al.* 1999 for a summary of this literature). An alternative explanation is that highly educated people are in higher demand to perform voluntary jobs.

Similar to results produced by Banks and Tanner (1998), the probability that an average person volunteers is 4.1 percentage points higher if they own their own home. All else being equal, homeowners are less transient than people who do not own their own home and hence can enjoy longer-term social and community benefits from volunteering. Community services provided by not-for-profit organisations may also translate into increased property prices,

which benefit the homeowner further. However, a homeowner is not more likely to commit to high levels of volunteering.

**Figure 3: The effect of age on the predicted probability of volunteering for an individual with average characteristics**



As found in previous studies, the estimated effects of age and income on volunteering are inconsistent with the Menchik and Weisbrod (1987) criteria for evidence of the investment model of volunteering. Examining the effects of age first, a significant quadratic relationship is estimated between volunteering and age. Predicted probabilities for volunteering on age for an average individual are presented in Figure 3. Total participation rates of volunteering are estimated to continue rising, albeit at a slowing rate, up until age 70 and then fall only marginally. Despite the estimated growth in participation with age, it is estimated that people move away from moderate and high levels of commitment to low levels of commitment, which may be due to the negative health effects of aging. This result is in contrast to previous studies that estimate participation rates to peak in middle-age with a steep decline there-after. A likely explanation for the discrepancy is that previous studies didn't control for work status.

After controlling for potential endogeneity, household income is estimated to have a significant positive effect on the rates of volunteering. For an individual with average characteristics, a one percent increase in household income is estimated to increase the probability of volunteering by 0.02 per cent. In other terms, an average individual from a household with a



median household income (\$A53 326) is 1.3 percentage points more likely to volunteer than an average person with household income at the 25<sup>th</sup> percentile (\$A27 500).

## **6. Conclusions**

Unlike previous studies, we find evidence in support of the investment model of volunteering. In particular, we find that people volunteer for short-term improvements in labour market mobility. After controlling for endogenous workplace variables, results in this paper show a positive correlation between volunteering and being in labour market transition, either into the labour force, into a job or between jobs. In line with previous studies, we find that age and income are not effective proxies for workplace motivations.

These results underline the interdependence of the voluntary sector and the paid labour market. A key implication of our results is that the voluntary sector may help to improve labour market mobility. Greater mobility reduces the psychological effects of long-term unemployment, reduces the cost of welfare and improves the allocative efficiency of the labour market. For the voluntary sector, the positive relationship between being in transition and volunteering means that the supply of volunteers will respond positively to a heightened demand for voluntary services. During periods of economic restructuring, the pool of volunteers will swell with the demand for community services.

From a policy perspective, the results presented in this study suggest that initiatives aimed at encouraging volunteering among people in labour market transition may provide the greatest public benefit. However, the efficacy of such programs depends on the extent to which volunteering improves labour market mobility, a question not addressed in the literature. Without such research, low cost options such as providing information to the unemployed on available positions and training opportunities within voluntary organisations may still be worthwhile.

## **Appendix A: Testing for endogenous regressors**

As discussed above, the supply of voluntary labour in this paper is assumed to be conditional on labour market outcomes, in particular, labour market status, hours worked and wages. The latter two are incorporated into the voluntary labour supply model as hours available (for volunteering) and household income. To test for endogeneity, a Hausman-like approach, similar to that deployed by Carlin (2001) was used (see Berndt 1991 for more details).

To use the Hausman approach, an instrumental variable was derived for each of the suspected endogenous variables. Instrumental variables for hours available for volunteering and employment status (1=working, 0=not working) were derived using predicted values from a sample selection model of labour supply (Heckman 1976), which included controls for the endogeneity of net wages. An instrumental variable for household income was derived using predicted wages from a sample selection wage model and reported average work hours and non-waged income.

**Table A.1: p-values for Hausman-like endogeneity test**

Variable	p-value
Hours available	0.95
Currently employed	0.99
Household income	0.01

For each variable, the null hypothesis of exogeneity was tested by conducting a likelihood-ratio test. Under the unrestricted scenario, the variable of interest and its instrument were unconstrained, while under the restricted scenario, the instrument is restricted to zero. The p-values for the tests are presented in Table A.1.

Using results from the test, the null hypothesis that hours available for volunteering and employment status are exogenous could not be rejected. In contrast, the hypothesis that household income is exogenous was rejected with a 1 per cent level of significance.

## **Appendix B: Two-step maximum likelihood estimation**

Two-step maximum likelihood is conducted where one equation is embedded in another. In this paper, an equation for each individual's annual household income is embedded in the voluntary labour supply equation.

To calculate household income, each individual ( $i$ ) is categorised as a member of a household ( $h_i$ ). Household income ( $HHinc_h$ ) is estimated as:

$$HHinc_h = \sum_{h_i=1}^{H_i} \hat{w}_{h_i} L_{h_i} + \mu_h, \quad (h_i = 1, \dots, H_i), (h = 1, \dots, H) \quad (5)$$

where  $\hat{w}_{h_i}$  is the predicted household member wage from a Heckman sample selection model,  $L_{h_i}$  is reported hours of work and  $\mu_h$  is non-waged household income. Assuming household member wage density functions are independent, the household income density function can be represented as a linear combination of household members wage density functions:

$$\ln f_1(HHinc_h / \hat{\theta}_1, x_{h_i}, L_{h_i}) = \sum_{h_i=1}^{H_i} L_{h_i} \ln f(\hat{w}_{h_i} / x_{h_i}, \hat{\theta}_1) \quad (6)$$

where  $\hat{\theta}_1$  and  $x_{h_i}$  are the estimated coefficients and explanatory variables from the Heckman model for each household member.

Because estimated household income is an explanatory variable in the OGEV model of voluntary labour supply, the OGEV density function can be written as:

$$\ln f_2(y_i / \theta_2, x_{2i}, HHinc_i) = \sum_{j=1}^J y_{ij} \ln P_{ij}(\theta_2, x_{2i}, HHinc_i(\hat{\theta}_1, x_{h_i}, L_{h_i})) \quad (7)$$

where  $\theta_2$  is the vector of coefficients for estimation in the OGEV model,  $HHinc_i = HHinc_h$  for all  $i$  members of household  $h$  and  $y_{ij}$  is an indicator variable that takes on the value 1 if individual  $i$  selects alternative  $j$ , otherwise it is zero.

In equation 9,  $\hat{\theta}_1$  is being used to estimate  $\theta_2$ , so some correction is needed to the covariance matrix for  $\hat{\theta}_2$  to account for the added source of variation from  $\hat{\theta}_1$ . The Murphy and Topel (1985) corrected asymptotic covariance matrix for  $\theta_2$  is:

$$V_2^* = \frac{1}{n} [V_2 + V_2 [CV_1 C' - RV_1 C' - CV_1 R'] V_2] \quad (8)$$

where  $V_1$  and  $V_2$  are uncorrected covariance matrices of  $\theta_1$  and  $\theta_2$  (derived using BHHH estimation):

$$\hat{V}_1 = \left[ \frac{1}{n} \sum_{i=1}^n \left( \frac{\partial \ln f_{1i}}{\partial \theta_1} \right) \left( \frac{\partial \ln f_{1i}}{\partial \theta_1} \right)' \right]^{-1} \quad \text{and} \quad \hat{V}_2 = \left[ \frac{1}{n} \sum_{i=1}^n \left( \frac{\partial \ln f_{2i}}{\partial \theta_2} \right) \left( \frac{\partial \ln f_{2i}}{\partial \theta_2} \right)' \right]^{-1} \quad (9)$$

and  $\mathbf{R}$  and  $\mathbf{V}$  are the sums of individual observations on the cross products of the derivatives:

$$\hat{\mathbf{C}} = \frac{1}{n} \sum_{i=1}^n \left( \frac{\partial \ln f_{2i}}{\partial \theta_2} \right) \left( \frac{\partial \ln f_{2i}}{\partial \theta_1} \right) \quad (10)$$

$$\hat{\mathbf{R}} = \frac{1}{n} \sum_{i=1}^n \left( \frac{\partial \ln f_{2i}}{\partial \theta_2} \right) \left( \frac{\partial \ln f_{1i}}{\partial \theta_1} \right) \quad (15)$$

Both the covariance and cross-product matrices are derived using numerical differentiation.

## Appendix C: Description of explanatory variables

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### Socio-demographic

Female	1 if the respondent is female, 0 otherwise
Married/Defacto	1 if the respondent married or has a defacto, 0 otherwise
Dependent child	1 if the respondent has a dependent child aged 15 or less, 0 otherwise
Home owner	1 if the respondent owns their place of residence, 0 otherwise
Born in Australia	1 if the respondent born in Australia, 0 otherwise
Religiosity	Importance of religion on a scale of 0–10, where 0 is least important, 0 otherwise
Capital city	1 if the respondent lives in a capital city, 0 otherwise
Age	Natural log of age at last birthday in years
Age squared	Natural log of age at last birthday in years squared
HH Income	Natural log of imputed annual household income
Finished school	0 if the respondent's highest qualification is to graduate from secondary school
Didn't finish school	1 if the respondent didn't graduate from secondary school, 0 otherwise
Higher Education	1 if the respondent has a certificate, diploma or degree, 0 otherwise

### Workplace

Hours available	Natural log of hours available for volunteering per week <sup>a</sup>
Hours avail. squared	Natural log of hours available for volunteering per week squared
Not in labour force	0 if not working and does not want to work or wants to work, but is not looking <i>and</i> can't start in the reference period
Marginally attached	1 if not working and wants to work, but either can't start work <i>or</i> is not looking for work in reference period, 0 otherwise
Unemployed	1 if not employed and is currently looking for work and can start work in the reference period, 0 otherwise
Studying secondary	1 if currently studying at secondary school and is either not working or is working part-time, 0 otherwise
Studying H.E.	1 if currently undertaking a post-secondary course and is either not working or working part-time, 0 otherwise
Employed	1 if employed and not studying or employed full-time and studying part-time, 0 otherwise
White collar	1 if employed as a manager, professional or clerk, 0 otherwise
Reported jobsecurity	Satisfaction with job security 1–10, where 1 is totally dissatisfied
Reported job hunting	1 if employed and looked for a new job in past month, 0 otherwise

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<sup>a</sup>168 hours less an assumed sleep time of 56 hours, less time spent commuting to work and less average time spent at work. For those not employed, a value of 112 is assigned.

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