

The impact of providing informal care on self reported well-being

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Abstract

This paper estimates the impact of informal caregiving on self reported well-being. It uses a sample of 12,155 respondents of the first wave of the Household, Income and Labour Dynamics in Australia (HILDA). HILDA is a national representative sample of Australians collected in 2001. 10.5 percent of the sample provided on average 12.5 hours of informal care per week. The econometric estimates show that providing informal care has a clear negative effect on well-being. This effect is mainly because of providing care for someone of 18 years and older within the same household. Providing informal care to somebody outside their own household does not involve well-being losses.

Keywords: informal care, well-being, happiness, life satisfaction, quality of life

JEL classification: I10

Introduction

Informal care is the name given to the care provided by family and friends, who are unpaid other than possibly receiving some form of carers' benefit. While informal care has always been part of the care provided to the sick and disabled, it is becoming increasingly significant with the growing burden of chronic disease, the pressures to reduce acute hospital stays, and the emphasis on dying at home or at least remaining there as long as possible. Informal caregivers are responsible for the major amount of care provided, mostly at home, for people with chronic diseases, the elderly and the terminally ill (Norton, 2000).

Until recently, informal care was largely ignored by economists on the basis that if the informal carers provided care, the benefits to them must outweigh the costs. This meant that informal carers were seen as a free resource, and providing care at home as cost saving rather than redistribution of the costs. However, caregiving often involves considerable time (Van den Berg and Spauwen, 2006), and often limits the extent to which caregivers can take paid employment (Ettner, 1996; Carmichael and Charles, 1998 and 2003). The existing health economic literature on informal care has mainly focused on the valuing this time input (Smith and Wright, 1994; Posnett and Jan, 1996). Most of the discussion has been around the appropriate method of valuation; see McDaid (2001) and Van den Berg et al. (2004) for overviews. Traditionally, economists suggested to value informal care with the opportunity or proxy good (also called replacement cost) methods (Van den Berg et al., 2006). The first uses the foregone earnings of the caregivers as the value of care, and it ignores thus the (dis)utility that a caregiver might derive from providing the care. In the proxy good method the value of informal care is the price of a market substitute, e.g. professional home care. It assumes that informal care and professional care are perfect substitutes. This assumption is not realistic, however. The informal caregiver decided to provide informal care because he or the care recipient considered professional care too expensive or of too low quality or because professional care is not available, e.g. when the patient is on a waiting list for professional care or out of a feeling of obligation. Both methods do neither reflect either the preferences of the informal caregiver nor those of the care recipient. For this reason, Van den Berg et al. (2005a; 2005b and 2005c) suggest using contingent valuation and choice experiments as more

adequate to value informal care. This because these methods are preference based and because they give a total valuation of informal care.

Beyond the economics literature, the impact of care giving on the carer has been well documented. Caregivers have reported negative effects on their physical and mental health, finances, social life and leisure, as well as labour market participation (Pearlin et al., 1990; Kramer, 1997; Hughes et al., 1999; Schulz and Beach, 1999; Dunn and Strain, 2001; Savage and Bailey, 2004; Hirst, 2005; and Yamazaki et al., 2005)). This has led to another stream of literature which tries to incorporate the so-called quality of life impacts of informal caregiving. Mohide et al. (1988) introduced the term caregiver quality of life in the literature by applying the time trade-off technique to caregiving. In fact the literature that followed simply applies health-related quality of life measures to informal caregiving, see for references Dixon et al. (2006). Unfortunately, conceptual clarity about caregiver quality of life is lacking. It is for instance not clear what aspects of caregiving should be included (Kramer, 1997). Moreover, the obvious interdependency in utility functions between caregivers and their care recipients is neglected (Van den Berg et al, 2005b).

A third body of literature focuses on the substitution between informal care and formal care utilization (Van Houtven and Norton, 2004).

While caregiving can impose a considerable burden on caregivers, caregivers also report satisfaction with giving to a significant other, e.g. Jacobi et al. (2003), Andrén and Elmståhl (2005) and Zapart et al. (2006). This implies that the impact of caregiving is complex, involving both positive and negative effects. This suggests that a more sophisticated approach to understanding the caregiving role is required, and that the impact on overall well-being in addition to specific aspects should be assessed. There is only one paper which has taken this approach (Van den Berg and Ferrer-i-Carbonell).¹ The main aim of this paper was the monetary valuation of informal care by means of the well-being valuation method. The paper showed that on sample

¹ Two other papers apply self reported well-being measures to informal caregiving but they do not intend to measure caregiver's well-being according to the self reported well-being tradition but other concepts: process utility and caregiver quality of life (Brouwer et al., 2005; and Brouwer et al., 2006).

average providing more informal decreased self reported well-being. Moreover, the effect was stronger for family caregivers compared with non-family caregivers.

This paper uses Household Income and Labour Dynamics in Australia (HILDA) data to investigate the impact of caregiving on self reported well-being in an Australian population sample. We take a similar approach to Van den Berg and Ferrer-i-Carbonell; however in this analysis we use a large representative sample of both caregivers and non-caregivers. The earlier Van den Berg and Ferrer-i-Carbonell paper was restricted to caregivers only, and the sample was recruited through caregivers support agencies. Therefore, this study adds to the literature by using Australian data from a representative population sample, and comparing both caregivers and non-caregivers. The HILDA data also collects health status information and this allows us to compare the effect of caregiving on well-being with the effect of a deterioration in physical health on well-being.

Subjective well-being research measures respondents' own internal judgement of well-being as opposed to social indicator's research that measure peoples objective circumstances in a given cultural or geographic unit (Diener and Suh, 1997). It can measure people's judgement about their own life as a whole or to specific domains of life, for instance, their job, house of family; see for an overview Myers and Diener (1995). Methodological research in this area focussed mainly on the validity of the survey questions; see for example Lyubomirsky and Lepper (1999). Self-reported well-being measures have been used in economics to understand and explore a large range of topics. They include: unemployment, inflation, health, job situation, and income (DiTella et al., 2001; Ferrer-i-Carbonell and Van Praag, 2002; Clark and Oswald, 1994; Easterlin, 2001; Long, 2005; Ferrer-i-Carbonell, 2005). Economists take answer to well-being questions as a proxy to measure experienced utility; see, e.g., Frey and Stutzer (2002) and Luttmer, 2005). In a few occasions, the economics literature goes one step ahead. It uses the general finding in cross sectional data that household income increases self reported well-being to calculate a monetary compensation for cost-benefit analysis. This approach is called the well-being valuation method and is applied to for instance airport noise (Van Praag and Baarsma, 2005); chronic conditions (Ferrer-i-Carbonell and Van Praag, 2002) and informal care (Van den Berg and Ferrer-i-Carbonell).

The structure of the paper is as follows. First, we describe the data (survey questions and sample) and econometric estimation methods. In the next section we present descriptive statistics. Estimation results are given in the following section. Finally, we discuss the conclusions.

Method

We use the first wave of HILDA. The data were collected in 2001. HILDA is a nationally representative sample of 7682 households and 13,969 individuals (response rate = 92.3%). Household interviews were held with at least one adult household member and individual interviews with all household members of 15 years and older. See Watson and Wooden (2002) for a very detailed description of the survey. Due to item non-response 12,155 individuals are used in the analysis. 1,278 of them (10.5%) indicated that they would provide informal care during a typical week.

Survey questions

Two major pieces of necessary information are well-being and informal care. The survey asked respondents to indicate their own well-being, see figure 1 for the exact phrasing of the question.

Figure 1: Life satisfaction question

All things considered, how satisfied are you with your life?

Again, pick a number between 0 and 10 to indicate how satisfied you are.

Totally											Totally
dissatisfied											satisfied
0	1	2	3	4	5	6	7	8	9	10	

Answer to these (or similar) questions are usually referred to as an individual subjective well-being.² This life satisfaction question was asked in an in person

² The subjective well-being literature uses as interchangeable the terms well-being, happiness, and satisfaction with life Blanchflower and Oswald (2004); Frey and Stutzer (1999); and DiTella et al. (2001). The term used is often chosen independently of the exact formulation used in the questionnaire

interview. The self completion questionnaire included a question on time use. One of the seven answer categories was on informal caregiving. Figure 2 gives the exact wording.

Figure 2: Time use question

How many hours would you spend on each of the following activities in a typical week?
(Remember, there are only 168 hours in a week, and this list does not include all of the things you do in a week, such as: sleeping, eating, paid employment or leisure activities.)

IMPORTANT: *If you do not do one of the following activities in a typical week, write in "0" for that activity.*

	Hours per week
Caring for a disabled spouse or disabled adult relative, or caring for elderly parents or parents-in-law	<input type="text"/>

Unfortunately, the survey did not ask about the relationship between the caregiver and the care recipient. Other research claims that this is an important variable as providing care for your partner might be much different from for instance providing care for a parent. In order to get a more precise estimate of the caregiving impact, we constructed a variable to distinguish between caregivers and care recipients living together in the same households and not living together.

The data set includes a wide range of other variables that enable us to control for other factors which also affect wellbeing. Other items include: net household income, gender, children, education, marital status, occupation, age and health as measured by the SF-36. Here we use only the physical dimension of the SF-36 because it measures functional status. Other aspects of health, particularly those dimensions measuring mental health, are likely to be very close to self-assessed well-being (Wilson and Cleary). Including all the dimensions of the SF-36 independently would introduce multicollinearity.

itself. Here we will use the term well-being, although we will refer to the question as the life

The additional range of variables also enables us to compare the estimated impact of caregiving on overall wellbeing with other life events. In particular, we can compare the caregiving role with a given deterioration in physical health.

Econometric methods

Responses to the subjective well-being question are categorical, with a range of 0-10. In the subjective well-being literature, these questions have been regressed with linear as well as with latent variable econometric techniques (Ferrer-i-Carbonell and Frijters, 2004). The linear techniques assume that the answers to subjective well-being questions are cardinal, while the latent ones only assume ordinality. Ferrer-i-Carbonell and Frijters (2004) show that assuming cardinality or ordinality generates similar results in terms of the trade-offs between variables. We will present estimation results of both Ordinary Least Squares (OLS) regression and Ordered Probit (OP).

The model to be econometrically estimated by OLS is:

$$W = \alpha + \beta_1 \ln(C) + \beta_2 X' + \varepsilon \quad (1)$$

where W is self reported well-being measured with the life satisfaction question (answer categories 0-10). C is number of hours of informal care provided per typical week, X is a vector of control variables, ε represents the unobservable error term and α is a constant. Household income and hours of informal care provided are taken as logarithms. The logarithmic relationship between informal care and well-being captures the usual assumption of diminishing marginal (dis)utility. In case of OP the dependent variable = W^* . W^* is the unobserved latent variable. Another difference is that α are the intercept terms of the eleven discrete categories (0-10). See Greene (1993) for an extensive discussion of the models.

In order to capture the possible effect of the sharing the same household of the caregiver and their care recipient, we also estimate:

$$W = \gamma + \delta_1 \ln(C) + \delta_2 X' + \delta_3 SR + \varepsilon \quad (2)$$

satisfaction question, because the survey asked for life satisfaction.

where SR are two dummy variables that equal 1 if the caregiver and the care recipient share or not sharing the same household respectively. They are compared with the sub-sample of non-caregivers.

Results

Table 1 gives the frequencies on the life satisfaction scale for the total sample and by caregiving status. Note that zero represents the least life satisfaction.

Table 1: Life satisfaction in percentage

Answer	All	Caregivers	Non-caregivers
0	0.2	0.3	0.2
1	0.2	0.1	0.2
2	0.5	0.6	0.5
3	0.8	1.5	0.8
4	1.3	1.9	1.3
5	5.1	6.1	5.0
6	5.8	5.9	5.8
7	17.2	15.9	17.4
8	30.2	29.5	30.2
9	19.4	19.1	19.4
10	19.3	19.3	19.3
N	12,155	1,278	10,877

The distributions for both groups are comparable. It is worth noting that less than 10.5 percent of the caregivers and less than 10 percent of the non-caregivers rate their life satisfaction lower than 6.

Characteristics of the sample are shown in table 2. We tested for statistically significant differences between caregivers and non-caregivers with a t-test or a chi-square test in case of respectively continuous and categorical variables.

Table 2: Sample characteristics (standard deviations between brackets)

	All	Caregivers	Non-caregivers	Significance
Informal care (hours per week)	1.31 (8.42)	12.50 (23.13)	0.00	n.a.
Net household income (per year in dollar)	65073.48 (55284.33)	66817.10 (60856.25)	64868.62 (54591.73)	0.233
Male (percentage)	0.47 (0.50)	0.42 (0.49)	0.48 (0.50)	0.000
<i>Children</i>				0.000
Yes: at home (percentage)	0.38 (0.49)	0.51 (0.50)	0.36 (0.48)	
Yes: not at home (percentage)	0.30 (0.46)	0.29 (0.45)	0.30 (0.46)	
No (percentage)	0.32 (0.47)	0.20 (0.40)	0.33 (0.47)	
Education (years of school)	10.56 (1.56)	10.49 (1.55)	10.57 (1.56)	0.080
<i>Marital status</i>				0.000
Living together/being married (percentage)	0.65 (0.48)	0.73 (0.44)	0.63 (0.48)	
Divorced/widowed (percentage)	0.13 (0.33)	0.12 (0.33)	0.13 (0.33)	
Never married (percentage)	0.23 (0.42)	0.14 (0.35)	0.24 (0.43)	
<i>Occupation</i>				0.000
Paid work full time (percentage)	0.43 (0.49)	0.37 (0.48)	0.43 (0.50)	
Paid work part time (percentage)	0.19 (0.39)	0.19 (0.40)	0.19 (0.39)	
Unemployed (percentage)	0.04 (0.19)	0.04 (0.19)	0.04 (0.19)	
Retired (percentage)	0.16 (0.37)	0.19 (0.39)	0.16 (0.37)	
Housework (percentage)	0.10 (0.31)	0.15 (0.36)	0.10 (0.30)	
Else (percentage)	0.08 (0.27)	0.06 (0.24)	0.08 (0.27)	
Age (years)	42.97 (17.33)	47.67 (14.36)	42.42 (17.56)	0.000
SF-36 physical dimension (100 is good and 0 is bad)	82.98 (23.35)	80.46 (23.10)	83.28 (23.36)	0.000
N	12,155	1,278	10,877	

The sample includes 591 respondents who are still at school: 2.0 percent of the caregivers and 5.1 percent of the non-caregivers. Table 2 shows the mean years of schooling completed; 46.9 percent of the sample completed year 10 or less, while 53.1 percent completed year 11 or 12.

Informal caregivers were more likely to be female, currently married or partnered, and report their occupation as home duties. They were more likely to have children living at home than non-caregivers and be in poorer physical health. A small proportion, 13.7 percent, is receiving a carer pension or a carer allowance.

Most informal caregivers (63.1%) were caring for someone outside the household, while 36.9 percent lived with the care recipient.

Econometric results

Table 3 presents the regression results, first for the set of independent variables excluding whether the caregiver lived in the same household, (equations 1) and then including living arrangements (equation 2).

Table 3: Estimation results OLS-regression equations (1) and (2); dependent variable life satisfaction (n=12,155).

Independent variables	Equation 1		Equation 2	
	Coef.	t-value	Coef.	t-value
Informal care (hours per week)	-0.052	-2.420	-0.009	-0.200
Net household income (per year in dollar)	0.068	5.630	0.067	5.590
Male (percentage)	-0.127	-4.080	-0.128	-4.110
Children (ref. = no children)				
Yes: at home (percentage)	-0.076	-1.410	-0.074	-1.360
Yes: not at home (percentage)	-0.202	-4.200	-0.204	-4.230
Education (years of school)	-0.047	-4.460	-0.047	-4.530
Marital status (ref. = never married)				
Living together/being married (percentage)	0.528	10.300	0.529	10.320
Divorced/widowed (percentage)	-0.210	-3.230	-0.219	-3.370
Occupation (ref. = housework)				
Paid work full time (percentage)	-0.169	-3.100	-0.168	-3.070
Paid work part time (percentage)	-0.077	-1.370	-0.076	-1.350
Unemployed (percentage)	-0.755	-8.470	-0.753	-8.450
Retired (percentage)	-0.004	-0.050	0.000	0.000
Else	-0.215	-2.910	-0.211	-2.870

(percentage)				
Age (years)	-0.068	-12.840	-0.068	-12.910
Age2	0.001	15.570	0.001	15.640
SF-36 physical dimension (100 is good and 0 is bad)	0.013	18.760	0.013	18.680
Relation caregiver care recipient (ref. non-caregivers)				
Care recipient lives in same household			-0.290	-2.290
Care recipient lives elsewhere			0.055	0.620
Intercept	7.675	39.020	7.698	39.050
Adjusted R ²	0.09		0.10	

The estimation results of equation (1) are not in general unexpected. Higher income, higher education, being married, and being younger are associated with higher life satisfaction. Less expected is the effect of being female, occupied with home duties, and not having children. There is an independent effect of providing informal care on self reported well-being, in the expected direction, that is greater the number of hours of informal care the more overall wellbeing is reduced.

Equation 2 includes a dummy for whether or not the caregiver lives with the recipient. Hours of care are not statistically significant but providing care to someone in the same household is statistically significant and negative. Caregivers in the same household provide on average 14.6 hours more care per week than caregivers caring for someone outside the household: 21.7 versus 7.1 hours respectively (p-value = 0.000). So, providing informal care to a care recipient in the same household captures the full negative well-being effect.

We also included interactions in the model between hours of informal care and gender and between providing care for someone in the same household and age. Both interaction terms were not statistically significant. We also included the carer pension/allowance variables in the model, but they were also not statistically significant. Moreover, including these variables did not have an impact on the other estimation results in table 3.

Table 4 presents the same results as table 3 but now estimated with OP. Again, first for the set of independent variables excluding whether the caregiver lived in the same household, (equations 1) and then including living arrangements (equation 2).

Table 4: Estimation results OP-regression equations (1) and (2); dependent variable life satisfaction (n=12,155).

Independent variables	Equation 1		Equation 2	
	Coef.	t-value	Coef.	t-value
Informal care (hours per week)	-0.029	-2.040	0.004	0.140
Net household income (per year in dollar)	0.042	5.260	0.042	5.240
Male (percentage)	-0.083	-4.000	-0.084	-4.030
Children (ref. = no children)				
Yes: at home (percentage)	-0.021	-0.580	-0.019	-0.530
Yes: not at home (percentage)	-0.129	-4.020	-0.130	-4.050
Education (years of school)	-0.047	-6.590	-0.047	-6.630
Marital status (ref. = never married)				
Living together/being married (percentage)	0.338	9.920	0.339	9.930
Divorced/widowed (percentage)	-0.147	-3.400	-0.153	-3.540
Occupation (ref. = housework)				
Paid work full time (percentage)	-0.168	-4.580	-0.167	-4.540
Paid work part time (percentage)	-0.084	-2.230	-0.083	-2.200
Unemployed (percentage)	-0.480	-8.090	-0.478	-8.070
Retired (percentage)	-0.016	-0.340	-0.014	-0.300
Else (percentage)	-0.141	-2.860	-0.138	-2.820
Age (years)	-0.045	-12.610	-0.046	-12.650
Age2	0.001	15.250	0.001	15.300
SF-36 physical dimension (100 is good and 0 is bad)	0.008	17.520	0.008	17.460
Relation caregiver care recipient (ref. non-caregivers)				
Care recipient lives in same household			-0.195	-2.310
Care recipient lives elsewhere			0.015	0.240
Intercept 1	-3.027		-3.039	
Intercept 2	-2.810		-2.822	
Intercept 3	-2.545		-2.557	
Intercept 4	-2.281		-2.293	
Intercept 5	-2.030		-2.042	
Intercept 6	-1.524		-1.535	
Intercept 7	-1.190		-1.201	
Intercept 8	-0.563		-0.573	
Intercept 9	0.260		0.250	

Intercept 10	0.869	0.859
Pseudo R ²	0.03	0.03

The estimation results as presented in table 4 are remarkably similar to those in table 3, both in terms of statistical significance and in signs of the coefficients. There is only one difference between the OLS and OP estimates. Occupation having a part time paid job compared with home duties is statistically significant with a negative sign in table 4, while it was not in table 3.

Not assuming cardinality with OP does not influence the signs and statistical significance of the main variables of interest.

Table 5 gives the predicted self-reported life satisfaction score for a few characteristic types of caregivers compared with the life satisfaction of non-caregivers.

Table 5: Predicted self reported well-being.

	35 years, children at home and full time paid job		65 years, children not at home and retired	
	Female	Male	Female	Male
Caregiver in good health providing 27 hours informal care per week for someone inside the household	7.5	7.4	8.1	8.0
Non-caregiver in good health	8.1	7.9	8.7	8.5
Caregiver in bad health providing 27 hours informal care per week for someone inside the household	6.5	6.4	7.1	7.0
Non-caregiver in bad health	7.0	6.9	7.6	7.5

The predictions in the table have a very similar pattern. Informal caregivers providing care to someone inside the household indicate lower life satisfaction (0.5 point on the 0-10 scale) compared with similar non-caregivers. Being in good health makes involves a higher life satisfaction of 1.0 point compared with being in bad health. The crucial question is: what does the 0.5 point caregiving impact versus 1.0 point health impact on self reported life satisfaction imply?

Conclusion and discussion

This paper estimated the effect of providing informal care on self reported well-being by means of a life satisfaction question. We used a net sample of 12,155 respondents of the first wave of HILDA. HILDA contained over 1200 informal caregivers and provides a comprehensive range of data. Carers comprise 10.5% of the sample, and provide 12.5 hours of care per week on average. This indicates the substantial contribution made by informal carers. The most recent ABS survey data estimates that in 2003 12.9% of Australians were providing informal care to someone with a disability, chronic illness or ageing. The average care provided was 9 hours per week. The HILDA sample seems less likely to contain those providing low levels of care. This is even more striking if we consider that HILDA measures time by means of aggregated questions. It just asks how much informal care is provided during a typical week. It has been argued that these kind of aggregated questions involve an underestimation of time use (Van den Berg and Spauwen, 2006). Therefore, the presented average hours of informal care might be even lower than the real care time. In both surveys, ABS and HILDA, caregivers are more likely to be female as is common in the literature.

Although carers may be making a substantial contribution to the care provided, overall their life satisfaction is very similar to non-carers. Sixty-eight per cent of carers and 69% of non-carers rate their life satisfaction as 8 and above. Our econometric estimates show that living in the same household as the care recipient has a statistically significant effect on self reported well-being, and when this is included the effect of hours of care provided is no longer statistically significant. Providing informal care to somebody outside their own household does not involve self reported well-being losses.

This is consistent with carers living in the same household being primary caregivers, which involves more direct hours of care and more responsibility for ensuring care is provided. Caregivers in the same household provide on average 14.6 hours more care per week than caregivers caring for someone outside the household: 21.7 versus 7.1 hours respectively. In addition, living in the same household can require more availability for the care recipient, and more impact on aspects such as social life and getting a full night's sleep, factors which carers report as stressful.

Unfortunately, HILDA does not contain information on the relationship between care giver and recipient. Most caregivers are partners, with parents and children also providing a large number of carers. Other investigations of informal caregiving have shown that the difficulties associated with caregiving often differ according to the relationship.

The life satisfaction scale, though widely used, is perhaps difficult to interpret. How much importance should be given to a move of 1 point in the 0-10 range? There are two ways we can extend the study to investigate how these results should be interpreted. The well-being valuation method uses the change in self reported well-being associated with the change in income to estimate a monetary value equivalent. This can be applied to the change in life satisfaction associated with providing informal care. We can also use a similar approach to convert life satisfaction into QALY equivalents. As higher levels of physical health are associated with higher self reported well-being, we can compare caregiving with poorer physical health. Physical health has been measured using the SF-36, and this can be expressed as QALY weights, using the scores developed by Brazier et al. (2002). While there are many conceptual and theoretical problems with using these sorts of equivalence approaches, this would at least provide some indication of how to interpret these results.

Caregivers report lower physical health than non-caregivers. This could be a result of caregiving, particularly when care recipients require a great deal of physical assistance. It is equally plausible that it is independent of the caregiving role and could reflect ageing and deteriorating health of two partners. HILDA is a panel data set. The panel nature of the survey allows us to consider changes in caregiving and in life satisfaction over time. Unfortunately, we only used the first wave because of attrition. We lost approximately one third of the caregivers after the first wave.

This study does, in spite of its limitations, provide useful new data on informal caregiving in Australia. In particular, it compares caregivers and non-caregivers across a range of dimensions. It should prompt further consideration of how to assess the impact of informal caregiving.

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