The dynamics of informal care provision in the Australian household panel survey: Previous work characteristics and future care provision

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Abstract: This study contributes to the rare literature of informal care dynamics by examining the dynamics of informal care provision of working age Australians. We focus on the impact of previous work characteristics (including work security and flexibility) on subsequent care provision decisions. We distinguish between care provided to people who cohabit or are resident elsewhere and between individuals providing care on a primary or secondary caring role. Our dynamic framework of informal care provision accounts for state-dependence, unobserved heterogeneity and initial conditions. For both males and females, we find the existence of positive state-dependence in all care states in short and medium-term. Furthermore, the inertia in care provision appears to be stronger for more intensive care. We also find previous employment statuses have some significant deterrent impact on current care provision decisions. The employment impacts, however, differ by type of previous work, type of current care, and gender. We additionally find that workers with higher job security perceptions are less likely to provide some type of care in subsequent years. Workers' perceptions about work flexibility or overall work satisfaction are found to have no impact on their subsequent decisions to provide care of any type.

Keywords: informal care, labour supply, dynamic multinomial choice models, panel data.

JEL classification: C23, J14.

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1. Introduction

Informal care has profound economic, social and psychological implications for sick, disabled, or elderly people in the developed world. The OECD estimates that on average, around 70 to 90 % of individuals who provide care are family members whose care provision involves little or no remuneration (Colombo et al., 2011). Recent socio-economic trends such as declining fertility rates, increases in the labour force participation rates of women and changes in child migration patterns may cause the provision of informal care to decline. In light of population aging and the decreasing trend in the supply of informal care, governments may intervene by (re)designing public policies regarding formal and informal care provision. The success of such policies requires an understanding of the determinants as well as the dynamics of informal care provision.

Although a rich literature exists on the determinants of informal care provision, most of the literature abstracts from the inter-temporal dimensions of care. As far as we are aware, only two studies so far (Mentzakis et al., 2009; Michaud et al., 2010) have examined the dynamics of informal care provision. We contribute to this small literature, estimating dynamic models of informal care provision by working age Australians. Our rich dataset permits us to make several contributions to this literature.

First, we are able to distinguish informal care according to whether carers and care recipients co-habit ("resident" and "non-resident" caregiving) and via an indicator of care intensity, i.e. whether the caregiver identifies himself or herself as the main caregiver or otherwise. We classify the latter as "secondary caregivers". Our care classifications are thus more detailed than those in the previous studies which use only the first care classification (Michaud et al., 2010) or only examine caring for residential spouses or children (Mentzakis et al., 2009).

Second, we are also able to distinguish between four types of labour market outcome: full-time, part-time, self-employment and economic inactivity. Previous U.K. studies (Mentzakis et al., 2009; Michaud et al., 2010) used a binary indicator of whether an individual was in the labour force or not. Our ability to disaggregate employment outcomes provides additional insight into the dynamics of caregiving and labor market activities, because it allows us to study the impact of work characteristics such as work security, benefit and flexibility on the subsequent choices to provide care. This is important because previous work (Booth et al., 2002; Henz, 2006; Origo and Pagani, 2009) suggests that work characteristics typically differ with the type of employment (i.e. full-time, part-time and self-employment – more details in

Section 3). These work characteristics may thus also associate with different propensities to provide care.

In addition to the above classification of employment status, this paper also uses various indicators that represent job security and flexibility perceptions to assess the impact of previous work characteristics on current decisions to provide care. This paper therefore contributes to the rare literature on the impact of work characteristics on the probability of providing care as the first to establish the effects of previous work security and flexibility characteristics on the subsequent decisions to provide care. Previous studies typically abstract from the inter-temporal dimensions of care. The disadvantage of doing so, however, is that one is not effectively able to deal with the selection into work or care.

Using the panel data from latest seven waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey and a dynamic multinomial framework which accounts for state-dependence, unobserved heterogeneity and initial conditions, we find strong evidence of positive state-dependence in all care provision statuses. We also find that, for both males and females, the persistence of care provision exists in the short- and medium-term and appears to be stronger for more intensive care. In addition, we find that the previous employment statuses have some deterrent impact on current care decisions. The impact varies, though, by type of previous work, type of current care, and gender. We also find that workers with higher job security perceptions are less likely to be care providers in subsequent years. Yet we also find that workers' perceptions about work flexibility or overall work satisfaction do not influence their subsequent care provision decisions.

The remainder of this paper is structured as follows. Section 2 provides an overview of related literature. Section 3 introduces the data and some descriptive analyses. The empirical models are introduced in Section 4. In Section 5 we present the results. Section 6 provides some robustness checks for our results and Section 7 concludes the paper.

2. Literature review

There are three different strands of literature relevant to this study. The first literature deals with the decision to provide care for others. Theoretically, the motivations for informal caregiving can be classified into a taxonomy of altruism (Becker, 1974), exchange (Bernheim et al., 1985; Cox, 1987; Cox and Rank, 1992) and demonstration (Cox and Stark, 1996) motives or some mixture of these three. Although empirical studies do not directly test for

these motivations[1] they do shed some light on the factors that drive informal caregiving decisions. For example, individuals with higher incomes are less likely to become caregivers (Carmichael et al., 2010; Couch et al., 1999; Mentzakis et al., 2009) due to the higher opportunity cost of time. The question of whether or not previous work experience *per se* affects the probability of providing care is equivocal: some empirical studies suggest that previous work experience lowers the probability of care provision (Carmichael et al., 2010; Mentzakis et al., 2009; Michaud et al., 2010) while others (Berecki-Gisolf et al., 2008; Stern, 1995) do not.

A number of studies in long-term care literature have focused on the dynamics of long-term care arrangements.[2] For instance, Borsch-Supan et al. (1992) study the dynamics of living arrangements of the U.S. elderly. Similarly, Dostie and Léger (2005) examine the transitions of living arrangements of sick, elderly individuals in the U.S. More recently, Gardner and Gilleskie (2012) estimate a dynamic model of long-term care arrangements, assets/gift behaviour, health insurance benefits, and health transitions for a sample of the U.S. elderly. Lately, Goeree et al. (2012) contribute to the literature by estimating dynamic models of elder-care arrangements using U.S. data. So far, all studies in the U.S. appear to focus on long-term care arrangements of elderly which are more closely related to the demand side of long-term care. To our knowledge, only two studies have focused on the "supply side" of care and both of them use data from the British Household Panel Survey (BHPS) (Mentzakis et al., 2009; Michaud et al., 2010). Mentzakis et al. (2009) employ a random-effects dynamic model to analyse the dynamics of care provision by males and females in the U.K. They focus on caring for residential spouses and children and use a two-part model to distinguish care participation and levels of provision. Similarly, using a framework that deals with unobserved heterogeneity and state-dependence, Michaud et al. (2010) examine the dynamics in informal care provision and employment outcomes for females in the U.K.

The second and rather rich literature deals with the impact of informal caregiving on caregivers' labour force participation (LFP). Most studies have found evidence of a negative correlation between informal care and LFP. However, the magnitude of the negative correlation varies across studies, ranging from an almost negligible effect (Meng, 2013; Van Houtven et al., 2013) to a 42 percentage point reduction (Heitmueller, 2007) in the LFP rate.

[1] Two U.S. studies by Brown (2006) and Norton et al. (2013) are exceptions. They both document that children who provide care to their elderly parents are more likely to receive financial transfer from the parents than children who do not provide care.

[2] See Sovinsky and Stern (2012), for example, for a recent review on the literature on informal care dynamics.

The existing literature has also uncovered significant heterogeneity of the effect of informal care on LFP: specifically, the impact appears to be stronger for intensive caregivers (Carmichael and Charles, 2003; Casado-Marín et al., 2011; Lilly et al., 2010; Nguyen and Connelly, 2013) or residential caregivers (Carmichael and Charles, 2003; Casado-Marín et al., 2011; Ettner, 1996; Heitmueller, 2007; Nguyen and Connelly, 2013).

Studies in the second literature use a variety of techniques to address the expected endogeneity of caregiving, including panel data methods (Casado-Marín et al., 2011; Heitmueller, 2007; King and Pickard, 2013; Leigh, 2010; Meng, 2013; Michaud et al., 2010; Moscarola, 2010), instrumental variable methods (Bolin et al., 2008; Ciani, 2012; Ettner, 1995; Heitmueller, 2007; Stern, 1995) or a combination of these two (Ciani, 2012; Nguyen and Connelly, 2013; Van Houtven et al., 2013).

The third line of literature examines the impact of workplace flexibility on care provision and work retention decisions. Despite of the policy interest in promoting flexible working, little is known about the extent to which work place flexibility affects care provision decisions. Studies so far have focused on samples of employees and provided mixed results. For example, Pavalko and Henderson (2006) document that, among employed U.S. females who started providing care, those in jobs which offer more flexible working hours or more generous job benefits (as measured by unpaid family leave or paid sick or vacation days) were more likely to remain employed and maintained work hours over a two-year period. Similarly, Bryan (2012) uses cross-sectional British employee data to show that workers in more flexible jobs are more likely to care. By contrast, using British cross-sectional data which contain retrospective information about informal care and employment, Henz (2006) shows that starting caregiving is not affected by work flexibility.[3]

While not closely related to this literature, some recent studies suggest that work flexibility may have some impact on the employees' future work and care decisions. Zuba and Schneider (2012), for instance, use cross-sectional employee data from Europe to document that employees who provide informal care exhibit higher levels of perceived work–family conflict than workers who do not provide informal care. Similarly, using a cross-sectional sample of Austrian employees, Schneider et al. (2012) show that female employees with more flexible work arrangements are less likely to report that they intend to change jobs. If

[3] Unfortunately, since there is no direct information about job flexibility in the data Henz (2006) has to use aggregate measures which were derived using socio-economic class. As Henz (2006) notes, these derived measures of work flexibility may make it more difficult to detect effects.

work and informal care are substitutable and job change intentions are good proxies for actual job changes, the finding by Schneider et al. (2012) may be interpreted as showing that job flexibility facilitates future care provision.

In summary, previous work shows that flexible work arrangements may or may not facilitate employees' decisions to provide care. However, it is difficult to draw a causal interpretation from the correlation between work characteristics and care provision decisions from these studies because they use cross-sectional econometric methods and thus cannot control for individual heterogeneity; they also do not address the problems associated with the strong possibility of selection into work or care. Our dynamic framework, which accounts for state-dependence, unobserved heterogeneity and initial conditions, thus provides the first empirical evidence on the causal impact of previous work characteristics (including job security and flexibility) on subsequent decisions to provide care.

3. Data and descriptive analyses

3.1. Data

This study utilises the Household Income and Labour Dynamics in Australia (HILDA) survey, a nationally representative household-based panel survey which began in 2001 (Watson and Wooden, 2010). There are approximately 7,000 households and 13,000 individuals who respond in each wave. HILDA contains rich information on household formation, income and work. We use seven latest waves (5 to 11) since they have detailed information on informal care.[4]

3.2. Sample

For this study, we restrict the sample to individuals aged between 24 – 64, excluding individuals at school or full-time study. We thus obtain a balanced sample which consists of 5,427 unique individuals. From these individuals, we exclude a further 1,581 individuals on the basis they entail missing information on important variables.[5] Thus, we have a balanced sample of 3,846 unique individuals, 54 % (2,058) of whom are female. We recognize the

[4] We do not use wave 1 to 4 since no direct information about informal care is available in these waves.

[5] Most of missing information is due to variables describing demand for care (See Section 4 for details). Information on these variables is derived from a mail-back self-completed questionnaire. About 90 per cent of respondents returned this questionnaire. For these variables we lose 1,568 unique observations mostly because respondents did not return a self-completed questionnaire. We have checked for any significant difference in the pattern of missing data and found no significant difference by caregiving status and gender.

possible differences in caregiving patterns between males and females by analysing males and females separately.

3.3. Definition of unpaid caregiving intensity

In our data, informal caregivers are individuals who provide unpaid assistance with daily activities to a member or non-member of the household due to their long-term health condition, old age or disability. We first follow Michaud et al. (2010) to identify care provision by residency status between the caregiver and care recipient, classifying caregivers as either "resident" caregivers or "non-resident" caregivers.[6] We then capture caregiving intensity by classifying whether caregivers are primary caregivers or not.[7] We classify caregivers who answer "yes" to the question "Are you the main carer of person?" as "main caregivers", while those who answer "no" we classify as "secondary caregivers". Previous studies using data from the U.K. (Carmichael and Charles, 2003), Canada (Lilly et al., 2010) and Australia (Nguyen and Connelly, 2013) have found this measure of care intensity robust and reliable. Our data (see Appendix Table 1) also show that, on average, as compared to secondary caregivers, main caregivers appear to spend more weekly hours on care and more likely to receive carer benefits (either in a form of a Carer Payment or Carer Allowance).

In our sample, 8.1 % of respondents are defined as informal carers. In addition, care is equally provided to residents (4.1 %) and non-residents (4.0 %). By gender, females are more likely to be caregivers (9.9 %) than males (6.3 %). More than a half (53 %) of caregivers identified themselves as main caregivers, with more females (59 %) than males (43 %) identifying as such. In addition, caregivers are much more likely to indicate that they are main caregivers when they co-habit with the care recipients (74 %) than when they do not co-habit with care recipients (33 %).

[Table 1 about here]

Table 1 also shows that most (89 %) care is provided to immediate family members (partner, parents (own or in-law) or children). In addition, much more care is provided for immediate

[6] There are a few individuals (less than 0.5 % of our sample) reporting providing care for both residents and non-residents at the same time. Our previous work (Nguyen and Connelly, 2013) shows that resident care is more intensive than non-resident care so we assign them as resident caregivers. Similarly, when defining care provision by care intensity we assign them as main caregivers if they indicate that that provide care for either residents or non-residents as main carers. The results however are not sensitive to the exclusion of these individuals from our sample.

[7] Theoretically, care provision can be identified by both residency and intensity. However, in practice, transitions between some care groups (for example, among those identified as secondary resident caregivers in the previous year, none of them switched to provide care for non-residents (either as main or secondary caregivers) in the following year) are not large enough for us to estimate a dynamics model of care provision.

family members in residential (97 %) than non-residential care (81 %). The care provided by residential caregivers appears to be distributed equally between partner, parents and children. By contrast, most of the care provided by non-residential caregivers is provided to parents (77 %).

3.4. Caregiving transition

In Table 2, the rows show previous caregiving states whereas the columns present current caregiving states. Also in Table 2, Panel A shows the transition in care giving statuses defined by residency status while Panel B presents the trajectory of care states distinguished by care intensity. Both Panels show a strong degree of observed inertia among non-carers since about 96 (97) % of female (male) non-caregivers in previous year remained non-carers in current year. We do, however, observe significant transitions among caregivers. In particular, for females, while most of the resident caregivers resumed their caregiving role in subsequent year (65 %), 32 % of them became non-carers, and 2.3 % of them switched to provide care for non-residents. Also, for females, non-resident caregivers appear to be less stable as only about 48 % of them remained in their previous caregiving duties and 50 % became non-carers. The same transition pattern is observed for males. However as compared to female caregivers, male counterparts appear to have a higher degree of movements since we observe a higher proportion of male caregivers (either for residents or non-residents) becoming non-carers in subsequent year.

[Table 2 about here]

When we measure care intensity by main or secondary roles, we also observe the highest level of inertia among non-caregivers, following by main caregivers and secondary caregivers have the lowest. As compared to the resident/non-resident care classification, with care intensity classification we observe qualitatively similar proportions of caregivers becoming non-carers and lower proportions of caregivers resuming their caregiving roles in subsequent year (male secondary caregivers were an exception). The lower proportions of caregivers resuming their caregiving roles in subsequent year are consistent with the observation that more previous caregivers switched between main and secondary caregiving roles in current year. These transitions appear large enough to make inference on caregiving intensity dynamics.

4. Empirical model and econometric method

4.1. Theoretical background of care provision dynamics

There are several theoretical grounds suggesting informal care provision is an intrinsically-dynamic process. Some theoretical work (Byrne et al., 2009; Engers and Stern, 2002; Hiedemann and Stern, 1999; Rainer and Siedler, 2009) in the long-term care literature uses game theory to model the interaction between siblings who make decisions about long-term care for their elderly parents. If the stages of decisions are viewed as sequential, as opposed to simultaneous, these theoretical models imply that decisions to provide care are made dynamically (Fevang et al., 2012; Skira, 2012). As discussed in Sovinsky and Stern (2012), there are several other scenarios where previous care status is taken into account when future care provision decisions are made.[8] For example, the costs associated with changing care arrangements may cause the current caregivers to continue to provide care in the future. In addition, the human capital associated with providing care may cause current caregivers to resume their caregiving roles in the next period because the longer they provide care, the better they become at doing so. Alternatively, individuals who choose to provide care at some point, thus have to leave work or reduce hours worked, may face a reduced probability of receiving jobs offers in the next period due to labour market human capital depreciation (Skira, 2012). Finally, the existence of a "burnout" effect experienced by caregivers who provide care for a long period of time could cause them to exit providing care in the future (Seltzer and Li, 2000). These theoretical grounds suggest that the sign of the state dependence in care provision can be positive or negative, thus leave the actual sign for empirical work.

4.2. Econometric models

Caregiving status is defined by J mutually exclusive states $(J = 3)$. The latent value for care status j of individual i at time t is presented as:

$$C_{ijt}^{*} = X_{it}\beta_{Xj} + \gamma_j C_{ijt-1} + L_{it-1}\beta_{Lj} + \alpha_{ijt} \qquad (1)$$

where X_{it} is a vector containing individual observed characteristics with unknown parameters β_{Xj}. We follow prior literature (Carmichael et al., 2010; Mentzakis et al., 2009; Michaud et al., 2010; Stern, 1995) to use previous labour market states (L_{it-1}) as explanatory variables to limit the endogeneity of labour market status in caregiving equations. As discussed earlier,

[8] Since decisions to care and to work are typically made simultaneously (Nocera and Zweifel, 1997; Skira, 2012) we can borrow some theories from a richer literature on the dynamics of employment to explain the dynamics of care provision (see Aguirregabiria and Mira (2010), for example, for a review).

the inclusion of past care status (C_{ijt-1}) allows past care giving choices to affect current care giving choices, thus, reflects the true dynamic characteristics of care provision (Dostie and Léger, 2005; Gardner and Gilleskie, 2012; Mentzakis et al., 2009; Michaud et al., 2010). Individual-specific time-invariant unobserved heterogeneity such as preferences over caregiving and labour market attachment are captured by α_{ijt}.

As we are estimating dynamic models, we need to deal with the initial conditions problem. The initial conditions problem arises because the caregiving statuses before the observed time period cannot be known and because the state observed in the initial time period ($t = 1$) cannot be assumed to be random. Rather, it is likely that non-random unobservable factors are correlated with the initial caregiving states. To account for the initial conditions problem, we follow Wooldridge (2005) and include among our explanatory variables a vector of $(J - 1)$ binary dummy variables indicating initial caregiving status (C_{i1}) and the average over the sample period of the exogenous time-varying variables ($\bar{Z}_i$).[9] Although Wooldridge (2005) calls for the inclusion of the initial statuses of care provision (the dependent variable), we follow prior literature (Kohn and Liu, 2012; Michaud et al., 2010) to include the initial labour market states. Specifically, we specify the distribution of the unobserved individual effects as:

$$\alpha_{ijt} = \varphi_{0j} + C_{i1}\varphi_1 + L_{i1}\varphi_2 + \bar{Z}_i\varphi_3 + \eta_{ij} \; (i = 1, \dots, N; j = 2, \dots, J) \qquad (2)$$

where η_{ij} is a new unobserved individual effects and is assumed to be multivariate normally distributed and independent of all the explanatory variables and the initial caregiving status. Because this initial caregiving status starts out seven-year time-series, the estimates of φ_1 (φ_2) also indicate the medium-term persistence of caregiving (labour market states). Note that using the Wooldridge method which includes the average of the exogenous time-variant variables, we can also deal with the possible correlation between the exogenous variables and unobserved individual-effects (Chamberlain, 1980; Mundlak, 1978). Using the Wooldridge method thus helps to further limit the endogeneity of previous labour market status in the care dynamics models. Substituting Equation (2) into Equation (1) we get the augmented specification which accounts both for the initial conditions and unobserved heterogeneity.

[9] An alternative to the Wooldridge (2005) approach is the Heckman's reduced form approximation (Heckman, 1981). Heckman's approach is computationally more demanding than the Wooldridge's so we apply the latter. In addition, Arulampalam and Stewart (2009) and Akay (2012) show that the Wooldridge method performs equally well or even better than the Heckman's reduced form approximation method, especially when the duration of the panel is longer than 5 (as is ours).

The observed care giving status is denoted by C_{ijt}. The individual i chooses the care status j at time t if and only if $C_{ijt}^{*} > 0$ (i.e. $C_{ijt} = 1(C_{ijt}^{*} > 0)$). Since we assign caregivers who provide both residential and non-residential care as the residential caregivers, each individual in our sample therefore can choose only one of three mutually exclusive and collectively exhaustive states ($J = 3$): non caregiver, resident caregiver, and non-resident caregiver. We therefore can use the Multinomial Logit (MNL) model to model individual choices to provide informal care. For identification purposes, we set the state $j = 1$ (non-caregiver) as the base group. All other sets of unknown parameters are estimated in comparison with this base group.[10] Our dynamic MNL model with random effects is estimated via a maximum simulated likelihood (MSL) method using 50 Halton draws for each individual (Train, 2003).[11]

The empirical approach employed here thus controls for random intercepts with time-invariant components and initial conditions. We also experiment with two empirical model specifications: Specification I which does not allow for correlation between errors in two care outcome equations and Specification II which does. We apply these two specifications to three alternative models: a baseline model (Model 1) which includes previous labour market statuses as defined above and Model 2 (3) which includes variables explaining the work security and flexibility perceptions (overall work satisfaction perceptions).

4.3. Explanatory variables:

We estimate a reduced form of care provision. In our model, respondents' characteristics that are associated with the decision to provide care include age (and age-square), education, marital status and health status.[12] Furthermore, we use non-labour income and home ownership status to control for any wealth effect on the respondent's care provision decisions. Non-labour income is the sum of the respondent's income from sources other than wages, salaries, business income, private pensions, and includes the other members' income from all sources. This non-labour income is normalized by the square root of household size to adjust for economies of scale in consumption. Home ownership statuses are two dummy variables respectively indicating whether the home that the respondent is living is owned or its

[10] Note that our dynamic Multinomial Logit (MNL) model with random effects does not exhibit the restrictive assumption of Independence from Irrelevant Alternatives (IIA) (Revelt and Train, 1998).
[11] We use mixlogit command in Stata to estimate the model (Haan, 2006). As a robustness check, we increased the number of draws from 50 to 100 which almost did not change the results.
[12] We do not include work experience which is measured in years the respondent has spent at all paid jobs since this variable entails a lot of missing information. See Appendix Table 1 for summary statistics.

mortgage is currently paid off by any member of the household.[13] As the country of origin (immigrant from English speaking background (ESB) countries or non-English speaking background (NESB) countries versus native) may also play some role in explaining care giving decision, we also include two dummy variables indicating immigration statuses in all equations.[14] Household characteristics in the models also include the number of residing members of various age cohorts. We also control for differences in working conditions and formal care across regions by including the regional unemployment rate, regional relative socio-economic advantage index, state dummies and a rural/urban dummy in the caregiving equations. In addition, throughout the empirical analysis, we include a full set of year dummies to control for fluctuations in the formal care or labour markets overtime.

We also include variables that may affect the demand for care such as the health status of potential care recipients (any serious personal injury/illness of a relative or family member) or the death of a family member (spouse/children/relative) or a close friend.[15] These variables represent demand-shifters for care for both residents and non-residents.

As discussed above, we also include a vector of previous labour market statuses in the care dynamics equations. We distinguish four different labour market states: full-time employment, part-time employment, self-employment and economic inactivity (the benchmark group). Previous research has shown that work characteristics typically differ according to the nature of employment (Booth et al., 2002; Henz, 2006; Origo and Pagani, 2009). Our data which contain respondents' various self-reported opinions about their jobs also show that the three types of employment (full-time, part-time and self-employment) do indeed differ in terms of job security, flexibility and benefits. See Appendix Table 2 for details. Appendix Table 3 also shows that full-time employment offers the highest level of job security and the most generous work place entitlements[16] (as measured by all variables

[13] We cannot include total net wealth in our model since information on family wealth such as assets and liabilities are not available at all waves.

[14] We experimented with including indigenous/non-indigenous status in the regression. For males, the estimation of this variable is very imprecise (i.e. large standard errors), suggesting a small number of observations having this characteristic. This variable is not significant in all regressions for females. We therefore drop it from the final regressions.

[15] We aggregate any death of spouse or children and that of a relative in one event since the former is a rare event in our data.

[16] While access to workplace benefits such as special leave for caring for family members or paid maternity leave would have an impact on workers' decision to provide care, we do not include a measure of workplace benefits in our model because all available workplace benefit measures entail a lot of missing information. In our sample, in each wave, about 20 % of respondents who were asked the relevant work place benefit questions responded "Don't know", possibly because they were not aware of these benefits. Since we use a balanced panel sample, if we include these work benefit variables in our model, we have to pair-wise drop observations with

describing the respective work characteristics), following by part-time employment and self-employment. By contrast, self-employment offers the highest level of work flexibility, following by part-time and full-time employment has the lowest. Our classification of labour market status thus captures job security, flexibility and benefits reasonably well.

Work security and flexibility is then captured directly by using indicators of job security and flexibility. Job security, which measures the probability that an individual will keep his or her job, theoretically may affect the decision to provide care in two different (and opposite) ways. It may be that individuals with a lower level of work security would be more likely to provide care because they face a lower opportunity cost in the labour market (Hyslop, 1999; Skira, 2012; Stewart, 2007) (e.g., they may be more likely to be unemployed). Conversely, individuals with lower job security may be more resistant to taking on a caregiving role precisely because they may be at greater risk of losing and of not regaining employment. To our knowledge, the impact of job security on care provision has not been empirically analysed in the extant literature on informal care. Following Bryan (2012) and Henz (2006), we include variables representing workplace flexibility in our regressions. Unlike these previous studies, though, which use concurrent work characteristics and care decisions, we use respondents' responses to questions about the flexibility of their workplaces as indicators of the latent flexibility of the workplace, and measure the effects of these on subsequent care choices.

Specifically, we use respondents' responses to a "job security satisfaction" question to represent work security and responses to a "the flexibility to balance work and non-work commitments satisfaction" question to proxy for work flexibility for three reasons.[17] First, these variables are highly correlated with the other measures of work security and flexibility that are available to us (See Appendix Table 2). Second, questions about "job security satisfaction" and "work and life job satisfaction" were asked for all employed individuals, including self-employed people, so we do not need to impute information for self-employed individuals. Third, these measures entail much less missing information than the alternatives. Finally, in addition to these two measures of work security and flexibility, in separate

missing information in any wave from the sample. Doing so causes a significant loss (>20 % of the original sample) in the sample size.

[17] In particular, respondents were told: "I now have some questions about how satisfied or dissatisfied you are with different aspects of your job. If not currently employed: These questions refer to the most recent job you were working in the last 7 days. I am going to read out a list of different aspects of your job and, using the scale on SHOWCARD E36, I want you to pick a number between 0 and 10 to indicate how satisfied or dissatisfied you are with the following aspects of your job. The more satisfied you are, the higher the number you should pick. The less satisfied you are, the lower the number".

regressions, we also include a measure representing "overall job satisfaction" in our model because this measure is also highly correlated with work security or flexibility measures (see Appendix Table 2).

Unemployed individuals were not asked the foregoing questions. Following the usual practice in the literature dealing with missing information, we use a "dummy variable adjustment" method (Allison, 2001). In particular, we substitute the variable's mean for all missing cases because respondents were unemployed and thus were not asked the relevant question.[18] In addition, we include a dummy variable coded 1 if the original variable is missing and 0 otherwise. This dummy variable is also the variable describing the unemployment status. Thus, estimates of work characteristic variables can be interpreted as the effect of, say, work security perceptions given that the individuals worked last year, whereas the variable "unemployed last year" distinguishes between individuals who did not work last year and had average work security perceptions and individuals who worked last year (also had average work security perceptions).

5. Empirical results

5.1. Resident versus non-resident care

5.1.1. Test results

We first discuss results for the dynamics of care provision when care is defined by residency status between the caregiver and care recipient (Table 3a). The standard deviations (SD) of the individual random coefficients which are reported at the lower part of Table 3a indicate that unobserved heterogeneity is important in all regressions: they are all highly statistically significant. The correlation between errors in the two care outcome equations is also reported at the lower part of Table 3a. It can be seen from Table 3a that the correlation coefficient is negative and statistically significant for males only. This negative correlation suggests that, for males, whose unobserved characteristics which make them more likely to provide non-resident care also make them less likely to provide other care. For males, the inclusion of the

[18] We dropped individuals (about 3 % of the original balanced panel sample) who were employed or self-employed but had missing information on these variables rather than used the "dummy variable adjustment" method because deletion has been found to produce less biased estimates (Allison, 2001). The results almost did not change when we assigned the lowest value (=0) of job security and flexibility index for unemployed individuals.

correlation between errors also improves the fit of the model as measured by the Likelihood Ratio (LR) test for the error covariance matrix.[19]

[Table 3a about here]

We use the Akaike Information Criterion (AIC) (Akaike, 1973) and the Bayesian Information Criterion (BIC) (Schwarz, 1978) to assess the fit for two specifications. Both criteria aim to weight the model fit and the number of parameters (lower values of BIC or AIC are preferred). These model selection criteria, reported at the bottom of Table 3a, favour Specification I for females. By contrast, for males, these model selection criteria are inconclusive with respect to the preferred specification of error correlation: the AIC suggests that Specification II is preferred while BIC, which imposes a greater penalty for model complexity, selects Specification I. Note too that accounting for error correlation does not change the significance of any of the parameter estimates noticeably either for males or females.

5.1.2. Main results

The results in Table 3a show that, for both females and males, providing care to residents rather than providing care to non-residents or providing no care in the previous year increases the probability of providing care for residents in the current year. Similarly, providing care to non-residents rather than providing care to residents or providing no care last year increases the probability of providing care for non-residents this year. These results confirm the existence of significant positive state-dependence in care status for both males and females. Comparing the persistence of resident and non-resident care, we observe that resident care is more persistent than non-resident care, a finding which is consistent with U.K. evidence presented in (Michaud et al., 2010).

The presence of state-dependence in care provision behaviours is also found in medium-term. The estimates of variables describing initial care states (measured in 2005) show that male and female individuals who provided care for residents (non-residents) at the beginning of the study period are more likely to provide care for residents (non-residents) in the current year. For females, we do not observe switches between caregiving for residents and non-residents during the study period. For males, though, we do observe switches between caring for residents and non-residents. Specifically, males who started the study period as resident (non-

[19] The (joint) significance of the error correlation can be tested using an LR test. The test statistic, which is chi-squared distributed with k degrees of freedom (k= number of error correlation = 1 in our case) is given by 2*(Log Likelihood of Specification II – Log Likelihood of Specification I).

resident) caregivers are more likely to become non-resident (resident) caregivers in the current year. Our finding of the evidence of switching between caring for residents and non-residents for Australian males is in line with evidence presented in Michaud et al. (2010) for U.K. females. Our results however suggest that while inertia in care provision does exist for both females and males, it appears to be longer lasting for males. Again, in our study, resident care appears to be more persistent than non-resident care in medium-term for both males and females.

We next turn to the impact of previous employment states on current care decisions. Results from Specification I in Table 3a show that, for females, only working on a full-time basis last year statistically significantly reduces their probability of providing care (either for residents or non-residents) this year. Working on other bases (i.e. part-time or self-employment) in the previous year however does not have any impact on their decisions to provide care either for residents or non-residents in the current year. Our findings of heterogeneous impacts of previous work status on current care provision decisions suggest that the deterrent impact of previous work status--as identified by working or not on current care decisions that has been found in the literature (Carmichael et al., 2010; Mentzakis et al., 2009; Michaud et al., 2010)--may be concentrated among full-time employed females (only).[20] By contrast, for males (results from Specification I and II in Table 3a), working on any basis (i.e. full-time, part-time or self-employment) last year strongly statistically significantly decreases the probability of providing care to residents this year. Males' previous work states however do not have any statistically significant impact on their decisions to provide care to non-residents in the current year. Similarly, for both males and females, their initial work status (which is measured in 2005 in our data) appears to have statistically insignificant impact on current decisions to provide care. Males who worked part-time in 2005 are the exception: they are less likely (at the 5 % level) to provide care for non-residents in the current year.

5.1.3. Results from alternative models with work characteristics

Above we find heterogeneous impacts of previous employment statuses on current care provision decisions. As discussed earlier, these heterogeneous impacts may reflect the different work characteristics associated with different types of employment. In this section,

[20] We experimented with defining previous work status by one dummy variable (i.e. working or not) as used in the prior studies (Carmichael et al., 2010; Mentzakis et al., 2009; Michaud et al., 2010). Results from this experiment show that, for females, working last year only marginally (at a 10 per cent statistical significance level) statistically decreases their probability of providing care for residents this year. In addition, also for females, working last year does not have any statistically significant impact on their probability of providing care for non-residents this year.

we directly examine which previous work characteristics are driving working respondents to provide informal care in subsequent years. We discuss the results from two alternative models with direct measures of work characteristics. Results from Model 2 which includes indicators representing work security and flexibility perceptions and Model 3 which controls for overall work satisfaction perceptions are reported in Table 3b and 3c, respectively. The test statistics and coefficient estimates in Model 2 and 3 are remarkably similar to those presented previously for Model 1. The only noticeable differences are that, for both males and females, estimates of the variable explaining the "unemployed" status become statistically insignificant in all specifications and models. The insignificant estimates for this variable suggest that there is no difference between the previously employed and unemployed individuals when choosing to provide care either for residents or non-residents in the subsequent years. Estimates for the "unemployed" variable for males in Model 3 are the exception: males who were unemployed last year are marginally more likely (at the 10 per cent level) to provide care for residents in the current year than their employed counterparts. As discussed above, it is possible that the effects of the three types of employment (i.e. full-time, part-time and self-employment) differ but that their combined impact is to cancel out.

Controlling for previous work status, we find that, for previously employed males and females, work security, flexibility and overall work satisfaction perceptions have no statistically significant impact on their subsequent decisions to provide care (either for residents or non-residents). Estimates for an indicator of job security perceptions (which were measured at the beginning of the study period) are, however, negative and statistically significant at the 5 per cent level in the non-resident care equation for males. These estimates suggest that among males working in the initial year, those who perceived a lower level of job security are more likely to provide care for non-residents in the current year.

[Table 3b and 3c about here]

5.1.4. Other results

We next discuss other factors that may affect the optimal choice over caregiving (Appendix Table 4). Most of the estimates are as expected. In particular, migrant background plays a statistically significant role in explaining caregiving decisions of females only. Specifically, female immigrants from ESB countries are less likely to provide care for either residents or non-residents than female Australian born individuals. We do not, however, find any significant difference in the probability of providing care either to residents or non-residents

between females who were born in Australia and those migrated to Australia from NESB countries. This finding is consistent with the fact that NESB female immigrants typically have a lower labour market attachment and thus are more likely to provide care than ESB female immigrants. Without further information regarding how cultural or traditional diversity affects care provision, the higher incidence of caregiving among Australian born individuals is likely to be linked with their closer physical contact with their relatives or friends.

We also find the probability of being the resident caregiver decreases with higher educational attainment (bachelor or higher). While the signs of these coefficients are consistent with the observation that people with higher education may tend to face higher opportunity costs of providing care (Norton, 2000), the results are statistically significant for males only. Appendix Table 4 also shows that, as compared to females living in a rented home, those living in an outright-owned home are more likely to provide care to residents, a finding which suggests that a more stable housing as measured by outright home ownership could facilitate care provision for residents.

Characteristics of co-habiting household members are important factors that are correlated with the respondent's care provision decisions. The probability of providing care as a resident caregiver, for instance, significantly increases for males and females who live together with older family members. As expected, caregivers who live with older household members are statistically significantly less likely to provide care to non-residents since they have to provide care to residents in need. This estimated impact is, however, statistically significant only for males.

We also observe that indicators of the health status of potential care recipients significantly affect the respondents' care provision decisions. For both males and females, any recent serious injury or illness of a family member statistically significantly increases the probability of providing care for either residents or non-residents. By contrast, the death of a relative statistically significantly reduces the probability of providing care for non-residents only. The death of a close friend however does not have any statistically significant impact on the probability of providing any type of care.

5.2. Main versus secondary caregivers

5.2.1. Test results

We next discuss results from the dynamic models of the intensity of care provision. The main results are reported in Table 4a. The lower panel in Table 4a shows that the correlation coefficients are positive and highly statistically significant for males and females. These positive error correlations suggest that unobservables that increase an individual's probability of providing care as the main caregiver also affect his or her probability of supplying care as a secondary caregiver, in the same direction. The significance of the estimates of error correlations also suggests a higher level of inertia of care intensity as defined by main or secondary caregiving roles if the correlation between errors is ignored. This correlation of the errors also changes the statistical significance of some estimates for males. For example, the parameter estimate on the "main carer last year" variable in the secondary care regression is statistically significant (at the 5 per cent level) in Specification I, which does not account for error correlation, to statistically insignificant in Specification II, which does account for the correlation of the error terms. Similarly, the estimate for the "secondary care last year" variable in the main care equation changes from being highly significant (at the 1 per cent level) to marginally significant (at a 10 per cent level) in the regressions that control for error correlation.

[Table 4a about here]

The highly statistically significant estimates of error correlation also help to explain why, in most cases, the AIC and BIC support Specification II. An exception is observed for males (in Model 1) where the BIC marginally favours Specification I.

5.2.2. Main results

Results from the regressions with an error correlation structure (Specification II – Table 4a) suggest a lower level of inter-transition between care intensity roles for males than for females. Specifically, for females, providing care as main (secondary) caregivers last year statistically significantly increases the probability of providing care as secondary (main) caregivers this year. By contrast, for males, providing care as main (secondary) caregivers has no statistically significant impact on the probability of supplying care as secondary (main) caregivers. This is, however, the only apparent gender difference in the estimates of past care status on current caregiving status that we observe. For other estimates, we observe a similar pattern of care inertia for both males and females. Specifically, males and females

providing care as main or secondary caregivers last year are statistically significantly more likely to resume those roles in the current year. Similarly, individuals who provided care (either as main or secondary caregivers) at the beginning of the study period (i.e. in 2005) are more likely to provide care either as main or secondary caregivers in the current year.

Turning to the impact of previous employment status on current caregiving decisions, we also observe heterogeneous impacts by gender. For females, only those working on a full-time basis in the previous year are less likely to provide care either as main or secondary caregivers in the current year. By contrast, for males, working on any basis (full-time, part-time or self-employment) last year statistically significantly reduces their probability of providing care as main caregivers this year. However, males' previous working states do not statistically significantly affect their decisions to provide care as secondary caregivers in the current year. Males who worked part-time last year are exceptions since they are more likely to provide care as secondary caregivers this year, probably as a result of an interaction between various work security, flexibility and benefit characteristics that we will discuss in Sub-section 5.2.3. Additionally, only working on a part-time or self-employment basis in the initial year (i.e. 2005) statistically significantly reduces males' chance of assuming a secondary caregiver role in the current year.

In summary, the results from two alternative classifications of care provision both confirm the presence of significant state-dependence in informal care provision for both males and females. This finding is consistent with the observation that caregivers are more likely to identify themselves as the main caregiver when they provide care for residents (see Table 1). The pattern of state-dependence from two different classifications of care provision, however, appears to be more similar for males than for females. Disaggregation by care intensity (i.e. main or secondary caregiving roles) further reveals that females providing care as main (secondary) caregivers last year are more likely to provide care as secondary (main) caregivers this year. Recall that classifying care by residency status, we did not find the evidence that females switched from providing care to residents to providing care to non-residents and vice versa. These differences in the estimates between the two care definitions for females may reflect the differences in the structure of care recipients to whom males and females provide care. It is also possible that, as previously found in this literature (Lilly et al., 2010; Nguyen and Connelly, 2013), males and females have different measures of care intensity. While the results here confirm the previous evidence of inertia in care provision, they may also suggest a certain level of "flexibility", especially for females, in care provision.

Specifically, caregivers who find it hard to exit their caregiving duties may be able to adjust the intensity of care by switching between the main and secondary caregiving roles.

5.2.3. Results from alternative models with work characteristics

Results from models with indicators of work security and flexibility (overall job satisfaction) perceptions are reported in Table 4b (4c). The parameter estimates for most variables are almost the same as those found in Model 1, as are the test statistics.

[Table 4b and 4c about here]

Controlling for working status, we find that work flexibility perceptions have no impact on workers' subsequent care decisions (See Table 4b). By contrast, for both male and female workers, perceptions about job security do influence their subsequent decisions to provide care. It is interesting to observe that while job security perceptions influence males' and females' subsequent decisions to provide care in the same direction they take longer to have an impact on males' care provision decisions. In particular, among females who worked last year, those who felt their jobs were more secure are less likely to provide care as main caregivers this year. By contrast, only males who worked in 2005 and perceived their jobs more secure are less likely to provide care (either as main or secondary caregivers) in the current year. Our finding of a different impact of job security perceptions by time horizon for males and females is thus consistent with the fact that males typically have stronger labour market attachment than females.

Turning to the impact of overall job satisfaction perceptions on care provision decisions, we also find a medium term impact for male workers. Specifically, results from Table 4c suggest that males who worked in 2005 and reported higher overall job satisfaction are less likely to provide care as main caregivers in current year. This is, however, the only statistically significant impact of job satisfaction perceptions that we observe in Model 3.

5.2.4. Other results

Consistent with the observation that caregivers are more likely to identify themselves as main caregivers when they co-reside with care recipients, estimates for other variables (reported in Appendix Table 5) are almost the same as those found previously when care is distinguished by residency status. One noticeable change is that, for both males and females, the estimated coefficients on variables that describe the number of residing members of various age cohorts become statistically insignificant in both main and secondary care equations. This is reasonable because these variables represent the characteristics of those who live with the

caregivers and they are expected to be more closely related with the demand for care as defined by residency status.

6. Robustness checks

Until now, we have used a sample of individuals with valid information on a list of variables that represent the demand for care to address a concern about the poor quality of other available variables, especially variables that reflect the demand for non-resident care. Doing so however comes at a cost of reducing the sample size significantly. We examine how sensitive the results are to this sample restriction by excluding that list of demand side variables from our regressions to increase the sample size. We instead include a variable containing the number of other household members with a long term health condition, disability or impairment to proxy for demand for care. Regression results from this experiment are almost the same as those reported in Section 5 (and are not presented here, but are available upon request).

So far, we have focused on "unpaid" caregivers. In our data, there are individuals who are not identified as "unpaid" caregivers in the above analyses but reported receiving welfare payments for their care provision, either in a form of a Carer Payment or Carer Allowance (See Appendix Table 1). We next assess the robustness of the results by designating those individuals as caregivers. For these individuals, though, we have no information about care intensity and care location. We assume that those who receive any Carer Payment or Carer Allowance are the main caregivers because these payments are paid to caregivers who provide care to individuals with a severe disability or severe medical condition. As mentioned above, we are unable to determine whether these caregivers provide care to residents or non-residents, and hence only can examine the robustness of the results when care is distinguished by care intensity. The results are very similar to those reported in Section 5.2 (and hence are not presented here, but are available from the authors upon request).

7. Conclusion

We have examined the dynamics of care provision of working age Australians. Our multinominal dynamic models account for state-dependence, unobserved heterogeneity and initial conditions. The results provide strong evidence of positive state-dependence in all care provision states (defined either by residency status or main/secondary role). This is true in both the short- and medium-term, irrespective of gender. In addition, the persistence in care

provision appears to be stronger for more intensive care types (i.e. resident care or main care).

We also find that previous employment states have some significant deterrent impacts on the current care decisions. The employment impacts, however, vary by type of previous work, type of current care, and gender. In particular, for females, only working on a full-time basis last year reduces their current probability of providing any type of care (either defined by residency status or intensity). By contrast, for males, working on any basis last year statistically significantly reduces their current probability of providing more intensive care (i.e. resident or main care) only.

Controlling for employment status, we find that workers' perceptions about work flexibility or overall work satisfaction have no impact on their subsequent decisions to provide care of any form. This finding suggests that, counter to popular intuition, policies that are designed to create flexibility in employment may not do much to facilitate informal care provision. Indeed, by contrast, we find some evidence that workers with higher job security perceptions are less likely to become caregivers in subsequent years. This finding implies that policies which aim at strengthening work security of workers may not help encourage current workers to provide care either, probably because they have a stronger desire over the maintenance of their employment, *ceteris paribus*.

Also from the public policy point of view, our findings of a significant inertia in care provision when viewed with earlier evidence that work skills face with longer duration of unemployment. (Pissarides, 1992) suggests that if the policies aim at returning caregivers to work, appropriate training programs are needed.

This paper has focused on the impact of previous caregiving status and previous work characteristics on current care provision decisions. It therefore abstracts from estimating a simultaneous model of care provision and labour force participation decisions. As suggested by Skira (2012), decisions to provide care and to work may be made simultaneously. Further work on dynamic models of an interaction between caregiving and labour market activities is thus a promising avenue for future research.

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Table 1: Caregivers and care recipients

	Resident caregiver			Non-resident caregiver			Resident and non-resident caregiver		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Carer: % Yes	4.7	3.5	4.1	5.2	2.8	4.0	9.9	6.3	8.1
Main carer: % Yes (a)	84.9	59.5	74.1	37.6	24.9	33.3	58.6	43.4	52.7
Who is cared for: % (a)									
Spouse/partner	28.6	35.0	31.3	0.5	0.2	0.4	14.0	19.7	16.2
Parents	20.1	34.2	26.1	76.7	76.1	76.5	49.9	52.8	51.0
Children	47.3	29.0	39.5	4.5	4.5	4.5	24.8	18.1	22.2
Others	4.0	1.8	3.1	18.4	19.3	18.7	11.3	9.4	10.6

Notes: [(a)] Conditional on providing respective unpaid care; Longitudinal sampling weights are used.

Table 2: Caregiving trajectories by gender

	Wave t+1					
Wave t	Female			Male		
Panel A: Resident/Non-resident care	Non caregiver	Residential	Non-residential	Non caregiver	Residential	Non-residential
Non caregiver	95.5	1.7	2.8	96.7	1.4	2.0
Residential	32.3	65.4	2.3	38.5	59.8	1.7
Non-residential	50.2	2.0	47.8	65.0	1.9	33.1
Total	90.1	4.7	5.2	93.7	3.5	2.8
Panel B: Main/Secondary care	Non caregiver	Main	Secondary	Non caregiver	Main	Secondary
Non caregiver	95.5	2.3	2.2	96.7	1.2	2.2
Main	35.2	54.5	10.3	39.3	50.8	9.9
Secondary	50.8	11.7	37.5	58.1	5.2	36.7
Total	90.1	5.7	4.1	93.7	2.7	3.6

Notes: Longitudinal sampling weights are used.

Percentage of those in current wave state moving to the next wave state (row percentage) is reported (%).

Table 3a: Caregiving dynamics: Resident versus non-resident care - Model 1 with employment status (main results)

Variables	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care
Resident care last year [(a)]	1.91***	0.58	1.89***	0.45	1.49***	-0.21	1.51***	0.04
	(0.22)	(0.39)	(0.22)	(0.40)	(0.29)	(0.60)	(0.29)	(0.62)
Non-resident care last year [(a)]	0.40	1.27***	0.29	1.27***	0.50	1.32***	0.78	1.19***
	(0.41)	(0.16)	(0.41)	(0.16)	(0.58)	(0.25)	(0.60)	(0.25)
Resident care at t = 1 [(a)]	4.81***	0.14	4.84***	0.29	5.81***	1.35**	5.79***	1.34**
	(0.51)	(0.44)	(0.51)	(0.46)	(0.71)	(0.62)	(0.71)	(0.54)
Non-resident care at t=1 [(a)]	0.71	2.65***	0.79	2.65***	2.17***	2.46***	2.10***	2.57***
	(0.51)	(0.29)	(0.51)	(0.29)	(0.68)	(0.40)	(0.68)	(0.39)
Work full time last year [(b)]	-1.17***	-0.51**	-1.18***	-0.51**	-0.97**	0.01	-0.97**	0.01
	(0.34)	(0.23)	(0.34)	(0.23)	(0.42)	(0.35)	(0.42)	(0.36)
Work part time last year [(b)]	-0.21	-0.19	-0.22	-0.19	-1.06**	0.74*	-1.06**	0.70*
	(0.27)	(0.20)	(0.27)	(0.19)	(0.53)	(0.39)	(0.53)	(0.40)
Self-employed last year [(b)]	-0.08	-0.37	-0.10	-0.37	-1.32**	0.26	-1.33**	0.27
	(0.47)	(0.37)	(0.48)	(0.37)	(0.56)	(0.45)	(0.56)	(0.45)
Work full time at t=1 [(b)]	-0.47	0.27	-0.45	0.27	-0.32	-0.28	-0.31	-0.24
	(0.38)	(0.27)	(0.39)	(0.27)	(0.57)	(0.42)	(0.57)	(0.42)
Work part time at t=1 [(b)]	-0.66*	0.20	-0.63*	0.19	-1.19	-1.45**	-1.16	-1.43**
	(0.35)	(0.24)	(0.35)	(0.24)	(0.86)	(0.65)	(0.85)	(0.67)
Self-employed at t=1 [(b)]	-0.69	-0.39	-0.65	-0.41	-0.52	-0.91*	-0.46	-0.88
	(0.63)	(0.42)	(0.67)	(0.42)	(0.71)	(0.53)	(0.71)	(0.54)
Unobserved heterogeneity (SD)	2.46***	1.74***	2.49***	1.74***	2.42***	1.56***	2.41***	1.64***
	(0.21)	(0.13)	(0.22)	(0.13)	(0.29)	(0.18)	(0.29)	(0.17)
Error correlation			0.57				-1.27***	
			(0.54)				(0.42)	
Log-likelihood	-2849.11		-2848.48		-1761.34		-1757.17	
Pseudo R2	0.05		0.05		0.03		0.03	
AIC	5966.21		5966.96		3790.67		3784.35	
BIC	6960.66		6968.83		4766.27		4767.23	
P LR			0.54				0.02	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; [(b)] Unemployed is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are reported in Appendix Table 4.

Table 3b: Caregiving intensity dynamics: Resident versus non-resident care – Model 2 with work security and flexibility indicators

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care
Resident care last year [(a)]	1.96***	0.60	1.93***	0.47	1.44***	-0.09	1.48***	0.15
	(0.23)	(0.39)	(0.23)	(0.42)	(0.30)	(0.60)	(0.30)	(0.63)
Non-resident care last year [(a)]	0.37	1.23***	0.24	1.23***	0.23	1.39***	0.52	1.34***
	(0.43)	(0.17)	(0.46)	(0.17)	(0.65)	(0.26)	(0.68)	(0.26)
Resident care at t = 1 [(a)]	4.66***	-0.01	4.71***	0.13	5.96***	1.61***	5.89***	1.40**
	(0.54)	(0.47)	(0.54)	(0.52)	(0.72)	(0.54)	(0.71)	(0.55)
Non-resident care at t=1 [(a)]	0.15	2.71***	0.18	2.69***	2.44***	2.41***	2.36***	2.44***
	(0.65)	(0.30)	(0.61)	(0.30)	(0.69)	(0.41)	(0.67)	(0.40)
Job security index last year	-0.05	-0.01	-0.05	-0.01	0.12	0.03	0.11	0.03
	(0.06)	(0.04)	(0.06)	(0.04)	(0.08)	(0.05)	(0.07)	(0.05)
Work and life job satisfaction last year	0.07	-0.00	0.07	-0.00	0.01	-0.01	0.01	-0.01
	(0.06)	(0.04)	(0.06)	(0.04)	(0.07)	(0.05)	(0.06)	(0.05)
Unemployed last year	0.37	0.29	0.38	0.28	0.66	-0.38	0.67	-0.39
	(0.25)	(0.19)	(0.25)	(0.19)	(0.42)	(0.35)	(0.42)	(0.35)
Job security index at t=1	0.09	-0.03	0.09	-0.02	-0.03	-0.12**	-0.02	-0.12**
	(0.08)	(0.05)	(0.08)	(0.05)	(0.09)	(0.06)	(0.09)	(0.06)
Work and life job satisfaction at t=1	-0.04	-0.01	-0.03	-0.01	-0.03	0.02	-0.03	0.02
	(0.07)	(0.05)	(0.08)	(0.05)	(0.08)	(0.06)	(0.08)	(0.06)
Unemployed at t=1	0.33	-0.09	0.32	-0.08	0.92	0.54	0.89	0.54
	(0.31)	(0.23)	(0.31)	(0.23)	(0.57)	(0.43)	(0.56)	(0.42)
Unobserved heterogeneity (SD)	2.50***	1.76***	2.53***	1.76***	2.41***	1.55***	2.38***	1.56***
	(0.25)	(0.14)	(0.26)	(0.14)	(0.28)	(0.19)	(0.28)	(0.18)
Error correlation			0.51				-1.27**	
			(0.72)				(0.56)	
Log-likelihood	-2747.36		-2747.11		-1637.18		-1635.60	
Pseudo R2	0.04		0.04		0.04		0.04	
AIC	5762.72		5764.22		3542.37		3541.19	
BIC	6753.20		6762.10		4512.85		4518.92	
P (LR)			0.78				0.20	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are omitted.

Table 3c: Caregiving intensity dynamics: Resident versus non-resident care - Model 3 with overall work satisfaction indicators

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care
Resident care last year [(a)]	1.96***	0.59	1.93***	0.47	1.45***	-0.08	1.49***	0.13
	(0.23)	(0.39)	(0.23)	(0.42)	(0.30)	(0.60)	(0.30)	(0.63)
Non-resident care last year [(a)]	0.36	1.23***	0.25	1.23***	0.21	1.39***	0.50	1.34***
	(0.43)	(0.17)	(0.45)	(0.17)	(0.65)	(0.26)	(0.68)	(0.26)
Resident care at t = 1 [(a)]	4.66***	-0.01	4.70***	0.12	5.90***	1.62***	5.82***	1.41**
	(0.54)	(0.47)	(0.54)	(0.51)	(0.71)	(0.54)	(0.70)	(0.55)
Non-resident care at t=1 [(a)]	0.12	2.72***	0.18	2.70***	2.38***	2.38***	2.31***	2.42***
	(0.60)	(0.30)	(0.59)	(0.30)	(0.68)	(0.41)	(0.66)	(0.40)
Overall work satisfaction last year	-0.08	0.01	-0.08	0.01	-0.02	0.01	-0.02	0.02
	(0.07)	(0.05)	(0.07)	(0.05)	(0.08)	(0.07)	(0.08)	(0.07)
Unemployed last year	0.36	0.28	0.37	0.28	0.73*	-0.33	0.73*	-0.35
	(0.25)	(0.19)	(0.25)	(0.19)	(0.41)	(0.35)	(0.41)	(0.35)
Overall work satisfaction at t=1	0.05	-0.03	0.06	-0.03	-0.03	-0.05	-0.02	-0.05
	(0.10)	(0.06)	(0.10)	(0.06)	(0.11)	(0.07)	(0.11)	(0.07)
Unemployed at t=1	0.31	-0.08	0.30	-0.08	0.84	0.45	0.82	0.46
	(0.31)	(0.23)	(0.31)	(0.23)	(0.56)	(0.43)	(0.55)	(0.42)
Unobserved heterogeneity (SD)	2.51***	1.76***	2.54***	1.76***	2.38***	1.57***	2.35***	1.58***
	(0.25)	(0.14)	(0.26)	(0.14)	(0.27)	(0.19)	(0.27)	(0.18)
Error correlation			0.48				-1.19**	
			(0.67)				(0.55)	
Log-likelihood	-2748.30		-2748.05		-1640.64		-1639.14	
Pseudo R2	0.04		0.04		0.03		0.04	
AIC	5756.60		5758.11		3541.27		3540.28	
BIC	6717.52		6726.41		4482.79		4489.04	
P (LR)			0.78				0.22	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are omitted.

Table 4a: Caregiving intensity dynamics: Main versus secondary care - Model 1 with employment status (main results)

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary
Main care last year [(a)]	1.83***	1.54***	1.53***	0.79***	2.07***	1.00**	1.85***	0.42
	(0.18)	(0.21)	(0.18)	(0.22)	(0.31)	(0.39)	(0.32)	(0.40)
Secondary care last year [(a)]	1.95***	1.64***	1.23***	1.57***	1.55***	1.58***	0.76*	1.50***
	(0.22)	(0.19)	(0.24)	(0.19)	(0.35)	(0.25)	(0.40)	(0.24)
Main care at t = 1 [(a)]	3.28***	1.07***	3.80***	1.99***	3.61***	1.79***	3.99***	2.41***
	(0.33)	(0.27)	(0.37)	(0.31)	(0.55)	(0.44)	(0.58)	(0.50)
Secondary care at t=1 [(a)]	1.37***	2.22***	2.13***	2.44***	0.91*	2.70***	1.60***	2.85***
	(0.35)	(0.28)	(0.43)	(0.29)	(0.50)	(0.37)	(0.56)	(0.36)
Work full time last year [(b)]	-0.76***	-0.42*	-0.86***	-0.48**	-1.18***	0.30	-1.21***	0.26
	(0.26)	(0.23)	(0.26)	(0.23)	(0.36)	(0.35)	(0.36)	(0.35)
Work part time last year [(b)]	-0.01	-0.29	-0.08	-0.25	-1.08**	0.86**	-1.13**	0.81**
	(0.21)	(0.20)	(0.21)	(0.20)	(0.47)	(0.38)	(0.47)	(0.38)
Self-employed last year [(b)]	0.07	-0.46	-0.02	-0.39	-1.72***	0.66	-1.64***	0.55
	(0.36)	(0.38)	(0.36)	(0.37)	(0.48)	(0.44)	(0.49)	(0.44)
Work full time at t=1 [(b)]	0.02	0.21	-0.08	0.07	-0.32	-0.11	-0.40	-0.22
	(0.29)	(0.25)	(0.31)	(0.26)	(0.45)	(0.39)	(0.46)	(0.40)
Work part time at t=1 [(b)]	-0.42	0.24	-0.48*	0.08	-0.28	-1.64**	-0.30	-1.75***
	(0.26)	(0.22)	(0.28)	(0.23)	(0.59)	(0.68)	(0.60)	(0.67)
Self-employed at t=1 [(b)]	-0.30	-0.24	-0.33	-0.29	-0.17	-0.93*	-0.32	-1.04**
	(0.43)	(0.40)	(0.45)	(0.39)	(0.55)	(0.51)	(0.57)	(0.52)
Unobserved heterogeneity (SD)	1.96***	1.40***	2.29***	1.51***	1.69***	1.35***	1.87***	1.52***
	(0.15)	(0.14)	(0.17)	(0.13)	(0.25)	(0.17)	(0.25)	(0.18)
Error correlation			2.70***				2.10***	
			(0.47)				(0.57)	
Log-likelihood	-3172.63		-3150.16		-1878.85		-1874.57	
Pseudo R2	0.03		0.04		0.02		0.02	
AIC	6613.26		6570.32		4025.71		4019.13	
BIC	7607.71		7572.19		5001.31		5002.01	
P (LR)			0.00				0.01	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; [(b)] Unemployed is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are reported in Appendix Table 5.

Table 4b: Caregiving intensity dynamics: Main versus secondary care - Model 2 with work security and flexibility indicators

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary
Main care last year [(a)]	1.86***	1.46***	1.52***	0.76***	2.06***	1.11***	1.80***	0.49
	(0.19)	(0.22)	(0.19)	(0.23)	(0.32)	(0.40)	(0.32)	(0.41)
Secondary care last year [(a)]	1.81***	1.58***	1.23***	1.42***	1.59***	1.62***	0.91**	1.50***
	(0.23)	(0.19)	(0.24)	(0.19)	(0.37)	(0.25)	(0.38)	(0.24)
Main care at t = 1 [(a)]	3.23***	1.17***	3.85***	1.98***	3.73***	1.69***	4.18***	2.47***
	(0.34)	(0.28)	(0.38)	(0.32)	(0.54)	(0.49)	(0.59)	(0.51)
Secondary care at t=1 [(a)]	1.36***	2.29***	2.14***	2.59***	0.92*	2.79***	1.60***	2.99***
	(0.40)	(0.29)	(0.42)	(0.31)	(0.49)	(0.37)	(0.52)	(0.38)
Job security index last year	-0.10**	0.03	-0.10**	0.03	0.08	0.05	0.10	0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.07)	(0.05)	(0.07)	(0.05)
Work and life job satisfaction last year	0.06	-0.01	0.07	-0.01	-0.01	0.01	-0.02	0.01
	(0.05)	(0.04)	(0.05)	(0.04)	(0.06)	(0.05)	(0.06)	(0.05)
Unemployed last year	0.30	0.31	0.34	0.33*	1.10***	-0.76**	1.03***	-0.74**
	(0.20)	(0.20)	(0.21)	(0.20)	(0.35)	(0.35)	(0.35)	(0.35)
Job security index at t=1	0.04	-0.03	0.05	-0.03	-0.12*	-0.10**	-0.12*	-0.10*
	(0.06)	(0.04)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)	(0.05)
Work and life job satisfaction at t=1	-0.07	-0.01	-0.01	-0.00	0.04	-0.02	0.05	-0.02
	(0.06)	(0.05)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)	(0.05)
Unemployed at t=1	0.19	-0.20	0.18	-0.19	0.57	0.52	0.71	0.66
	(0.23)	(0.22)	(0.26)	(0.23)	(0.44)	(0.40)	(0.46)	(0.41)
Unobserved heterogeneity (SD)	1.89***	1.43***	2.36***	1.63***	1.60***	1.41***	1.88***	1.59***
	(0.15)	(0.14)	(0.19)	(0.14)	(0.22)	(0.18)	(0.26)	(0.18)
Error correlation			2.69***				1.92***	
			(0.51)				(0.56)	
Log-likelihood	-3036.62		-3013.14		-1761.96		-1754.77	
Pseudo R2	0.03		0.04		0.02		0.02	
AIC	6341.24		6296.28		3791.92		3779.53	
BIC	7331.72		7294.15		4762.40		4757.26	
P (LR)			0.00				0.00	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are omitted.

Table 4c: Caregiving intensity dynamics: Main versus secondary care - Model 3 with overall work satisfaction indicators

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary
Main care last year [(a)]	1.88***	1.47***	1.56***	0.78***	2.01***	1.12***	1.76***	0.50
	(0.18)	(0.22)	(0.19)	(0.23)	(0.31)	(0.40)	(0.32)	(0.40)
Secondary care last year [(a)]	1.83***	1.59***	1.24***	1.42***	1.59***	1.63***	0.92**	1.50***
	(0.23)	(0.19)	(0.24)	(0.19)	(0.37)	(0.25)	(0.38)	(0.24)
Main care at t = 1 [(a)]	3.18***	1.16***	3.76***	1.96***	3.82***	1.67***	4.26***	2.46***
	(0.34)	(0.28)	(0.38)	(0.32)	(0.54)	(0.47)	(0.59)	(0.51)
Secondary care at t=1 [(a)]	1.32***	2.26***	2.12***	2.57***	0.94*	2.77***	1.62***	2.98***
	(0.42)	(0.29)	(0.43)	(0.31)	(0.50)	(0.37)	(0.52)	(0.38)
Overall work satisfaction last year	-0.02	-0.03	-0.01	-0.03	0.07	-0.03	0.06	-0.02
	(0.06)	(0.05)	(0.06)	(0.05)	(0.08)	(0.06)	(0.08)	(0.06)
Unemployed last year	0.25	0.33*	0.26	0.36*	1.18***	-0.74**	1.14***	-0.72**
	(0.20)	(0.20)	(0.20)	(0.20)	(0.34)	(0.35)	(0.36)	(0.35)
Overall work satisfaction at t=1	-0.06	0.04	-0.07	0.02	-0.19**	0.04	-0.19**	0.03
	(0.07)	(0.06)	(0.07)	(0.06)	(0.08)	(0.07)	(0.09)	(0.07)
Unemployed at t=1	0.24	-0.22	0.24	-0.21	0.53	0.44	0.67	0.57
	(0.23)	(0.22)	(0.25)	(0.23)	(0.44)	(0.40)	(0.46)	(0.41)
Unobserved heterogeneity (SD)	1.87***	1.41***	2.29***	1.62***	1.66***	1.41***	1.90***	1.60***
	(0.15)	(0.14)	(0.18)	(0.14)	(0.22)	(0.18)	(0.22)	(0.18)
Error correlation			2.58***				1.91***	
			(0.50)				(0.55)	
Log-likelihood	-3039.58		-3016.54		-1763.08		-1755.75	
Pseudo R2	0.03		0.04		0.02		0.03	
AIC	6339.15		6295.08		3786.16		3773.50	
BIC	7300.07		7263.39		4727.67		4722.25	
P (LR)			0.00				0.00	

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a)] Non-carer is the base group; Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Specification I (II) does not (does) allow for correlation between errors in two care outcome equations; P (LR) is P value from an LR test for the significance of the error correlation; Estimates of other variables are omitted.

Appendix Table 1: Characteristics of carers and non-carers: by gender and caregiving status

	Female						Male					
Variables	Non caregiver	Main resident	Secondary resident	Main non-resident	Secondary non-resident	Total	Non caregiver	Main resident	Secondary resident	Main non-resident	Secondary non-resident	Total
Unemployed last year	0.25	0.47	0.39	0.37	0.32	0.27	0.12	0.45	0.09	0.28	0.13	0.12
Worked full-time last year	0.37	0.15	0.25	0.27	0.34	0.36	0.71	0.38	0.72	0.53	0.69	0.70
Worked part-time last year	0.32	0.31	0.33	0.34	0.27	0.32	0.06	0.08	0.08	0.04	0.11	0.06
Self-employed last year	0.06	0.07	0.04	0.02	0.06	0.06	0.11	0.09	0.11	0.15	0.08	0.11
Job security perception last year [(a)]	8.06	8.11	8.14	7.56	8.08	8.05	7.95	7.88	7.64	7.43	7.84	7.94
Work life flexibility perception last year [(a)]	7.56	7.74	7.51	7.40	7.35	7.55	7.44	7.61	7.73	7.35	7.13	7.44
Overall job satisfaction last year [(a)]	7.79	7.88	7.74	7.76	7.63	7.79	7.61	7.43	7.85	7.57	7.55	7.61
Age	45.45	47.48	47.41	51.52	48.98	45.77	45.86	47.68	44.27	47.43	50.04	45.98
Immigrant from an ESB country	0.10	0.06	0.07	0.02	0.05	0.10	0.12	0.09	0.12	0.09	0.10	0.12
Immigrant from an NESB country	0.13	0.14	0.16	0.20	0.12	0.13	0.12	0.11	0.09	0.13	0.08	0.12
Year 12	0.15	0.11	0.20	0.11	0.09	0.14	0.12	0.07	0.02	0.13	0.09	0.12
Vocational training	0.35	0.26	0.41	0.39	0.48	0.35	0.48	0.43	0.55	0.37	0.54	0.48
Bachelor or higher	0.21	0.15	0.13	0.14	0.20	0.20	0.20	0.07	0.12	0.24	0.21	0.19
Married/de facto	0.77	0.75	0.77	0.74	0.79	0.77	0.77	0.76	0.82	0.73	0.84	0.77
Separated/divorced/widowed	0.13	0.15	0.07	0.15	0.11	0.13	0.08	0.10	0.01	0.19	0.11	0.08
Disable	0.20	0.34	0.34	0.27	0.25	0.21	0.20	0.39	0.26	0.28	0.21	0.20
Non-wage household income	0.27	0.26	0.27	0.27	0.27	0.27	0.11	0.15	0.16	0.11	0.12	0.11
Home owner without mortgage	0.46	0.37	0.37	0.41	0.42	0.45	0.49	0.25	0.38	0.44	0.36	0.48
Home owner with mortgage	0.32	0.31	0.38	0.39	0.40	0.33	0.29	0.48	0.36	0.32	0.45	0.30
Number of persons aged 0-4	0.22	0.14	0.08	0.03	0.08	0.20	0.21	0.15	0.17	0.27	0.17	0.21
Number of persons aged 5-9	0.23	0.31	0.28	0.09	0.15	0.23	0.22	0.12	0.38	0.12	0.14	0.22
Number of persons aged 10-14	0.26	0.38	0.54	0.17	0.24	0.27	0.25	0.22	0.55	0.19	0.18	0.25
Number of persons aged 15-23	0.36	0.44	0.58	0.60	0.50	0.37	0.33	0.34	0.47	0.28	0.35	0.33
Number of persons aged 24-64	0.83	0.91	1.12	0.67	0.84	0.83	0.87	0.89	1.21	0.72	0.87	0.87
Number of elderly	0.06	0.19	0.38	0.14	0.03	0.07	0.04	0.30	0.23	0.00	0.02	0.05
Death of close relative	0.12	0.14	0.15	0.11	0.13	0.12	0.11	0.11	0.14	0.15	0.11	0.11
Death of close friend	0.08	0.11	0.09	0.11	0.09	0.08	0.09	0.14	0.06	0.09	0.15	0.09
Injury to self	0.06	0.12	0.05	0.10	0.06	0.07	0.07	0.07	0.09	0.10	0.08	0.08
Injury/illness of relative/family member	0.16	0.31	0.19	0.30	0.31	0.18	0.13	0.26	0.25	0.23	0.27	0.14
Weekly hours of care [(b)]	0.52	18.96	13.18	11.14	6.37	1.80	0.29	25.96	5.19	8.04	4.66	1.11
Carer benefit recipient	0.02	0.63	0.47	0.26	0.03	0.05	0.00	0.51	0.06	0.13	0.01	0.02
Number of wave-observations	13009	563	84	250	500	14406	11800	242	146	76	252	12516

Notes: Longitudinal sampling weights are used. [(a)] Mean is for those working last year. [(b)] Mean is for individuals with a valid answer to the question on the number of weekly hours spent on providing care to a spouse or relative or parents from the self-completed questionnaire.

Appendix Table 2: Correlation matrix of work characteristics

	Job characteristics	Var. code	Work security				Flexibility								Entitlements					Overall
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Work security	Per cent chance of losing job in next 12 months [a]	1	1.00																	
	Per cent chance of voluntarily leaving job in next 12 months [a]	2	0.23	1.00																
	Job security satisfaction [b]	3	-0.58	-0.16	1.00															
	I have a secure future in my job [c]	4	-0.48	-0.20	0.67	1.00														
Flexibility	The flexibility to balance work and non-work commitments satisfaction [b]	5	-0.10	-0.14	0.22	0.16	1.00													
	My working times can be flexible [c]	6		-0.03	0.04	0.08	0.43	1.00												
	I can decide when to take a break [c]	7	-0.02		0.08	0.09	0.31	0.58	1.00											
	I have a lot of choice in deciding what I do at work [c]	8	-0.07	-0.07	0.12	0.16	0.25	0.48	0.49	1.00										
	I have a lot of freedom to decide when I do my work [c]	9	-0.02	-0.04	0.06	0.08	0.35	0.66	0.57	0.69	1.00									
	Workplace entitlements: Flexible start/finish times [d]	10	0.03				0.29	0.57	0.46	0.31	0.44	1.00								
	Workplace entitlements: Home-based work [d]	11	0.02			0.02	0.18	0.39	0.35	0.28	0.37	0.47	1.00							
	Workplace entitlements: Permanent part-time work [d]	12	-0.08	-0.06	0.14	0.16	0.05		-0.02	-0.05	-0.05	0.14	0.14	1.00						
Entitlements	Does employer provide paid sick leave [d]	13	-0.12	-0.09	0.16	0.17	-0.11	-0.12	0.04	0.06	-0.05		0.08	0.14	1.00					
	Does employer provide paid holiday leave [d]	14	-0.12	-0.09	0.16	0.18	-0.10	-0.12	0.04	0.06	-0.05		0.08	0.14	0.96	1.00				
	Child care facilities or subsidised child care expenses [d]	15			0.02	0.02	0.05	0.09	0.06	0.03	0.06	0.15	0.20	0.13	0.04	0.03	1.00			
	Workplace entitlements: Special leave for caring for family member [d]	16	-0.09	-0.09	0.14	0.17		-0.07	-0.02	-0.06	-0.11	0.09	0.09	0.48	0.44	0.43	0.15	1.00		
	Workplace entitlements: Paid maternity leave [d]	17	-0.07	-0.09	0.10	0.12	-0.06	-0.13	-0.09	-0.12	-0.17	0.03	0.08	0.38	0.40	0.39	0.22	0.60	1.00	
Overall	Overall job satisfaction [b]	18	-0.22	-0.37	0.43	0.35	0.54	0.21	0.17	0.23	0.20	0.11	0.05	0.07			0.03	0.07	0.02	1.00

Notes: Only correlation coefficients significant at the 5% level or better are listed. Longitudinal sampling weights are used.

[a] a number between 0 and 100; [b] a number between 0 (totally dissatisfied) and 10 (totally satisfied); [c] a number between 1 (strongly disagree) and 7 (strongly agree); [d] Yes/No choice, Yes = 1 and No = 0.

Appendix Table 3: Work characteristics by type of job

		Pooled sample			Females			Males		
	Variables	FT	PT	SE	FT	PT	SE	FT	PT	SE
Work security	Per cent chance of losing job in next 12 months [(a)]	8.81	10.01		7.72	9.26		9.41	14.03	
	Per cent chance of voluntarily leaving job in next 12 months [(a)]	15.94	17.93		14.87	16.91		16.54	23.33	
	Job security satisfaction [(b)]	8.10	7.88	7.38	8.18	7.98	7.58	8.06	7.39	7.27
	I have a secure future in my job [(c)]	5.24	5.06	4.78	5.39	5.13	5.00	5.17	4.70	4.68
Flexibility	The flexibility to balance work and non-work commitments satisfaction [(b)]	7.24	8.06	7.86	7.03	8.05	8.06	7.35	8.14	7.74
	My working times can be flexible [(c)]	3.97	4.29	5.57	3.66	4.21	5.73	4.12	4.67	5.49
	I can decide when to take a break [(c)]	4.79	4.33	5.89	4.44	4.25	5.83	4.96	4.75	5.92
	I have a lot of choice in deciding what I do at work [(c)]	3.86	3.45	5.24	3.63	3.40	5.28	3.98	3.72	5.22
	I have a lot of freedom to decide when I do my work [(c)]	3.66	**3.60**	5.39	3.40	3.52	5.60	3.80	3.99	5.29
	Workplace entitlements: Flexible start/finish times [(d)]	0.57	0.54	0.76	0.52	**0.53**	0.77	0.59	**0.58**	0.76
	Workplace entitlements: Home-based work [(d)]	0.28	0.20	0.46	0.26	0.20	0.56	0.29	**0.25**	0.41
	Workplace entitlements: Permanent part-time work [(d)]	0.76	0.85	0.42	0.87	**0.87**	0.49	0.70	0.77	0.38
Entitlements	Does employer provide paid sick leave [(d)]	0.93	0.58		0.93	0.61		0.92	0.43	
	Does employer provide paid holiday leave [(d)]	0.92	0.58		0.92	0.60		0.92	0.43	
	Child care facilities or subsidised child care expenses [(d)]	0.09	**0.09**	0.05	0.09	**0.09**	0.05	0.10	**0.09**	0.04
	Workplace entitlements: Special leave for caring for family member [(d)]	0.84	0.71	0.30	0.88	0.73	0.27	0.82	0.60	0.32
	Workplace entitlements: Paid maternity leave [(d)]	0.65	0.48	0.07	0.71	0.50	0.06	0.61	0.41	0.07
Overall	Overall job satisfaction [(b)]	7.63	7.87	**7.66**	7.64	7.91	7.94	7.62	**7.63**	**7.51**

Notes: FT: full time; PT: part time; SE: self-employed. Tests for the difference of means of full time jobs are statistically significant at the 5 % level for all variables except those given in bold. Longitudinal sampling weights are used.

[(a)] a number between 0 and 100; [(b)] a number between 0 (totally dissatisfied) and 10 (totally satisfied); [(c)] a number between 1 (strongly disagree) and 7 (strongly agree); [(d)] Yes/No choice, Yes = 1 and No = 0.

Appendix Table 4: Caregiving dynamics: Resident versus non-resident care - Model 1 with employment status (Remaining results)

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care	Resident care	Non-resident care
Age	-0.27	-0.02	-0.26	-0.02	-0.40	0.01	-0.38	0.02
	(0.33)	(0.25)	(0.33)	(0.25)	(0.40)	(0.35)	(0.40)	(0.36)
Age squared	-0.00	-0.00**	-0.00	-0.00**	0.00	-0.00	0.01	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ESB immigrant [(a)]	-0.75*	-0.86***	-0.78*	-0.87***	0.18	-0.41	0.19	-0.40
	(0.41)	(0.31)	(0.41)	(0.30)	(0.41)	(0.30)	(0.40)	(0.31)
NESB immigrant [(a)]	-0.56	-0.05	-0.57	-0.03	0.12	0.30	0.14	0.29
	(0.41)	(0.26)	(0.40)	(0.25)	(0.51)	(0.32)	(0.51)	(0.32)
Year 12 [(b)]	-0.06	-0.06	-0.06	-0.03	-0.32	-0.26	-0.36	-0.26
	(0.38)	(0.27)	(0.38)	(0.26)	(0.55)	(0.40)	(0.55)	(0.38)
Vocational training [(b)]	0.03	0.31*	0.05	0.32*	-0.29	0.05	-0.32	0.04
	(0.28)	(0.18)	(0.29)	(0.18)	(0.34)	(0.26)	(0.33)	(0.26)
Bachelor or higher [(b)]	-0.02	-0.06	-0.01	-0.07	-1.05**	0.06	-1.06**	0.04
	(0.37)	(0.24)	(0.37)	(0.24)	(0.49)	(0.32)	(0.48)	(0.32)
Married/de facto [(c)]	-1.11	-0.56	-1.10	-0.56	-0.94	1.69*	-0.97	1.77*
	(0.95)	(0.67)	(0.96)	(0.67)	(0.97)	(0.97)	(0.96)	(0.99)
Separated/divorced/widowed [(c)]	-0.60	-0.63	-0.58	-0.64	-2.34*	1.19	-2.37*	1.25
	(1.05)	(0.77)	(1.05)	(0.77)	(1.38)	(1.09)	(1.38)	(1.11)
Disable	0.35	0.31*	0.35	0.31*	-0.20	0.24	-0.20	0.24
	(0.23)	(0.18)	(0.23)	(0.18)	(0.28)	(0.26)	(0.28)	(0.26)
Non-wage household income	0.22	-0.06	0.24	-0.06	0.12	0.75	0.10	0.75
	(0.57)	(0.29)	(0.57)	(0.29)	(0.81)	(0.69)	(0.81)	(0.69)
Home owner without mortgage [(d)]	1.14**	0.32	1.14**	0.33	0.28	-0.64*	0.28	-0.62
	(0.45)	(0.35)	(0.45)	(0.35)	(0.53)	(0.38)	(0.53)	(0.39)
Home owner with mortgage [(d)]	0.55	0.31	0.55	0.32	0.11	-0.68	0.11	-0.68
	(0.48)	(0.38)	(0.48)	(0.38)	(0.56)	(0.44)	(0.56)	(0.44)
Number of persons aged 0-4	0.19	-0.62**	0.18	-0.61**	0.58	-0.52	0.60	-0.59*
	(0.31)	(0.31)	(0.31)	(0.31)	(0.37)	(0.32)	(0.37)	(0.34)
Number of persons aged 5-9	0.41	-0.53**	0.41	-0.53**	0.60*	0.12	0.61*	0.11
	(0.27)	(0.25)	(0.27)	(0.25)	(0.32)	(0.32)	(0.32)	(0.32)
Number of persons aged 10-14	0.70***	-0.43**	0.70***	-0.42**	0.76***	-0.25	0.77***	-0.26
	(0.23)	(0.20)	(0.23)	(0.20)	(0.29)	(0.26)	(0.29)	(0.26)
Number of persons aged 15-23	0.36*	-0.14	0.35*	-0.13	0.45*	-0.25	0.45*	-0.25
	(0.20)	(0.15)	(0.20)	(0.15)	(0.24)	(0.22)	(0.24)	(0.22)
Number of persons aged 24-64	1.08***	-0.02	1.08***	-0.02	1.73***	-0.72*	1.73***	-0.71*
	(0.31)	(0.27)	(0.31)	(0.27)	(0.42)	(0.40)	(0.42)	(0.40)
Number of elderly	2.47***	-0.33	2.48***	-0.32	3.61***	-1.58**	3.65***	-1.60**
	(0.42)	(0.48)	(0.43)	(0.48)	(0.64)	(0.81)	(0.63)	(0.80)
Death of close relative	-0.03	-0.74***	-0.04	-0.74***	-0.50*	-0.41*	-0.49	-0.43*
	(0.23)	(0.18)	(0.23)	(0.18)	(0.30)	(0.25)	(0.30)	(0.25)
Death of close friend	0.28	0.05	0.27	0.05	0.24	-0.01	0.23	-0.01
	(0.26)	(0.19)	(0.26)	(0.19)	(0.32)	(0.26)	(0.32)	(0.26)
Injury to self	-0.28	-0.08	-0.27	-0.09	-1.04**	-0.13	-1.03**	-0.14
	(0.27)	(0.22)	(0.27)	(0.22)	(0.41)	(0.30)	(0.41)	(0.30)
Injury/illness of relative/family member	0.41**	0.47***	0.41**	0.47***	0.94***	0.66***	0.93***	0.67***
	(0.19)	(0.14)	(0.19)	(0.14)	(0.25)	(0.21)	(0.25)	(0.21)

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a) (b) (c) (d)] indicate native, Year 11 or under, never married, and renter as the base group, respectively. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Estimates on the year dummies, state dummies, local variables and the initial conditions are omitted.

Appendix Table 5: Caregiving intensity dynamics: Main versus secondary care - Model 1 with employment status (Remaining results)

	Female				Male			
	Specification I		Specification II		Specification I		Specification II	
Variables	Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary
Age	-0.19	0.04	-0.18	0.07	0.17	-0.44	0.08	-0.41
	(0.27)	(0.26)	(0.27)	(0.26)	(0.40)	(0.31)	(0.40)	(0.31)
Age squared	-0.00	-0.00*	-0.00	-0.00**	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ESB immigrant [(a)]	-0.80**	-0.46*	-1.07***	-0.61**	-0.18	-0.12	-0.14	-0.09
	(0.34)	(0.26)	(0.37)	(0.28)	(0.37)	(0.27)	(0.36)	(0.26)
NESB immigrant [(a)]	-0.03	-0.30	-0.14	-0.26	0.45	0.14	0.37	0.12
	(0.28)	(0.24)	(0.31)	(0.24)	(0.38)	(0.30)	(0.40)	(0.31)
Year 12 [(b)]	-0.26	0.15	-0.19	0.11	0.07	-0.52	0.11	-0.50
	(0.28)	(0.25)	(0.32)	(0.26)	(0.42)	(0.37)	(0.43)	(0.36)
Vocational training [(b)]	-0.13	0.47***	-0.16	0.51***	-0.08	0.01	-0.05	-0.02
	(0.20)	(0.18)	(0.22)	(0.18)	(0.28)	(0.22)	(0.29)	(0.23)
Bachelor or higher [(b)]	-0.53*	0.35	-0.53*	0.31	-0.40	-0.21	-0.38	-0.34
	(0.28)	(0.22)	(0.30)	(0.22)	(0.40)	(0.28)	(0.40)	(0.29)
Married/de facto [(c)]	-1.04	-0.29	-1.12	-0.31	1.33	-0.83	1.35	-0.79
	(0.80)	(0.66)	(0.80)	(0.66)	(1.00)	(0.79)	(0.99)	(0.80)
Separated/divorced/widowed [(c)]	-0.69	-0.37	-0.71	-0.44	0.00	-0.95	-0.04	-0.94
	(0.87)	(0.77)	(0.88)	(0.77)	(1.22)	(0.94)	(1.21)	(0.95)
Disable	0.32*	0.25	0.31*	0.28	0.14	-0.07	0.16	-0.07
	(0.19)	(0.19)	(0.18)	(0.19)	(0.28)	(0.24)	(0.28)	(0.24)
Non-wage household income	0.32	-0.42	0.31	-0.40	-0.64	1.03	-0.62	1.06*
	(0.38)	(0.31)	(0.38)	(0.30)	(0.77)	(0.63)	(0.77)	(0.64)
Home owner without mortgage [(d)]	0.89**	0.13	0.92**	0.23	-0.43	-0.29	-0.33	-0.32
	(0.36)	(0.35)	(0.37)	(0.35)	(0.47)	(0.37)	(0.48)	(0.38)
Home owner with mortgage [(d)]	0.67*	-0.01	0.69*	0.08	-0.98*	-0.05	-0.87*	-0.10
	(0.38)	(0.39)	(0.39)	(0.38)	(0.51)	(0.41)	(0.52)	(0.41)
Number of persons aged 0-4	0.02	-0.47	-0.04	-0.43	0.13	-0.22	0.10	-0.23
	(0.26)	(0.29)	(0.27)	(0.29)	(0.37)	(0.28)	(0.37)	(0.28)
Number of persons aged 5-9	0.04	-0.24	0.01	-0.20	0.19	0.26	0.19	0.26
	(0.22)	(0.24)	(0.23)	(0.24)	(0.34)	(0.26)	(0.35)	(0.25)
Number of persons aged 10-14	0.01	0.06	0.05	0.09	0.39	0.06	0.39	0.07
	(0.19)	(0.20)	(0.19)	(0.19)	(0.29)	(0.22)	(0.29)	(0.22)
Number of persons aged 15-23	-0.05	0.15	-0.03	0.14	0.19	-0.04	0.20	-0.05
	(0.16)	(0.16)	(0.16)	(0.15)	(0.25)	(0.19)	(0.25)	(0.19)
Number of persons aged 24-64	0.43*	0.47*	0.47*	0.49*	0.48	0.33	0.52	0.33
	(0.25)	(0.26)	(0.26)	(0.26)	(0.43)	(0.32)	(0.43)	(0.32)
Number of elderly	1.55***	0.39	1.58***	0.48	1.69***	1.00*	1.76***	1.17**
	(0.36)	(0.42)	(0.37)	(0.42)	(0.57)	(0.56)	(0.57)	(0.57)
Death of close relative	-0.43**	-0.62***	-0.46**	-0.59***	-0.38	-0.48**	-0.42	-0.48**
	(0.18)	(0.18)	(0.19)	(0.18)	(0.29)	(0.23)	(0.29)	(0.23)
Death of close friend	0.15	0.09	0.13	0.10	0.09	0.07	0.14	0.08
	(0.20)	(0.20)	(0.20)	(0.20)	(0.30)	(0.24)	(0.30)	(0.24)
Injury to self	-0.04	-0.29	-0.05	-0.29	-0.55	-0.39	-0.58	-0.40
	(0.22)	(0.24)	(0.22)	(0.24)	(0.39)	(0.29)	(0.39)	(0.29)
Injury/illness of relative/family member	0.52***	0.38***	0.53***	0.40***	0.59**	0.73***	0.64***	0.76***
	(0.15)	(0.15)	(0.15)	(0.15)	(0.24)	(0.19)	(0.24)	(0.19)

Notes: Coefficient estimates from MSL estimation with 50 Halton draws; [(a) (b) (c) (d)] indicate native, Year 11 or under, never married, and renter as the base group, respectively. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Estimates on the year dummies, state dummies, local variables and the initial conditions are omitted.