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Is the welfare state in need of caregiving?

Labor supply effects for informal caregivers in Sweden.

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Abstract

This paper estimates labor supply effects for informal caregivers in Sweden using four waves of the SHARE data panel. To give daily or weekly care to a parent, step parent or parent in law is found to be more common among women than among men and is associated with lower employment probability for daily caregivers although the causal direction of the relationship is unclear. No negative effect of caregiving is found on working hours. Further, no support is found for the hypothesis that reduced availability of public eldercare in Sweden has caused labor market consequences for caregivers to become more severe over time. The results from this paper raise the question if the substitution of public eldercare with informal care in Sweden has caused caregivers to carry the double load of both market work and caring responsibilities and which consequences this will have for gender inequality in the long run.

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1. Introduction

In most societies the provision of eldercare is divided between four spheres: the public sector, the family or informal sector, the market or private sector and the voluntary sector. These sectors have been called the corners of the Welfare Diamond. Sweden has for long been characterized by a strong public involvement in eldercare as well as in other welfare services. Public eldercare has together with public childcare been seen as an important contributor to enabling a high labor force participation of women (Johansson et al. 2011:4). Beginning in the 1990s, however, public supply of eldercare has decreased and only partially been substituted with an increase in private supply. At the same time researchers and the public discourse are starting to recognize the prevalence and consequences of informal caregiving. According to *The Swedish National Board of Health and Welfare* (Socialstyrelsen), the decision on eligibility for public eldercare should be based solely on individual need but as a consequence of tighter budgets in many municipalities the requirements to qualify for public care have in practice become stricter (SCB 2006:416). In 2004 civil servants who were assessing qualification for public eldercare were being directed to investigate whether relatives of the individual could share the caring responsibility in one out of four municipalities. Johansson et al. (2011) argue that the 1990 economic crisis and downsizing of municipal budgets resulted in what they call "a rediscovery of the family" as a supplier of eldercare.

A body of literature (see for example: Bolin et al. 2008, Heitmueller 2007, Kotsadam 2011, Kotsadam 2012, SCB 2006 and Spiess & Schneider 2003) has estimated the labor supply effects of providing care to a family member. This paper adds to this literature by estimating labor supply effects for caregivers in Sweden with a focus on the role of gender and availability of public care. The regression analysis is based on four waves of the SHARE data panel ranging from 2004 to 2013 and uses panel data models to control for the potential endogeneity of informal care. The main findings are that informal caregiving is negatively correlated with employment probability and although the causal direction could not be tested, informal caregiving seems to be part of the structures which are associated with high unemployment rates in groups far away from the labor market. Further, informal caregiving is found to have no significant effect on working hours.

The paper proceeds as follows: the next section will provide a background on informal care and its historical and political context, the third section introduces the theoretical framework and

previous research, the fourth specifies purpose and research question, section five describes the dataset and method followed by the sixth section presenting results from the regression analysis. Finally the seventh section provides a discussion of the results and an outlook on policy development.

2. Background

In this chapter I will explain what is meant with informal caregiving and how the term will be used in this paper. In the second part of the chapter informal caregiving and public eldercare will be placed in their historical and political contexts.

2.1. Defining informal and intergenerational care

Informal care can be defined as care provided regularly to a family member, friend or neighbor in or outside of the own household. The nature of this care can vary and researchers commonly include practical help which can be help with household chores and personal care, administrative help such as paying bills or help in contact with authorities and finally emotional support which is the important but elusive support given by just being there for someone (SCB 2006: 436-437). This paper will focus on the type of informal care sometimes referred to as intergenerational care where the caregivers are adult children providing care for their aging or sick parents or both. This group has become increasingly recognized in both economic and welfare research since people in this group often combine informal care work and market work. I will henceforth use informal and intergenerational care as synonyms when referring to this group. Since informal caregiving can be a wide range of things from helping out with garden work once every second weekend to providing daily personal care to a severely impaired parent, the expected consequences for other parts of life will differ. I will adopt the framework of distinguishing *intensive caregivers* from *regular caregivers* which will be more carefully specified in Section 5.2.2.

2.2. Eldercare from the 1960s to today

The 1960s were the beginning of an expansion of publicly provided eldercare in Sweden. This constituted a shift where the state took over the main responsibility of the care for older people from the family and was part of a general expansion of the welfare state. The legally binding obligation to care for one's parents was removed from the legislation. At the same time women were in increasing numbers entering the labor market and publicly provided child care was

becoming generally available (Johansson et al. 2011: 337). During the 1970s public eldercare continued to grow, with more places provided in nursing homes and home-help services. This expansion came to an end in the 1980s. The ratio of the 80+ population receiving any kind of public eldercare decreased from 62% to 37% between 1980 and 2012 (Szebehely & Ulmanen 2012: 11). This decrease can only partially be explained by better health among the elderly and is rather a result of economic downsizing and political priorities (Thorslund 2010: 402). In particular among the oldest (80+) the improvements in health have been relatively small and the reduced spending on eldercare seem to have resulted in a real decrease in access (SCB 2006: 418). The period after 2000 has been characterized by a substitution of places in nursing homes for home-help services, see Table 1. Since the average receiver of home-help services receives considerably less care counted in hours than the average person living in a nursing home this indicates that the total amount of publicly provided eldercare has decreased (Szebehely & Ulmanen 2012: 11).

Table 1. Development of eldercare in Sweden

Persons who have a decision on home-help services, Sweden, both sexes, Age 80+

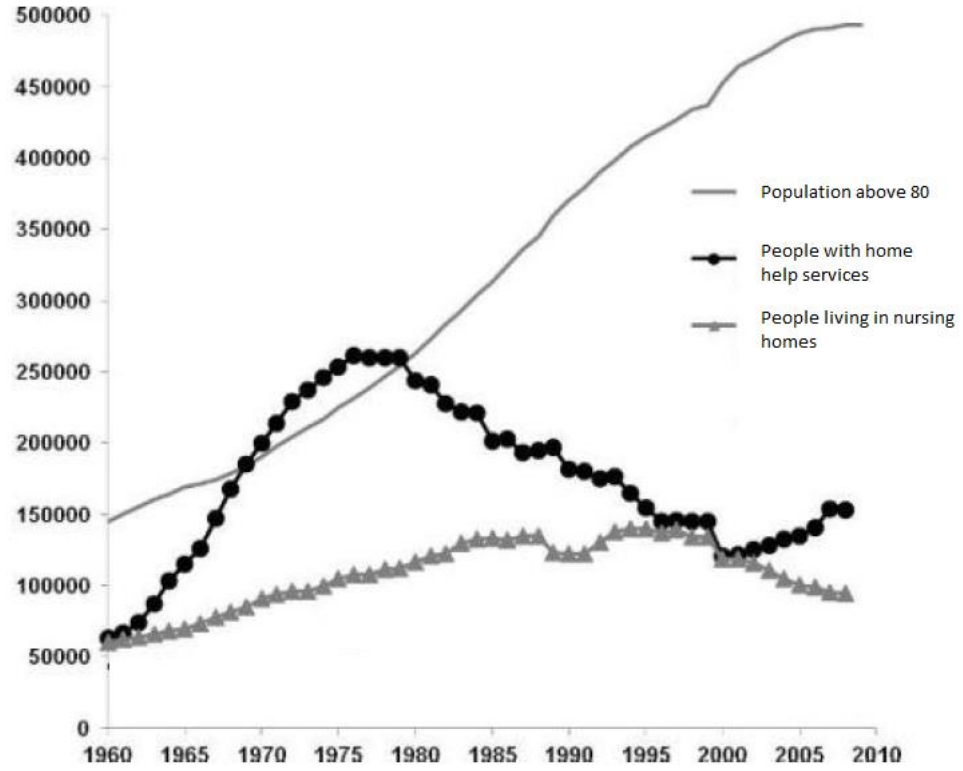
	2004	**2007**	**2011**	**2012**
Amount	95 300	110 698	117 390	118 698
Proportion in %	20	22,5	23,6	23,8

Persons who live permanently in a nursing home, Sweden, both sexes, Age 80+

Amount	83 300	76 143	72 324	70 336
Proportion in %	17	15,5	14,5	14,1

Source: Own calculations from National board of health and welfare official statistics. April 2015.

Figure 1. Development of public eldercare in Sweden, from Thorslund 2010: 400, translated and adjusted.



In a simple model the number of 80+ people can be seen as an indicator of demand for eldercare whereas the amount of people receiving home-help services and living in nursing homes can be an indicator of supply. Within this framework the reduction in places in nursing homes has potentially created a wedge between demand and public supply since the population aged above 80 has increased (Thorslund 2010: 400. See also Figure 1). Has this gap been filled by the other main corners of the welfare diamond: private and informal care? Data from the Swedish living condition survey (ULF) conducted by Statistics Sweden shows that between 2003 and 2010 the proportion of the elderly who received only public eldercare and no informal care decreased from 24% to 12%. Further, the proportion who combined public eldercare and informal care increased from 21% to 32% and the proportion who received only informal care increased from 27% to 31% (Szebehely & Ulmanen 2012: 16). This indicates a substantial shift from formal to informal eldercare during the last decade. Privately bought help also increased during this period, from 10% to 15%[1], but amounted to a smaller proportion of the total care and was mostly used in groups with higher education (ibid: 16 and 18).

[1]The numbers for private care are upper boundaries since also other unspecified care was included in this category.

2.3. Political context

Alongside this development came an increasing recognition of and reliance on informal caregivers during the 1990s and 2000s from Swedish authorities. Johansson et al. (2011) have analyzed how the role of the family as provider of eldercare was being redefined in the *1997 Social services act*. Family caregivers were now to be regarded as valuable resources and to be offered the support they needed to be able to continue to care for their next of kin. In focus of the new directives were that the municipal authorities now were given a responsibility to raise awareness and show appreciation of caregivers, improve their quality of life by providing needed support and to reduce the risk of burnout by offering training and mentoring (Johansson et al. 2011: 343). Simultaneously, caregivers were becoming increasingly organized in groups who demanded more recognition and support (Ibid: 345). To some degree this represents a policy direction where substitution of public eldercare with informal caregiving is being encouraged, and where the potentially negative consequences should be countered by the municipalities.

3. Theory and previous literature

Within the economics research there has been an increasing interest for the labor market effects of informal caregiving. This section will present the theoretical framework and previous literature.

3.1. The decision to give informal care

Starting out in a basic labor market participation decision we can assume a currently employed individual with a time constraint who has a parent in need of care. The allocation of time between market work, informal caregiving and leisure will then be a utility maximization problem where the individual weights the assumed positive utility derived from giving help against the time allocated to this task at the expense of leisure and market work. Hence, the care need of the parent potentially raises the reservation wage of the individual. If the care need is minor the help could probably be provided without interfering on market work through a reduction of leisure while a substantial care need would be more time consuming and potentially cause the individual to reduce her working hours or even exit the labor force. In this framework the allocation of time to informal care, leisure and market work can be expected to depend on: opportunity costs for the individual (e.g. foregone market wage, household income), individual

and family characteristics (e.g. family relations, number of siblings to share the care responsibility), possibilities to successfully combine informal care, market work and leisure (e.g. work hours flexibility, geographical proximity to parents), availability of substitutes to informal care (e.g. supply and/or price of public and private alternatives) and social norms and expectations on the individual.

3.2. Informal care supply of women and men

Many studies which have estimated the prevalence of informal care find that it is more common that women provide care to their parents and that women also provide more hours of care than men (Swedish National board of health and welfare 2012, Szebehely & Ulmanen 2012 and SOU 2014: 28). However, the results differ substantially between studies, and it is likely that they are highly dependent on how the survey questions are formulated. A general tendency seems to be that the gender gap in providing informal care is estimated to be larger if the receivers of care are asked than if the potential caregivers are asked. Because of gendered norms, there is a risk that women are more likely to understate their own caregiving than men are (SCB 2006: 437). Therefore, studies based on survey questions specifying specific care tasks might result in smaller bias due to systematic differences in the interpretation of questions.

Based on the above labor supply model I find two main explanations for a systematic divergence in informal caregiving of men and women. First, women on average earn lower wages than men[2] resulting in lower opportunity costs for providing care. Second, norms regarding domestic work and care work as female responsibilities are, although perhaps less so in Sweden than in most other countries, nevertheless persisting and potentially influencing individual decisions. Evidence for both these explanations is found by Haberkern et al. (2015) who use the SHARE data panel to model the factors affecting the decision to provide informal care and the gender gap in European countries. They find that possibilities to provide care such as wages and geographical proximity to parents matter, but even holding these constant, women provide more care. Further, they find that the gender gap is larger in countries where the family is an important welfare provider, conservative values are prevailing and where public supply of eldercare is small.

[2] In 2013 Swedish women earned on average 87% of men's earnings according to Statistics Sweden.

3.3. Estimated effects of intergenerational care on labor supply in other countries

Are there reasons for concern about gender inequality in informal care? Returning to the utility maximization problem above, there is a risk that inequality in informal care spills over to an increasing gender inequality in the labor market if informal care interferes with market work. A number of studies have estimated the effects of supplying informal care on labor market outcomes, commonly measured as employment probability, number of hours worked and wages. Most of the studies published in the US and the UK have found significant negative effects on labor market outcomes and especially so for intensive caregivers (Kotsadam 2012: 2). An overview of this literature is provided in Lilly et al. (2007). Within the labor economics literature there is an ongoing discussion about the potential endogeneity of informal care. Evidence of a causal negative effect of informal caregiving on labor supply has been questioned (see for example: Lilly et al. 2007, Heitmueller 2007) arguing that the caregivers could be self-selecting individuals who already have a weak attachment to the labor market.

Studies conducted in the European countries also find negative marginal effects of caregiving on the labor supply. Three studies by Bolin et al (2008), Kotsadam (2011) and Spiess and Schneider (2003) take on a comparative approach in which they estimate if the effects differ across European countries. Bolin et al. (2008) control for potential endogeneity by using an instrumental variables (IV) approach where caregiving was instrumented with parental health and age, distance to parents and number of brothers and sisters. Kotsadam (2011) uses fixed effects estimation and Spiess and Schneider (2003) use a type of difference in differences estimator. Bolin et al. (2008) use the first wave of the SHARE data set and find general negative effects on labor supply but no systematic differences between southern and northern Europe. Kotsadam (2011) however, finds that the negative effects on labor supply in general are stronger in southern than in northern European countries and that the effects are weaker for countries with more formal care when using data from the European Community Household Panel (ECHP). Similarly, Spiess and Schneider (2003) who also use ECHP data find that increasing care hours result in fewer hours worked among women in southern but not northern Europe. Their proposed explanation is that since family norms are weaker in northern Europe and public care is more generally available the decision to provide care is more voluntary in northern Europe and can therefore be avoided when it would interfere with market work and thus incur a high cost on the individual. This hypothesis is also supported by evidence from a study in the

UK which shows that the degree of freedom in the caring decision is an important factor in explaining the strength of the labor market effects (Heitmueller 2007: 557). These comparative studies indicate that norms and availability of public care might not only matter for the decision to provide care but also for the magnitude of the effect on the individual labor supply. Kotsadam (2012) estimates the labor supply effects of informal caregiving in Norway using IV. Using age, health and care need of the parents as well as a dummy variable for living together with at least one parent as instruments he found no significant effects on employment probability for normal caregivers. However, to be an intensive caregiver, here defined as providing care more than 20 times per month, was found to reduce employment probability by 6 to 8 percentage points. No significant effects were found on working hours for either regular or intensive caregivers. The author concludes that the high availability of public care in Norway could explain the relatively modest labor supply effects.

3.4. Previous estimates for Sweden

In the Swedish context there is relatively little research on the labor supply effects of informal caregiving. To my knowledge there is only one study, SCB (2006), which has gone beyond simple correlations in an attempt to quantitatively explain the effect on employment probability for caregivers while controlling for age and household type. Using cross-sectional data from The Swedish Living Conditions survey of 2002/2003 they find significant negative correlations between caregiving and employment probability for women and no effect for men.

In a survey study in 2013 (SOU 2014: 28 and 139) a sample of 3630 respondents were specifically asked questions about informal caregiving and whether it had interfered with different aspects of their lives such as personal health, leisure and market work. As caregivers were classified those who answered yes to having given a relative, neighbor or a friend help with at least one out of seven specified care tasks at least weekly. Similarly to results from previous studies on SHARE data caregiving was found to be as common among men as among women but women provided more hours of care (Ibid: 140-143). Further, 12% of the female caregivers and 8,9 % of the male caregivers answered that they had reduced their working hours as a result of their caregiving responsibilities (Ibid: 148).

4. Purpose and research question

The mechanisms of informal care are important to understand since they help in constructing

policy that both meet the challenges of increasing demand for eldercare associated with an aging population as well as the aim of keeping labor supply high. Comparative cross-sectional studies indicate that the availability of public eldercare might be important in explaining the labor market effects for informal caregivers. Sweden is an interesting case since the level of public care seems to have decreased over the last two decades. This will be used to highlight the role of public eldercare in explaining labor supply effects from caregiving. I will start by estimating the labor supply effects of being an informal caregiver for a Swedish sample. The two independent variables will be hours worked and employment probability. I will then proceed to test whether the effect of informal care on labor supply has changed over time as supply of public eldercare seems to have decreased. The results will be used in a discussion on how far we have come and what we still need to understand better to be able to give empirically founded policy advice about informal caregiving in a Swedish context as well as how informal caregiving relates to gender inequality.

5. Data and method

In this chapter the dataset, variables and estimation strategies used in the regression analysis of the effect of informal caregiving on labor supply are presented.

5.1. Dataset

This paper uses the Swedish subsample of the Survey of Health, Aging and Retirement in Europe (SHARE) data panel. It is based on interviews with respondents aged above 50 in twenty European countries. The panel contains four waves, with interviews conducted in 2004, 2007, 2011 and 2013. The SHARE data panel contains questions about various kinds of help and care given to others as well as suitable control variables.

Before proceeding to a more thorough description of the dataset I will assess the appropriateness of using a sample limited to individuals over the age of 50. First, intergenerational caregiving is likely to become increasingly common in this age as the care need of the parents will become high when they approach their 80s which speaks for the relevance of using this sample. However, as discussed in Bolin et al. (2008), restricting the sample to 50+ individuals risks excluding those who already stepped out of the labor force before the age of 50 to care for a parent. In a Swedish context, however, this can probably be expected to be a very small fraction of the caregivers. It has also been shown that the correlation coefficients between caregiving

and employment probability were more negative at lower ages for a European sample (Kotsadam 2011: 124). To conclude, using a sample restricted to 50+ individuals might result in estimated weaker employment effects than using a sample that includes also younger individuals. This should be considered when evaluating external validity and even though the differences are not likely to be very large in a Swedish sample the results of this paper should be regarded as lower boundaries.

5.2. Variables

The original sample included 12 280 observations. I restricted this sample to individuals who had not yet retired and excluded all respondents above 79 years[3]. Also all individuals who answered that they were in paid employment but worked zero hours per week were excluded[4]. These restrictions resulted in a loss of more than half of the observations and the working sample now consisted of 4364 observations. The main reason for the fall in observations was that a large proportion of the above 50 population are already retired. Table 2 presents summary statistics for the variables which were included in the regression analysis. The dependent variables *employed* indicate whether the individual *i* answered that she or he was in paid employment at time *t* and *lnhours* indicate the log of hours worked per week[5]. Informal care is indicated by the binary variables *care* and *icare* which are described below. The control variables are: *age* which is continuous and equals current age of the respondent, *woman*, *married, badhealth* and *highed* are binary, where *highed*[6] is equal to one if the respondent had finished more than 14 years of schooling and *badhealth* equals one if the respondents self-assessed health was poor or very poor. The time variable *year* is equal to year of response minus 2000 so that 2004 = 4 etcetera[7].

[3] Those in the age group above 79 years who answered that they had not yet retired consisted of 68 observations and excluding these from the regressions did not result in any significant changes in the estimated results.
[4] These were very few and most likely results of reporting errors
[5] Actually log of hours worked per week +1 since the log of zero is non-defined.
[6] Due to differences across the waves in how to measure education I have used the answers from the two waves which asked directly for number of years in education and assumed that it is time invariant which is not likely to be very restrictive in a sample of 50+ individuals.
[7] Resulting in the values 4,7,11,14. The reason a wave variable (1,2,3,4) is not used is that the number of years between the waves differ, with a gap between 2007 and 2011.

Table 2. Summary statistics of variables

Variable		Mean	Std. Dev.	Min	Max	Observations
employed	overall	.945692	.2266504	0	1	N = 4364
	between		.2218835	0	1	n = 2740
	within		.1012754	.195692	1.612359	T-bar = 1.5927
lnhours	overall	3.625572	.3386625	0	4.110874	N = 4126
	between		.3350728	0	4.110874	n = 2610
	within		.1457677	1.606818	5.075755	T-bar = 1.58084
care	overall	.1110817	.3142749	0	1	N = 3772
	between		.2847634	0	1	n = 2408
	within		.1646658	-.6389183	.8610817	T-bar = 1.56645
icare	overall	.0161718	.1261526	0	1	N = 3772
	between		.1106725	0	1	n = 2408
	within		.07067	-.6504949	.7661718	T-bar = 1.56645
woman	overall	.5343721	.4988743	0	1	N = 4364
	between		.4985059	0	1	n = 2740
	within		0	.5343721	.5343721	T-bar = 1.5927
married	overall	.4926673	.5000035	0	1	N = 4364
	between		.415316	0	1	n = 2740
	within		.328417	-.1739994	1.242667	T-bar = 1.5927
highed	overall	.206462	.4048123	0	1	N = 4364
	between		.346063	0	1	n = 2740
	within		0	.206462	.206462	T-bar = 1.5927
badhea~h	overall	.0187901	.1357986	0	1	N = 4364
	between		.1360836	0	1	n = 2740
	within		.0654095	-.4812099	.7687901	T-bar = 1.5927
age	overall	58.66132	4.628372	50	79	N = 4364
	between		4.504482	50	79	n = 2740
	within		2.213795	53.32799	63.66132	T-bar = 1.5927
year	overall	8.653071	3.756414	4	13	N = 4364
	between		3.558114	4	13	n = 2740
	within		2.213795	3.319737	13.65307	T-bar = 1.5927

In the table, *N* refers to total number of observation and *n* is number of individuals. *T-bar* is *N* divided by *n* and hence refers to the average length of the panel. The table show that the mean of the *employment* variable is on a relatively expected level for this age group[8] and the mean of log of hours worked is 3.63 which means that the mean of working hours was about 37.5 hours per week. Since theoretically *employed* could be equal to one even for very few working hours it is interesting to see how many of the observations (where *employed*=1) have few hours worked. Inspecting the sample showed that less than three per cent of the observations had fewer than 20 working hours per week and only one per cent had less than ten working hours

[8] Total Unemployment levels in Sweden were relatively stable around 5% for this age group between 2004 and 2013.

per week making it unlikely to cause any bias to the results. Continuing to the other variables, women are slightly overrepresented in the sample. Around half of the respondents are married, and twenty per cent have more than 15 years of schooling. Further, around two per cent state that their health is bad or very bad and the mean age in the sample is 59 years. It can also be noted that the variables *employed*, *icare* and *badhealth* have relatively low within variation[9] (and the *icare* variable has also low overall variation). This is a reason of concern since low within variation reduces the efficiency in fixed effects estimation.

5.2.1. Attrition analysis

Since the number of respondents differed across the waves both in the original and the working sample indicating that some individuals had dropped out from the panel and that new had been added an attrition analysis was performed to investigate whether this caused any distortion to the main variables. Investigating the means of the *employed* and *lnhours* variables separately for each of the waves indicated that the *lnhours* variable was stable across the waves but that the mean of the *employed* variable showed a weakly increasing trend over the period. This could reflect that unemployed individuals had a higher tendency to drop out of the sample since actual unemployment levels were relatively stable during this period. To avoid this causing a bias the time variable *year* was included in all regressions to account for this trend. None of the independent variables *woman*, *care* and *icare* showed any clear trend over the period. Hence, although there are indications that informal caregiving did increase in Sweden during the period this is not reflected in my sample.

5.2.2. Informal care

The binary variable indicating that the individual was a regular caregiver: *care* (intensive caregiver: *icare*) was constructed to be equal to one if the respondent answered that she or he had given a biological parent, step-parent or parent in law help with: personal care, practical household work or paperwork at least weekly (daily) continuously during the last year[10]. As discussed previously asking specifically for care tasks has the advantage of reducing the risk of systematic differences in interpretation of the term "giving care". On the other hand it does not capture help that fall outside of these categories. Inspecting the distribution of caregiving in the

[9] Within variation refers to how much a variable changes over time *within an individual*. Hence, the variable *woman* has zero within variation since no individual changed their sex between the waves while other variables such as *employed* has above zero within variation since some individuals had changed employment status.
[10] Note that this definition is not the same as used by Kotsadam 2011, the reason is that SHARE survey does not ask specifically about care hours except for in the first wave. The definition is however the same as used in the survey study mentioned in Section 3.4.

sample showed that 12.2% of the women were caregivers and 1.6% were intensive caregivers. Among the men 9.9% were caregivers while 1.5% were intensive caregivers. Indicating that women are overrepresented among caregivers, but the differences are not very large. Note also that according to the definition used here all intensive caregivers are also regular caregivers. Or in other words, if $icare_i$=1 then $care_i$=1.

5.2.3. Public eldercare

A drawback of using the SHARE data panel in this context is that it does not include information about municipal residence of the respondents. This makes it difficult to control for the availability of public eldercare. Ideally resources spent on- or places per residents above 65 or 80 years in nursing homes and home-care services in respective municipality would have been used. But since we do not know in which municipality the respondent or their parents resided the Swedish national average would have had to be used. This variable is at best a very course measure of the supply of public eldercare available to the respondent and instead time-care interaction variables were used, to estimate whether the effect of informal caregiving had changed over time as public eldercare decreased.

5.3. Estimation strategy

The effect of being an informal caregiver on labor supply will be estimated using the two following general relationships:

1. $pr(employed) = \beta_0 + \beta_1 caregiver + x\beta$
2. $lnhours = \beta_0 + \beta_1 caregiver + x\beta$

where *caregiver* is a binary variable equal to one if the individual gave informal care weekly or more often (*care*) or daily (*icare*) and *x* is a vector of control variables. Again, *employed* is a binary variable indicating if the individual was in paid employment and *lnhours* is the log of hours worked. To get a first view of the sample the models were estimated using pooled OLS. Then, assuming an error structure of $\varepsilon_{i,t} = \alpha_i + u_{i,t}$ where α_i is individual specific and time invariant and $u_{i,t}$ is iid, the relationships were estimated with panel data estimators. If the assumptions that $\varepsilon_{i,t}$ are random factors - independently and identically distributed over the individuals- and strict exogeneity of the explanatory variables hold, the random effects (RE) estimator will be consistent. However, since informal care could be endogenous this assumption

might not hold. Therefore the fixed effects (FE) estimator was also considered. It requires only that *care* and *icare* are uncorrelated with $u_{i,t}$ which will be the case under the probable assumption that the unobserved heterogeneity comes from time invariant individual characteristics which will be captured in α_i (Heitmueller 2007: 551-552).

5.3.1. Estimating the effect on employment probability

It was not possible to run fixed effects regressions for the employment model. A possible explanation is that there was not enough within variation in the variables *care, icare* and *employment.* To be able to exploit the between variation I therefore estimate this model using the RE logit estimator and following Kotsadam (2011) I also apply the Mundlak-Chamberlain (MC) approach to add the over-time means of all time varying regressors as additional control variables. This approach can be thought of as a middle way between the fixed effects and random effects models. The model maintains the assumption of strict exogeneity of all independent variables (including *care* and *icare*) conditional on α_i but allows for arbitrary correlation with α_i . Under these assumptions the error terms $\varepsilon_{i,t} = \alpha_i + u_{i,t}$ satisfy $E(\varepsilon_{i,t}) = 0$ and $E(x_i' \varepsilon_{i,t}) = 0$ (Wooldridge 2002: 323-324).

5.3.2. Estimating the effect on hours worked

Since only a small proportion of the individuals in the sample were informal caregivers the FE estimator which exploits only the within variation will be comparatively small (see Table 2 for within variation in *care, icare, employed* and *lnhours*).

A possible way to improve the efficiency and to be able to estimate marginal effects of the time invariant control variables is to use the Hausman-Taylor (HT) estimator which creates internal instruments for time invariant as well as for assumed endogenous variables. Required conditions are that there are enough time varying exogenous variables to create instruments and that these correlate sufficiently with the time invariant variables. Under the assumption that the variables *married*, *age*, *badhealth* and *year* are exogenous[11] and time variant, the gender dummy *woman* is exogenous but time invariant, the education dummy *highed* is endogenous and time invariant and the caregiving variables are endogenous and time variant, the identification requirement is fulfilled. Correlation coefficients were calculated to give a first

[11] Actually it is not obvious that civil status and health are exogenous to education levels. However, the endogeneity is not likely to be very strong and the effect of *highed* on employment outcomes is not of main interest in the analysis.

indication of the validity of the instruments and are shown in Table 3. Since it is not immediately obvious that the correlations are strong enough to produce unbiased estimates the consistency of the HT estimator should be tested against the FE estimator using a Hausman test. It should be noted that the caregiving variables *care* and *icare* are instrumented with their deviation from individual means which is equivalent to the FE approach.

Table 3. Correlation coefficients for internal instruments and the time invariant variables *woman* and *highed*

	married	age	badhea~h	woman
married	1.0000			
age	-0.2018	1.0000		
badhealth	0.0006	0.0203	1.0000	
woman	-0.0314	-0.0856	-0.0047	1.0000

	married	age	badhea~h	highed
married	1.0000			
age	-0.2018	1.0000		
badhealth	0.0006	0.0203	1.0000	
highed	-0.1456	0.0013	-0.0088	1.0000

The empirical strategy is to run regressions using the RE, FE and HT estimators and to test the consistency of the potentially efficient but also potentially inconsistent estimators against the consistent FE estimator using standard Hausman tests. If the null hypothesis of no systematic difference between the estimates cannot be rejected, the RE or HT estimators are consistent and can be used.

6. Results

The results from the regression analysis are presented below with regression details in Table C in the appendix. The results from the pooled OLS estimation are presented in Table D in the appendix. The effects were fairly close to the panel model estimates but the Breusch-Pagan LM test rejected the null hypothesis of no panel effects. Therefore I continued to the panel framework in which all estimations were performed using individual clustered robust standard errors.

6.1. The effect of informal caregiving on employment probability

Regression results from estimating the effect of caregiving on employment probability are

shown in Table 4. The marginal effects reported in the table are logged odds and to interpret these I raised **e** to the power of the coefficients to get odds ratios which are the odds of being in employment for a caregiver relative to the odds of a non-caregiver. An odds ratio equal to one indicates that becoming a caregiver does not change the odds of being employed. For the RE model the odds ratio for regular caregivers was about 0.84 (column 1) and the ratio for intensive caregivers was 0.28 (column 3) indicating that the odds of being in employment for a caregiver is 84% of the odds for a non-caregiver and for an intensive caregiver this relation is 28%. These are relatively strong effects, however only the effect for intensive caregivers was statistically significant and that only at the 10% level. This results from high standard errors which can likely be traced to the low variation in the employment and caregiving variables discussed above. Still, these results indicate that being an intensive caregiver is associated with significantly lower odds of being in paid employment compared to regular and non-caregivers. The effects of the control variables are of expected signs and magnitudes. In the MC regressions (columns 2 and 4) where means of time varying variables were added as additional control variables the estimated effects are still high, actually higher (these results should however been considered in the light of the very high standard errors). It does not seem to be the case that allowing for arbitrary correlation between the independent variables and the individual fixed effects has remedied the potential endogeneity problem which will be more carefully considered in section 7.1. I will now proceed to the results from the working hours regressions.

Table 4. Regression results from RE and Mundlak-Chamberlain (MC) estimation on employment probability

	(1) REcare	(2) MCcare	(3) REicare	(4) MCicare
care	-0.175	-0.610		
	(0.339)	(0.513)		
icare			-1.265*	-2.008*
			(0.702)	(1.091)
woman	-0.400	-0.435	-0.395	-0.430
	(0.258)	(0.267)	(0.259)	(0.267)
married	0.399*	0.133	0.397*	0.138
	(0.239)	(0.351)	(0.240)	(0.353)
highed	0.633*	0.665*	0.646*	0.667*
	(0.349)	(0.357)	(0.350)	(0.358)
age	-0.0651**	-0.0555	-0.0651**	-0.0530
	(0.0283)	(0.0737)	(0.0281)	(0.0743)
badhealth	-1.223**	1.060	-1.233**	1.068
	(0.596)	(0.890)	(0.598)	(0.895)
year	0.147***	0.122**	0.147***	0.123**
	(0.0377)	(0.0507)	(0.0377)	(0.0509)
mean_care		0.802		
		(0.819)		
mean_mar~d		0.717		0.702
		(0.518)		(0.521)
mean_age		-0.00531		-0.00854
		(0.0739)		(0.0745)
mean_bad~h		-3.942***		-4.001***
		(1.058)		(1.062)
mean_icare				1.487
				(2.163)
_cons	7.667***	7.621***	7.692***	7.711***
	(1.761)	(1.921)	(1.749)	(1.910)
_cons	1.965***	2.021***	1.977***	2.028***
	(0.269)	(0.263)	(0.266)	(0.263)
N	3772	3772	3772	3772

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

6.2. The effect of informal caregiving on hours worked

Table 5 displays the results of estimating the effect of being a regular or intensive caregiver on working hours. Both the fixed effects estimator (column 2 and 4) and the random effects

estimator (column 1 and 3) yield small and insignificant effects of *care* and *icare*. The control variables have expected signs. The Hausman tests[12] rejected the null hypothesis of no difference and hence the consistency of the random effects estimator. Somewhat surprisingly the FE estimator has dropped the time effect due to collinearity. This omission is however not likely to cause a bias since the effect estimated by the RE and HT (see below) estimators yield significant but very small time effects.

Table 5. Estimation of effect of *care* and *icare* on *lnhours* using FE and RE estimator

	(1) REcare	(2) FEcare	(3) REicare	(4) FEicare
care	0.0134	0.00480		
	(0.0136)	(0.0176)		
icare			0.0233	0.0219
			(0.0245)	(0.0273)
woman	-0.127***	0	-0.126***	0
	(0.0126)	(.)	(0.0126)	(.)
married	-0.00737	0.00739	-0.00728	0.00742
	(0.0112)	(0.0170)	(0.0112)	(0.0170)
highed	0.0353**	0	0.0350**	0
	(0.0170)	(.)	(0.0170)	(.)
age	-0.0143***	-0.00874***	-0.0143***	-0.00873***
	(0.00164)	(0.00292)	(0.00164)	(0.00293)
badhealth	-0.260***	-0.123	-0.261***	-0.122
	(0.0643)	(0.0993)	(0.0643)	(0.0993)
year	0.00527***	0	0.00528***	0
	(0.00164)	(.)	(0.00164)	(.)
_cons	4.483***	4.141***	4.486***	4.140***
	(0.0942)	(0.177)	(0.0940)	(0.177)
N	3559	3559	3559	3559
R-sq		0.023		0.023

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Before interpreting these results I will proceed to performing the regression with the HT estimator to see if the efficiency of the estimation can be improved. The results are shown in Table 6.

[12] See Table A in appendix for results from Hausman tests.

Table 6. Estimation of effect of *care* and *icare* on working hours using FE and HT estimator

	(1) FEcare	(2) HTcare	(3) FEicare	(4) HTicare
care	0.00480	0.00753		
	(0.0176)	(0.0249)		
icare			0.0219	0.0240
			(0.0273)	(0.0561)
woman	0	-0.135***	0	-0.134***
	(.)	(0.0146)	(.)	(0.0146)
married	0.00739	0.00572	0.00742	0.00582
	(0.0170)	(0.0127)	(0.0170)	(0.0127)
highed	0	0.283***	0	0.283***
	(.)	(0.0890)	(.)	(0.0890)
age	-0.00874***	-0.0188***	-0.00873***	-0.0188***
	(0.00292)	(0.00291)	(0.00293)	(0.00291)
badhealth	-0.123	-0.267***	-0.122	-0.267***
	(0.0993)	(0.0417)	(0.0993)	(0.0417)
year	0	0.00974***	0	0.00975***
	(.)	(0.00243)	(.)	(0.00243)
_cons	4.141***	4.666***	4.140***	4.667***
	(0.177)	(0.152)	(0.177)	(0.152)
N	3559	3559	3559	3559
R-sq	0.023		0.023	

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

The HT estimates in Table 6 (column 2 and 4) are fairly in line with the fixed effects results but the Hausman test could not be conducted so I will stay with the fixed effects estimates [13]. The effects from the FE regressions (column 1 and 3) should be interpreted as follows: had the effects been statistically significant, being a regular caregiver would have been associated with 0.5% more hours worked and to be an intensive caregiver with 2.2% more hours worked. Hence, these results do not indicate that caregiving has a negative impact on working hours in Sweden. I will now proceed to test whether the effect of caregiving on hours worked has changed over time as public eldercare has decreased.

[13] The HT models failed to meet the asymptotic assumptions of the test which is common in small samples. See Table B in appendix for test output.

6.3. The effect of caregiving over time

The test strategy was to add interaction variables between the caregiving variables and year dummies in the regression to try to capture whether the effect of being an informal caregiver had changed over time. The interaction variables should be interpreted as the marginal effect on working hours of being a caregiver for each of the years with 2004 as the reference year. Hence, they also potentially capture other time varying effects not included in the model. Only if all other factors which can be expected to affect working hours remained constant over the period, the effect captured by these care-time interaction variables will be equivalent to the effect of decreased public eldercare. Although this is unlikely to hold perfectly, the trend of reduced public eldercare seems to have been relatively strong and comparing effects over time could give an indication of its importance. The results presented in Table 7 show that only one of the interaction variables was significant (*icare* in year 2011) and no trend of increasing negative impact on working hours was found for either regular (column 1) or intensive caregivers (column 2). There rather seems to be a weak trend in the opposite direction but the effects are small and mostly insignificant. Hence, there is no evidence that the effect of being an informal caregiver on hours worked had changed over the period.

Table 7. Effect of caregiving on working hours with time interaction variables

	(1) FEcare	(2) FEicare
care	-0.000535	
	(0.0256)	
1.y2007#1.care	-0.0288	
	(0.0260)	
1.y2011#1.care	0.0667	
	(0.0547)	
1.y2013#1.care	0.0419	
	(0.0423)	
icare		0.0465
		(0.0429)
1.y2007#1.icare		-0.0736
		(0.0516)
1.y2011#1.icare		0.178***
		(0.0498)
1.y2013#1.icare		0.00710
		(0.0532)
woman	0	0
	(.)	(.)
married	0.00358	0.00566
	(0.0178)	(0.0172)
highed	0	0
	(.)	(.)
age	-0.00970***	-0.00888***
	(0.00329)	(0.00299)
badhealth	-0.125	-0.122
	(0.0993)	(0.0994)
_cons	4.198***	4.150***
	(0.198)	(0.181)
N	3559	3559

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

6.4 Sensitivity analysis

To test whether the effect of *care* was driven by those individuals in this variable who were giving daily care I re-estimated the models using the variable *wcare* = *care* - *icare* which then included only regular caregivers. For the *lnhours* regression the effect of *wcare* was very close to the effect of *care* indicating that this was not the case. For the *employment* regression the estimated effect of *wcare* was significantly smaller than the effect of *care* indicating that the

strong negative effect on employment probability indeed seems to be driven by the intensive caregivers. The regression results are presented in Table E in the appendix.

Finally it could also be argued that on top of informal care being more common among women, the marginal labor market effects from providing informal care could also be more severe than for men. An argument for this to be the case is that it could be more socially acceptable for female caregivers to reduce their working hours or quit their jobs than it is for their male counterparts. To test this I ran fixed effects regressions on *lnhours* separate for men and women[14]. The regression output is found in Table F in the appendix. The results yielded that being an informal caregiver had no significant effect on hours worked in neither the female nor the male subsample and that the differences in the estimated effects were small.

7. Discussion

The purpose of this paper was to estimate the effect of informal caregiving on employment probability and working hours and to test the hypothesis that the effects have become more severe over time as public eldercare has become less available. A discussion of the results and an outlook on the political context, future research and policy development follows below.

7.1. Discussion of results

Beginning with the effect on employment probability, the results from the regression analysis are ambiguous. The RE logit estimates indicate a negative correlation between employment probability and informal caregiving, but it was not possible to test to which extent this correlation was driven by caregiving being endogenous since no fixed effects estimation could be conducted. In a UK study, Heitmueller (2007) shows that for panel data the estimated effect of informal caregiving on employment probability is upward biased, and – as in my results – very high, when not controlling for unobserved heterogeneity. He concludes that this endogeneity potentially reflects that caregivers often belong to a vulnerable group on the labor market. Therefore, increasing the supply of public eldercare might not be efficient in bringing these groups into work. The endogeneity indicates that the unemployment does not seem to stem directly from involuntary caregiving provided to substitute for public eldercare. He argues that policy should instead be targeted at enhancing the skills and employability of these groups

[14] Since the variation in the caregiver variables and the employment variables was already low it did not seem meaningful to divide the sample for the employment regression.

in general.

Since endogeneity could not be tested for, the results from my study cannot confirm or reject that informal caregiving in Sweden causes any large reductions in employment probability in general. However, the results indicate that, at least for groups with an already weak attachment to the labor market, caregiving seem to be one of the mechanisms decreasing the likelihood of being in or returning to paid employment and thus part of the complex combination of many factors reducing employment probabilities in these groups. For example caregiving could be something a currently unemployed individual does for a period because she or he has the time, but eventually this care might become indispensable which would reduce the possibility of reentering the labor market.

Proceeding to the relationship between caregiving and working hours no significant effect was found for either regular or intensive caregivers. These results are in line with results found for Norway (Kotsadam 2012). A possible explanation for the case that the labor supply effects seem weaker than theory would suggest is that some individuals might have bought private eldercare to substitute for public eldercare. These are then most likely those individuals who have to lose the most from giving informal care, e.g. people with high incomes and/or non-flexible work hours. Such a substitution would dampen the estimated average labor market effects of caregiving. Proceeding to the over-time effects of caregiving it is difficult to draw any conclusions since the direct effect of availability of public care could not be isolated from the general time effect. However, nothing in the estimation results indicates that the labor supply effects of informal caregiving have become more severe as a result of lower availability of public eldercare and a lower degree of freedom in the caregiving decision.

The results of this paper are fairly in line with results for Norway and northern European countries from studies using similar methods which also find weak or no labor supply effects. The estimated effects are however contradicting to the results found in the Swedish survey study presented in section 3.4. where 12% of the female and 8.9% of the male caregivers answered that they indeed had reduced their working hours as a result of their caregiving tasks. Since that study included help given to spouses and disabled children the results are not directly comparable as this help tends to be more time intense and hence to have a comparatively strong effect on labor supply. In their sample one out of ten caregivers was giving help to a spouse or a child under the age of ten while 60 % gave help to a parent (SOU 2014: 28 and 150). Hence

it seems unlikely that the entire difference in the results is attributable to the inclusion of this group. Further it has been shown that for SHARE data, the inclusion of spouses living in the same household caused virtually no change in the size of the caregiving coefficient (Bolin et al. 2008: 735). Instead different methods – direct survey questioning or quantitative inference from observed behavior – probably capture different aspects of the complicated mechanisms involved in the individual choice of informal caregiving.

7.2. Outlook and policy development

Reduced availability of public eldercare combined with comparatively high expectations on Swedish women to work in the market could explain why informal caregiving seems to be increasing without any large reductions in labor supply. If the results of this paper hold, it becomes evident that a growing group of people in Sweden are working double. Running the sample separately for men and women indicated that marginal effects do not differ substantially between women and men. Hence, the main driver of gender inequality from informal caregiving in Sweden seems to be that more women than men are caregivers and hence might carry a double workload. Returning to the theoretical model of labor supply, increasing informal care work while holding market work constant can only be done at the expense of foregone leisure. Aside from how equitable it is that society is placing such a heavy weight on this group it is difficult to see how it can be a sustainable solution. It seems reasonable to assume that leisure will be sacrificed in a first stage when the individual spends more hours on informal care. Studies confirm that informal caregivers in Sweden to a higher extent experience difficulties to find time for themselves and their needs (SCB 2006: 454-456) and that caregivers to some degree use vacation days and unpaid temporary leave to give care (SOU 2014: 28 and 147). In a second stage the stress and tiredness from double working could result in a reduction of market work.

Based on the findings of this paper it cannot be confirmed that the decreasing level of public eldercare and the increase in informal caregiving has come with a labor supply price, but better data is required to further investigate the relationship between informal caregiving and employment probability while controlling for endogeneity. Further, theory suggests that labor supply should eventually suffer in the long run if the trend with decreased supply of formal eldercare continues. Further research explicitly including variables indicating public and private availability of eldercare could help clearing the picture for the future.

What guidelines do these results provide to municipalities struggling with tight budgets and high unemployment? The good news are that cutting in the budgets to eldercare does not yet have seem to have caused large reductions in labor supply but the risk still prevails that this will happen if further reductions are made. More worrisome are the indications that a growing group of people are carrying the demanding task of combining care work and market work. This raises the question of economic compensation to caregivers. However, such a compensation is likely to create further incentives for substituting market work with care work if the compensation is extensive. This is the same critique as has been directed towards financial compensation for staying at home with a child[15]. There seems to be an inherent dilemma in this question and more research is warranted to give good policy advice. However, the results in this paper show that any Swedish government or municipality concerned with labor force participation and gender equality need to take informal caregiving into account when constructing eldercare and labor market policy. Meanwhile, the new center-left (social democratic and green party) government seems to have begun a policy shift towards moving back from informal to formal eldercare. In the 2015 spring budget proposition increased resources to public eldercare were motivated with that it will help female caregivers who have reduced their working hours to choose more market work (Swedish government 2015). The same argument can be used to argue for increasing privatized supply of eldercare, organized in the quasi-market form where each user is subsidized by the municipality which is aimed at securing equal access, user choice and create incentives for quality competition. The economics literature on public versus private organization in the health and welfare sector is vast. Also politically this dispute is in constant focus and the public can form their opinion based on empirical evidence and ideology. A return to the family however, whether it comes with labor market consequences or not, as a bearing pillar in eldercare has until now sailed under the radar and has constituted a conservative turn in liberal, progressive Sweden.

[15] The policy which in Sweden has been called *Vårdnadsbidraget*

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Appendix

Table A. Results Hausman tests RE estimator

	Coefficients (b) FE	(B) RE	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
care	.0049858	.0104511	-.0054652	.0200538
married	.0123749	.0052755	.0070993	.0133875
age	-.0081644	-.0142398	.0060755	.0023563
badhealth	-.1224561	-.298972	.1765159	.052115

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 61.83
Prob>chi2 = 0.0000

	Coefficients (b) iFE	(B) iRE	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
icare	.0222203	.0285942	-.006374	.0410494
married	.0124035	.0053839	.0070196	.0133843
age	-.0081546	-.014265	.0061105	.0023521
badhealth	-.122337	-.2992252	.1768882	.052118

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 63.56
Prob>chi2 = 0.0000

Table B. Results Hausman test HT estimator

	Coefficients			
	(b) FE_care	(B) HT_care	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
care	.0049858	.0091802	-.0041944	.
married	.0123749	.0222437	-.0098688	.0113747
age	-.0081644	-.0189336	.0107692	.
badhealth	-.1224561	-.3026923	.1802362	.0506083

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xthtaylor

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= -2.62 chi2<0 ==> model fitted on these data fails to meet the asymptotic assumptions of the Hausman test; see suest for a generalized test

	Coefficients			
	(b) FE_icare	(B) HT_icare	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
icare	.0222203	.0249021	-.0026818	.
married	.0124035	.0223385	-.009935	.0113729
age	-.0081546	-.0189477	.0107931	.
badhealth	-.122337	-.3028557	.1805187	.0506231

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xthtaylor

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= -2.65 chi2<0 ==> model fitted on these data fails to meet the asymptotic assumptions of the Hausman test; see suest for a generalized test

Table C. Regression details summary

lnhours	**N**	**Clusters**	ρ[16]	**R^2 within**	**R^2 between**	**R^2 overall**
REcare	3559	2288	.519	0.0146	0.0833	0.0698
REicare	3559	2288	.519	0.0147	0.0834	0.0697
FEcare	3559	2288	.664	0.0185	0.0348	0.0296
FEicare	3559	2288	.664	0.0186	0.0349	0.0296
HTcare	3559	2288	.524	-	-	-
HTicare	3559	2288	.525	-	-	-
FEcare with time interactions	3559	2288	.519	0.0150	0.0836	0.0703
FEicare with time interactions	3559	2288	.519	0.0146	0.0835	0.0698
employed						
REcare	3772	2408	.684	-	-	-
REicare	3772	2408	.697	-	-	-
MCcare	3772	2408	.698	-	-	-
MCicare	3772	2408	.697	-	-	-
Sensitivity analysis regressions						
women	1875	1207	.743	0.0075	0.0216	0.0185
men	1691	1086	.542	0.0425	0.0053	0.0195
iwomen	1875	1207	.743	0.0075	0.0215	0.0184
imen	1691	1086	.542	0.0425	0.0054	0.0196

[16] Fraction of variance due to u_i

hours_w	3559	2408	.664	0.0185	0.0347	0.0295
emp_w	3772	2413	.685	-	-	-
Pooled OLS						
lnhours care	3559	-	-	-	-	0.0712
lnhours icare	3559	-	-	-	-	0.0711
employed care	3772	-	-	-	-	0.0216[17]
employed icare	3772	-	-	-	-	0.0225[18]

Table D. Estimation output for Pooled OLS

	(1) lnhours	(2) lnhours	(3) employed	(4) employed
main				
care	0.0198		-0.110	
	(0.0150)		(0.232)	
icare		0.0209		-0.617
		(0.0280)		(0.445)
woman	-0.122***	-0.121***	-0.243	-0.244
	(0.0121)	(0.0121)	(0.166)	(0.167)
married	-0.0164	-0.0163	0.190	0.186
	(0.0117)	(0.0117)	(0.154)	(0.154)
highed	0.0379**	0.0374**	0.399*	0.399*
	(0.0154)	(0.0154)	(0.235)	(0.235)
age	-0.0134***	-0.0134***	-0.0421**	-0.0420**
	(0.00166)	(0.00166)	(0.0181)	(0.0179)
badhealth	-0.340***	-0.342***	-1.016***	-1.021***
	(0.0696)	(0.0696)	(0.341)	(0.341)
year	0.00449***	0.00449***	0.0901***	0.0892***
	(0.00161)	(0.00161)	(0.0228)	(0.0228)
_cons	4.444***	4.450***	4.620***	4.625***
	(0.0961)	(0.0957)	(1.096)	(1.087)
N	3559	3559	3772	3772
R-sq	0.077	0.077		

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

[17] Pseudo R^2
[18] Pseudo R^2

Table E. Estimation output separating weekly caregivers

	(1) hours_c	(2) hours_w	(3) emp_c	(4) emp_w
care	0.00480		-0.175	
	(0.0176)		(0.339)	
wcare		0.000498		0.0995
		(0.0184)		(0.367)
woman	0	0	-0.400	-0.405
	(.)	(.)	(0.258)	(0.258)
married	0.00739	0.00735	0.399*	0.398*
	(0.0170)	(0.0170)	(0.239)	(0.239)
highed	0	0	0.633*	0.640*
	(.)	(.)	(0.349)	(0.348)
age	-0.00874***	-0.00878***	-0.0651**	-0.0638**
	(0.00292)	(0.00292)	(0.0283)	(0.0282)
badhealth	-0.123	-0.123	-1.223**	-1.204**
	(0.0993)	(0.0993)	(0.596)	(0.594)
year	0	0	0.147***	0.147***
	(.)	(.)	(0.0377)	(0.0376)
_cons	4.141***	4.143***	7.667***	7.555***
	(0.177)	(0.177)	(1.761)	(1.748)
lnsig2u				
_cons			1.965***	1.961***
			(0.269)	(0.268)
N	3559	3559	3772	3772
R-sq	0.023	0.023		

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F. Estimation output from separate estimation men and women

	(1) women	(2) men	(3) iwomen	(4) imen
care	0.00154	0.0105		
	(0.0193)	(0.0327)		
icare			0.00127	0.0266
			(0.0310)	(0.0431)
married	-0.0232	0.0344	-0.0231	0.0338
	(0.0231)	(0.0249)	(0.0231)	(0.0248)
highed	0	0	0	0
	(.)	(.)	(.)	(.)
age	-0.00643*	-0.0113***	-0.00643	-0.0114***
	(0.00391)	(0.00435)	(0.00391)	(0.00437)
badhealth	-0.0553	-0.214	-0.0553	-0.214
	(0.0787)	(0.210)	(0.0787)	(0.210)
year	0	0	0	0
	(.)	(.)	(.)	(.)
_cons	3.965***	4.338***	3.965***	4.344***
	(0.234)	(0.266)	(0.235)	(0.267)
N	1869	1690	1869	1690
R-sq	0.007	0.055	0.007	0.055

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01