Employment and the distribution of intra-household financial satisfaction~~Wellbeing~~

Supplementary file

Non-linear estimation strategy

In cases where the dependent variable takes an ordered limited set of values such as data on subjective assessments~~wellbeing (SWB) measures~~, the standard approach to estimation is the ordered logit model. Implementing fixed effects estimators for ordered logit models is somewhat complex and the use of a random effects model as an alternative would be at the cost of not being able to address the issue of time invariant unobserved heterogeneity; thus leading to inconsistent results (Cameron & Trivedi, 2005). Nonetheless, Baetshmann et al. (2015) have provided insight into non-linear strategies which can incorporate fixed effects. In particular, they used Monte Carlo simulations to explore methodologies proposed by previous researchers who provided applications of ordered logit models in a way which incorporated fixed effects. Their assessment included the Ferrer-i-Carbonell and Frijters (FF) estimator, maximum distance methods (MD), generalised method of moments (GMM), empirical likelihood (EL), and blow-up and cluster (BUC) estimators (see Baetshmann et al., 2015 for technical details). Their results demonstrated that BUC estimators were generally unbiased and efficient relative to the FF, MD, GMM, and EL estimators, making them an attractive option. Moreover, the BUC approach has been used successfully by a number of studies which use satisfaction data~~on SWB~~ (see for example, Brown & Gray, 2016; Ambrey et al., 2017; Lepinteur, 2019). Hence the BUC method is employed for this robustness check. This leads to a latent variable model with ordered responses, modelled as follows:

$$s_{jt}^{*m} = \alpha_{1\mathrm{m}}\boldsymbol{E_{jt}^{m}} + \alpha_{1w}\boldsymbol{E_{jt}^{w}} + \delta_{1\mathrm{m}}\boldsymbol{C_{jt}^{O}} + \delta_{2\mathrm{m}}\boldsymbol{C_{jt}^{P}} + t_1 + \boldsymbol{\gamma_{jt}^{m}} + \varepsilon_{1jt} \qquad (3)$$

$$s_{jt}^{*w} = \alpha_{2\mathrm{m}}\boldsymbol{E_{jt}^{m}} + \alpha_{2w}\boldsymbol{E_{jt}^{w}} + \delta_{1\mathrm{w}}\boldsymbol{C_{jt}^{O}} + \delta_{2\mathrm{w}}\boldsymbol{C_{jt}^{P}} + t_2 + \boldsymbol{\gamma_{jt}^{w}} + \varepsilon_{2jt} \qquad (4)$$

As shown in equations (3) and (4), s_{jt}^{*m} and s_{jt}^{*w} are latent measures for satisfaction with financial situation (SWFS)~~of the subjective financial wellbeing (SFWB)~~ of the man and woman in the jth household at time t, respectively. The explanatory variables in equation (3) and (4) are defined as in equations (1) and (2). The vectors of variables $\boldsymbol{\gamma_{jt}^{m}}$ and $\boldsymbol{\gamma_{jt}^{w}}$ are individual fixed effects which capture time invariant unobservable heterogeneity for the man and the woman respectively. ε_{1jt} and ε_{2jt} are randomly distributed error terms with a mean of zero. Since the latent variables s_{jt}^{*m} and s_{jt}^{*w} are unobservable, s_{jt}^{m} and s_{jt}^{w} are observed such that:

$$s_{jt}^{m} = k \text{ if } \mu_k < s_{jt}^{*m} \leq \mu_{k+1},\ k = 1,\ldots.\text{K} \qquad (3.1)$$

$$s_{jt}^{w} = k \text{ if } \mu_k < s_{jt}^{*w} \leq \mu_{k+1},\ k = 1,\ldots.\text{K} \qquad (4.1)$$

As mentioned earlier, the answers from the HILDA survey to the question "How satisfied are you with your financial situation?" include categorical responses to the question on a scale from 0 to 10 therefore, K is equal to 11. The individual specific threshold parameters μ_k are increasing for all values of k, with $\mu_k = -\infty$ and $\mu_{k+1} = +\infty$. The fixed effects logit model assumes that the white noise error term ε_{it} is independently and identically distributed (IID) with logistic cumulative distribution function:

$$F\left(\varepsilon_{1it} \middle| E_{jt}^{m},\ E_{jt}^{w}, C_{jt}^{O}, C_{jt}^{P}, t_1, \gamma_{jt}^{m}\right) = F(\varepsilon_{1it}) = \frac{1}{1+\exp(-\varepsilon_{1it})} \equiv \Lambda(\varepsilon_{1it}) \qquad (3.2)$$

$$F\left(\varepsilon_{2it} \middle| E_{jt}^{m},\ E_{jt}^{w}, C_{jt}^{O}, C_{jt}^{P}, t_1, \gamma_{jt}^{w}\right) = F(\varepsilon_{2it}) = \frac{1}{1+\exp(-\varepsilon_{2it})} \equiv \Lambda(\varepsilon_{2it}) \qquad (4.2)$$

$\Lambda(.)$ is the cumulative logistic distribution. The BUC estimators are implemented by replacing each observation in the sample by K-1 copies of itself. Each of the K-1 copies of the individual are then dichotomised at a different cut-off point. Essentially, this "blows up" the sample size (Baetshmann et al., 2015: ~~, p.~~ 690). After the sample has been "blown up" a standard conditional logit estimation is applied to the sample, with clustered standard errors. One shortfall with regard to the BUC estimators is that marginal effects cannot be calculated, although the sign and statistical significance of the coefficients can be observed. Therefore, not much can be said about the independent magnitude of the coefficients, though it is possible to comment on the sign and statistical significance of the coefficients, as well as the ratio of coefficients. Nonetheless, this is sufficient for comparing the outcomes of the man's and the woman's employment outcomes on SFWB which is the main purpose of this study.

BUC estimation strategy results

The results for the ordered logit BUC estimations are presented in Table S5. The results for the ordered logit BUC estimations of the baseline regression models are presented in Table S1. As a result of using this methodology, the number of observations artificially increases to 197,704 for men and 212,444 for women. In addition, the number of blown up observations are different for men and women because individuals who do not display any variation in their financial satisfaction are excluded in the estimation samples.

As before, controlling for equivalised household income, number and ages of children, age, health, and education does not alter the sign or the statistical significance of the employment variables. Thus, the description of the results is focused on Model C. For both

men and women, if either partner is employed less than full-time there are negative associations with SWFS~~SFWB~~. For men, their own contributions are more important than their partner's contributions in determining their SWFS~~SFWB~~. That is, for men, negative outcomes are more pronounced if they move from full-time employment to being part-time employed, unemployed or economically inactive, compared to if their partners made the same move. For women, the negative effects of her own move from full-time employment to part-time employment and her partners move from full-time employment to part-time employment are very similar. However, the negative effects of her own move from full-time employment to unemployment or being economically inactive are larger than those associated with a similar move by her partner.

The similarity between the results using ordered logit BUC and OLS fixed effects estimation strategies confirm that the results are robust to either methodology. Furthermore, although not the main focus of this study, this application contributes towards the literature suggesting that when analysing satisfaction measures~~measuring SWB~~, whether one assumes linear or non-linear fixed effects strategies, very similar outcomes are reached.

Table S1

Ordered Logit BUC Regression Results for Men's and Women's Financial Satisfaction

	Men			Women		
	(1)	(2)	(3)	(4)	(5)	(6)
	Model A	Model B	Model C	Model A	Model B	Model C
Man's employment status (ref: employed full-time)						
Part-time	-0.654***	-0.598***	-0.614***	-0.391***	-0.338***	-0.334***
	(0.050)	(0.050)	(0.050)	(0.049)	(0.049)	(0.049)
Economically inactive	-1.231***	-1.134***	-1.131***	-0.569***	-0.481***	-0.469***
	(0.074)	(0.074)	(0.074)	(0.068)	(0.068)	(0.069)
Unemployed	-1.635***	-1.576***	-1.582***	-0.845***	-0.784***	-0.782***
	(0.079)	(0.079)	(0.079)	(0.079)	(0.079)	(0.080)
Woman's employment status (ref: employed full-time)						
Part-time	-0.232***	-0.119***	-0.119***	-0.457***	-0.357***	-0.353***
	(0.033)	(0.034)	(0.034)	(0.035)	(0.036)	(0.036)
Economically inactive	-0.304***	-0.126***	-0.126***	-0.726***	-0.573***	-0.565***
	(0.044)	(0.045)	(0.045)	(0.045)	(0.047)	(0.047)
Unemployed	-0.543***	-0.410***	-0.408***	-1.386***	-1.279***	-1.276***
	(0.068)	(0.069)	(0.068)	(0.072)	(0.072)	(0.072)
Log equivalised monthly household income		0.634***	0.650***		0.563***	0.564***
		(0.041)	(0.041)		(0.040)	(0.041)
No. children 0–4 years		-0.065**	-0.023		-0.052*	-0.050

	(0.028)	(0.030)	(0.028)	(0.031)
No. children 5–9 years	-0.029	0.024	-0.017	-0.008
	(0.027)	(0.030)	(0.028)	(0.032)
No. children 10–14 years	-0.049*	0.001	-0.057**	-0.048
	(0.026)	(0.030)	(0.027)	(0.030)
No. children 15–24 years	-0.073**	-0.030	-0.031	-0.022
	(0.031)	(0.033)	(0.031)	(0.032)
Man's age		-0.024		0.103***
		(0.032)		(0.032)
Man's age squared		0.001		-0.001
		(0.000)		(0.000)
Woman's age		-0.004		-0.070**
		(0.032)		(0.032)
Woman's age squared		0.000		0.001**
		(0.000)		(0.000)
Man's presence of a health condition		-0.154***		-0.067*
		(0.035)		(0.034)
Woman's presence of a health condition		-0.125***		-0.190***
		(0.035)		(0.035)
Man's years in education		0.006		0.016
		(0.028)		(0.027)
Woman's years in education		0.013		0.009
		(0.020)		(0.021)

Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N (observations)	57,092	57,092	57,092	57,092	57,092	57,092
Couples	8,478	8,478	8,478	8,478	8,478	8,478
BUC observations	197,704	197,704	197,704	212,444	212,444	212,444

Note. The bracketed terms are robust standard errors (clustered by couples). The sample consists of men and women in mixed-sex couples, between the ages of 18–65 years old who were interviewed in the HILDA survey, waves 1–18.
*p < .10. **p < .05. *** p < .01.

References

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