Appreciating the Proceeds from Household Production – The Determination of Extended Income Equivalence Scales from Income Satisfaction and Time Use Data

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Economists often use equivalence scales to make the economic well-being of differently structured households comparable. A vast body of literature is concerned with empirically determining the monetary compensations needed to allow households to enjoy the same standard of living/well-being as additional members join that household. The question of what these compensations should cover remains to be normative, though. Possible answers range from only market commodities' consumption to full costs in terms of all household resources, including money and time.

Several empirical studies assume self-reported income satisfaction to be a suitable measure of well-being and calculate necessary increases in households' money incomes associated with additional household members (e.g., Schwarze, 2003, Biewen & Juhasz, 2017). The well-being effect of time and hence the time cost of additional household members has remained largely unrecognized by these studies. They do not account for the fact that domestic production represents a positive value to the household that one might also wish to compensate for in monetary terms. To my knowledge, no study based on income satisfaction data, has attempted to construct an extended income equivalence scale that takes money incomes and the proceeds from household production into account. This is despite there being a growing interest in the value of household production and continuous efforts to include time costs in the estimation of equivalence scales based on other approaches. Full costs of additional household members (including domestic production and leisure) have been investigated and incorporated into full cost equivalence scales based on time use and income or expenditure data (Apps & Rees, 2002, Gardes & Starzec, 2017) or based on direct survey evidence (Koulovatianos et al., 2009). The present paper contributes to the literature by taking an important component of the time cost of additional household members, namely increases in domestic work, into account when estimating equivalence scales from income satisfaction data. The starting point of the analysis is the idea that respondents may recognize the value of (their and their partner's) unpaid work at home and evaluate their extended instead of their monetary income when assessing their satisfaction with household income. One can easily imagine that the heads of two otherwise identical households evaluate their income satisfaction differently depending on whether two full-time employed partners generate the household's income or one breadwinner earns the same amount while the partner fully engages in domestic work. If respondents appreciate the proceeds from household production, regressing satisfaction on monetary instead of extended income will lead to an underestimation of the compensations needed to keep income satisfaction constant, provided that household production is positively related to household size. The data needed to estimate extended income equivalence scales from income satisfaction data is available in the German Socio-Economic Panel. Extended incomes can be constructed using relatively comprehensive time use data collected during seven waves from 2001 to 2013. Based on a broad definition of household production, which includes all activities labelled as running errands, housework, childcare, caring and repairing, I assess its value using the opportunity cost method, pricing each hour spent in domestic production by the individual's actual or potential wage. The latter's assessment rests upon wage equations that also account for women's selection into employment.

Including extended instead of monetary household incomes in the regression of income satisfaction leads to an extended income equivalence scale whose parameter for adults virtually does not change while that of children is about 40 percentage points higher than in the money equivalence scale. Unfortunately, the model fit deteriorates massively when extended incomes replace money incomes. This suggests that our hypothesis of respondents appreciating the value of household production when evaluating their income is untrue. In fact, a closer examination of the relationship between hours worked in domestic production and income satisfaction shows that the effect is negative, even after controlling for individual hours of leisure and the share of income contributed or when using satisfaction with the standard of living as the dependent variable. Instead of appreciating the proceeds from household production, individuals seem to perceive only the costs associated with it. Possibly, respondents are less satisfied with their income because it is not enough to afford market services to substitute for their domestic work. As income satisfaction data does not seem to incorporate the benefits from household production, I suggest a second approach to estimating an extended income equivalence scale following a two-step procedure. First, regressing income satisfaction on actual household income and family structure reveals the equivalence scale in monetary well-being. By this, one can calculate the equivalent income that allows each household member to experience the same monetary satisfaction alone as in her current situation. I can then determine the household work requirements by different household types at given levels of monetary well-being. Different specifications allow me to disentangle the distribution of workload across genders and household types. I find that at given levels of monetary well-being, the hours of domestic work increase massively when an adult partner is present and a bit less, but still considerably, in the number of children. Looking at household types separately, I find that the first child requires more additional household work than an adult partner does. Women satisfy a great share of the increase in household work requirements and young children present households with greater home production requirements than older children. Furthermore, I show that the results are quite robust to changes in the regression equation used to estimate the monetary equivalence scale or to an arbitrary choice of the monetary equivalence scale. At the same time, the inclusion of an indicator of monetary well-being proves important when comparing domestic production across households. If the value of household production is assessed in relation to singles' mean household income, the weight that the extended income equivalence scale assigns to adults (children) is about 79 (54) percentage points higher than that of the monetary scale.