

## A Comment on the Timm Baenke and Carsten Schroeder paper "Country inequality rankings and conversion schemes"

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This paper looks at the impact of variations in household equivalizing (square root and squared square root rule scaling) and weighting schemes (needs and size) on country inequality rankings using a generalized entropy (GE) class of inequality measures<sup>1</sup> applied to countries in the Luxembourg income study. A bootstrap approach to developing confidence intervals for differences was followed together with using Kendall's Tau to examine changes in country rankings each of which revealed that rankings were sensitive to weighting schemes for "reasonable" within household economies of scale in consumption, none of which I would dispute. However I would argue that the study has missed an opportunity to thoroughly explore issues in equivalizing incomes that have beset the practice in the last quarter century. The paper could have done with a discussion of the issues and an attempt at looking at equivalizing scales that varied with the size of equivalized income.

In justifying their decision to just consider 2 very simple equivalizing schemes the authors aver that "There is broad consensus regarding the adjustment of household incomes via equivalence scales in order to control for household economies when research involves the distribution of income and living standards in a society.". I would beg to differ, whilst this may be true of researchers who work on aggregate wellbeing measurement per se, it is certainly not true of researchers who study household consumption patterns and the nature of the households sharing decisions with regard to wellbeing (see Browning, M., P. A. Chiappori, and A. Lewbel, 2006 for example). That literature suggests that equivalizing formulae will vary with incomes, prices, the structure of the family etc. and any sensible formula would go some way to accommodate this (a good review of this literature is to be found in Lewbel and Pendakur, 2007).

Equivalence scales are of concern when the agent of comparison is not the agent of observation. Social welfare is generally thought to be a function of individual rather than household wellbeing, unfortunately the instrument of comparison (usually consumption or income) is usually measured in the context of households. Essentially they reflect how much household scale economies in consumption matter. Regrettably attempts to estimate appropriate adult equivalence adjustment scales from demand studies abound with identification problems and assumptions that surmount these have been found to lack consonance with the data. This has fostered rather than hindered the debate on what values these fundamentally unidentifiable quantities should take and prompted a plethora of proposed formulae or functional forms for the scale! Ideally an equivalence scale should equate the utility index of an individual in a given family unit to that of an individual in a reference family unit enjoying the same level of welfare. Thus generally determining what the appropriate equivalence scale should be lies in the realm of

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<sup>1</sup> Generalized Entropy Inequality Measures require specification of a parameter  $\alpha$  which relates to the sensitivity of such measures to variations in high incomes, in this study values of  $\alpha$  of 0, 1 and 2 were used.

the theory of consumer behavior and is determined by the nature of the indirect utility function presumed for the “average” family.

Consider a household Indirect Utility Function defined by:  $V(p,x,z)=\max_q(U(q,z) \text{ s.t. } \sum_i p_i q_i = x)$  where  $p$  is a vector of prices corresponding to a vector of commodities  $q$  constrained by expenditure  $x$  and  $z$  is a vector of household characteristics (e.g. numbers and ages of children etc.) The welfare of two families  $a$  and  $b$  is equal if and only if  $V(p,x_a,z_a) = V(p,x_b,z_b)$  so the identification of  $V()$  permits interpersonal comparisons of utility in a simple fashion and the number of adult equivalents  $d(p,x,z)$  relative to a reference household  $z^R$  is defined implicitly by:

$$V(p,x,z^R)=V(p,x/d(p,x,z),z).$$

As such it will generally be a function of prices and income levels. Indeed it has been argued that the equivalence scale should differ by the type of consumption good demanded, which makes eminent sense when it is noted that economies of scale in consumption usually differ by type of good consumed (Donaldson and Pendakur 2012).<sup>2</sup> This would imply that the overall equivalence scale for wellbeing comparisons of aggregate consumption or income purposes should be a weighted sum of the subgroup equivalence scales where the weights would be the consumption shares.

Unfortunately, in the absence of more information, there are serious problems with the identification and estimation of  $d$  (Blundell and Lewbel, 1991) and attempts at proposing restrictions (Blackorby and Donaldson, 1988, 1993, Pendakur 1999, Donaldson and Pendakur 2004) have lacked consonance with the data. Hence we observe the employment of ad hoc measures in the literature that have been the subject of so much debate (see, inter alia, Buhmann et al., 1988; Coulter et al., 1992; Banks and Johnson, 1994; Jenkins and Cowell, 1994 and references cited therein). In practice, in the absence of prices faced by the agents and other means of identifying  $d$ , a class of equivalence scales is entertained wherein utility has an elasticity of  $-\theta$  with respect to household size ( $n$ ). Household utility is then measured by  $Y/n^\theta$  where  $Y$  corresponds to household disposable income,  $n$  to household size and  $n^\theta$  to the equivalent number of single persons. Obviously such scales are independent of income, prices and to some degree the nature of the family beyond its size (for example they are independent of gender mix, who are the income earners in the family and how the sharing decisions are made). In the wellbeing measurement literature values of  $\theta$  in the interval  $[0, 1]$  have been employed where 0 may be interpreted as infinite returns to family size ( $Y$  is the welfare enjoyed by each of the individual family members no matter how many of them there are and indeed who they are) and 1 is interpreted as constant returns to family size (with  $Y$  being shared equally among the family members). Generally something in between is favoured (see, for example, Karoly and Burtless, 1995; Lanjouw and Ravallion, 1995), the official United States Bureau of the Census poverty scale has an implicit family size elasticity of 0.56 and though it has been the subject of criticism (Citro and Michael, 1995) this is the scale most frequently used by researchers (which presumably prompted the authors to use 0.5 and 0.25). Here is the point, noting that Generalized Entropy inequality indices were used which allowed for varying sensitivity to variations in high

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<sup>2</sup> Interestingly enough the most commonly used equivalence scale (and one of the two employed in this study), the “square root rule” was developed in the context of a food consumption budget study (Brady and Barber 1948).

incomes, it would have been interesting to let the equivalizing formulae vary with income to some degree and see the extent to which that affected rankings at different levels of high income sensitivity of the inequality indices. If they showed little response it would have vindicated the use of income independent household scaling measures in wellbeing measurement.

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