

## WHAT ARE EQUIVALENCE SCALES?

The needs of a household grow with each additional member but – due to economies of scale in consumption– not in a proportional way. Needs for housing space, electricity, etc. will not be three times as high for a household with three members than for a single person. With the help of *equivalence scales* each household type in the population is assigned a value in proportion to its needs. The factors commonly taken into account to assign these values are the *size of the household* and the *age of its members* (whether they are adults or children). A wide range of equivalence scales exist, many of which are reviewed in Atkinson *et al.* (1995). Some of the most commonly used scales include:

- **“OECD equivalence scale”**. This assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child. This scale (also called “Oxford scale”) was mentioned by OECD (1982) for *possible* use in “*countries which have not established their own equivalence scale*”. For this reason, this scale is sometimes labelled “(old) OECD scale”.
- **"OECD-modified scale"**. After having used the “old OECD scale” in the 1980s and the earlier 1990s, the Statistical Office of the European Union (EUROSTAT) adopted in the late 1990s the so-called “OECD-modified equivalence scale”. This scale, first proposed by Haagenars *et al.* (1994), assigns a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child.
- **Square root scale**. Recent OECD publications (e.g. OECD 2011, OECD 2008) comparing income inequality and poverty across countries use a scale which divides household income by the square root of household size. This implies that, for instance, a household of four persons has needs twice as large as one composed of a single person. However, some OECD country reviews, especially for Non-Member Economies, apply equivalence scales which are in use in each country.

The table below illustrates how needs are assumed to change as household size increases, for the three equivalence scales described above and for the two “extreme” cases of no sharing of resources within household (per-capita income) and full sharing (household income). In general, there is *no accepted method* for determining equivalence scales, and no equivalence scale is recommended by the OECD for general use.

### What are equivalence scales (cont.)

Household size	Equivalence scale				
	per-capita income	“Oxford” scale (“Old OECD scale”)	“OECD-modified” scale	Square root scale	Household income
1 adult	1	1	1	1	1
2 adults	2	1.7	1.5	1.4	1
2 adults, 1 child	3	2.2	1.8	1.7	1
2 adults, 2 children	4	2.7	2.1	2.0	1
2 adults, 3 children	5	3.2	2.4	2.2	1
<i>Elasticity</i> <sup>1</sup>	1	0.73	0.53	0.50	0

<sup>1</sup> Using household size as the determinant, equivalence scales can be expressed through an "equivalence elasticity", i.e. the power by which economic needs change with household size. The equivalence elasticity can range from 0 (when unadjusted household disposable income is taken as the income measure) to 1 (when per capita household income is used). The smaller the value for this elasticity, the higher the economies of scale in consumption.

#### **The effects of different equivalence scales**

The choice of a particular equivalence scale depends on *technical assumptions* about economies of scale in consumption as well as on *value judgements* about the priority assigned to the needs of different individuals such as children or the elderly. These judgements will affect results. For example, the poverty rate of the elderly will be lower (and that of children higher) when using scales that give greater weight to each additional household member (Förster 1994). In selecting a particular equivalence scale, it is therefore important to be aware of its potential effect on the level of inequality and poverty, on the size of the poor population and its composition, and on the ranking of countries. Sensitivity analyses suggest that while the level and, in particular, the composition of income poverty are affected by the use of different equivalence scales, trends over time and rankings across countries are much less affected (Burniaux *et al.*, 1998).

#### **References**

- Atkinson, A.B., L. Rainwater and T. M. Smeeding (1995), *Income Distribution in OECD Countries*, *OECD Social Policy Studies*, No. 18, Paris.
- Burniaux, J-M, T-T Dang, D. Fore, M.F. Förster, M. Mira d'Ercole and H. Oxley (1998), “Income Distribution and Poverty in Selected OECD Countries”, *OECD Economics Department Working Paper*, No. 189, Paris.  
[www.oecd.org/dataoecd/34/37/1864447.pdf](http://www.oecd.org/dataoecd/34/37/1864447.pdf) via [www.oecd.org/eco/working\\_papers](http://www.oecd.org/eco/working_papers)
- Hagenaars, A., K. de Vos and M.A. Zaidi (1994), *Poverty Statistics in the Late 1980s: Research Based on Micro-data*, Office for Official Publications of the European Communities. Luxembourg.
- Förster, M.F. (1994), “Measurement of Low Incomes and Poverty in a Perspective of International Comparisons”, *OECD Labour Market and Social Policy Occasional Paper*, No. 14, Paris.  
<http://www.oecd.org/dataoecd/45/58/1895548.pdf>
- OECD (1982), *The OECD List of Social Indicators*, Paris.
- OECD (2008), *Growing Unequal ? Income Distribution and Poverty in OECD Countries*, Paris.
- OECD (2011), *Divided We Stand – Why Inequality Keeps Rising*, Paris.  
[www.oecd.org/social/inequality.htm](http://www.oecd.org/social/inequality.htm) / [www.oecd.org/fr/social/inegalite.htm](http://www.oecd.org/fr/social/inegalite.htm) )