

Activity: Redistribution Motivations and Foundations

Econ 308

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1 Gruber 17.1: It's Absolutely Relative

As Table 17-2 shows, members of the poorest fifth of U.S. households have a much smaller share of total U.S. income than is typical in other developed countries. Does this mean that the poorest fifth of U.S. households are worse off in the United States than are the poorest fifth of households elsewhere? Why or why not?

Table 17.2, Income Share in Total Income for OECD Nations, Page 490

Income Share in Total Income						
Country (2018)	Bottom 10%	Bottom 20%	Bottom 40%	Top 40%	Top 20%	Top 10%
Austria	3.1	8.5	22.7	59.4	36.6	22.3
Belgium	3.8	9.2	23.3	58.1	34.8	20.7
Canada	2.9	7.8	21.0	61.1	37.8	22.9
Czech Republic	4.1	9.9	24.3	57.5	34.7	20.5
Denmark	3.8	9.5	23.6	58.3	35.7	21.9
Finland	3.9	9.4	23.4	58.8	36.3	22.3
France	3.4	8.6	21.9	60.8	39.0	25.0
Germany	3.3	8.5	22.1	60.1	37.5	23.2
Greece	2.9	7.7	20.9	61.5	38.2	23.4
Hungary	3.2	8.5	22.2	60.2	37.5	23.1
Italy	2.0	6.6	19.4	63.0	39.7	24.5
Korea	2.2	6.2	18.4	64.4	40.7	25.0
Luxembourg	2.7	7.6	20.5	62.2	39.5	24.6
Mexico	2.0	5.6	15.9	69.4	47.9	32.3
New Zealand	2.9	7.3	19.2	64.5	42.2	27.5
Norway	3.3	8.9	23.6	57.9	35.2	21.4
Poland	3.2	8.5	22.3	59.6	36.6	22.2
Portugal	3.0	7.8	20.7	62.2	39.8	25.1
Slovak Republic	3.5	9.4	24.5	56.5	32.8	18.5
Sweden	3.5	8.7	22.6	59.4	36.6	22.7
Turkey	2.4	6.2	17.1	67.7	46.3	31.3
United Kingdom	2.4	6.7	18.5	65.4	43.6	29.0
OECD	2.9	7.7	20.6	62.3	39.6	24.8
United States	1.6	5.3	16.2	67.6	44.5	28.5

Total income in the US is much higher than many other countries, so bottom 20% is likely richer than other countries' bottom 20%

2 Measuring Poverty

The US poverty threshold increases with household size:

2023 POVERTY GUIDELINES FOR THE 48 CONTIGUOUS STATES AND THE DISTRICT OF COLUMBIA	
Persons in family/household	Poverty guideline
1	\$14,580
2	\$19,720
3	\$24,860
4	\$30,000
5	\$35,140
6	\$40,280
7	\$45,420
8	\$50,560

This is because a larger household needs more income to achieve a given level of utility, but the question is how much more income? **Equivalence scales** are the economist's way of answering this question and provide the means of adjusting measured incomes into comparable quantities.

- a. Observe that the US poverty threshold for a family of size $N \geq 2$ is not simply N times the poverty threshold for a family of size 1. This is because there are economies of scale in family size. Provide some examples of such economies of scale.

N person family does not need $N \times$ same poverty for one family, family plans (bulk) \rightarrow cheaper

- b. There are two senior advisors to the government, A and B , who both agree that the poverty line is at \$12,000 for a single person. However, they have different equivalence scales. A believes that the scale factor in determining income should be 0.25 for each additional family member (i.e., an additional \$3,000/person). B suggests that the scale factor should be 0.5 for each additional family member.

- i. Find the poverty threshold for a family of two, three, and four under both values of the scale factor 0.25 and 0.5.

Scale Factor	Single	Two	Three	Four
0.25	12,000	12,000	15,000	21,000
0.5	12,000	18,000	24,000	30,000

- ii. Which advisor believes that the economies of scale in family size are larger?

Advisor A

- iii. Suppose the government is committed to provide welfare eligibility to every family below the poverty threshold. If this government wishes to keep total welfare spending to a minimum, which of the two advisors should it listen to?

Advisor A

Bonus. Assume a family utility function $U = \ln\left(\frac{M^2}{d}\right)$ where M is family income and d is family size.

And suppose that the government wants to set poverty thresholds so that at each threshold by family size, family utility is the same. Determine the implied equivalence scale: the ratio of the poverty threshold for a family of size d to the poverty threshold for a family of size 1. How much larger is the poverty threshold for a family size of 2, or 4?

$$\ln(M^2) - \ln(d)$$

$$u = k$$

$$M^2 \propto d$$

$$k = \ln\left(\frac{M^2}{d}\right)$$

$$\frac{1}{\sqrt{2}}$$