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On the income dependence of equivalence scales

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Abstract

Household consumption exhibits economies of scale as the number of household members increases. We collect survey data from two countries, Germany and France, in order to obtain direct subjective estimates of household consumption economies of scale, and, in particular, to examine an additional dimension: whether household consumption economies of scale change as living standards go up. Our data from both countries indicate strongly that household economies of scale increase as the living standard goes up. We discuss the robustness of our survey method and compare our results to these of alternative estimation methods in the literature.

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1. Introduction

As the number of family members increases in a household, the sharing of goods such as housing, furniture, household appliances or private means of transportation, also increases. Thus, in order to retain the same per-capita living standard, households of different size need not have the same per capita income. Sharing opportunities make larger households needing

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lower per capita income in order to be at the same living standard with smaller households. In other words, there are household consumption economies of scale over the dimension of household size. In this paper we examine an additional dimension: whether household consumption economies of scale change as living standards go up. Our study explores this question through a survey method: we ask people to tell us about the relationship among household income, family demographic composition and the well-being of a household.

We ask our subjects questions as: "which family-income level can make a household with one adult and two children achieve the same well-being as a household with a single adult only and a monthly family income of $2000, according to your opinion?" In this way, we collect a sample of subjective "equivalent incomes": incomes that make the well-being of households with different demographic composition equal.[1] Dividing the income of a household type by the equivalent income of a household with a specific demographic composition (reference household) gives the equivalence scale of the former household type.

In our questionnaire, we give to our subjects a specific income level (reference income) for a single-childless-adult household (our reference household). We ask them to think of the well-being of the reference household at this reference income and to give us equivalent incomes for seven other family types, according to their own perception of utility and existing markets. We ask our respondents to repeat the same procedure for five different reference incomes for the imaginary single-childless-adult (reference) household. In this way, we collect five sample equivalence scales corresponding to five different reference-income levels. The database we construct provides a range of subjective household welfare evaluations that enables us to test for a possible dependence of equivalence scales on reference incomes, the central issue of this paper.

If equivalence scales are negatively correlated with reference incomes and living standards, then within-household economies of scale in consumption increase with rising household income. For example, according to the model of Barten (1964), the expenditure share on food and clothing may be higher for households with low income. As the number of family members increases, the expenditure share on food and clothing is likely to increase even more for households with lower family income. This may happen because economies of scale in food and clothing consumption are not likely to be important.[2]

As another example, considering housing, rich single adults may have larger houses that will not be congested too much by adding one or two extra people. On the contrary,

[1] By identifying subjective equivalent incomes for many household types, we obtain subjective "equivalent-income functions": functions that give equivalent income for all household types, all household incomes and any given commodity price vector. A significant body of literature attempts to estimate equivalent-income functions using consumer-expenditure data. See, for example, Donaldson and Pendakur (2004).

[2] Deaton and Paxson (1998) provide evidence that the food expenditure share decreases as the household size increases, keeping per capita household income constant. Thus, food may contain significant sharing possibilities. In their comment to Deaton and Paxson (1998), Gan and Vernon (2003) argue that, at least compared to housing, in a two-good framework (food and housing) food exhibits increasing expenditure shares with increasing family size, so food has comparatively lower sharing possibilities to housing. Independently from these empirical findings, the main point of our argument about why equivalence scales may decrease with income, is that there might be goods with comparatively low potential for sharing that take the biggest part of total household expenditures in low-income families.