

Capturing Development by Identifying Intrinsic Groups in Household Expenditure Survey Data

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- 8) **External researcher(s):** no entry
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- 11) **Short Summary:** Based on expenditure survey data of India, intrinsic groups of households can be found on having similar expenditure characteristics. Crucial aspects of development can then be modelled by the evolution of these groups and their distinct energy use patterns.

12) Keywords: Applied Statistics/Biometrics, Development Economics, Economics, Economics of Developing Countries, Energy Economics

13) Project description:

To start with a triviality - as any real-world topic, development in a developing country has an uncountable number of important and different aspects Ū what makes it difficult to gather and assess sensible information on it, and, especially, to draw sound conclusions from these. This task starts with a definition or a framework to confine the term "development" in order to pose more concrete questions. In a second step, methods to assess the development and to report and give interpretations of the results have to be chosen. There is no unique way to achieve this. This is mirrored in the presence of several approaches to define, to measure and to assess development on different levels of aggregation and formalisation and in different topical frames.

This project deals with development on the household level, focusing on socio-economic and infrastructural characteristics as reported in the household expenditure survey data of India we base our research on. Our approach is based on the idea that groups can be found or defined on having similar expenditure characteristics, both generally and in terms of their energy use pattern. The evolution of household energy use can then be modelled by the change in size, even disappearance of existing or emergence of new groups with their distinct energy use pattern.

To identify potential groups, we employ several statistical tools designed to reveal nontrivial intrinsic structure in data sets. These are cluster analysis and dimension reduction techniques such as factor or principal component analysis. In addition, we build groups of households by combination of the different levels of several categorical variables. The resulting groups are then assessed on grounds of their energy use patterns and the evolution thereof over the years.

A potential difficulty with cluster analysis and dimension reduction techniques is the necessity of a considerable amount of assumptions and subjective choices that have to be made by the researcher. This bears the danger that the resulting groups do not reflect any intrinsic structure of the data but are only generated by these choices. On the other side, the potential drawback of groups defined by levels of categorical variables is their triviality. In contrast to the other methods, however, such groups are more transparent and independent of implicit assumptions.

These reservations are duly kept in mind while assessing the different methods to identify intrinsic groups, different assumptions and the results they produce, their adequacy to capture development and the picture they draw of the development of the whole society.

14) Popular description: no entry

15) Graphics: no entry

16) Publications:

- Muller, A. 2004. Assessment of Statistical Methods to Find Intrinsic Groups in Large Household Expenditure Data Sets. CEPE Working Paper.
- Muller A., Spreng, D. 2004. Searching for and Constructing Groups in Indian Household Expenditure Survey Data. CEPE Working Papers.
- Pachauri, S., Spreng, D. 2003-12-31. Energy Use and Energy Access in Relation to Poverty. Economic and Political Weekly.

17) Links to important web pages:

- <http://www.cepe.ethz.ch>