Transforming a sample design for taking into account new statistical needs, new information or new technological instruments for data collection

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Background

The paper deals with the strategies which can be adopted in case new statistical needs emerge, e.g. the estimation of agro-environmental parameters, or new information is available (e.g. a cover map produced for controlling subsidies), or when new technological instruments are acquired for collecting data on the ground (e.g. PDAs allow visualizing on the screen all available geographic information like topographic maps, land cover maps and so on and simplify and transform the survey procedures).
The possible strategies can differ considerably on the basis of some political concerns. If the preservation of the actual sample design is considered a priority, then only minor changes can be applied for improving the efficiency of the estimates and for collecting only the parameters that can be detected on the sample units which are generally surveyed. In case the statistical system can be conceived ex novo, the previous sample design is not a constrain and the data collected in the previous years, the new land cover map and the new technological instruments for data collection have to be used for designing the new sample.
In this paper, we describe the different strategies, analyzing their advantages, disadvantages and requirements.

Introduction

First strategy: the sample design adopted in the previous years for agricultural statistics is preserved.

Advantages:

- It allows perfect comparability over time,
- The maximum advantage is taken from the experience of the project managers and of the enumerators,
- The reliability of the data collection procedures has already been assessed.

Disadvantages:

- In case a new land cover map is available, is can be used only at the estimator level for improving the efficiency of the sample design.
- If new statistical needs emerge, not all the new parameters of interest can be estimated. Only those parameters for which information can be detected on the sample units which are generally surveyed can be estimated.
- If new technological instruments are acquired, they make the data acquisition process more reliable, faster, often easier and more efficient, but the enumerator cannot take complete advantage from their characteristics.

Second strategy: the sample design is conceived ex novo.

Advantages:

- The new statistical needs can be satisfied
- If the new available information is reliable and accurate, the sample design can take a great advantage from it, if it is used at the design level.
- Maximum advantage is taken of the new technological instruments for data collection.

Disadvantages:

- it could generate a discontinuity in the time series,

- the project managers and the enumerators have to adapt to the new procedures
- the reliability of the data collection procedures has to be assessed.

Third strategy: small changes are applied to the sample design generally adopted.
Advantages:

- New statistical needs are partially taken into account,
- it allows comparability over time,
- the advantage is taken from the experience of the project managers and of the enumerators,
- the reliability of the data collection procedures has already been assessed for most kinds of data.

Disadvantages:

- In case a new land cover map is available, is can be used only at the estimator level for improving the efficiency of the sample design.
- If new statistical needs emerge, very few of the new parameters of interest can be estimated.
- If new technological instruments are acquired, the enumerator can take partial advantage from their characteristics.

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