

ANNEX
METHODS OF DERIVING REGIONAL R&D DATA

Introduction

1. Chapters 5 and 6 of the Manual make recommendations for breaking down data on R&D personnel and R&D expenditure by region. This annex briefly discusses various methods of doing so. It draws on work by Eurostat, which has investigated the methods in greater detail. Regional data can be derived either directly, by classifying the statistical units, or by including a separate question on this breakdown in surveys. This annex does not discuss details of the regional breakdown. This has to be determined according to national or international needs for information.

Classifying the statistical units

2. In many cases it is possible and feasible to attribute statistical units to regions on the basis of the postal address of the entity. The advantage of this approach is that all variables will automatically be available by region. Problems may arise if sampling is used, as the region can seldom be used as a stratification variable. For regionalisation of R&D variables, the ideal solution would be to have statistical units small enough to avoid their having activities in several regions. This would in many cases imply establishment-type units. However, this is generally not feasible from the point of view of data collection and compiling of meaningful national aggregates by industry. The data for R&D surveys are usually available only at the level of enterprise-type units, and an attempt to split these units into smaller ones would create extra work for the respondent and for the surveying agency. Sectoral aggregates by industry would also be rather different if the establishment is used as the statistical unit. Therefore, the *Frascati Manual* recommends using the enterprise-type unit as the most appropriate for R&D surveys in all sectors, except for the higher education sector.

3. Attributing large units with activities in many regions to a single region will, however, lead to distortions in the breakdowns. It is therefore recommended, if it is not possible to have a separate question on regional breakdown (as described below), to have, at least for the biggest units, a separate breakdown by region for the most important variables (R&D expenditures, R&D personnel). If it is not possible to obtain the information directly, it may have to be estimated on the basis of variables that can be assumed to be closely related to R&D.

4. Depending on the method used to obtain data on the higher education sector, the establishment unit (for example the university institutes or corresponding units) may be more feasible. In this case, regional data can be derived directly. Otherwise, the discussion above and in the following section is applicable.

Asking a separate question on the regional breakdown

5. Compared with the above alternative, this option gives more precision to regional breakdowns. It serves as a substitute when information at establishment level is lacking. The question can be asked in many ways. The table below indicates the information to be requested in such a question without suggesting the formulation of the question or the priority of the variables.

Region, municipality or establishment	R&D personnel (head count)	R&D personnel (FTE)	R&D expenditure

6. Information on the regions might be asked for directly. In some countries, however, respondents may not be aware of how the regions are defined. An alternative is to ask for the municipalities of the sub-

units and to code them later for the appropriate regions. A third alternative is to ask for establishment type units and to try to identify the address of the establishment. It is usually possible to have the variables for which regionalisation is required at establishment level. The table needs additional columns for data on researchers by region. With this approach, problems of sampling may arise, as raising factors have to be applied.

OECD (2002), “Methods of deriving regional R&D data”, in *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development*,

The Measurement of Scientific and Technological Activities, OECD Publishing, Paris.

DOI: <http://dx.doi.org/10.1787/9789264199040-en>

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