



6th EU Framework Programme



**ADVANCED QUANTITATIVE METHODS
FOR THE EVALUATION OF THE
PERFORMANCE OF PUBLIC SECTOR
RESEARCH**

June 2004- December 2006



GOALS OF THE PROJECT:

- i) build an integrated dataset of microdata at the level of university across a number of European countries, following an experimental approach;
- ii) discuss in great detail institutional differences and establish conditions for comparative studies and for integrated cross-country data treatment;
- iii) carry out several econometric analyses on the integrated dataset, using both parametric and nonparametric techniques, addressing a number of highly debated issues in the economics and policy of research, higher education, and science;
- iv) exploiting the potential of new robust nonparametric techniques for the analysis of efficiency and productivity in university production.

A TOP-DOWN BOTTOM UP APPROACH

After a first series of methodological discussions and annotated description of the variables to be collected, following a top down-bottom up approach, we combined at European level the **micro data** already available for the six pilot countries.

CRITICAL POLICY ISSUES

Then, we run several exercises of advanced quantitative methods to address important issues related to science and technology policies including:

- Economies of scale and scope in academic production
- Trade-off research vs. teaching
- Trade-off publications vs. applied industry research
- Complementarity in inputs
- Structural vs Project funding
- Public vs private funding
- Impact of national differences in European systems of Higher Education and Research.



AQUAMETH integrated dataset

6 Countries: Italy, Switzerland, Spain, Portugal, Norway and UK.

Coverage: 1995-2003 (with some breaks)

Main categories of variables:

AREA	CATEGORIES
<i>General information</i>	<ul style="list-style-type: none"> • Year of foundation • City, province, region (NUTS) • Number and type of faculties/schools/disciplines covered • Governance (public, private) • Type (university, technical college) • Other relevant historical information
<i>Revenues</i>	<ul style="list-style-type: none"> • Total revenues of the university • General budget of the university (in federal countries divided between national and regional appropriations) • Tuition and Fees • Grants and contracts, if possible divided between government, international, private and private non-profit • Other expenditures
<i>Expenditures</i>	<ul style="list-style-type: none"> • Total expenditures (excluding investments and capital costs) • Personnel expenditures, if possible divided between personnel categories • Other expenditures
<i>Personnel</i>	<ul style="list-style-type: none"> • Total staff (FTE or headcount) • Professors • Other academic staff • Technical and administrative staff
<i>Education production</i>	<ul style="list-style-type: none"> • Number of undergraduate students • Number of undergraduate degrees • Number of PhD students • Number of PhD degrees
<i>Research and technology production</i>	<ul style="list-style-type: none"> • ISI publications • Technological production indicators

OUTPUTS OF THE PROJECT

(at 15 November 2005)

- An integrated dataset
- 10 conference papers
- 6 national reports
- 3 published (or forthcoming) articles
- 2 working papers
- A collective book (in preparation)

AQUAMETH II

Building on these results, the project in its second phase will develop the following critical aspects:

- a) **Consolidation of the methodology**, including in the project other research teams which will provide data on other new countries: France, Hungary and Netherlands.
- b) **Exploration of new topics** including:
 - i. *Regional differences* in university efficiency and productivity between and within European countries
 - ii. *Quality* indicators of teaching and research activities (e.g. placement of students)
 - iii. *Third mission* indicators
 - iv. *Subject mix* at the level of universities: categorization, heterogeneity, statistical and econometric solutions
- c) Development of a platform for an **Interactive Software** for benchmarking and profile analysis of European universities.

UNIVERSITIES AS STRATEGIC UNITS

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Outline

Universities as strategic units – Bonaccorsi A. Daraio C.

PART I: Transversal Topics

- Ch. 1 Changing patterns in funding of European higher education institutions by Lepori B., Jongbloed B., Salerno C., Slipersaeter S.
- Ch. 2 Economies of Scale and Scope in European Higher Education Institutions by Garcia Aracil A.
- Ch. 3 Third mission and the entrepreneurial university model , by Slipersaeter S., Gulbrandsen M.
- Ch. 4 The University Benchmark: An Interactive Computer Approach, by Bogetoft P., H.O. Fried and Ph. Vanden Eeckaut
- Ch 5 Efficiency and productivity in European Universitie, by Bonaccorsi A., Daraio C. and Simar L.

PART II. National patterns

- Ch. 6 Heterogeneity in the Swiss Higher Education System, by Lepori B.
- Ch. 7 University autonomy and structural constraints in the Italian system, by Bonaccorsi A., Daraio C.
- Ch 8. Economies of capacity utilization and scope in the Swiss university industry, by Filippini M. Lepori B.
- Ch. 9 The UK knowledge production function, by Crespi G.
- Ch. 10 The Portuguese Public University System: on the Road to Improvement, by C.Sarrico, M F Cardoso, M J Rosa and P Teixeira
- Ch 11 Relative efficiency among Spanish universities: a case of regional difference, by Garcia Aracil A.

PART III. Methodological issues

- Ch. 12 Strategy for indicators production
Bonaccorsi A., Daraio C, Lepori B.

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