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Economic research in Europe

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Abstract

The purpose of this paper is to give an account of the resources devoted to economic research at the national (for the E.E.C.) level and at the European level and in addition, to give a summary account of the output from that activity. The findings permit us to make a certain amount of comparison between countries. Though no doubt some of the measures used will be subject to criticism, the outcome of the study should serve to stimulate a more informed debate on the state of economic research in Europe.

Key words: Economic research; Europe; EEC; Education; Resources; Research output

JEL classification: A.1; A.2

1. Introduction

The debate on the state and adequacy of economic research in Europe which has developed since the early 1980s has been conducted on the basis of very few facts. The purpose of this paper (which is based on Kirman and Dahl (1993) referred to from now on as KD), is to give an account of the resources devoted to economic research at the national (for the E.E.C.) level and at the European level and in addition, to give a summary account of the output from that activity. The findings permit us to make a certain amount of comparison between countries. Though no doubt some of the measures used will be subject to criticism, the outcome of the study should serve to

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stimulate a more informed debate on the state of economic research in Europe.

The origin of the debate about economic research in Europe is probably to be found in a sense of inadequacy with regard to the training provided and research output achieved in the leading academic institutions in the U.S. This was particularly true in applied economics. As closer links developed between the E.E.C. countries, there was a growing European awareness of the failure to profit from the considerable economies of scale available within Europe, in the form of joint research projects or joint doctoral programmes (Portes, 1987). The economic profession now seems to have taken up this challenge in particular with the creation of the European Economic Association. Furthermore additional funds are now available, at the European level in support for projects, scholarships and conferences.

The development of existing centres and the establishment of new centres in which this sort of training and research would take place was emphasized by Portes. The basic need was to consolidate a European infrastructure capable of holding its own with its U.S. counterpart, offering an independent and viable European alternative. In particular we note that research education curricula in many countries are undergoing changes to bring them into the mainstream of international research. Now, various international doctoral programmes have developed in addition to the first initiatives which were taken in the form of the European Doctoral Programme in Bonn, Louvain, London, Paris, and the European University Institute in Florence.

The European Communities have also begun to devote some of their research funding to economics with emphasis on mobility, cooperation, and European aspects of the research through the various programmes discussed below.

In addition of course, current university based research and the various national initiatives to improve the level of economic research within the existing framework must be taken into account, when analysing the allocation of resources to, and the output from, research in economics. Unfortunately, it is often difficult to obtain information which is comparable across countries, at this level. Moreover, in some cases, for data reasons we have had to include management and business within the broad field of economics.

Even within this broader definition of economic science there is a European agenda developing with regard to the organisation and funding of research and research education. As more joint research projects are undertaken involving groups in different European countries a more coherent European structure is forming. In particular a new generation of European economists is emerging with both the necessary formal training and the motivation to undertake the analysis of economic problems of particular concern for Europe.

Before proceeding we should make it clear that we consider as economic research, work which develops or applies economic theory although, for practical reasons, it is sometimes difficult to stick precisely to this definition.

2. Some statistical evidence

The sort of statistics which are fairly readily available give a rather superficial description of the volume of economic research. Their limitations are only too well known but nevertheless must be stated.

Firstly, many countries publish R&D statistics for the social sciences without separating out the specific disciplines of economics or political economy, economic history and management science, in which we are interested.

Secondly, the dividing line between basic and applied economic research is difficult to define.

Thirdly, when we assess output we have used simple quantitative measurements, the number of Ph.D.'s and the number of articles in refereed journals. We have made no attempt to venture into the difficult terrain of weighting output by quality as is done for many such exercises in particular countries (see Jones et al. (1982), Liebowitz et al. (1984), and Laband (1990) for the U.S. for example). Nor have we been able to obtain and compare the detailed results of evaluation exercises which, in addition to quantitative indicators, involve assessment by peers of entire departments (see Universities Funding Council (1993) for the U.K. and Engwall (1992) for Sweden). The only quality constraint is that we have analysed only those journals included in the Source Index of Social Science Citation Index, thus limiting ourselves to some 150 journals in economics.[1]

3. Funding

Considerable diversity exists in the funding structures in different countries. Funding is derived from national, regional, and even local sources. In some countries a relatively high degree of autonomy is given to those who

[1] Such problems are no excuse for not seeking comparable quantification from individual countries, quite the contrary. We have been greatly helped in this respect by S. Alleggrezza (Luxembourg), S. Barbera (Spain), J. Blackwell (Ireland), H. Dicke (Germany), G. Ecchia and P. Silvestri (Italy), B. Felderer and D. Campbell (Austria), L.A. Gérard-Varet and O. Boylaud (France), B. Grodal (Denmark), L. Katseli and N. Alexopoulos (Greece), R. Portes and A. Alsop (United Kingdom), and many others (for a full list of persons consulted, see Annex 20 of KD). However, we must bear the responsibility for the final presentation.

receive funds (universities' appropriations in the U.K.), in others the attribution is more centrally controlled (in France many university-based researchers are directly employed by the C.N.R.S. and university professorships are awarded through national competitions). In other countries the situation is more complex (in Germany the principal sources of funds are the Länder, but federal funding is also quite extensive). The resources devoted to economic research are estimated to be:

E.E.C.	500 Mio. USD
E.F.T.A.	100 Mio. USD
U.S.A.	350 Mio. USD

These estimates are based on analysis of expenditure, mainly in the public sector, and are not quite comparable because of the different coverage of management science in various countries and which is not included at all in the figure for the U.S.A. Whereas the funding structure is described here in general terms with a few examples, our analysis, in particular of expenditures at the institutional level, is rather more detailed in KD. The particular problem of assessing how much of salaries to university staff should be considered as research expenditure remains the main source of uncertainty in our estimates.

Several layers of funding exist:

(a) Salaries for permanent staff;
(b) Multiannual programmes for individual universities;
(c) Similar programmes for economic institutes;
(d) Specific grants from national scientific councils for particular research programmes (C.N.R.S. in France, E.S.R.C. in the U.K., Deutsche Forschungsgemeinschaft in Germany and C.N.R. in Italy, etc.);
(e) Programmes for cooperation at the European level (SPES primarily and now the Human Capital and Mobility programme and ACE).

4. Permanent funds, programmes and grants

Broadly speaking, three types of public budgets finance research in economics and management. Private foundations contribute with small amounts only.

Firstly, most permanent and largest in volume are salaries to professors and researchers in university posts. In the U.K. for example, approximately 50% of research funding to economics and management flows from the Universities Funding Council. Permanent funds for other costs are, typically, very modest. Permanent finance is also given to research within public institutes outside the university sector, often by different ministries. The

German 'Blaue Liste' institutes are examples of such establishments financed from federal and Länder budgets.

The second largest source is the national research councils which finance multi-annual programmes and centres which sustain the continuity of research. Terminology and practice differ from one country to another. Prominent examples include C.N.R.S. four year contracts and, in the U.K., five or ten year commitments to research centres and similar provisions are found in most other countries.

The third source are the many grants for project research and scholarships which are given also by research councils and foundations, typically open for proposals from individual researchers or institutes and awarded in peer-review based competition. Again, most of these external grants flow to research within the universities, but a notable exception to this is found in Germany where the 'Blaue Liste' institutes receive considerable external finance.

The overall picture of financial resources devoted to economic research in Europe is, admittedly, very incomplete. Comparing it with the total in the U.S.A., which is calculated to be around 350 Mio. USD, we are inclined to dismiss the hypothesis that America's lead is due to larger resources devoted to economic research.

5. Manpower

This section presents two counts of manpower resources. Firstly, national sources of R&D statistics are used for estimation of total numbers of people and their time devoted to research in each country. Secondly, for economics in its narrow sense, the membership list of the European Economic Association reveals the geographical distribution of the more active researchers.

The total manpower resources in economics and business/management research are of the order of 10,000 in the E.E.C. and 1,300 in E.F.T.A. The figures are from 1990 or earlier and comprise academic and other staff expressed in full time equivalent man-years. Typically, academic staff (professors and researchers) provide 75%–80% of the research manpower.

We have reached these results by using the statistics in Table 1 below which gives the research time of academic staff in most of Europe. The total is approximately 8,000 man-years for all 19 countries and we had a mark up of 20% for other staff. The actual number of professors and researchers is probably as high as 20,000. A few countries have given data from earlier years also, which show that the growth has been considerable owing to increased university teaching in economics and management.

In Table 1, manpower is estimated separately for economics and manage-

Table 1
Manpower resources devoted to research in economics and management in universities and public sector research institutes by country; see notes. Full time equivalent man-years of scientific staff in year indicated in first column; totals include proxies for missing estimates

Country	Economics	Management	Total	Percent of all staff
Denmark (1991)	204	108	312	87%
France (1992)	380–730	160–300	600–1100	
Germany (1990)	876	1509[a]	2385	58%
Greece (1991)			350	79%
Ireland (1985)	app. 100			
Italy (1990)	455	155	652	
Netherlands (1990)	app. 585	app. 60	645	
United Kingdom (1992)	482	400–700	980–1180	
Austria (1989)	99	136	235	72%
Finland (1987)	196	136	323	
Norway (1989)	118			
Sweden (1989/90)	151	92	143	75%
Switzerland			200	
Estimated total for				
E.C. 12	3600–4200	2400–2500	6000–7000	
E.F.T.A. 7	660	560	1120	
All 19 countries	4300–4900	4100–4700	7100–8300	

[a] Includes other related sciences.

ment. The full-time equivalent of research undertaken by academic staff totalled about 4,500 man-years in economics and about 4,400 man-years in management.[2] While man-years of research thus seem evenly distributed between economics and management, staff numbers are probably much higher in management because of higher student numbers.

Manpower in economic research (excluding business/management) in the same countries can also be compared through the membership count of the European Economic Association, which is shown in Table 2. Belgium (for which we were not able to make estimates in Table 1) is well represented, probably owing to the Association's origin in that country. The U.K. and France have smaller shares in the membership count than their total manpower would lead us to expect. The general picture of active economists within all European countries is confirmed by Table 2.

[2] As was noted by B. Grodal and B. Felderer in the panel discussion, the figures for Denmark and Finland are an over-estimate as they include posts in government institutions not engaged in research in the sense used here.

Table 2
European Economic Association membership count 1 May 1989 by country

E.E.C.	E.F.T.A.	U.S.A. Canada	Rest of world
61%	20%	10%	9%

	E.E.C. only	Members %
Germany	134	19
Italy	117	16
United Kingdom	106	15
Belgium	96	13
Netherlands	85	12
France	73	10
Denmark	38	5
Spain	33	5
Ireland	15	2
Greece	12	2
Portugal	10	1
Luxembourg	2	0
E.E.C. 12	716	100

Source: European Economic Association (1990).

6. European Communities programmes for economic research

The European Communities' research programmes have in part developed as needs became stronger for cooperation and for research on European issues, and in part to meet the increasingly felt need to reinforce basic economic research in Europe.

Financial support for economic research, management science and other social sciences has grown to approximately 7 Mio. ECU (1992) per year. Contract research and economic studies outside the research programmes are not included in the total.

Firstly, the Stimulation Plan for Economic Sciences (SPES), which was the first E.C. research programme for economics, was launched in 1989 and gave support to research projects and fellowships. A total amount of nearly 12 Mio. ECU was granted over three years. The funding continues with the Human Capital and Mobility Programme and is extended to management and other social sciences. Another extension is the possibility of support for so-called Euroconferences, of which five in economics and four in other social sciences are already scheduled for 1993 and 1994. The fourth Framework Programme foresees a new specific programme for socio-economic research.

We estimate that the actual level of finance paid to economic research was about 4 Mio. ECU in 1992.

Stated briefly, the objectives of these programmes continue to be to support research cooperation among top level economists at the European level and to increase mobility through fellowships. The support is thus very similar to that offered by national research grant schemes and is distributed via similar procedures of peer evaluation of proposals from individual researchers.

Secondly, community policies towards Eastern and Central Europe include the technical assistance and economic aid actions of P.H.A.R.E. which started for Poland and Hungary but now covers 11 countries. One of these, the Action for Cooperation in Economics (ACE), has financed economics and management research since 1990. ACE has the same structure as did SPES and has awarded almost as much money per year, namely about 3 Mio. ECU. The main differences are that more countries are covered and that management is included. ACE continued in 1992–93 at the same level.

In total therefore, we estimate that EC finance of economics and management research is at a level of 7 Mio. ECU (1992) not considering contract research, economic surveys, and data collection, etc.

The impact of the two economic research programmes SPES and ACE can be illustrated by some figures for the distribution of the researchers involved. It is still too early to evaluate the scientific output in full, but detailed information is given in KD and is taken from Schneider et al. (1992) and Kolodko et al. (1993).

SPES financed 75 research projects and networks with an average per project of 100,000 ECU and 11 courses and workshops and 63 fellowships with an average of 50,000 ECU each.

The United Kingdom stands out as providing most project coordinators and partners, over one third of the total, and host institutions for fellowships. Belgium is even more active in proportion to its size. Both these countries received about twenty fellows while sending only one or two abroad. Germany and Italy are of note for having sent a large number of fellows abroad and having received almost none.

KD also give details of ACE research projects which each involve researchers from at least two EC countries (West) and from one or more PHARE beneficiary countries (East). The coordinators of these 70 projects are mainly Western, notably from the UK and Germany, but the geographical distribution of researchers is more even. The fact that 158 researchers from the East and 186 from the West are involved illustrates very much the dual purpose of ACE, namely to assist research in the East through forging links with the West.

In conclusion, EC support at a level of 7 Mio Ecu per year for research in economics and management is small if compared with overall expenditure in

Europe, but provides a flexible complement to existing national funding.

7. Output: Doctoral degrees

This section presents the statistics we have collected on doctoral training in E.C. and E.F.T.A. countries and from the U.S.A. The numbers give a measure of output and of the capacity in each country to reproduce its stock of human resources with the highest level of formal education.

The overall volume in the E.C. countries is probably not higher than 2,000 new doctoral degrees per year in economics and management; the corresponding sum for E.F.T.A. countries is about 160. It may be noted that the total for the E.C. is the same as that which can be reached from data collected for the Commission on doctoral education in all fields in another study (Galinaro, 1990). In the United States the number of new Ph.D.'s in economics was around 1,000 per year for over twenty years, but has recently fallen to around 800 to 850. The volume has increased significantly in certain countries, while remaining constant in others. Reforms are being implemented, or already in place, in almost every country.

We regret not having been able to collect more detailed statistics on research education in economics. Fewer countries are covered and with less comparability than in the statistics for expenditure and manpower. Nevertheless, the figures which are available (shown in Table 3) give some indication of the volume by country, bearing in mind their different character and the growing mobility of students (the figures for Italy include students who undertook a substantial part of their training abroad and that for the U.K. contains a majority of students of foreign origin, for example).

While always international at its most advanced level, economic research has become increasingly international also at the level of research training. Different degree structures, a particular West European phenomenon, are under strong pressure to adapt to the increasingly international career patterns of young economists. The list of joint doctoral programmes and advanced courses run on the basis of long-run cross-border agreements is rapidly growing, in parallel with E.E.C. support for scholarships for young economists to profit from opportunities available in different E.E.C. countries. These programmes are, in part, a response to the continuing attraction of the major U.S. departments. Now, they also attract young people from Eastern and Central Europe. An important aspect to emphasise is that simple imitation of U.S. programmes will not provide the answer to European needs. Although the basic structure of these programmes is widely accepted, many features of them are still being questioned in the U.S. (see e.g. Hansen, 1991).

Table 3
Research education in economics and management by country

	Economics	Management	Total[a]
Denmark (ca 1992)			
(Mainly economics)			10–16
France			
Doctorats d'etat (1990)			50
Doctorats Nouveau Regime (1990)			361
Germany (1990)	171		
Greece (1990)			57
Ireland (1986)			
Economics and Social Studies	24	124	
Commerce			
Italy (ca 1992)	135	45	
Netherlands (1990)	70	12	
Spain (ca 1992)			150
United Kingdom (1989)	122	157	
Austria (1990)	27		
Norway (1990)			24
Sweden (ca 1990)	12		
United States (ca 1992)	850		

[a] The total is only given for those countries where economics and management figures were not available separately.

8. Output: Publications and journal articles

Statistics on publications often convey a false impression of accuracy and they need careful interpretation. Due regard must be paid to differences in the scientific environments and traditions. Bibliometric analysis has gained most acceptance for disciplines with large productions of articles in international scientific journals. Economics and other social sciences are late comers in this respect and, as in other disciplines, the use of English as the most frequent language represents a significant bias against research in non-English speaking countries. However, a recent publication from the Nordic Council of Ministers demonstrates that even in those countries bibliometric analysis is gaining acceptance for the social sciences (Sivertsen, 1993). Measurements of research output are always difficult and open to criticism of the many choices made in the process. Our proposition is, however, that there is a general consensus in the academic economics profession that publications in refereed journals constitute an important element of output.

We have taken the Source Index of the Social Science Citation Index (SSCI) as our basic reference. This contains a list of articles in some 150 journals which can be classified as economic journals. As a first and crude indicator of productivity we have made a simple count of articles and their

authors by country. Over the five years 1987–91 author names from institutions within the E.E.C. were linked to almost 10,000 articles. In comparison, it can be mentioned that, on an annual basis, this is a contribution in the order of 2% to the total production of scientific articles (Eurostat, 1992). Owing to details of our calculation method this is probably an overestimation of the total output. Nevertheless, the percentage distribution by country is quite revealing.

Since nearly all journal articles originate in universities, probably most of the authors have teaching obligations in addition to their research activity. The optimal balance between research and teaching varies greatly between departments, but probably not between countries.

We have made a simple count of two basic elements from the SSCI: articles by authors who give their affiliation as being to an institution in one of the E.C. countries and second a list of those authors, since some listed more than one affiliation. This necessitates some comments on bias owing to coverage and weighting.

How well SSCI covers the publication channels for economic research has been examined by the recent Nordic study covering Denmark, Iceland, Finland, Norway and Sweden for the years 1981–1990 (Sivertsen, 1993). It shows that SSCI includes more than half of the citation sources which are quoted in articles by economists. This indication of coverage is lower than for natural sciences but higher than for most other social sciences.

The geographical coverage is important for our purpose. Journals of some European countries are included in SSCI with a much lower frequency than for those in the U.S.A. A related problem is that of systematic bias in favour of English speaking countries. Although English is not the sole language, because the SSCI includes journals on the basis of how frequently they are cited by authors, we would add that it appears that economists on the continent increasingly publish in English.

Although the Anglo-Saxon or even U.S. bias of content, together with the language problem, cannot be ignored three points are worth making in this connection. Firstly, if Europe wishes to compete on the international level in terms of research and ideas, it cannot do so by only publishing in languages other than English, nor by avoiding those journals which currently, for good or ill, dominate the economics literature. Whilst it is true that there is inertia and protectionism, the market for ideas is still relatively open and arguing to the contrary is too often a pretext for doing nothing at all. Secondly, many academics and academic administrators are heard to argue that Europe must now participate more actively in the international economics profession. Yet too often the same people question the rules of the game suggesting that they would be happy to compete if the rules were changed. The rules, however, depend on those who are actively involved in the game and not on the spectators. Lastly, we have made an important concession to such criticism

by not weighting journals by 'quality', thereby avoiding standard U.S. practice.

We have analysed 1980 and the period 1987–1991 which gives about 10,000 articles. For each of these articles we use the following information: (1) Name of first author[3], (2) Institution(s) given as the affiliation(s) of the author(s)[4].

As noted above, we have weighted articles neither by number of pages nor by the prestige of the journal. Most bibliometric studies of single countries take both aspects into account. The ranking of journals used in weighting for U.S. ranking (see Labard, 1990, and Liebowitz and Palmer, 1990) is fairly widely accepted, but the particular weights given are much more controversial.

Since we have not made any of these corrections, our system will be biased in favour of those establishments that specialize in subjects typically published in specialized but not highly rated journals.

For some institutions, or even countries, numbers will be small and in such cases the biases discussed above are of greater significance than where we have two- or three-digit figures.

Table 4 gives the total number of articles in the economics journals of SSCI for the last five year period. The distribution among the 12 E.C. countries follows the weighting described above. A non-weighted distribution of first authors is in fact quite similar.

One thing that this table confirms is the predominance of articles by authors from the United Kingdom. This was much to be expected because of the language bias and because of the links of that country with the U.S.A. where journal publication is the standard output. In Germany and France other forms of publication are relatively more common, and there are strong incentives for young researchers to use them. Further down this list we note that the Netherlands have twice as many articles as Belgium which again has the same number as Italy. These proportions seem more surprising and the underlying explanation would be worth a thorough investigation. Over time, there also seem to be differences between countries. In particular the small and the non-English language countries have increased their output.

In Table 5 articles are distributed by institutes within the Community countries. This is done in order to illustrate how output levels differ. It will

[3] The Source Index of the SSCI identifies the name of the first author only. This means that our count would be highly unsatisfactory if we were interested in the performance of individuals. However, at the level of departments and universities, giving full weight to first authors and none to their co-authors will only bias results if a particular department has a disproportionate number of authors with names beginning with letters late in the alphabet or if some countries have the median letter later than others. A casual check of the telephone directories of European capital cities does not reveal this to be the case.

[4] The problems arising with this are spelled out in detail in KD.

Table 4
Articles in economic journals of the Source Index of Social Science Citation Index (co)authored by E.E.C. researchers 1987–91, compared with total population 1987–91

Country	Population in millions	Articles 1987/1991						Articles per Mio. inhabit. per year
		80	87	88	89	90	91	87–91
Belgium	9.9	45	58	54	57	61	48	5.6
Denmark	5.1	4	12	10	14	17	26	3.1
France	56.1	62	106	96	102	106	117	1.9
Germany	78.5	85	146	185	172	163	123	2.0
Greece	10.0	4	18	11	15	7	21	1.4
Ireland	3.5	26	17	12	26	13	13	4.6
Italy	57.5	21	46	32	57	57	58	0.9
Luxembourg	0.4	0	0	0	2	0	3	3.5
Netherlands	14.8	41	79	74	120	132	103	6.7
Portugal	10.1	1	1	3	6	5	4	0.4
Spain	38.9	2	15	20	20	26	15	0.6
Un. Kingdom	57.3	366	455	408	440	411	505	7.7
England	47.6	332	391	360	382	350	420	8.0
N. Irel.	1.6	6	6	9	6	8	13	5.3
Scotland	5.1	31	40	31	36	37	50	7.6
Wales	2.9	7	17	8	16	17	22	5.5

Source: Source Index of Social Science Citation Index and own calculations. Numbers for articles per country are given without the decimals used in the underlying calculations. Germany includes DDR 1987, 1988, 1989, 1990.

show the names of the most productive institutions, and we have set the arbitrary limit at ten articles (weighted) for the five-year period. Since we do not have corresponding figures for resources, our ranking could be said to be one according to volume of internationally recognized research – not one of overall quality or cost/effectiveness.

9. Comment

'League tables' are by definition based on simplified criteria; in this case the numbers measure quantity of output at an exacting international level.

What the data here show are:

- There are productive institutions in all countries.
- Belgium and the Netherlands have a great concentration and a large output per university.

Table 5
Research institutions with more than ten SSCI economics articles 1987 –1991[a]

Country and university or institute	Articles by institution
Belgium	
Free University Brussels	73.7
Cath. Univ. Louvain La Neuve and CORE	68.8
Catholic University Leuven	49.5
Denmark	
Aarhus University	34.5
University Copenhagen	32.5
France	
University Paris 01	40.6
Univ. Toulouse I, II, III and GREMAQ	38.0
Ctr. Et. Prospect. Econ. Math. Appl. Planificat. (CEPREMAP)	32.0
INSEAD (Fontainebleau)	31.3
Ecole Hautes Et. Sci. Sociales (EHESS, DELTA, Ec. Norm. Super.)	29.1
Inst. Natl. Stat. and Etud. Econ.	25.3
Univ. Aix Marseille 2, 3, and GREQE	16.8
University Paris 09	14.3
Germany	
University Bonn	65.3
University Kiel	38.8
University Mannheim	37.0
Institut Weltwirtschaft, Kiel	36.3
University Munich	35.3
Wissensch. Zentrum Berlin Sozialforsch.	25.3
Free University Berlin	22.5
University Tübingen	18.3
University Hannover	17.0
University Bielefeld	14.0
Greece	
Athens Univ. Econ. and Business	30.6
University Athens	13.5
Ireland	
Natl. Univ. Irel., Univ. Coll. Dublin	24.0
Univ. Dublin, Trinity College	17.3
Econ. and Social Res. Inst. (Dublin)	14.8
Italy	
University Rome	23.7
European University Institute (Florence)	22.5
University Venice	16.5
University Bocconi	13.3
Bank of Italy	13.0

Table 5 (continued)

Country and university or institute	Articles by institution
Netherlands	
Erasmus University (Rotterdam)	90.8
State University Groningen	61.3
University Amsterdam	59.7
Tilburg University	54.8
Free University Amsterdam	46.2
State University Limbourg	31.7
Portugal	
University Nova Lisboa	10.0
Spain	
Univ. Autonoma Barcelona	33.5
Bank of Spain	11.5
Univ. Complutense Madrid	11.3
United Kingdom	
Univ. London, L.S.E.	215.2
University Oxford	144.0
University Cambridge	124.8
University Warwick	89.8
Univ. Newcastle Upon Tyne	65.8
University Manchester	61.7
London Grad. School Bus. Studies	58.7
University York	58.2
University Bristol	57.5
Univ. London, Birkbeck College	53.5

Source: Source Index of Social Science Citation Index and own calculations [a]Where more than ten institutions in a country satsify our criterion we give only the leading ten. For full details see KD.

- France and Germany have less concentration and, therefore, fewer universities which produce more than those in much smaller countries such as Denmark, Greece and Ireland. Thus there may be institutional factors in those countries which prevent them from achieving concentrations of productive scholars and thereby exploiting their potential economies of scale.

10. Conclusion

The basic aim of this report has been to collect and, where possible, put in comparable form, data on the financing of, and output from, economic research in European countries. As is clear from this brief summary, the data on both inputs and outputs are far from complete and their content

varies considerably from country to country. This is in part due to differences in the breakdown of the figures, some countries only give figures for the social sciences as a whole for example, whilst others even make the distinction between expenditure on, and research output from economic history and economics. Another problem is that the responsibility for establishments, particular institutions for higher education, lies at different levels in different countries. The authorities responsible may be local, regional, or national. This does not simplify the task of obtaining the appropriate data.

The data that we provide give some global indications as to the level and distribution of economic research. These figures should be treated with care since in some cases they include salaries of researchers and in others direct data on salaries are unavailable, for example. Nevertheless, we now have a clearer idea of the resources that are being devoted to economic research, understood in the somewhat restricted sense that we have chosen, by the various European countries and by the C.E.C. The figures for manpower are probably the most reliable and certainly the easiest to interpret. Here the discrepancies across countries are not particularly marked though many would argue that the levels are inadequate in the international context.

As to output, the two crude measures that we have adopted have many drawbacks as we have pointed out. The doctorate is far from standard across countries though the burgeoning of new joint doctoral programmes in Europe should do much to rectify this. The use of published articles as a criterion can be contested on several grounds some of which we have mentioned. However, despite these caveats, as Europe takes a more and more active part on the international research scene in economic research, the sort of criteria that we have adopted are likely to be more widely used.

The criticism that academic economic research is too separated from the activities of policy-makers and that there is too little applied macroeconomic research in Europe has been met to some extent by the creation of the Centre for Economic Policy Research. The rapid expansion of its activities shows that the coordination and stimulus of policy related economics research which it provides was much needed.

As far as training is concerned, there is a clear need to develop a coherent strategy to improve doctoral training in economics in Europe. As more economic problems arise at the European level, the need for well-trained young European economists becomes more pressing. The way to create a pool of such economists seems to be to profit from European economies of scale, to finance research and doctoral programmes at the highest level in Europe, and to provide the means for researchers and students in Europe to profit from such programmes. Such an approach, which is that adopted in the U.S., would also counteract the strong tendency for the best European economists and students to gravitate towards that country. Ways of improv-

ing the quality and reducing the duration of doctoral training still need to be actively studied, but the establishment of cooperative programmes should help to do this. Both the inter-university doctorates such as the European Doctoral Programme, and inter-governmentally funded university institutes, such as the European University Institute are steps in this direction. To achieve a better allocation of resources as doctoral students become more mobile within Europe, some evaluation and ranking of different doctoral programmes and departments, as has been the case in the U.S., will become inevitable.

Improving the level of training and research output within Europe would seem to be a better approach to the longer-run solution of Europe's economic problems than trying simply to orient research directly into the examination of current European economic problems. Training good European economists will provide a resource which will be able to answer Europe's economic questions and which will have the flexibility to evolve as these problems change. These considerations should be borne in mind in the allocation of European resources, particularly as the share of the latter in total European expenditure on economic research increases, as is likely to be the case.

In conclusion we hope that our report will generate a debate not only about the nature and accuracy of the data that we have assembled but also about how wisely and productively the resources currently being devoted to economic research in Europe are being used.

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