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"Research and higher education in economics: can we deliver the Lisbon objectives?"

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(A first draft towards Drèze's presentation for the roundtable at CORE's 40th Anniversary on June 2.)

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Introductory

The Lisbon objectives aim to make the European Union « the most dynamic and competitive knowledge-based economy in the world », through education, research and development.

Although the primary concern lies with achievements in science and technology, economics is also at stake: economic policies in the Union

¹ I thank David Colander, Fernanda Estevan, Jean-Jacques Herings and François Maniquet for helpful remarks about a previous draft – while retaining full responsibility for this one. I also record my intellectual debt to Cremer and Gérard-Varet (1999).

should undoubtedly reflect the most advanced developments of that discipline. This calls for: (i) first rate *education* of economists working at our universities, but also at the European Commission and in other international or national services; and (ii) first rate *research*, both applied and fundamental, on the policy problems faced by the Union.

Also, understanding the requirements of excellence in economic education and research may lead to conclusions of relevance for similar achievements in other disciplines closer to science and technology.

The present paper looks at doctoral education and research in economics in Europe today, and attempts to evaluate it relative to the objective of being “the most dynamic and competitive in the world”.

The paper does not rely on systematic, extensive research. It reflects my personal assessment of the issue, and of avenues towards improvement, as based on 48 years of immediate experience. In the process of organising my thoughts, I was led to check a variety of data as were readily available. The data did suggest new, interesting conclusions, beyond confirming received ideas. Unfortunately, the data are scanty; it would be desirable to extend the information base.

The paper is organised as follows. The upstream issue of how to measure performance is dealt with in Appendix A, which I recommend to readers as a natural starting point. It is complemented by Appendix B on sources. Sections 2-6 review data on research performance in Europe and the US, leading to a preliminary conclusion in section 7. Section 8 deals with doctoral education. Section 9 reviews the upstream issue of funding doctoral training and research. This leads to a proposal in section 10, and to some brief conclusions.

I had the benefit of first rate assistance from Fernanda Estevan in collecting and analysing data. I thank her warmly.

1. European versus US economics

1.a Table 1 presents some summary statistics aimed at providing a comparative picture of recent economic research accomplishments: Nobel prizes, Econometric Society Fellowships, citations and publications. These four measures are listed in decreasing order of elitism.²

² See Appendix A for a concise discussion of the rationale behind these measures, and Appendix B for sources and definitions.

The message of Table 1 is clear: in spite of substantial discrepancies reflecting the underlying definitions, **the US “research output” ranges between 60 and 75% of world output, a clearly dominant position;** and the US output amounts to between 2 and 5 times European output. Adjusting for population, the ratios should be multiplied by a factor of 1.35 (EU 15) or more (EU 25 + Norway and Switzerland).

The US/Europe gap is thus substantial. **As stated, the Lisbon objective is not in sight, for economics.**

1.b Table 2 introduces a time perspective, using whatever data we could readily find. **Looking at citations and publications, no clear trend emerges.** True, the number of European economics departments ranked among the top 100 in the world has doubled between 1980 and the mid-nineties (HABM data). But for citations (Who’s Who data), no clear trend emerges. And for Nobel Laureates or ES Fellows³, the US lead is increasing. It is conceivable that more refined data would reveal some trend; but it is unlikely that such a trend would be quantitatively significant.

1.c In an attempt to trace the origin and some channels of the gap, Tables 3 and 4 use the easily accessed data in “Who’s Who in Economics”, editions II, III and IV.⁴

Table 3 contrasts the countries of residence (i.e. academic affiliation) and countries of birth, across the 3 successive editions. The Table reveals that the US uniformly attracts more top economists than are born there: **a brain drain is at work.** Table 4 (based on edition IV) confirms that well-known feature, with a precision. From Table 4b, we observe that 153 economists in the set (585 – 432, i.e. a full 20%) moved from a first degree elsewhere to a US PhD. Thus, **the attractiveness of US doctoral programs plays a significant role in feeding the brain drain.** Presumably, the attractiveness of US PhD’s reflects their quality. Also, it is enhanced by the use of English as the language of instruction. There is a useful lesson here for Europe.

Of course, Europe has benefited from the fact that some of its citizens did acquire a US PhD: 66 economists listed in Who’s Who IV did acquire a US PhD after a first degree in Europe (Table 4.b); and 26 of them are affiliated with European universities today (Table 4.c). Although the

³ I must confess some puzzlement at the rise in the US share of ES Fellowships!

⁴ It is interesting to note that average age (at time of publication) drops from 60 in edition III to 49 in edition IV.

“return” rate (40%) is disappointing, that group is clearly relevant for European economics, especially in some countries⁵.

Today, it remains true that a US PhD has value for Europeans. **Young Europeans should be encouraged to study at the world’s best universities.** But Europe too should offer first rate PhD education; it should facilitate and promote the return of its citizens trained in the US.

2. Looking inside Europe

2.a Table 3 already suggests that “Europe” is not homogeneous: **the number of frequently cited economists working in the UK is as large as (edition IV), if not larger (editions II and III), than the number working on the continent;** yet, the population ratio is roughly 1 to 5 or 6!

Continental Europe itself is not homogeneous, as documented in Tables 4 and 6 of Lubrano et al. (2003, hereafter LBKP), which are reproduced here as Tables 5.a and 5.b. Looking at the last column of Table 5.b, we note first (“Total”) that European economists publish on average some 40% of their papers in “national” journals, with no difference between the UK and the continent⁶. The same column brings out the different publication habits between two groups of continental countries: 10 small ones (upper panel) versus the “Big 4” (B4, i.e. France, Germany, Italy and Spain). Whereas economists in the small countries publish on average less than 20% of their papers in national outlets, those in the four big countries publish there the bulk of their papers (two third or more, up to 85% in France).

For ease of comparison as well as for the sake of homogeneity, Table 6 uses a subgroup of 7 “small” countries (S7): Austria, Belgium, Denmark, Finland, Netherlands, Norway and Sweden.⁷ Their population adds up to 58.4 million, very close to that of the UK (60 million) and to *one fourth* that of the Big 4 (240 million).

The overall message from Table 6 is unambiguously that **the Big 4 stand well below par in any per capita comparison.** Actually, nowhere do they outperform significantly either of the other two groups *in absolute terms*, in spite of the 4-to-1 population ratio!⁸

⁵ Spain in particular – see Table 11.

⁶ Except, of course, that UK’s national language is English!

⁷ This set is somewhat hybrid, in particular by not including Switzerland, which is not present in the LBKP data. (Adding Switzerland does not affect conclusions.)

⁸ There is one exception: top economists in the B4 publish more than those in the S7; still, they publish less than top economists in the UK.

In the last two rows of Table 6, **the B4, the S7 and the UK come out very close to parity in absolute terms, implying a huge deficit of the B4 per capita.** This statement, which I offer as a summary picture of regional disparities in Europe, has two aspects:

- (i) the S7 do just as well as the UK, thus moderating the view that continental economics lags behind the UK⁹;
- (ii) the B4 lag substantially behind the S7 as well as the UK.

2.b Why do the B4 lag behind the S7 so markedly (in per capita terms, which are appropriate here)? Table 5.b suggests one explanation: the B4 economists publish mostly in national journals in national languages. This is much less the case for the S7, where economists publish more in English, and in top journals. One normative conclusion would be: **it is high time that a majority of B4 economists wake up to the fact that English is the undisputed lingua franca of economics!** (Of course, there exists in each B4 country a minority of economists and institutions which are well aware of this, and act accordingly.)

Waking up could, and perhaps should¹⁰, take various forms:

- (i) write and publish in English, so as to reach the whole profession, and not only the minority of colleagues who read your national language;
- (ii) taking this argument to the limit, issue your better national journals in English, as done recently by the *German Economic Review*¹¹;
- (iii) introduce english as the basic language of your PhD programs, so as to attract foreign students as well as teachers;
- (iv) encourage PhD students to write their dissertation in english¹².

These points deserve discussion at our roundtable.

But there is another hypothesis worthy of attention: **the university systems in the B4 are inefficient, rigid and outmoded**; in particular,

⁹ Also moderating the importance of English as the native language.

¹⁰ Should: as claimed in section 6 below...

¹¹ A few European journals had adopted english from the start (e.g. *Kyklos* or *Banca Nazionale del Lavoro Quarterly Review*); several others publish papers in both English and a local language (e.g. *Annales d'Economie et de Statistique* or *Recherches Economiques de Louvain*).

¹² In the leading French doctoral program ETAPE, *all* dissertations are submitted in french; at Toulouse, of 179 dissertations listed as presented at GREMAQ, 22 are written in English; at Erasmus Un. Rotterdam, of 129 dissertations submitted between 1994 and 2003, 88 are written in English; at the French-speaking Université Catholique de Louvain, among the 100 dissertations submitted over the last ten years, 94 are written in english...

they fail to provide incentives for research comparable to those prevailing in the UK and the S7.

It may sound improper for an S7 citizen to say so – but isn't this view shared by most of us? How many complaints have we heard about the French "concours d'agrégation", the Italian "concorso", the German and Spanish "habilitation" or the German "lehrstuhl" (chair) system? My Table 6 translates these widely held views into objective, quantitative terms. I am simply observing that the king is naked.

Of course, some limited institutional reforms have been introduced recently¹³, the effects of which are not yet reflected in data for the nineties.

2.c The relevance of the proposed diagnostic for the Lisbon program is clear: **if the B4 achieved the same research output per capita as the S7, European output would be doubled! This sets a clear intermediate goal on the Lisbon road.** There do not seem to exist objective reasons why that could not be accomplished. Even if the Lisbon objective as such is not in sight, major progress is at hand. Of course, it will take time – but the direction is clear: adopt English, reform institutions!

The realism of this suggestion is clearly illustrated by the record of some of the small countries, in particular the Netherlands (a country that stands out in Table 5). Twenty-five years ago, NO Dutch department appeared among the 143 top entries of the HABM survey¹⁴. Today, 6 Dutch departments would make it!¹⁵ The recent development of economic research in the Netherlands has indeed been spectacular, fed in large part by such initiatives as CentER in Tilburg and The Tinbergen Institute bringing together three universities from Amsterdam and Rotterdam. A lot can be accomplished in a rather short time, if one uses the right means!

I also note that no Spanish department appeared in the HABM survey, whereas at least three would make it handsomely today (Autonoma, Carlos III and Pompeu Fabra), reflecting recent initiatives.

I do not offer here specific suggestions for institutional reforms: that requires more detailed familiarity with national systems than I may

¹³ The *Institut Universitaire de France* is one noteworthy illustration.

¹⁴ See note b to Table 2.

¹⁵ See table 2 in Coupé (2003).

claim. But the *direction* of reform is evident: **introduce research incentives for individuals and quality incentives for departments!**¹⁶

2.d Having endorsed the KMS-LBKP methodology, I present as Table 7 a list of the 34 European universities (12 from S7, 10 from B4 and 11 from UK) for which KMS-adjusted pages exceed 100.¹⁷ And I note that 28 among these also belong to the top 34 in table 10 of LBKP.¹⁸ I also give a selection of US universities with comparable scores. And I note that the 34 universities on my “short list” account for 73% of the total number of adjusted pages for 120 European universities (in table 4 of KMS).

This small set of universities pretty much carries the brunt of European research and education in economics today. Of course, every measure is imprecise, as repeatedly emphasized above. Adding a few names, or omitting some, makes little difference overall. Rankings are not magical, and should always be taken with a grain of salt. But the broad picture offered by table 7 is solid.

It is also interesting to look at the few US universities (not listed in the Table) which do better than every European university, but not by 25% or more: U of C San Diego, U of Michigan, UCLA, Cornell, U of Texas Austin and Rochester. Emulating the like of these is more realistic (as explained under 4 below) than emulating Harvard or MIT. That sobering prospect deserves further scrutiny, on both sides.

3. A quick look at top journals

Table 8 looks at the 30 journals selected by KMS and provides some information about the origins of their contributors.

If one defines “domination” by a share of 70% or more in authorship, and “absence” by a share of less than 15%, an informal summary of Table 2 might be:

- Europe dominates 2 journals¹⁹, and the US dominates 13 journals;
- Europe is absent from 11 journals and the US from none;
- Europe’s share exceeds 50% in 4 journals²⁰, that of the US exceeds 50% in 27 out of 30 journals...

¹⁶ The record of the *Higher Education Funding Council for England* (HEFCE, successor of the former *University Grants Committee*) is instructive. So are recent reforms in the Netherlands.

¹⁷ The university of Geneva, with a score of 115, also belongs in that list.

¹⁸ The remaining 6 entries in Table 7 appear near the bottom (Bologna, Bristol, Alicante, Exeter, Edinburgh and Bocconi).

¹⁹ Scandinavian Journal and Oxford Bulletin.

²⁰ Same plus European Economic Review and Economic Journal.

Very few among our journals have authorship concentrated at a few universities. The clearest case is the *Quarterly Journal of Economics*, for which one third of the articles are written at Harvard, MIT or Chicago. (For the *Journal of Political Economy*, the same universities contribute 19%.) Otherwise, authorship from a single university rarely exceeds 5%; no university contributes a full 1% to *Economics Letters* or 2% to *International Economic Review*. No European journal has concentrated authorship.²¹

The list contains a number of journals that draw authorship from the world more or less in line with the geographical distribution of research output, i.e. with some 20% European and 60% American authorship. (Examples include *Econometrica*, *JET*, *Review of Economic Studies*, etc.) The more such journals there are, the better for the circulation of ideas. Europeans should encourage the proliferation of such journals.

As a simple practical suggestion, I offer the following. The AEA is currently considering the creation of 5 new journals, to be run like the AER, but concentrating each on a broad substantive area (e.g. IO, labour, macro..). **It would be great if the EEA could team up with the AEA in sponsoring new journals as joint ventures.** Hopefully, the world distribution of authorship might then replicate that of, say, *Econometrica* or *JET*, rather than *AER* or *QJE*. Benefits would be mutual. I urge the EEA officers to pursue this suggestion with unbounded determination.

I also note from Table 8 that Europeans seem to do somewhat better on theory than on more applied work – a commonplace observation. One reason for this bias is the **availability of data**. There are very few European-level data sets – either macro or micro. Analysis of data for a single European country attracts limited interest, especially if the country is small. The potential benefit of working with panel data (stratified by country) is too seldom reaped, due to the extra effort needed to access or construct the data. This point deserves further attention.

4. The distribution of output over departments

4.a Figures 1 and 2, based on data by departments from Coupé (2003 and web page) pertaining to ECONLIT journals for the period 1990-2000,

²¹ The Scandinavian Journal receives 13% of published contributions from Oslo, Stanford and Bergen; the Review of Economic Studies receives 14% from MIT, Northwestern and Harvard.

give the cumulative distribution of citations, respectively for European and US-based authors. Figure 3 plots these cumulative distributions on log-log scales.

If the underlying distribution obeyed the popular Zipf law (frequencies inversely proportional to rank), the log-log graphs should be straight lines. That law has been found applicable to the size distribution of firms or cities. It is clear from Figure 3 that the law does not apply to economics departments, and it is easy to understand why: there are no “giants” among departments, so the upper tail of the distribution is “flatter” (in the figures) than required to fit the rest of the distribution. Quite natural. Yet the log-data are nearly collinear over the bulk of the observations. I conclude that the degree of concentration at the top in Figures 1 and 2, though substantial, should not surprise us.

According to figure 2, 14 departments collect half the citations going to the 111 US departments covered. The same property is verified by 13 European departments out of 58.

If we turn to publications (pages, same coverage)²² in Figures 4 and 5, the top 13 departments now account for some 35% of the total in the US and 40% in Europe. To account for half the total, it now takes 20 departments in the US and 18 in Europe. The fact that concentration is higher for citations than for publications confirms that the first measure is more elitist than the second.

The message of these data is clear. In both the US and Europe: (i) **half the research output is concentrated in a few top universities; (ii) but the other half is spread over a large number of rank-and-file universities. Clearly, both halves deserve attention²³.**

4.b Table 9 focuses on the place of the 10 leading departments in both regions. As usual, we note that the more elitist measures entail: (i) a larger share of top departments in the total; and (ii) a wider gap between the US and Europe. But it is noteworthy that the shares in citations and publications are similar in the two regions, confirming the similarity in degrees of concentration.

²² Counting articles rather than pages makes little difference.

²³ My two-handed proposal in section 10 calls for supporting top universities through block grants, and rank-and-file universities through grants to individual researchers.

5. A closer look at top US departments

Table 10 collects selective data about 10 top US departments. First comes the market value of the university's endowment. The figures are billions of \$, yes, *billions!* Harvard leads with 25 billion, a staggering figure implying an annual income of the order of one billion euros per year... (For perspective: the annual expenditure under the 6th research program of the EU is 3.5 billion euros – for 25 countries with a population of nearly half a billion citizens!) Other universities are less rich, but their endowment is still measured in billion \$.

How does this wealth filter down to departmental opportunities? Columns 3 and 4 give a hint. The Harvard economics department (as distinct from the Business School, the Kennedy School a.s.o.) has **33 full professors, of which 31 fill an endowed chair!** It is known indeed that much of Harvard's endowment is earmarked for specific projects. In that category, endowed chairs are particularly flexible, and immensely helpful to departments. No wonder that an economics department with 31 endowed chairs stands out as a world leader!

The exceptional hiring opportunities offered by such resources must of course be put to good uses. Where and how does Harvard recruit its faculty? Column 4 reveals that 30 out of 33 Harvard professors (of economics) did their PhD at one of the 10 universities listed in Table 10. Column 5 reveals that, on average, these 33 professors were hired 11 years after completing said PhD.

In other words, Harvard hardly takes chances: it hires people coming out of the best schools, after their lasting merits have been tested elsewhere for 11 years! Picking the best is then possible thanks to the salaries and facilities associated with endowed chairs. All it takes is adoption of the right standards at the hiring stage. (Clearly, Harvard performs well on that score! Its appointment policy deserves attention.)

The other rows of Table 10 are generally comparable to the first: a majority of full professors holding endowed chairs (except at the large public institution Berkeley), an overwhelming majority of professors coming from the best schools, and a substantial testing period after the PhD.

All this is a pipe dream for those of us who have coped with the anguish of attracting from outside, and keeping over time, first rate scholars – sometimes in countries devoid of natural attraction and unable to match world salaries.

It is thus clear that **emulating Harvard and other top US universities is not within reach for Europe**, a fact that I do not regard as dramatic. As suggested above, our eyes should rather be directed at Michigan or Cornell. And it would be desirable to produce data comparable to those of Table 10 for universities in that category. Of particular interest would be an assessment of the means deployed by these universities. Whereas European universities may not expect funding on a scale comparable to that of top US universities, they clearly need *some* additional means. How much might prove adequate is worth investigating.

6. Where do economics professors get educated?

6.a The next-to-last column of Table 10 is particularly instructive: it gives the proportion of the faculty at top US departments trained at the same 10 leading schools, namely 80%!²⁴ Even if there is no inbreeding by individual universities, **there is almost complete (80%) inbreeding by the small group of leading universities.**

I personally find it thought provoking that world wide economic research is being pursued under the leadership of *a couple hundred university professors trained and employed by a handful of US departments.*²⁵

For comparison purposes, Table 11 collects some data on where members of leading European departments were trained. There is no indication here of “collective inbreeding”. Instead, two features are striking, namely (see last column): (i) the success of a few universities (namely Pompeu Fabra, Carlos III and Essex) in attracting faculty members trained abroad; (ii) the minimal presence of professors trained abroad at S7 universities. (The latter feature is particularly striking, considering the decent research score of S7 departments.)

6.b Another approach to tracing where economics professors are trained can be found in a paper by Amir and Knauff (2005, table 1), from which Table 12 is lifted. That Table reveals, for each member “j” of a set of 54 universities²⁶, how many faculty members at the full set of 54 universities hold a doctorate from “j”. Thus, the 10 US universities in Tables 9b and 10 have trained together 912 professors out of a total of 1596, namely 57%. In contrast, the 10 European universities in Table 9a have trained 144 professors, or 9%.

²⁴ Harvard and MIT together account for 47% of the total!

²⁵ More on this in section 7.

²⁶ For the construction of the set, starting from 30 world leaders and proceeding by cooptation, see Amir and Knauff (2005).

The role of leading universities in the training of professors-to-be is thus fully confirmed. So is the contrast between the unified academic market in the US and the fragmented European situation. These data quantify a commonplace observation: in the US, concentration of talent at leading universities is permitted by the existence of a **unified and transparent market for economists; no such market exists yet in Europe**; although progress in that direction is under way, many rigidities remain in the way.

The selective hirings by top US departments are possible, because:

- (i) *professors are mobile* across the country; most realise that a first job may not be available at once in a top (and well-paying) department; but transfers to better departments require publications, i.e. research; the supply side of the market is thus flexible and governed by proper incentives;
- (ii) *departments are competing with each other* for hiring the best professors; the departments at top universities are able to offer better salaries and working conditions; the demand side of the market is thus competitive and quality oriented.

These are the features that Europe should aim at replicating.

7. Reconsidering the Europe-US competition

From the material reviewed so far, I conclude that the Lisbon objectives are nor in sight, for economics; but there is scope for initiatives apt to reduce the US-Europe gap significantly, and perhaps even quite swiftly. But these initiatives call for accepting world standards of research performance – the very standards from which existence of the gap is derived. The key question is: **should Europe adopt publications in top world journals as a measure of its own research performance in economics? Or should instead Europe adopt its own standards of performance?**²⁷

(i) A first aspect of the question concerns adoption of *English* as the working language of doctoral education and publications. I personally

²⁷ In private correspondence, David Colander has suggested to me that the latter alternative should be preferred. His case rests in part on the views that: (i) journal editing practices are less objective than claimed; and (ii) the role of journals in dissemination of knowledge is bound to decline in the future. I respect these views, and invite readers to consider them. Though David may well prove right in the long run, I feel that the intermediate step privileged here cannot be dispensed with.

regard that option as *necessary* for progress on the Lisbon road. (Of course, I could hardly claim otherwise, after practicing that option at Louvain since the mid-sixties! Another forty years of field experience has amply confirmed my initial conviction.)

The main argument in favour of that option is that circulation of ideas and research results worldwide is enhanced by use of a single language as a vehicle of communication. With several languages, *the users of minority languages are the losers*: their ideas do not circulate widely and do not receive the attention which they deserve.

So, I maintain today that **Europe should indeed opt for English in the way detailed under 2.c above**. Otherwise, stop paying lip-service to Lisbon! On this aspect, I have no qualms or reservations.

(ii) A second aspect of the question concerns acceptance of *publications-cum-citations in international journals* as a measure of research performance; with the implication that incentives be provided on that basis to individuals and departments. This question is pertinent, because we have seen that publication standards in these journals are implicitly set by members of a few leading US institutions, the members of which are themselves graduates of the very same institutions. Is that small elite group apt to carry standards reflecting European priorities, or better still world priorities?

While recognising the relevance of the question, I personally feel that **the proper way for Europe to influence world standards at this time is to work within the system**, and to gain weight in the process through increased research efforts. It would, in my opinion, be extremely dangerous and counterproductive for Europe to set itself outside of the accepted world channels of research evaluation and dissemination. I see in the relative underperformance of economists in the B4 an illustration of where such an approach might lead.

My conclusion is based: (i) on the recognition that scientific progress is a world undertaking, which should be guided by common world standards; and (ii) on the belief that progress in Europe is at hand, and will be conditioned by adopting the right incentives, as defined by world standards of quality. Any other approach strikes me as doomed to failure. (Of course, this is one man's opinion, open for discussion.)

(iii) A third aspect of the question concerns the place of *incentives* in the organisation of teaching and research – including the so-called “*publish or perish*” dilemma. Today, careers at the better universities call for establishing early on a suitable publication record.

This has some clear drawbacks, of which the more important to my eyes is the bias in favour of quickly publishable research as opposed to projects requiring a more prolonged effort (as required, e.g., to construct data sets). The only advice I have on this point is that alternative systems now exist in different countries, and it will soon become possible to evaluate them. In the meantime, experimenting with alternatives is desirable. If superior alternatives to “publish or perish” can be devised, so much the better.

(iv) All this being said, it remains that we are still a long way from an integrated market for academic economists in Europe, thereby failing to replicate a feature that seems important to the US performance. Many aspects of this issue lie beyond the scope of my presentation, as they bear on job opportunities for spouses, schooling, living conditions and the like. One aspect that deserves scrutiny concerns salary competition across countries. The principle that national legislations should not prevent matching offers from other European countries has definite appeal – and again deserves scrutiny, or initiatives!

8. Doctoral programs

8.a Which universities produce PhD’s in the US and in Europe? Basic information for the US is summarised in Table 13, for the 1106 doctorates per year awarded (on average, over the decade 1994-2003) by all US universities – in fact, by 167 universities there.

I have on an earlier occasion alluded to some inefficiencies of US doctoral programs in economics; cf Drèze (2001, section 2). One major deficiency was the small size of most programs. As aptly stated by Cremer and Gérard-Varet (1999), “doctoral programs should be large enough that students can collaborate with each other and find intellectual support from their peers”. The more comprehensive data underlying Table 13 reveal some improvement on that score, but the deficiency is still there. One half of the degrees are awarded under programs that I would rate as inefficiently small, namely graduating less than 12 students per year. And nearly one half of the programs (77 out of 167) are dwarfs, producing less than 4 doctors per year.

I have long wondered why a university would offer doctoral training, which is costly, to such inefficiently small cohorts. The hypotheses I have heard range from prestige and hiring opportunities to use of doctoral students as teaching or research assistants. Whatever the reason, I have encountered few colleagues associated with dwarf programs who would

even consider giving up doctoral degrees. This point deserves further consideration.

These remarks do not apply to the 20 major programs, all of which grant at least 16 degrees per year.

8.b Data comparable to those of Table 13 are not readily available for Europe; see however table 14 in Kirman and Dahl (1996) and the notes to that table – while realising that immense differences prevail in the *quality* of European doctorates. In an attempt to remedy that deficiency, I have asked colleagues at the universities listed in Table 7 to supply comparable data. The information so collected is presented in Table 14.

The first entry in Table 14 is challenging: with 65 promotions per year, Paris 1 is perhaps the one university in the world with the largest doctoral program in economics! How should one interpret that observation? It is of course tempting to simply disregard it, on the grounds that it *must* reflect less exacting requirements than at the other universities considered here. Such dismissal would be too easy, and definitely unjust. Thus, in Table 12, Paris 1 occupies an enviable yet plausible place as the fourth more significant training center in Europe, ranking between Louvain and Cambridge. So I suggest further probing; but pending that, I must proceed with the rest of the table.

My scanty data cover a few universities with a PhD program comparable in size to those of the 20 major US universities in Table 11, namely 16 graduates per year or more. Next comes a small group with 10 to 12 graduates per year. But the majority of my answers concerns programs with 5 to 8 graduates per year. There is thus some way to go before most of the leading European PhD programs in economics reach an efficient size. Further concentration seems worth encouraging, especially if English becomes the working language.²⁸

8.c Another deficiency of US doctoral training stressed in Drèze (2001) was “*isolation*”, about which I wrote (pp 6-7):

“The *isolation* has two aspects. First, students do not move; they do all their graduate work at a single institution, and thus deprive themselves of the benefit of exposure to alternative views. Second, university departments hardly co-operate in education with other economics

²⁸ An ancillary issue, that may or may not prove significant, concerns the place of PhD programs in the new “Bologna” structure (the 3-5-8 or Bachelor-Master-PhD sequence). In the UK-US tradition, years 4 and 5 correspond to the course work for a PhD. In several continental countries, “doctoral schools” start after the 5-years Master. Proper attention should be paid to student information across national borders.

departments located nearby; and very few co-operate closely with the business school at their own university – in spite of the visible advantages of such co-operation where it exists (Carnegie, Chicago, MIT, Northwestern or Stanford being outstanding examples).”

This is one area where Europe has a leading edge, thanks to initiatives along three avenues of cooperation:

- (i) *international* joint ventures by universities in several countries, whereby students are invited to attend at least two universities as part of their degree; this gives them access to a wider pool of talent for courses and thesis supervision; it forces them to come in contact with two different departments and university systems; well-known examples are EDP and ENTER;
- (ii) *national* ventures under which advanced courses are offered at the national level and attended by students from all the universities in the country; the students benefit from inter-university contacts and the participation of the better teachers (often foreigners) for each subject; some courses are intensive residential sessions over short periods; others are offered on a weekly basis; this works more easily in small countries, like the Netherlands (NAKE program) or Switzerland;
- (iii) *local* joint ventures by neighbouring universities which offer complementary advanced courses attended by students from all participating universities; examples are the Tinbergen Institute, a joint venture of 3 universities, or the doctoral school of French-speaking Belgium (3 universities again).

With some twenty years of experience for some of these ventures, it would seem appropriate to attempt a **systematic objective evaluation** of benefits reaped and problems faced. Such ventures are indeed another answer to the scale problem.²⁹

9. Funding doctoral training and research

In Drèze (2001), I stressed “the difficulties associated with three specific features of graduate training seen as an economic activity”, writing as follows (footnotes omitted):

²⁹ I do not comment here on the cooperation between economics departments and business schools, in spite of my strong (and positive) endorsement of same.

“These difficulties stand in the way of efficiency through decentralised operations and point to the desirability of suitable co-ordination procedures or incentives.

The three specific features I wish to stress are the following:

(i) Research output is a pure *public good* and graduate teaching is typically a public good with exclusion; the first point is obvious, the second is verified to the extent that class sizes are sub-optimal, i.e. “typically.

(ii) Graduate education is an activity subject to *increasing returns* to scale, up to a program size rarely exceeded; beyond the public good aspect, the main reason for scale economies is that *students educate each other*; in fact, they are apt to learn more from each other than from their teachers; but this requires interactions, for which the prospects grow with size (enrolment).

(iii) Graduate education is a good subject to substantial variations in *product quality*, as illustrated below.

These three features, in isolation and *a fortiori* in conjunction, imply that *decentralised supply is generically not efficient, or even constrained-efficient*, unless incentives are suitably designed. Abdessalem (1997) investigates the provision of public goods with exclusion, produced under increasing returns, and applies his theoretical results to university education. Assuming that universities charge second-best tuition fees, and taking social as well as private returns into account, Abdessalem finds that public support of universities should come in three forms: (i) block grants to institutions; (ii) grants per graduating student, differentiated by fields of study; and (iii) positive or negative block grants to *programs of study*. The negative grants to programs are precisely meant to prevent the proliferation of undersized programs. They do not seem to exist anywhere.”

That lengthy quotation was needed to document the second-best efficiency of block grants to programs of study (e.g. doctoral programs in economics...).³⁰ There is more to the theme, however. In particular, it is suggested in Drèze (2001) that tuition fees should be raised in those countries where they are minimal³¹ – perhaps to reach a level of 5.000 euros per year.

10.A two-handed proposal

In order to enhance the research performance and teaching efficiency of European universities, I propose here two programs, addressed

³⁰ Understandably, I ignore the possibility of *negative* grants to undersized programs!

³¹ It is noted there that European EDP students faced (at the time) tuition fees of euros 2.500 at LSE, 800 at Pompeu Fabra, 700 at Louvain-la-Neuve, 125 at Paris and 0 at Bonn...

respectively to the demand side and to the supply side of a European market for academic economists. My proposal naturally starts from the premise that maintaining and strengthening the activities of leading economics departments in Europe is essential to further progress. To that end, I recommend block grants to leading departments. I realise (from section 4) that rank-and-file departments matter as well; but these would be candidates for negative block grants! So I suggest providing research incentives to individuals across the institutional spectrum. The market considerations and the second-best considerations thus reinforce each other.

Should this fresh funding be appropriated at national or at EU level? Given the small number of potential recipients for the block grants (around one per EU member state!), **competition among the applicants unequivocally calls for EU level appropriation.** But systematic matching of European grants from national sources would be desirable, thus spreading the costs between EU level funds (a very scarce resource!) and national funds.

Given that funds are scarce, it is essential that they be used with maximal efficiency. My best advice on that score is simply to allocate funds according to research merits, and then let beneficiaries decide how best to use them.

10.a The demand side.

I start with doctoral training in economics in Europe. It is clear that **we need a limited number of first-rate graduate schools, apt to train the elite of European economists.** I would provisionally set an upper bound to that number somewhere between 20 and 30, offering the list in Table 7 as a starting point - naturally open to some modifications.

Clearly, our leading schools would benefit greatly from *some* additional funding (some: not 30 endowed chairs!), especially funding available for whatever use the schools would favour; that is, **funding with no strings attached!** My own experience with the management of research confirms unequivocally the benefits of some freedom in resource allocation, in particular to attract and accommodate foreign teachers-researchers.

To be concrete, **I suggest organising a fund for block grants to PhD programs, apt to offer some 20 to 30 grants of 300.000 to 500.000 euros per year on a competitive basis across the EU.**

The grants should come in 4 to 5 years instalments, with no strings attached to their use. Appropriation criteria should be based on achievements, neither more nor less. But eligibility would be restricted by three conditions:

- (i) the language of instruction should be English;
- (ii) the program should be of sufficient size, meaning an average number of PhD's per year at least equal to 10 or 12, on a moving average basis;
- (iii) the department should have a strong record of published research, in a limited set of journals weighted by impact factors.

I deal below with the tricky question of organising the selection of beneficiaries of these grants. And I note that **such a program would automatically support research at centres of excellence across Europe.**

The suggested amounts are designed to make a difference, while recognising that resources transiting through the EU budget are scarce³². The annual cost of this program might be of the order of **10 million euros**, shared between European and national budgets. This amount could be phased in over a few years. Given that programs meeting my three conditions are not numerous today, a progressive take-off will do.

10.b The supply side.

In order to promote the supply of a flow of young research-oriented economists, whether they be employed by leading universities or more significantly by rank-and-file institutions, **I suggest organising a fund for block grants to productive young academics, apt to offer some 200 grants of 25.000 euros per year on a competitive basis across the EU.**

The grants should come in 4 to 5 years instalments, with no strings attached to their use. Appropriation criteria should be based on research achievements (meaning publications in good journals), neither more nor less. But eligibility would be restricted by three conditions:

- (i) the applicants should be less than 45 years old;
- (ii) the applicants should work full-time for a university or research centre;
- (iii) the applicants should not hold non-academic side jobs during the period of support.

One important set of potential candidates consists of Europeans working abroad. The EU already offers special grants aimed at facilitating the return to Europe of emigrated scientists.

³² The suggested amounts also correspond to the tuition fees that would be collected from 60 to 100 doctoral students at an annual rate of 5.000 euros. This remark opens the door to an alternative funding program;

By “no strings” is here meant that beneficiaries could freely decide whether to use the grants for supplements to personal income, for research expenses or assistance, to buy back a reduced teaching, or whatever.

The amount of 25.000 euros is chosen to offer the possibility of a supplementary income making full-time academic activity feasible to all, and hopefully attractive to many. The annual cost of this program would be of the order of **5 million euros**.

10.c I am thus asking for:

- (i) 15 million euros per year, divided between the European fund and national matching grants, with a phase-in period ;
- (ii) acceptance of concentration of the institutional grants on a small number of centres of excellence *operating in english*;
- (iii) acceptance of the “no strings” principle, both for institutions and for individuals;
- (iv) adoption of clear quality standards as exclusive selection guides.

None of these requests seems outrageous to me, but neither are they easy to obtain; finding ways of meeting them will require some imagination.

Ad (i), I note that my budget is probably the same order of magnitude as the full cost of economics at the European University Institute. It should also correspond to some 15% of a natural share of economics in the 6-th Framework Programme.

The budgetary issue is thus not paramount; but the institutional road to such a budget may be difficult to map.

Another way to look at the budgetary issue would start from the existing support of research and doctoral training in economics through EU funding. This would include doctoral and postdoctoral fellowships (e.g. Marie Curie grants), grants to research networks, the research units in some directorates of the EU staff (ECFIN, Competition,..), research contracts from the same, and economics at the EUI. One could then compute what share of this total is represented by my request, a share that I would label as “the share of fundamentals in total support”. If that share is moderate (like 15% or so), a case could be made that resources should be partly redirected towards this “fundamental” support, if the Lisbon goals are taken seriously.

Unfortunately, no figures are readily available on existing support as just defined. Collecting such figures would be highly desirable.

Ad (ii), it is clear that a departure from the current approach to EU support of research is called for. Currently, international *cooperation* is the basic requirement for EU support – a reflection of the subsidiarity principle. My arguments for a EU fund supporting centers of excellence is different: they would each *operate at a European level*; and there is need of international *competition* between them. I regard this reorientation of EU level funding principles as a clear lesson from an operational approach to the Lisbon program. And I invite the new *European Research Council* to consider its merits carefully.

Of these requests, the most difficult to meet (in practice, not in principle!) is probably the fourth one. There is now a record of European-level management of research support to economics covering a twenty-year span. And there are many national bodies with extensive experience in funding research (from NSF in the US to SSRC and the HEFCE in the UK). My suggestion is that **implementing (iv) above should be the subject of a research project** that could, for instance, be commissioned by the EEA.

In the meantime, I would suggest adopting the criterion of current publications in top journals as a guideline. This might take the form of basic grants to all departments *with high scores* in such rankings as my table 7, and supplementary grants to departments *progressing* in these worldwide rankings.

Summary and Conclusion

A number of specific conclusions and recommendations have emerged from my discussion of readily available data. But such data remain scanty. **More research is needed on almost every point touched here. I invite the EEA to promote such research, in the same way that it did earlier for rankings of economics departments.** Just running down the list of items above on which I did advocate further work provides the starting point of a research program.

A concise summary of the foregoing goes as follows:

- (i) At this time, the US occupy a leading position on the scene of research and PhD education in economics, with an output on both fronts several times (like 3 times) that of Europe (Table 1); catching up with the US will require a major effort, and some time.
- (ii) There is no evidence of a trend in the extent of the EU-US gap (Table 2), but there is an element of brain drain (Table 3).
- (iii) Europe is not homogeneous: the UK and several smaller European countries are well ahead (quantitatively) of the big four continental countries (Table 6). The accomplishments in the UK and small countries bear witness to the possibility of a progressive catching up with the US.
- (iv) Acceptance of English as the lingua franca of economics is unavoidable today. This remark applies to instruction in PhD programs and to publications, including the better national journals.
- (v) Institutional reforms, oriented towards providing the right incentives and rewards (to published research for individuals, to quality for departments) are urgently needed in the big four continental countries.
- (vi) Some 30 European departments of economics, accounting for three quarters of the research output, are easily identified (Table 7); their long run performances are essential to the catching up process.
- (vii) Among the 30 leading economics journals, 11 are “dominated” by US-based authors (Table 8). Joint sponsoring of new journals by the AEA and the EEA would be highly desirable.
- (viii) The concentration of research in leading departments is substantial, but not exclusive; in both the US and the EU, some 20 departments account for half the publications – neither more nor less (Figures 1-5).

- (ix) The top ten US departments rely extensively on endowed chairs to attract the best available faculty members (Table 10). 80% of their faculty comes from the same 10 universities. In Europe, some universities hire internationally (especially the leading Spanish and some British universities), but universities in the small countries hire locally (Table 11). We are still far from an integrated European market for academic economists.
- (x) Doctoral programs reach an efficient size (more than 15 graduates per year) at 20 US universities (Table 13), but only at a handful of European universities (Table 14). Undersized programs still prevail on both scenes. Further concentration is very much called for in Europe.
- (xi) Second-best funding of higher education and research calls for block grants to centers running major PhD programs and displaying proficiency in research. Providing such funding to a number of centers comparable to the number of EU member countries calls for an EU level allocation process. But EU level resources are very scarce!
- (xii) I propose a two-handed EU level program, combining block grants to a limited number of “centers of excellence” with a larger number of grants to young individual researchers across Europe, thereby attempting to stimulate both the demand side and the supply side of the emerging academic market. An annual budget of some 15 million euros is at stake. The allocation should be based on research accomplishments alone, and subject to specific eligibility conditions. No strings should be attached to the uses of the grants.
- (xiii) These efforts may call for departing from some current EU practices. Unless we are willing to innovate, we shall not implement the Lisbon program!

APPENDIX A: Ad measuring research output

Attempting to measure research output is a tricky task, fraught with many pitfalls. There is room for two distinct aims, namely tracking excellence or tracking research activity.

(i) If concerned with excellence, one would ideally like to evaluate the “*weight of ideas*” contributed by original research – a qualitative rather than quantitative indicator. One practical way of tracing that elusive concept is to look at awards designed to recognise significant contributions to a discipline. Two forms of public recognition of research merits are readily available, for economists: Nobel prizes and Fellowships of The Econometric Society. Although the latter are more specialised (there is a clear bias towards formal theory and quantitative methods), the bias is of ancillary relevance to international *comparisons*. These two indicators are reported in Table 1. They are, by nature, quite elitist.

(ii) The more common measures of research output used in the literature are based on *publications and/or citations*. In principle, citations come closer to assessing “*weight of ideas*” than publications; they provide a more elitist indicator.

But attention must be paid to the time-dimension of these indicators. Citations gain in significance when they are tabulated over a longer period, thus measuring the *lasting value of contributions*. Over a short interval following publication, citations reflect more the extent to which publications are *in line with current trends*, a different concept altogether. A choice between citations and publications thus also depends upon whether one aims at measuring a *stock* (for which citations over a longer period are appropriate) or a *flow* (for which recent publications are more appropriate). A ten-year period seems adequate for a flow measure.

(iii) Whether one relies on citations or publications, an important decision concerns the *publication outlets* over which data are collected. In economics, *journal articles* are the standard basis. Two types of measures have been used, depending upon the base of journals:

- a broad set of journals is provided by either the ECONLIT data base, covering some 680 journals (including many journals with national audience), or the SSCI/WEB OF SCIENCE data base, covering some 200 journals;
- narrower sets of “*top journals*” have been constructed by authors aiming to trace *quality* as well as quantity; typically, the authors also use weights to reflect journal quality.

Reliance upon top journals, the more elitist approach, comes closer to the “*weight of ideas*” concept, and is privileged here. Two sets of top

journals are used, namely that of Kalaitzidakis et al. (2003) consisting of the 30 journals listed in Table 8; and that of Lubrano et al. (2003) consisting of 68 journals; details are supplied in these two papers; the first set of 30 journals is of course a subset of the SECOND set of 68. Still, the fuller set of ECONLIT/WEB OF SCIENCE journals comes in through the tabulations of Tom Coupé (2003 and website).

(iv) A further dimension of the measurement issue concerns the basis for reporting data: either *departments* or *individuals*. Because much attention has been paid in the literature to *ranking departments* (a goal of ancillary relevance to my own pursuit), data are often aggregated over members of university departments or research centers. Although this should not matter in principle for *comparison* purposes, it does in fact matter some, because the grouping of individuals into departments may vary between countries. (This is vividly illustrated by the situation in Paris: of the 23 fellows of The Econometric Society giving an address or affiliation there, only 2 mention a university affiliation!)

(v) When comparing the performance of departments, their size should in principle be taken into account: more members publish more! Because I am not concerned here with rankings, I need not introduce corrections for size. But readers playing the rankings game should have regard to that dimension.

The messages from different measures are largely congruent, but not identical. Reliance on several measures is thus desirable for major conclusions.

There remains an issue of national or language bias in the editorial process of journals. I comment on that issue in sections 3 and 7.

Appendix B: Sources

ECONLIT covers some 680 economics journals and includes many national journals in national languages.

SSCI and WEB OF SCIENCE cover some 200 economic journals.

Who's Who in Economics, vol. II, III, IV; see Blaug (1986, 1999), Blaug and Vane (2003). Each volume concerns those economists with the highest number of citations in the SSCI database for articles published during a specific period – namely 1972-83, 1984-96 and 1990-2000 respectively. The numbers of entries for economists alive at time of publication are approximately 900, 1000 and 750 respectively.

Coupé

Refers to data in Coupé (2003) or available on the website of Tom Coupé <<http://student.ulb.ac.be/~tcoupe/ranking.html>>.

All data are based on articles published in the years 1990-2000 in ECONLIT journals that are also covered by the Web of Science, or citations thereof. Data for “departments” come from Table 5 in Coupé (2003), which covers 200 departments worldwide. Data for “economists” comes from Coupé’s “ranking page”.

HABM

Refers to data from Hirsch et al. (1984), or the update of same by Tom Coupé (2003, Table 4).

The original data are based on articles published in the years 1978-82 in 24 “top journals”. The update pertains to years 1996-2000 and to the same journals. The data are assembled by departments.

KMS

Refers to data from Kalaitzidakis et al. (2003). These data are based on articles published in the years 1990-2000 in a (weighted) set of 30 “top journals” listed in Table 8 and assembled by departments.

LBKP

Refers to data from Lubrano et al. (2003), table 10. These data are based on articles published in the years 1990-2000 in a (weighted) set of 68 “top journals” listed in Table A.1 of the quoted paper and assembled by departments.

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Table 1 European versus US economics

	Europe^a	US	US/ Europe	US in the world (%)
Nobel laureates^b	14	41	2.9	67
Fellows ES, 2005^c	124	408	3.2	68
CITATIONS^d				
Who's Who IV	107	534	4.8	72
Coupé, Departments	46.954	229.180	4.9	76
Coupé, 500 economists	13.953	81.390	5.8	78
PUBLICATIONS, Pages^d				
KMS	10.084	31.265	3.1	65
Coupé, Departments	301.305	761.478	2.5	61
Coupé, 500 economists	55.758	104.139	1.9	50

^a Our definition of Europe corresponds to EU 15 plus Norway, unless specified otherwise.

^b According to affiliation at time of award.

^c According to affiliation as listed in *Econometrica* (2006), vol. 74 (3).

^d See Appendix B for interpretation and references.

Table 2 Europe versus US over time

		Europe	US	US/ Europe	US in the world (%)
Nobel laureates	1969-1989	11	15	1.4	58
	1990-2005	3	26	6.7	87
Fellows ES	Jan 1981	88	179	2.0	56
	2005	124	408	3.2	68
Who's Who II	1972-1983	24%	67%	2.8	67
III	1984-1996	28%	60%	2.1	60
IV	1990-2000	13%	74%	5.7	74
Number of departments -based on publications, HABM^a	1978-1982	11	76	6.9	76
	1990-2000	19	70	3.7	70
	1996-2000	22	66	3.0	66

^a Based on table 3 in Coupé (2003); the ranking of economics departments by Hirsch et al. (1984) for 1978-82 was updated by Tom Coupé for the nineties; the original ranking is based on 24 journals.

Table 3 The brain drain, as revealed by Who's Who II-IV (percentages)

	Continental Europe	UK	ROW	US
II				
Affiliation	10	14	9	67
Birth	20	12	13	55
III				
Affiliation	10	18	12	60
Birth	21	18	18	43
IV				
Affiliation^a	7	6	6	69
Birth	7	8	21	64

Source: Blaug (1986), Blaug (1999), Blaug and Vane (2003).

^a Leaving out 51 economists with non-academic affiliations (mostly located in the US).

Table 4a Affiliation versus First Degree

Current Affiliation	Europe^a	US	ROW	Non-Academic	Total
First Degree					
Europe^a	100	63	4	11	178
US	3	395	9	38	445
ROW	4	74	34	2	115
Total	107	532	47	51	737

Source: Blaug and Vane (2003)

Note : The total number of observation is 743 but there are 6 missing values.

Table 4b PhD versus First Degree

PhD	Europe^a	US	ROW	Total
First Degree				
Europe^a	90	66	6	162
US	12	432	2	446
ROW	10	87	17	114
Total	112	585	25	722

Source: Blaug and Vane (2003)

Note : The total number of observation is 743 but there are 21 missing values.

Table 4c Affiliation versus PhD

Current Affiliation	Europe^a	US	ROW	Non-Academic	Total
PhD					
Europe^a	67	36	3	7	113
US	26	489	32	41	588
ROW	2	9	12	1	24
Total	95	534	47	49	725

Source: Blaug and Vane (2003)

Note : The total number of observation is 743 but there are 18 missing values.

^a Includes Switzerland.

Table 5a Comparing countries' quantitative indicators

Country	Articles		Foreign		Population (millions)	Authors/ population	Economics Departments
	total	Journals	Authors	coauthors			
Austria	842	247	460	15%	8.1	56.67	12
Belgium	1,656	298	806	19%	10.3	76.99	16
Denmark	919	253	463	14%	5.4	85.74	8
Finland	713	174	433	16%	5.2	83.27	18
Greece	861	245	403	16%	10.9	36.76	12
Ireland	460	143	256	17%	3.8	67.11	8
Netherlands	3,478	415	1,793	14%	16.0	111.94	10
Norway	940	233	470	13%	4.5	104.44	7
Portugal	260	117	144	25%	10.0	14.40	15
Sweden	1,652	304	868	12%	8.9	97.42	21
France	5,118	397	2,698	17%	59.2	46.00	70
Germany	4,191	406	2,506	13%	82.2	30.19	98
Italy	3,545	355	1,921	14%	57.8	32.87	72
Spain	2,338	307	1,527	14%	39.8	38.37	48
UK	13,351	613	6,656	15%	60.0	115.60	96
Total	40,324	681	21,406	—	382.1	56.02	511
California	7,893	560	3,419	19%	33.9	100.86	52

Source: Lubrano et al. (2003), page 1378, table 4.

Table 5b Publication characteristics

Country	Journals used	Major outlets	Decomposition of major outlets			
			Top	Articles	National	Articles
Austria	247	39	11	24%	1	6%
Belgium	298	45	18	32%	3	26%
Denmark	253	28	11	29%	1	30%
Finland	174	12	4	17%	2	53%
Greece	245	32	3	6%	6	25%
Ireland	143	12	2	8%	2	63%
Netherlands	415	46	20	41%	1	8%
Norway	233	30	10	37%	2	13%
Portugal	117	18	9	39%	1	27%
Sweden	304	31	9	30%	2	15%
France	398	13	3	11%	10	85%
Germany	406	22	5	11%	11	66%
Italy	355	24	3	7%	17	81%
Spain	307	16	7	23%	7	67%
United Kingdom	613	51	9	20%	27	40%
Total	681	247	47	17%	93	40%
California	560	64	36	66%	1	2%

Source: Lubrano et al. (2003), page 1381, table 6.

Table 6 Looking inside Europe

	Big 4^a	7 Small^b	UK
Population (million)	240	58,4	60
Fellows ES	49	26	48
Who's Who III	61	28	165
Who's Who IV	25	21	59
Coupé			
CITATIONS 200 Departments	5.591	13.005	28.358
500 Economists	4.098	3.152	6.703
PUBLICATIONS PAGES 200 Departments	73.914	83.078	142.209
500 Economists	20.553	9.909	24.943
KMS			
PUBLICATIONS PAGES 120 Depts Europe	3.745^c	3.472	3.759
LBKP			
PUBLICATIONS PAGES Top Journals	10.947	12.432	11.015

^a France, Germany, Italy, Spain.

^b Austria, Belgium, Denmark, Finland, Netherlands, Norway, Sweden.

^c France 1.375, Germany 782, Italy 555, and Spain 1.039.

Table 7 Europe's leading universities, and comparison with US^a

Continental Europe (Big 4 indented)		UK		US	
				16 universities with average	1.106
				Rochester	587
Tilburg	581	LSE	549	Madison Wisc	572
				Minnesota	539
		U Coll London	390	...	
		Cambridge	372	Ohio State	377
		Oxford	370	U Pittsburgh	369
				John Hopkins	328
Toulouse	322			Virginia	320
Autonoma	304			...	
Amsterdam	288			St Louis	285
Carlos III	286			...	
Pompeu Fabra	274	Essex	280	...	
Catholic Louvain	267			...	
Erasmus Rotterdam	261			...	
INSEE ^b	251			U North Carolina	244
Stockholm School	237			U Florida	237
Vienna	208	Warwick	212	Dartmouth Coll.	208
Bonn	202			Boston College	195
Copenhagen	188	York	187	Rutgers	195
Stockholm U	176	Southampton	185	Texas A&M	174
U L Brussels	170			U of C Sta Barbara	171
Paris 1	157			Indiana	158
				Arizona	147
Bologna	135			South. Methodist	137
Vrije U Amsterdam	134			...	
Limburg U Maastricht	130	Bristol	126	U Oregon	131
Alicante	123	Exeter	121	Syracuse U	124
ENPC ^c	119			...	
U Oslo	108	Edinburgh	105	Brandeis	107
Bocconi Milano	100			Arizona State	101
TOTAL	2.748	2.273	TOTAL	2.897	TOTAL
				23.402	

^a The figures denote numbers of pages as per KMS (table 3).

^b Institut National de la Statistique et des Etudes Economiques

^c Ecole Nationale des Ponts et Chaussées

Table 8 **Leading journals and their authorship**

Journal	Impact factor	Europe %	US %	Share of 3 main universities (%)
American Economic Review	100.00	8.4	82.0	13.27
Econometrica	96.78	20.2	67.0	17.77 ^a
Journal of Political Economy	65.19	10.8	80.4	18.95 ^b
Journal of Economic Theory	58.76	23.3	57.3	9.89
Quarterly Journal of Economics	58.11	11.4	84.5	32.86 ^c
Journal of Econometrics	54.91	26.8	54.0	7.91
Econometric Theory	45.85	36.5	41.9	12.8
Review of Economic Studies	45.15	25.5	62.1	13.95
Journal of Business and Economic Statistics	38.41	18.7	64.6	6.97
Journal of Monetary Economics	36.41	11.8	73.8	12.69
Games and Economic Behavior	35.49	31.7	50.8	11.65
Journal of Economic Perspectives	34.26	6.3	91.3	20.32 ^d
Review of Economics and Statistics	28.02	25.5	62.1	6.93
European Economic Review	23.76	65.3	26.2	8.46
International Economic Review	23.04	18.8	57.7	4.95
Economic Theory	22.43	23.8	60.7	10.48
Journal of Human Resources	21.34	8.7	83.0	9.58
Economic Journal	20.71	60.6	30.6	11.23
Journal of Public Economics	19.77	34.8	49.6	5.36
Journal of Economic Literature	18.78	13.6	80.4	12.54
Economics Letters	18.73	35.3	42.8	2.46
Journal of Applied Econometrics	16.59	38.9	42.1	7.01
Journal of Economic Dynamics and Control	14.54	31.8	53.2	6.4
Journal of Labor Economics	12.76	10.8	71.9	9.35
Journal of Environmental Economics and Management	11.85	14.1	74.7	10.03
Rand Journal of Economics	11.44	16.2	75.6	15.07 ^e
Scandinavian Journal of Economics	10.66	72.0	22.4	13.02
Journal of Financial Economics	9.89	3.6	91.5	15.63 ^f
Oxford Bulletin of Economics and Statistics	8.35	77.2	16.5	13.8
Journal of International Economics	7.84	19.3	63.4	9.0

Source: Column 1: Based on table 1 in Kalaitzidakis, P. et al (2003) ; Column 2, 3 and 4: Data available on Tom Coupé's website : <http://student.ulb.ac.be/~tcoupe/ranking.html>.

^a Yale, Northwestern, MIT.

^b Chicago, MIT, Harvard.

^c Harvard, MIT, Chicago.

^d Harvard, Berkeley, MIT.

^e Harvard, Northwestern, Berkeley.

^f Harvard, Rochester, Pennsylvania.

Table 9a The place of top departments in Europe

10 top European departments^a		
	Share in Europe (%)	Share in world (%)
Nobel Prizes	36	9
ES Fellows	34	7
Citations Who's Who IV^b	38	5
Coupé^c	35	5
Publications Coupé pages^d	33	8
KMS^e	33	8
Doctorates Who's Who IV	61	10

Table 9b The place of top departments in US

10 top US Departments^f		
	Share in US (%)	Share in world (%)
Nobel Prizes	78	56
ES Fellows	55	37
Citations Who's Who IV^b	41	30
Coupé^c	40	31
Publications Coupé pages^d	28	17
KMS^g	44	28
Doctorates Who's Who IV	73	59

^a Tilburg, LSE, U College London, Cambridge, Oxford, Toulouse, Autonomia Barcelona, Amsterdam, Carlos III, Pompeu Fabra.

^b Based on number of economists listed in Who's Who IV who obtained a doctorate from one of these 10 universities.

^c Based on table 5 in Coupé (2003).

^d Based on data provided to us by Tom Coupé for articles published between 1990 and 2000 and included in EconLit and in the Web of Science.

^e Based on tables 3 and 4 in Kalaitzidakis et al. (2003).

^f Harvard, Chicago, MIT, Northwestern, Pennsylvania, Yale, Princeton, Stanford, Berkeley, Columbia.

^g Based on table 3 in Kalaitzidakis et al. (2003).

Table 10 A closer look at 10 top US departments

University	University Endowment (\$ billion)	# Full Professors	# Endowed Chairs	PhD from top 11 dept.^a	# years PhD to first appointment^b
Harvard	25	33	31	30/33	11.5
Chicago	4	18	10	11/18	9.6
MIT	7	25	14	21/25	3.2
Northwestern	4	24	14	19/24	9.4
Pennsylvania	4	15	8	7/14	3.8
Yale	15	33	20	18/23	8
Princeton	11	38	16	27/35	11.6
Stanford	12	22	15	20/22	6.3
Berkeley	5	47	16	33/42	8.7
Columbia	5	25	11	19/24	13.3
Mean	9,2	28	15,5	79%	8

^a The difference between the total number of full professors in this column and in the second column is due to missing information.

^b Averages, ignoring missing observations.

Table 11 Doctoral training of some European economists^a

Affiliation	Coverage	Same university	Other same country	Other continent	UK	US	% same country
Pompeu Fabra	53/75	1	10	14	7	21	21
Carlos III	29/32	0	11	1	5	12	38
Essex	24/26	1	8	3	9	11	38
LSE	14/25*	1	5	0	6	8	43
Nottingham	16/20	0	9	0	9	5	56
Maastricht	14/28	5	3	4	1	1	57
U College London	29/33	3	14	6	17	5	59
Aix-Marseille	16/27*	4	6	2	2	2	62
Copenhagen	31/39	17	4	8	0	1	68
Vrije Amsterdam	17/25	4	10	1	1	1	68
Stockholm School	13/16*	4	5	1	1	2	69
Tilburg	14/18*	3	7	0	2	2	71
Erasmus	15/21	8	3	2	0	2	71
Toulouse	21/22	10	5	2	2	2	71
York	40/46	9	20	0	29	9	72
Amsterdam	18/24	8	4	2	2	2	75
Cath. Louvain	23/23	15	5	2	0	1	87
Stockholm U	9/12	0	8	0	0	1	89

^a Table based on the websites of those departments for which the desired information proved readily accessible. Coverage reflects availability of information. When the numbers in columns 3-7 do not reproduce coverage, the discrepancy reflects doctorates from the rest of the world. An asterisk means “professors only”; otherwise, the composition of the group is not identified, but its size is suggestive.

Table 12 Where did university professors get trained

University	# grads	University	# grads
Harvard U	164	U Paris 9	12
MIT	156	European U Institute	12
Stanford U	110	U Autonoma - Barcelona	12
U Chicago	106	EHESS - Paris	11
UC – Berkeley	98	Duke U	11
Princeton U	97	Boston U	11
Yale U	92	ANU	11
Northwestern U	89	Purdue U	10
U Minnesota	57	New York U	10
LSE	46	Brown U	9
U Rochester	40	U Western Ontario	9
U Pennsylvania	39	Cal Tech	8
Oxford U	35	U Illinois/Urbana	8
U Wisconsin	35	U British Columbia	8
U Michigan	34	U Toronto	7
U Louvain/CORE	26	UC - Davis	7
U Paris I	25	U College London	6
Cambridge U	24	U Pittsburgh	6
Columbia U	23	Pompeu Fabra U	6
UC - Los Angeles	22	U Washington	6
Cornell U	22	U Iowa	6
UC - San Diego	18	Rice U	6
U Toulouse	16	Penn State	5
Queen's U	16	U Maryland	5
Johns Hopkins U	15	U Virginia	5
Carnegie Mellon U	14	SUNY - Stony Brook	4
U Aarhus	12	U Carlos III - Madrid	4

Source: Based on Amir and Knauff (2005), Table 1, pages 9-10.

Table 13 US Doctorates (by deciles)^a

% of doctorates	# Universities	Cumulative	Minimal # of doctorates per university per year
10	3	3	32
20	5	8	23
30	5	13	20
40	7	20	16
50	8	28	12
60	10	38	9
70	13	51	8
80	17	68	6
90	22	90	4
99	36	126	1
100	41	167	< 0.1

Source: National Science Foundation Web CASPAR: <http://webcaspar.nsf.gov/>

^a Based on the average number of doctorate recipients in the period 1994-2003.

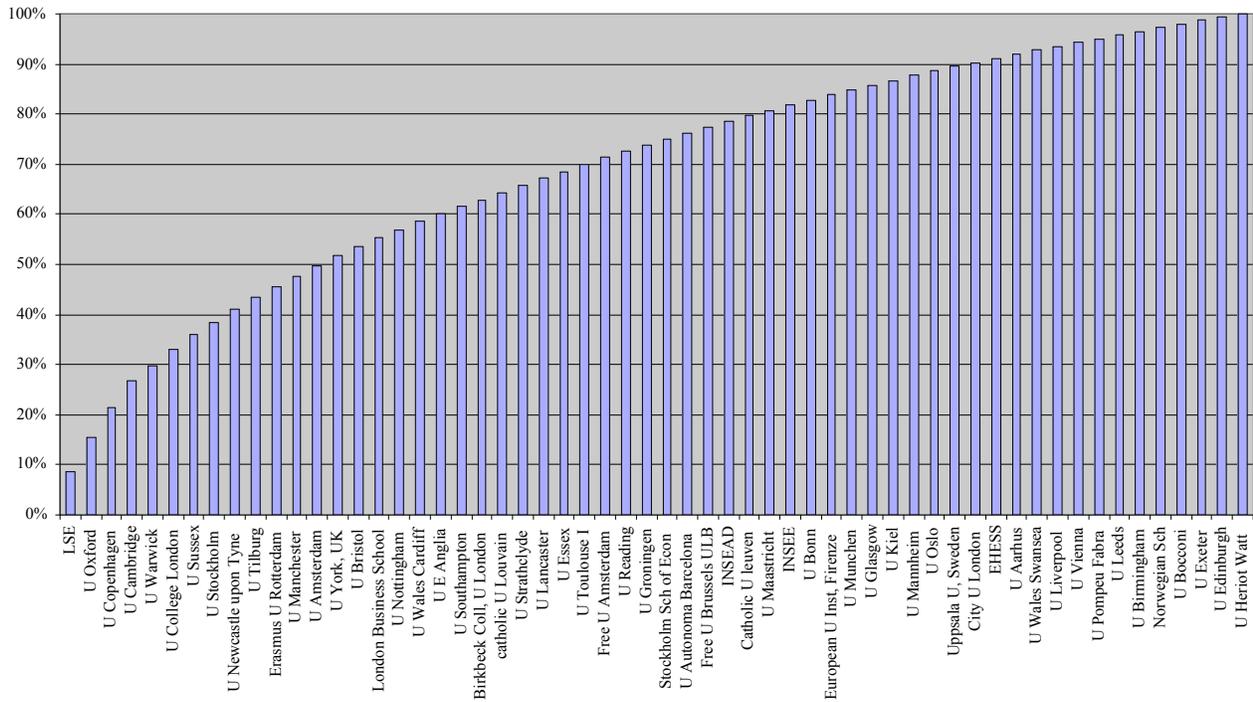
Note: Universities by deciles:

1. Berkeley, Chicago, Harvard.
2. Illinois, MIT, Stanford, Wisconsin, Cornell.
3. Pennsylvania, Minnesota, Yale, Maryland, Ohio State.
4. Michigan State, Columbia, UCLA, Texas A&M, Princeton, Northwestern.
5. Purdue, NYU, Ann Arbor, Rochester, U of C Davis, U of Texas Austin, Pennsylvania State, Missouri.

Table 14 Doctorates granted by some European universities, 1994-2003

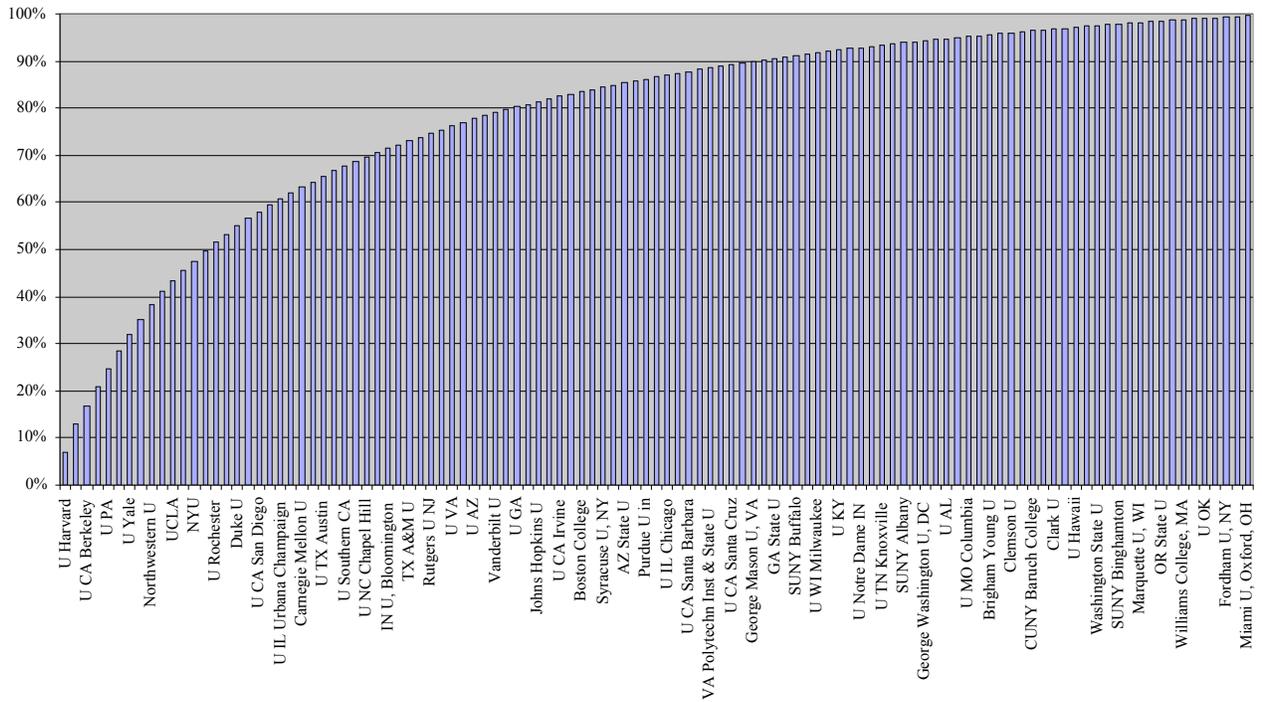
Paris I	650
Oxford	219
Toulouse I	206
Cambridge	161
Rotterdam	129
Tilburg	128
Warwick	126
LSE	121
Cath. Louvain	109
Carlos III	108
U C London	84
Amsterdam	80
Vrije Amsterdam	79
Stockholm School	62
Maastricht	62
Oslo	59
Essex	58
Southampton	57
Pompeu Fabra	51
Bonn	51

Figure 1 Cumulative distribution of citations in European economics departments



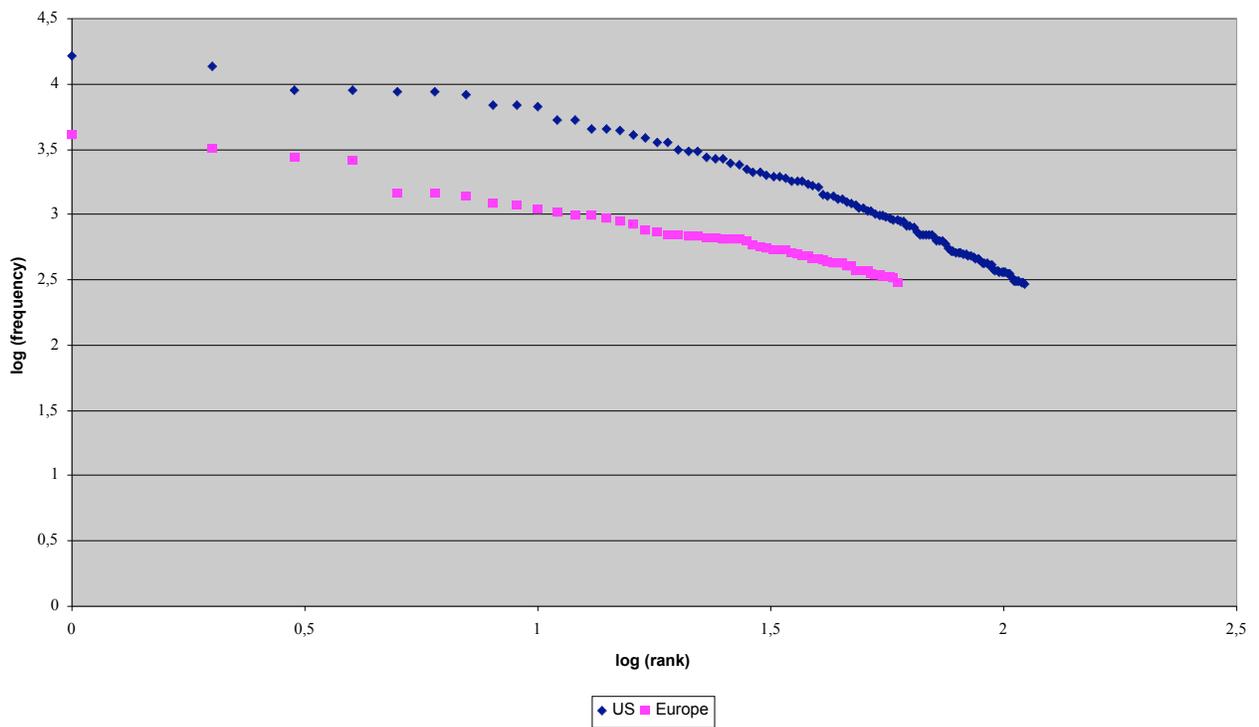
Note: There are 58 European departments in the sample (of the 200 most prominent economics departments) that amount to 46.954 citations (count weighted for co-authorship and multiple affiliations). Source: Coupé (2003), page 1326-1329, table 5.

Figure 2 Cumulative distribution of citations in American economics departments



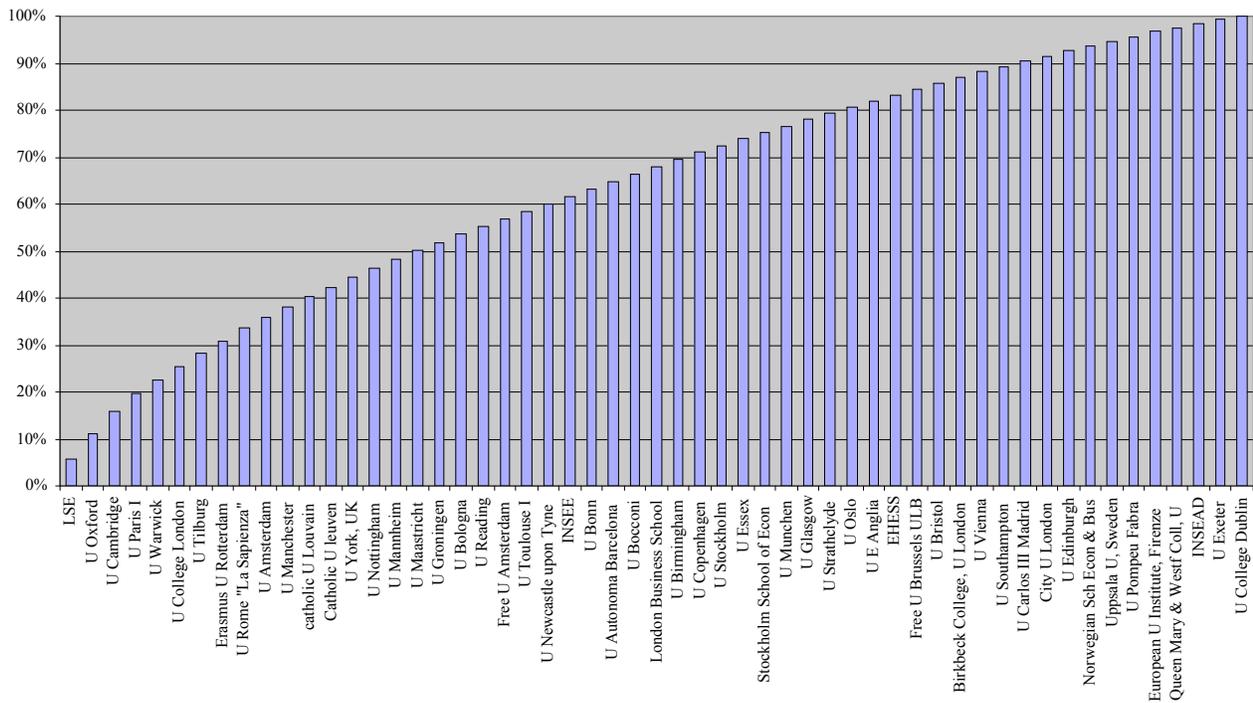
Note: There are 111 American departments in the sample (of the 200 most prominent economics departments) that amount to 229.180 citations (count weighted for co-authorship and multiple affiliations). Due to lack of space, only one of every two labels appears in the graph. The 20 first American departments are: Harvard, Chicago, Berkeley, Stanford, Pennsylvania, MIT, Yale, Ann Arbor, Northwestern, Princeton, UCLA, Columbia, NYU, WI Madison, Rochester, Cornell, Duke, MD College Park, CA San Diego, OH State. Source: Coupé (2003), page 1326-1329, table 5.

Figure 3 Testing for the Zipf's distribution



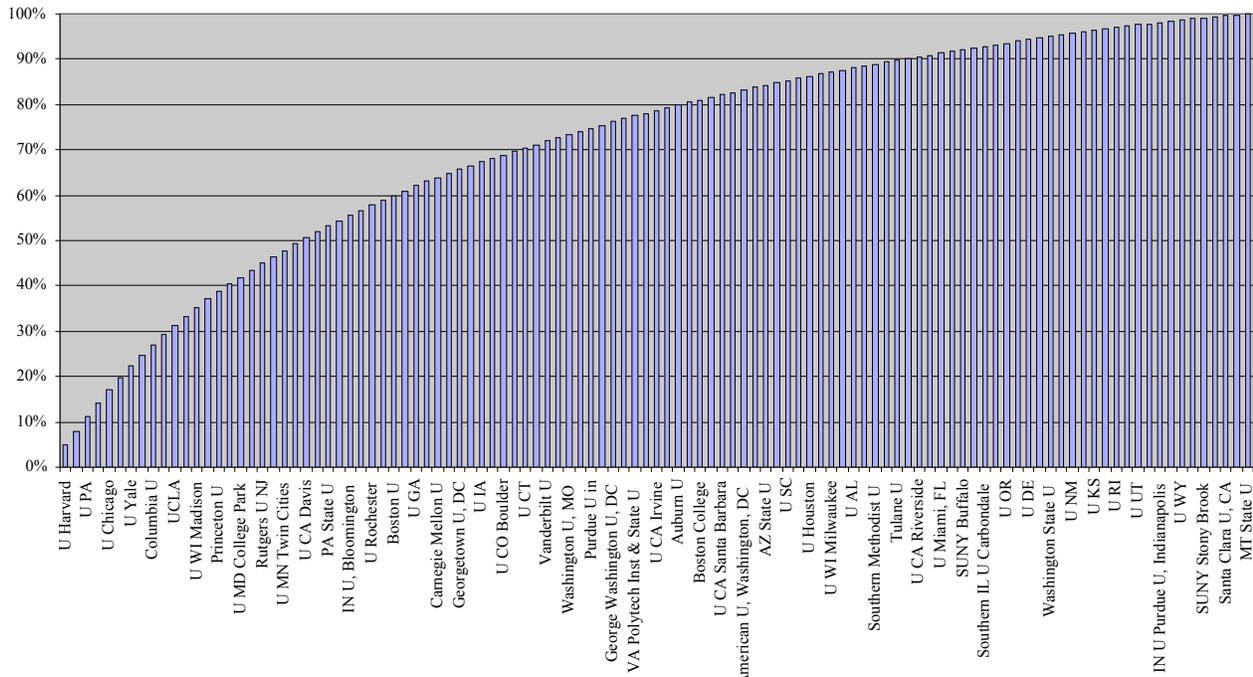
Source: Coupé (2003), page 1326-1329, table 5.

Figure 4 Cumulative distribution of publications (pages) in European economics departments



Note: There are 55 European departments in the sample (of the 200 most prominent economics departments) that amount to 301.305 pages of publications. Source: Based on data provided to us by Tom Coupé.

Figure 5 Cumulative distribution of publications (pages) in American economics departments



Note: There are 109 American departments in the sample (of the 200 most prominent economics departments) that amount to 761,478 pages of publications. Due to lack of space, only one of every two labels appears in the graph. The 20 first American departments are: Harvard, Berkeley, Pennsylvania, Stanford, Chicago, Ann Arbor, Yale, MIT, Columbia, Northwestern, UCLA, NYU, WI Madison, Cornell, Princeton, IL Urbana Champaign, MD College Park, Duke, Rutgers NJ, OH State. Source: Based on data provided to us by Tom Coupé.