# "The productivity of economics departments in the U.S.: publications in the core journals": A comment

Mirucki, Jean

University of Valenciennes (UVHC) France

December 1994

# *"The Productivity of Economics Departments in the U.S.: Publications in the Core Journals"*: A Comment

*By* **Jean Mirucki***

*University of Valenciennes and CEPE, University of Lille I, France*

* I am grateful to Edith Archambault, Bertrand Bellon, André Labourdette, François-Régis Mahieu, Bernadette Nicot and especially to William Baumol for helpful comments or encouragement.

# *"The Productivity of Economics Departments in the U.S.: Publications in the Core Journals"*: A Comment

In their recent article, Michael E. Cooper, Richard Dusansky, David Drukker and Arne Kildegaard (1995; hereafter CDDK) attempted to provide a relative evaluation of ranking of Economics Departments in the U.S. and to compare it with results from other previous studies. They concluded to the confirmed presence of the 24 leading departments in each of the top 25 listings and the remarkable relative stability of their set of 8 "Blue Ribbon" journals in each reported study. While such striking regularity would merit further scrutiny and interpretation, given its predictability property, actual data and results presented on effective scholarly production in economics contradict simple direct observations and would not pass the test even of the most elementary empirical analysis.

Lengthy empirical investigations are certainly a rebuttal to encourage thorough checking or formal replication undertakings. Instead of adopting such a route, we will propose some simple steps of systems analysis techniques capable of providing rapid judgment on overall acceptance/rejection criteria of major empirical studies and demonstrate, in the present case, the process of invalidation of the results on the basis of grossly distorted calculations, whatever the motives and/or the circumstances. The first part will establish, after comparative observations between similar studies, the anomalies in the proposed computed results. A simple "rule of thumb" method, based just on sufficient conditions of acceptability, will then provide general bulk figures to validate our presumptions of "unrealistic" results given reasonably wide parameters and reject, once again, the findings as not being plausible. The second part will verify the sufficient conditions for rejection, using only the required actual data quickly accessible from EconLit, checking along the way, as a by-product, the legitimacy of the basic assumptions used in the initial "rule of thumb" exercise.

## *I. Validating results on total unadjusted scholarly production*

### *A. Comparing results with other empirical studies*

A quick glance at results (see Table 1) referred to by CDDK indicates astonishing high absolute values in the number of pages attributed to the leading departments. While more regular increases are observed among previous studies, abnormal jumps exist between figures from these other studies and those reported by CDDK. Overall, HABM (Barry T. Hirsch, Randall Austin, John Brooks and J. Bradley Moore: 1984) show a progression of 34% over GMT (Philips E. Graves, James R. Marchand and Randal Thompson: 1982) after a 5-year period while CDDK gets some

incredible 2101% and 2816% jumps as a 8 and 13-year productivity growth rates based on GMT and HABM studies respectively, while computing only one-third in terms of the number of journals.

In fact, as indicated by LP study (David N. Laband and Michael J. Piette: 1994), the progression of total scholarly pages for a set of 41 major journals was evaluated at 50% between 1970 and 1990. In absolute value, it corresponds to an amount of 130,182 pages, again for the same set of 41 journals, for the 1985-89 period while CDDK, attributing contributions restricted to their "Blue Ribbon Eight" set exclusively to their 6 top leading departments, obtain a surprising tally of 226,396 pages, nearly three-fourth more than the output of the whole body of U.S. and foreign authors, despite the fact that these authors correspond to a much larger five-fold publication potential outlet.

**TABLE 1**

**Comparison of contributions of leading departments from CDDK study with other studies.**

| **Leading U.S. Economics Departments** | **CDDK study 1987-91 8 jnls** | **GMT study 1974-78 24 jnls** | **CDDK % of GMT** | **HABM study 1978-83 24 jnls** | **CDDK % of HABM** | **Hogan study 1970-79 4 jnls** | **CDDK % of Hogan** | **Bairam study 1985-90 4 jnls** | **CDDK % of Bairam** |
|---|---|---|---|---|---|---|---|---|---|
| Princeton | 53 312 | 891 | *5 983.3* | 1 187 | *4 491.3* | 798 | *6 680.7* | 1 319 | *4 041.8* |
| MIT | 35 114 | 1 089 | *3 224.4* | 1 442 | *2 435.1* | 945 | *3 715.8* | 1 414 | *2 483.3* |
| Chicago | 29 336 | 2 248 | *1 305.0* | 2 976 | *985.8* | 1 049 | *2 796.6* | 1 100 | *2 666.9* |
| Northwestern | 37 498 | 859 | *4 365.3* | 1 462 | *2 564.8* | 735 | *5 101.8* | 839 | *4 469.4* |
| Harvard | 38 766 | 2 007 | *1 931.5* | 2 427 | *1 597.3* | 1 982 | *1 955.9* | 1 329 | *2 916.9* |
| UC-Berkeley | 32 370 | 947 | *3 418.2* | 1 281 | *2 519.1* | 789 | *4 102.7* | 645 | *5 018.6* |
| **Total:** | **226 396** | **8 041** | ***2 815.5*** | **10 775** | ***2 101.1*** | **6 298** | ***3 594.7*** | **6 646** | ***3 406.5*** |

*Note*: The ranking of the institutions is different between the studies and may be also affected jointly or separately by the criteria and assumptions used by the authors (period, number of years, number and type of journals, time of affiliation, inclusion of non-departmental contributions), besides the abnormal differences in productivity growth observed with respect to the CDDK results when compared to those from other studies.

*B. "Rule of thumb" method*

This layman approach consists of providing, using elementary guesses as the basis for estimation, a bulk figure of the scholarly production in the designated core journals.

The total production (Q) of a limited set of leading economics departments ($V_i$) is inferior to the actual number of printed pages representing the contributions of the whole community of scientists (TPG) when considering the same conditions of period ($t$) and designated journals ($j$).

Generally, $Q(V_i) = Q(i,t,j,h,k,l) < TPG(W,h,k,l)$

with $W = W(t,j)$ such that $t = 1987,....,1991$ represents the year of publication

and $j = 1,....,8$ is the number of selected core journal

where $i = \{1,.....,v\}$ the rank of the leading U.S. economics departments ($V_i$)

$h = \{4,5,6\}$ the number of issues/year

$k = \{150,...., 350\}$ the number of pages/issue

$l = \{(0.4),...., (1.2)\}$ the AER-equivalent factor

Or, taking the average values for *h, k, l* we have:

$h' = 5$ the average number of issues/year

$k' = 250$ the average number of pages/issue

$l' = 0.8$ the average AER-equivalent factor

Then $TPG(W) = \sum_{t=1987}^{t=1991} . \sum_{j=1}^{j=8} W_{tj} = 40$ or $TPG\{W.(h,k,l)\} = 40 . TPG(h,k,l)$

Knowing that the total production of AER-equivalent printed scholarly pages in the selected set is necessary greater than the cumulated number of AER-equivalent printed scholarly pages published by all the *i-leading* economics departments ($V_i$), we have, using estimated average values,

the following expression: $W.(h'.k'.l') > \sum_{i=1}^{i=v} Q_{h,k,l}(V_i)$

Given the assumption proposed by CDDK of excluding any foreign contributions in their figures, on one hand, and referring to other studies they have expressly quoted (see: HABM, Table 2; Bairam, Tables 1, 2, 4 and 5), on the other hand, does justify this previous relationship.

Keeping in check the effect of the AER-equivalent factor ($l$) such that $l^* = 1$

we can use the average values $h'$ and $k'$ to calculate the estimated bulk figure for the unadjusted total number of pages ($TPG_{average}$) with TPG(W) = 40 such that $TPG_{average} = 40 . TPG(h'.k'.l^*) = 50\,000$

Removing the assumption of *l-neutrality*, similar calculations can provide estimations of adjusted average and lower limits of total number of pages as follows:

$TPG_{average,adjusted} = 40 \,.\, TPG(h'.k'.l') = 40\,000$

$TPG_{lower,adjusted} = 40 \,.\, TPG(h_{min} \,.\, k_{min} \,.\, l_{min}) = 9\,600$

Knowing that the AER-equivalent factor ($l$) is inferior to unity for the other journals, except for the *Review of Economics and Statistics* (CDDK: p. 1968), the overall impact of 6 journals must easily outweigh this exception. We can therefore safely assume that the effective maximum value of this factor should be considered as being always inferior to unity and represented as $l^*_{max} < 1$

Giving that $TPG_{adjusted} < TPG_{unadjusted}$ we can estimate the adjusted upper limit as follows:

$TPG_{upper;adjusted} = 40 \,.\, TPG(h_{max} \,.\, k_{max} \,.\, l^*_{max}) < 84\,000$

Therefore, under any circumstances, we should always have $TPG_{adjusted} < 84\,000$.

Using the estimated average count, the proposed CDDK results cannot be accepted at the ($V_2$) level and would be inferior only to the count of the first ranking economics department (53 312).

More generally, using the maximum values and checking the results provided by the article (CDDK: Table 1. col. 2), we realize that only the counts from the first two departments suffice to reject the previous condition, given that the cumulated number of pages (88 426) exceeds already the estimated upper adjusted limit (84 000) at the $i$=2 rank level.

## *II. Reviewing the replication procedure*

### *A. Checking the effective scholarly journals production*

Since the estimated measure of the adjusted (or even unadjusted) average page count misses the page count of the first ranked department, which could be accepted only under the upper limit constraint (CDDK: Table 1. col. 2), it will be necessary to calculate the real total number of scholarly pages, using the EconLit data-base (see Table 2).

Since no-one would be prepared to agree that all scholarly contributions to the 8 core journals came exclusively from the first two departments during 1987-91 or, going further into our observations, that members from the 6 leading departments (selected arbitrarily in our demonstration, they easily suffice to illustrate and generalize our point), were the sole contributors to this set of "Blue Ribbon Eight", and that their joint production represented 265.5% of the estimated maximum total printed page count, either the "rule of thumb" method presented serious flaws in the

assumptions (easily verified with actual data in the following section), or results from CDDK study are simply unrealistic and grossly erroneous.

*B. Reviewing the validity of the "rule of thumb" method*

Checking the previous point on Table 2, we realize that the real number of issues (*h*) during the period varied effectively from quarterly to bi-monthly frequency, totally a yearly average of 38, a number close to the predicted figure of 40, and therefore inferior to the upper limit of 48 yearly issues. Also, the average number of pages per issue (*k*) of 238 remains widely in check with the upper limit of 350. The fact that 5 journals out of 8 showed values inferior to our average estimation of 250 pages has no consequences whatsoever on our conclusions, since this "rule of thumb" approach was maximalist in nature, providing a one-tail upper limit approximation of the possible value of the sub-sample under study. Finally, we do not have to resort to a duplication of the AER-equivalent printed scholarly pages factor (*l*), but simply deduce its lack of realism directly from the CDDK results. Given voluntarily inflated raw adjustments for factors such as length of period, number of journals and productivity over different periods for the results from the other studies summarized in Table 1, we could explain the findings presented by CDDK only by applying a (*l*) AER-equivalent factor exceeding 20, implying that the selected journals contain on average, in each of their printed page, more characters than in 20 typical AER pages. In other words, the reader must choose between accepting that a 15-page article from any other journal would be equivalent, on average, to at least 300 pages of the *American Economic Review* (a whole single issue by itself) or reject the results provided in the CDDK article. By checking only the validity of a few simple parameters, and without having to resort to a tiresome formal replication procedure, it becomes now obvious that we can stand firmly convinced by the latter option and shed serious doubt on the usefulness of the CDDK findings.

**TABLE 2**

**Number of scholarly pages in the selected 8 core journals: 1987-91**

| **Journal** | **Iss./Y** | **1987** | **1988** | **1989** | **1990** | **1991** | **Total** | **Pg/Iss.** |
|---|---|---|---|---|---|---|---|---|
| *American Economic Review* | 4 | 1 074 | 1 164 | 1 307 | 1 288 | 1 453 | **6 286** | *314* |
| *Econometrica* | 6 | 1 476 | 1 471 | 1 459 | 1 485 | 1 801 | **7 692** | *256* |
| *International Economic Review** | 4 | 811 | 796 | 1 009 | 1 029 | 1 035 | **4 680** | *246* |
| *Journal of Economic Theory* | 6 | 1 184 | 1 269 | 1 363 | 1 367 | 1 363 | **7 315** | *244* |
| *Journal of Political Economy* | 6 | 1 336 | 1 328 | 1 504 | 1 348 | 1 328 | **6 844** | *228* |
| *Quarterly Journal of Economics* | 4 | 911 | 798 | 873 | 1 077 | 1 383 | **5 042** | *252* |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Review of Economic Studies*** | 4 | 700 | 668 | 639 | 706 | 1 042 | **3 755** | *179* |
| *Review of Economics and Statistics* | 4 | 732 | 712 | 727 | 712 | 754 | **3 637** | *182* |
| **Total:** | **38** | **8 224** | **8 206** | **8 871** | **9 012** | **10 159** | **45 251** | *238* |

*Source*: EconLit 1969-3/1995.
* Only 3 issues in 1987 for a total of 19 issues during the whole period.
** Frequency increased to 5 issues in 1991 for a total of 21.

## *III. Conclusion*

With the prolific production, in recent years, of contributions dealing with the particularities and the performance of our peers, individually or collectively, as well as with the tentative measurement of top achievements of leading groups, stetting on the way what might appear as the highest standards in the profession, care should be exercised in the quality, and therefore the relevance, of published findings. No doubt that great attention is normally deployed in the scrutiny of methodological and procedural options, both by the original authors and by the reviewers.

Unfortunately, anomalies exist, much more than one would suspect, and lengthy empirical projects (yet not limited to economics, social sciences or other scholarly publications) are often seriously infected, reaching sometimes for the summit of a hoax. Developing new efficient methods and techniques for probing rapidly the validity of complex empirical investigations should become an urgent priority for the benefit of the profession. In fact, these tools should be soon included in the panoply of the practitioners in the editorial process, editors, referees and other reviewers of submitted papers, as already eloquently demonstrated by an alarming study (Dewald et al., 1986) a decade ago.

## REFERENCES

BAIRAM, ERKIN I. "Institutional Affiliation of Contributors to Top Economic Journals, 1985-1990," *J. Econ. Lit*., June 1994, 32(2), pp. 674-79.

COOPER, MICHAEL E.; DUSANSKY, RICHARD; DRUKKER, DAVID AND KILDEGAARD, ARNE. "The Productivity of Economics Departments in the U.S.: Publications in the Core Journals," *J. Econ. Lit*., Dec. 1995, 33(4), pp. 1966-77.

DEWALD, WILLIAM G.; THURSBY, JERRY G. AND ANDERSON, RICHARD G. "Replication in Empirical Economics: The *Journal of Money, Credit and Banking* Project," *Amer. Econ. Rev*., Sept. 1986, 76(4), pp. 587-603.

GRAVES, PHILIP E.; MARCHAND, JAMES R. AND THOMPSON, RANDAL. "Economics Departmental Rankings: Research Incentives, Constraints and Efficiency," *Amer. Econ. Rev*., Dec. 1982, 72(5), pp. 1131-41.

HIRSCH, BARRY T.; AUSTIN, RANDALL; BROOKS, JOHN AND MOORE, J. BRADLEY. "Economics Departmental Rankings: Comment," *Amer. Econ. Rev*., Sept. 1984, 74(4), pp. 822-26.

HOGAN, TIMOTHY D. "Economics Departmental Rankings: Comment," *Amer. Econ. Rev*., Sept. 1984, 74(4), pp. 827-33.

LABAND, DAVID N. AND PIETTE, MICHAEL J. "The Relative Impact of Economics Journals, 1970-1990," *J. Econ. Lit*., June 1994, 32(2), pp. 640-66.

AMERICAN ECONOMIC ASSOCIATION. *EconLit-AEA on CD-ROM*, March 1995.