# PUBLISHING PERFORMANCE OF SPANISH ACADEMICS: 1970-2004: INSTITUTIONS, RESEARCHERS ET AL.

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## Abstract

This work complements some of the results appearing in the article "Publishing Performance in Economics: Spanish Rankings" by Dolado et al. . Specifically we focus on the robustness of the results regardless of the time span considered, the effect of the choice of a particular database on the final results, and the effects on changes in the unit of institutional measure (departments versus institutions as a whole). Differences are significant when we expand the time period considered. There are also significant but small differences if we combine datasets to derive the rankings. Finally, department rankings offer a more precise picture of the situation of the Spanish academics, although results do not differ substantially from those obtained when overall institutions are considered.

**Keywords:** rankings, economics, Spanish academics, bibliometric indicators
**JEL Classification:** A10, A11, A14

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## 1. Introduction

Unlike its American counterpart, European literature on measuring the economists' performance is relatively recent and traces back to the beginning of the nineties. Probably one of the main reasons of this recent concern on research performance has been the common trend in European countries towards increasing academic competition, which is needed of some measures of academic evaluation.

This literature has focused on analyzing the productivity of scientists and/or institutions based on a series of bibliometric indicators (such as the publications or their impact on the academic community) in a given period of time, generally no longer than ten years. Several indicators have been used as proxies of productivity but up to now there is no universally accepted measure[1].

Among the flow of recent studies, the contribution of Dolado et al. (2003) attracted the attention of the Spanish academic profession since (a) it focuses specifically on the Spanish case; and (b) introduces a new way of valuating publications that avoids several of the usual shortcomings of the traditional methods. This new way of assessing performance (called UC3 index) takes into account and corrects the traditional underestimation of contributions to Spanish academics journals; and publications in areas in the boundary of economics but with significant impact, such as econometrics or economic history.

This new measure however is still subject to the usual criticisms of these studies: it considers only a relatively short time span, unable of capturing the overall productivity of a researcher or institutional changes. If one of the final purposes of the rankings is to consider a relative position of a researcher or an institution in order to evaluate her overall contribution to the advance of knowledge, or even to allocate funds or compete

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[1] See Coupé (2003) for a detailed explanation of families of indicators used in the literature.

for an academic position, considering only the most recent productivity track can be misleading and probably unfair[2].

One of the aims of this work is precisely try to give some hints to this open question and analyze whether the time span considered matters. In order to do this we shall consider different time horizons and recompute the bibliometric measures used in Dolado et al. to check for significant changes.

In addition, this work offers what is probably the first attempt to rank Spanish academic institutions by departments rather than by the academic institutions as a whole. We believe that using this unit of measure together with the aggregate institutional rankings can give some valuable information about the strengths and weaknesses of Spanish academics.

Finally, we present results extended to 2004 for the three units considered, giving us enough room to see differences across periods and to infer some stylized facts.

Section 2 will explain the methodology used and section 3 will present the main results at the aggregate institutional level. In Section 4 we shall analyze the results at the level of departments. Section 5 offers information at the individual researcher level. Finally Section 6 presents the conclusions and some research directions.

## 2. Methodology

In order to replicate the results of the original study and to be as much as precise as possible, we have concentrated on the set of the top-10 Spanish academic institutions and the top-10 Spanish academic economists. Since there are different ranking measures, we shall consider those who at least appear once in Tables 1 to 4 (institutions) or 5 to 8 in the study. This gives a total number of 14 institutions and 22 scientists, respectively.

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[2] Another common trend in European countries is to allocate funds based on bibliometric results. For instance, government funds for research in university hospitals in Finland and partly based on publication points given by the impact factor of the journals in which researchers publish. (Adam 2002).

There has been some controversy in the literature about what can be considered an independent academic institution or not. For our purposes, an independent academic institution can be characterized by: i) its mission is to produce academic research; ii) has own faculty; and iii) its research is conducted independently from other institutions. Under this definition all the institutions that appear in Dolado's tables fit into it.

For the individuals' ranking, we follow the same methodology as the original work: we consider either authors working in a Spanish academic institution or those having Spanish citizenship. Note that several of the economists cited in the original study (Boldrin, Motta and Saint-Paul) are not working right now in a Spanish institution, but actually only the later does not keep any formal relationship with a Spanish institution[3].

Our procedure to replicate the analysis has been to download, using Econlit and the Social Sciences Citation Index (SSCI) the list of their publications and citations received. To avoid possible inconsistencies, we have checked that information with other sources, including the front page of the journal in which they appear. In the case of individual researchers, we have double-checked the information with the corresponding CV obtained either by their own web pages or their department[4]

One particular problem worth to mention here is the recovery of institutional information. First of all, Econlit does not supply institutional information prior to 1989. Secondly, information coming from both databases (Econlit and SSCI) cannot be 100% trusted, since they often contain mistakes. Last, but not least, department affiliations are scarce if not inconsistent.

In order to tackle these questions, our strategy of double-source (Econlit and SSCI) has allowed us to recover almost all the relevant data. Only those references prior to 1989

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[3] The remaining three authors keep permanent positions in Spanish institutions, although they are on leave.

[4] In only one case we were not able to obtain the original C.V. There were significant differences in one case, since several of the journals reported on the CV did appear in neither SSCI nor Econlit. After verifying them through the journal summaries we decided to include them.

only listed in Econlit might be a problem. However, only two journals, *Investigaciones Económicas* and *Revista Española de Economía,* could potentially generate a bias, given the number of articles published in them and their weight on some of the rankings[5]. In order to avoid this, we have manually inserted the information of these journals prior to 1989.

One question that persistently arises when calculating institutional rankings is which the qualifying articles are. Following the standard conventions we have included only journal articles. We have excluded from the database those contributions that explicitly appear as book or software reviews or editorial material. Unlike most articles, we have however included publications signed by visiting researchers and Ph.D. students. If institutional rankings are intended to give a proxy for the vitality of a research center, we think that it would be paradoxical to restrict the eligible publications to those done by permanent faculty. To make things even more difficult, it may be the case (and it actually happens often) that research published in economics journals come from researchers from neighbouring departments such as mathematics, geography or sociology. We have adopted the strategy of considering them, given that the topics and the destination articles are of economic nature.

Another potential problem when dealing with the data is the effect of institutional changes. The Spanish Academic System has been continuously changing during the last twenty-five years. Two main laws (LRU and LOU) with significant institutional effects have been passed during this period. In addition, the eighties and nineties envisaged the establishment of new universities across the country, multiplying by three their number. Lastly, each university has its own definition of a department. Thus we can find huge departments combining economics and business studies (such as the Economics and Business Department at Pompeu Fabra University) and small departments.

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[5] We are thus omitting the remaining references in non-SSCI journals published up to 1988. Preliminary explorations suggest that the number of affected references is marginal and even less significant is their effect on the rankings, since these were mainly low-ranked journals according to the criteria used.

Given these constraints, we have had forced us to stop going backward until 1985 at the institutional level, where departments as they are known today were established. We think that this change is not significant, since academic production in economics done in Spain was something strange. In fact, a preliminary inspection in the SSCI gave no more than twenty valid references with Spanish affiliation prior to 1985. At individual level we have been able to go backward until 1970.

To calculate the rankings we have used three different measures: the first one is the UC3 index, based on Dolado *et al.* (2003); the second one is the newest version of the KMS index, developed by Kalaitzidakis *et al.* (2003), and including 30 top-ranked journals; finally, the last one is the index developed by Bauwens (1998), which covers a broad sample of economics journals. Details of these criteria can be found in Box 1. Although there are other alternative measures, we have decided to concentrate on these three, since the remaining ones used in the original work were modified versions of the former two.

**BOX 1: DEFINITION OF THE CRITERIA USED FOR ELABORATE THE RANKINGS** (BASED ON DOLADO ET. AL)

**UC3 criterion**

*Description:* based on the number of pages published adjusted by the square root of the number of authors and weighted by the publication in which appears. Weights are derived from a qualitative criterion based on data from Laband and Piette (1994)

*Includes:* 281 journals

*Range of weights:* 30 (Econometrica, AER) to 0.5 (second-tier journals of limited scope)

*Source:* Dolado *et. al* (2003)

**BAU criterion**

*Description:* based on the number of articles published divided by the number of authors and weighted by the publication in which appears. Weights are based on an ordinal scale derived by multypliying the total number of citations a publication receives and its corresponding impact factor.

*Includes:* 265 journals

*Range of weights:* 5 (Econometrica, AER) to 1 (second-tier journals of limited scope)

*Source:* Bauwens (1998)

## 3. Institutions

Our sample consists of 14 institutions[6], of which nine of them are universities and the remaining four are research centers (CEMFI, FEDEA, IAE and IVIE) or research departments (BDE). Figure 1 shows the aggregate production for the four 5-year periods in which we can split the sample for each of the three ranking methods used. As the reader can easily see the production has dramatically increased during the last two decades. More important, this increasing process is steady and seems to affect both the best-rated journals (captured by the KMS index, which increases eight-fold between 1985-9 and 2000-4) and the second-tier or specialized journals (captured by the BAU index, which increases five-fold during the same period). This can be seen as a proof of the vitality of the Spanish academics

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[6] Legend: BDE: Bank of Spain; CEMFI: Centro de Estudios Monetarios y Financieros; EHU: The University of the Basque Country; FEDEA: Fundación de Estudios de Economía Aplicada; IAE: Institute for Economic Análisis, CSIC; IVIE: Instituto Valenciano de Investigaciones Económicas. UA: University of Alicante; UAB: Universitat Autònoma de Barcelona; UCM: Universidad Complutense de Madrid; UCIII: Universidad Carlos III de Madrid, UPF: Universitat Pompeu Fabra ; USAL: Universidad de Salamanca.; UV : Universitat de València; UZGZ: Universidad de Zaragoza.
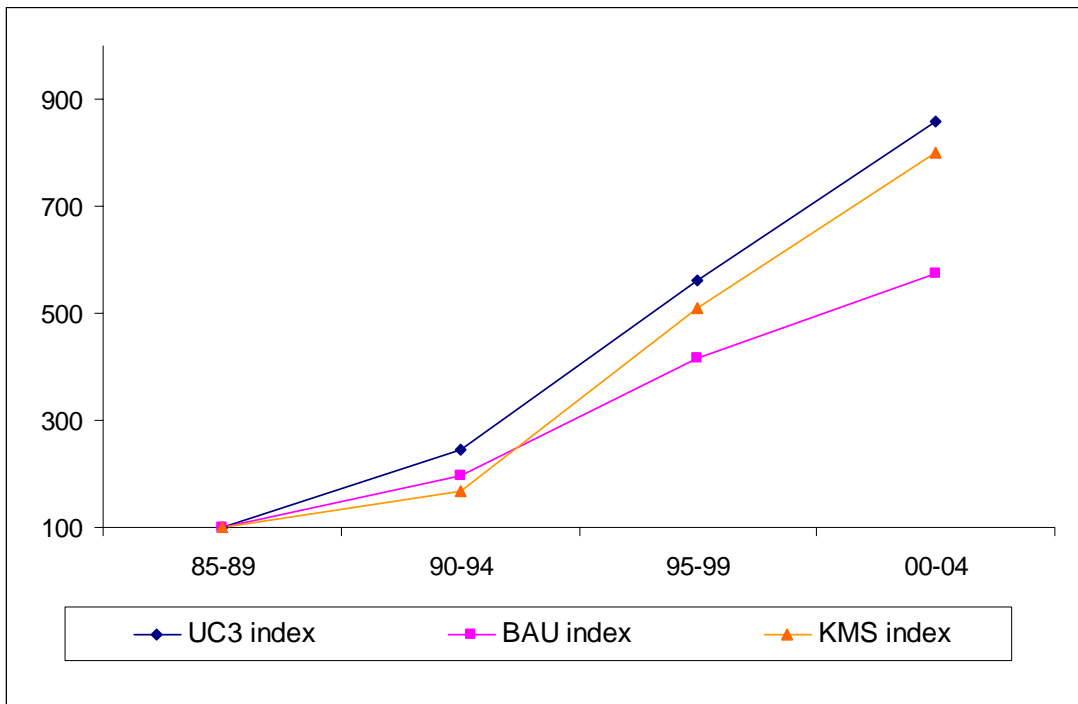
**Figure 1: Evolution of the overall academic productivity (1985-1989 = 100).**

For each index we have considered six different time spans: the first three are 10-year moving averages (1985-1994, 1990-1999 and 1995-04), whereas the others are 15-year moving averages (1985-1999 and 1990-2004) and the longest possible time span (1985-2004). The periods considered are a good starting point to analyze the medium and long run tendencies across institutions. Notice that the second column (1990 to 1999) can be used as a comparison basis with the original results. Results are indexed to a 100-point scale.

It is worth to see that there are few differences with the original classification. These are justified since our sample considers all faculty, and this clearly favors those institutions with a high number of visiting researchers, or institutions with well-established graduate programs. The IAE in the nineties is an example of the former, whereas the UAB

graduate program in economics is an example of the later. Not surprisingly, both institutions improve their results regardless of the criteria used[7].

**Table 1: Institutions. Classification according to the UC3 Criterion**

|   | 1985-1994 | | 1990-1999 | | 1995-2004 | | 1985-1999 | | 1990-2004 | | 1985 – 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UAB | 100 | UCIII | 100 | UCIII | 100 | UPF | 100 | UCIII | 100 | UCIII | 100 |
| 2 | IAE | 85.4 | UPF | 100 | UPF | 94 | UCIII | 99.8 | UPF | 93.3 | UPF | 93.3 |
| 3 | BDE | 57.5 | UAB | 84 | UAB | 51 | UAB | 96.9 | UAB | 61.5 | UAB | 66.9 |
| 4 | EHU | 46.7 | IAE | 54.8 | UA | 44.6 | IAE | 71.4 | UA | 44.5 | IAE | 45.9 |
| 5 | UCM | 44.3 | UA | 50.9 | UV | 35.4 | EHU | 53.5 | IAE | 38.6 | UA | 45.5 |
| 6 | UCIII | 41.3 | EHU | 47.8 | IAE | 30.9 | UA | 53.4 | UV | 38.1 | UV | 38.5 |
| 7 | UPF | 35.4 | CEMFI | 39 | EHU | 30.2 | BDE | 41.3 | EHU | 34.7 | EHU | 37.1 |
| 8 | UV | 29.9 | UV | 37 | CEMFI | 30.1 | CEMFI | 38.9 | CEMFI | 32.2 | CEMFI | 32.2 |
| 9 | UZGZ | 28.8 | BDE | 31 | UCM | 21.5 | UV | 38.4 | UCM | 24.7 | UCM | 28.7 |
| 10 | CEMFI | 23 | UCM | 48.1 | UZGZ | 21.2 | UCM | 37.2 | UZGZ | 22.6 | BDE | 26.9 |

**Table 2: Institutions. Classification according to the BAU Criterion**

|   | 1985-1994 | | 1990-1999 | | 1995-2004 | | 1985-1999 | | 1990-2004 | | 1985 – 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UAB | 100 | UCIII | 100 | UCIII | 100 | UAB | 100 | UCIII | 100 | UCIII | 100 |
| 2 | IAE | 75.8 | UAB | 95.4 | UPF | 90.0 | UCIII | 85.6 | UPF | 85.7 | UAB | 89.6 |
| 3 | UCM | 63.5 | UPF | 83.7 | UAB | 69.3 | UPF | 71.9 | UAB | 78.9 | UPF | 85.7 |
| 4 | BDE | 62.1 | UA | 58.3 | UV | 68.1 | UCM | 64 | UV | 67.7 | UV | 68.8 |
| 5 | EHU | 48.7 | EHU | 56.3 | UA | 47.7 | IAE | 55.3 | UCM | 50.8 | UCM | 60.1 |
| 6 | UCIII | 47.7 | UCM | 55.9 | UCM | 47.7 | UA | 54.5 | UA | 50 | UA | 52.7 |
| 7 | UV | 33 | UV | 51.7 | UZGZ | 46.7 | EHU | 54.1 | EHU | 48.7 | EHU | 52.1 |
| 8 | UA | 31.7 | IAE | 46.8 | EHU | 43.5 | VAL | 46.2 | UZGZ | 45.4 | UZGZ | 47.8 |
| 9 | UPF | 25.7 | UZGZ | 35.7 | IAE | 27.3 | BDE | 44.3 | IAE | 37.1 | IAE | 46 |
| 10 | UZGZ | 24.7 | BDE | 31.7 | CEMFI | 26.8 | UZGZ | 34.7 | CEMFI | 27.5 | BDE | 36.7 |

**Table 3: Institutions. Classification according to the KMS Criterion**

|   | 1985-1994 | | 1990-1999 | | 1995-2004 | | 1985-1999 | | 1990-2004 | | 1985 – 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | IAE | 100 | UPF | 100 | UPF | 100 | UPF | 100 | UPF | 100 | UPF | 100 |
| 2 | UAB | 89.8 | UCIII | 88 | UCIII | 88.4 | UCIII | 88 | UCIII | 88.1 | UCIII | 88.1 |
| 3 | BDE | 57 | UAB | 57.2 | UAB | 41.9 | UAB | 66.7 | UAB | 48.8 | UAB | 53 |
| 4 | UPF | 47.8 | UA | 36.9 | UA | 37.9 | IAE | 52.7 | UA | 36.6 | IAE | 37.9 |
| 5 | UCIII | 40.1 | IAE | 28.2 | CEMFI | 31.9 | UA | 38.8 | CEMFI | 34.2 | UA | 37.4 |
| 6 | UCM | 31.8 | CEMFI | 28 | IAE | 23.6 | BDE | 29.4 | IAE | 27.2 | CEMFI | 34.2 |
| 7 | CEMFI | 29.3 | EHU | 17.3 | UV | 14.7 | CEMFI | 28 | UV | 14.5 | BDE | 17.4 |
| 8 | EHU | 16.3 | BDE | 15.6 | EHU | 13.5 | EHU | 18.7 | EHU | 14.5 | EHU | 15.1 |
| 9 | UA | 14.8 | UCM | 6.8 | BDE | 8.9 | UCM | 14.9 | BDE | 11.3 | UV | 14.5 |
| 10 | UV | 6.3 | UV | 6.3 | USAL | 3.7 | UV | 6.3 | UCM | 4.6 | UCM | 8.3 |

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[7] Only in the case of the KMS index, the IAE position is lower than the original study. The reason of this discrepancy can be found on the attribution to UAB, and not IAE, to several articles written at the beginning of the nineties by IAE faculty but displayed in the journal under UAB affiliation. We have

Results show that regardless of the ranking method used and the time span considered there is a cluster of top-ranked institutions: the Carlos III, Autònoma de Barcelona and Pompeu Fabra universities. This result confirms the pattern depicted in the original study, but with an extra comment. There is an increasing tendency towards concentration into two big research centers: the UCIII and UPF universities. The UAB and IAE, who leaded the rankings during the last eighties, have tended to converge around the middle places. This does not mean that their production declined, rather that their rate of increase is lower compared with other institutions, consistently with Figure 1. A same process seems to happen at Complutense University, which is located in the middle places at the beginning but disappears in the last years. Not surprisingly those institutions nurtured at the beginning the faculties of the Pompeu Fabra and Carlos III universities, respectively.

However if we turn the attention to the bottom of the top-10 list there are significant differences depending on the criteria used. The BAU method seems to favor institutions such as the Valencia and Zaragoza universities, whose articles are published in specialized journals, whereas the KMS index most benefits those institutions that focus their production into the leading journals, like the CEMFI.

Finally it's worth to note that, overall considering, research centers have no longer the research contribution weight they used to have. This result is consistent with Figure 1 and is probably the outcome of the institutional changes of the Spanish university system during the eighties.

## 4. Departments

Tables 4 to 6 show the different rankings for each of the different ranking methods. Following the way we used in the previous section we build six different time spans from 1985 to 2004. A quick look at the tables will confirm that there are no substantial changes in the position of the institutions: those who were placed in the top of the list

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only attributed to IAE those articles were there was clear evidence that it was the result a journal's mistake, while we keep the UAB affiliation to the remaining articles.

keep their position, while those at the bottom are still there. There is only one case in which a institution that appears at the aggregate level in one of the top-10 lists does not in any of the departmental ones (University of Salamanca). However, it is worth to note that there are position changes inside the clusters. Thus, the IAE outperforms the UAB (more strictly the Economics and Economic History Department at UAB) for the 1985-1994 period according to the UC3 index, whereas the UAB as a whole outperforms the IAE in the same period using the same index.

The same can be seen between the UC3 and the UPF. If considered as a whole, there is a slight advantage of the first, whereas if we look at the department level positions reverse. The departmental ranking punishes institutions whose research is spread among different departments, whereas benefits those with high dispersion of productivity across departments. Specifically, it's the UCIII the less favored institution if we compute the rankings by departments and not by the overall institution, whereas the UPF with a large, single department devoted to economics clearly benefits from the choice of the departments. Given that the UCIII has had since its beginning three departments who worked closely (the Economics, Statistics and Econometrics and Business Economics), one obvious temptation is to add together and consider as a single entity. If we perform this exercise we can see that this cluster of UCIII departments almost catches the UPF Economics and Business Department, but without surpassing it. The difference between this result and the one obtained in section 3 is because of the existence of a separate economic history department at UCIII with a significant production.

Finally it is worth to note that the economic theory departments crowd the ranking list, whereas no applied economics department appears in any of the lists. This could be expected beforehand given that the KMS and, to a lesser extent, the UC3 indexes are more biased toward theoretical journals. But we could expect different results for the case of the BAU index, which gives more room to applied economics journals. The only two departments appearing in the top-10 lists other than an economic theory department are the Statistics and econometrics and the Business Economics department at Carlos III

University, which it happens to focus their research onto theoretical journals and to work hand-by-hand with the economics department[8].

**Table 4: Departments. Classification according to the UC3 Criterion**

|    | 1985-1994 |      | 1990-1999 |      | 1995-2004 |      | 1985-1999 |      | 1990-2004 |      | 1985 – 2004 |      |
|----|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-------------|------|
| 1  | IAE       | 100  | DEE-UPF   | 100  | DEE-UPF   | 100  | DEE - UPF | 100  | DEE-UPF   | 100  | DEE – UPF   | 100  |
| 2  | DEHE-UAB  | 94.6 | DEHE-UAB  | 67.7 | DE-UCIII  | 68.3 | DEHE-UAB  | 80.7 | DE – UCIII| 67.4 | DE - UCIII  | 67.4 |
| 3  | BDE       | 66.4 | DE - UCIII| 57.3 | DEHE-UAB  | 45.9 | IAE       | 72.4 | DEHE - UAB| 54.6 | DEHE – UAB  | 58.3 |
| 4  | DEE-UPF   | 40.9 | IAE       | 54.9 | FAE-UA    | 43.4 | DE - UCIII| 57.3 | FAE - UA  | 48.3 | IAE         | 49.1 |
| 5  | FAE-UCM   | 29.6 | FAE-UA    | 48.3 | IAE       | 32.8 | FAE - UA  | 50.9 | IAE       | 41.3 | FAE - UA    | 44.9 |
| 6  | AE-UV     | 28.9 | CEMFI     | 39.1 | CEMFI     | 32   | BDE       | 41.6 | CEMFI     | 34.5 | CEMFI       | 34.6 |
| 7  | CEMFI     | 27.3 | BDE       | 31.1 | AE-UV     | 27.1 | CEMFI     | 39.4 | AE - UV   | 30.1 | AE - UV     | 34.6 |
| 8  | FAE-EHU2  | 26.0 | AE-UV     | 28   | DEST-UCIII| 19.3 | AE - UV   | 28.8 | BDE       | 24.1 | BDE         | 28.1 |
| 9  | FAE-UA    | 25.7 | DEST-UCIII| 17.6 | BDE       | 17.7 | FAE2 - EHU| 18.4 | DEST - UCIII| 19.1 | DEST - UCIII| 28.1 |
| 10 | DE-UCIII  | 23   | FAE2-EHU  | 17.4 | AE - UZGZ | 11.6 | FAE-UCM   | 17.9 | FAE2 - EHU| 12.8 | FAE2 - EHU  | 13.7 |

Legend: E-UZGZ: Economic Analysis Department, Universidad de Zaragoza; DEHE-UAB: Economics and Economic History Department, Universitat Autònoma de Barcelona; DEE-UPF: Economics and Business Department, Universitat Pompeu Fabra; DE-UCIII: Economics Department, Universidad Carlos III; DEMP-UCIII: Business Economics Department, Universidad Carlos III; DEST-UCIII: Statistics and Econometrics Department, Universidad Carlos III; FAE-UA: Economic Analysis Department, University of Alicante; FAE- UCM: Economic Analysis Department, Universidad Complutense de Madrid; : FAE-UV: Economic Analysis Department, Universitat de València; FAE2-EHU: Economic Analysis 2 Department, University of the Basque Country.

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[8] The former Statistics and Econometrics Department split in 2003 into two: one of them focused on

**Table 5: Departments. Classification according to the BAU Criterion**

| | 1985-1994 | | 1990-1999 | | 1995-2004 | | 1985-1999 | | 1990-2004 | | 1985 – 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DEHE-UAB | 100 | DEE-UPF | 100 | DEE-UPF | 100 | DEHE-UAB | 100 | DEE-UPF | 100 | DEE – UPF | 100 |
| 2 | IAE | 94.9 | DEHE-UAB | 84.7 | DE-UCIII | 65.3 | DEE-UPF | 92.2 | DEHE - UAB | 68.1 | DEHE – UAB | 75.4 |
| 3 | BDE | 76.1 | FAE-UA | 63.8 | DEHE-UAB | 56.8 | IAE | 72.2 | DE – UCIII | 66.7 | DE - UCIII | 66.7 |
| 4 | FAE-UCM | 41.5 | DE - UCIII | 63.5 | FAE-UV | 48.3 | FAE - UA | 64.8 | FAE - UV | 52.4 | IAE | 54.2 |
| 5 | FAE-UA | 36.6 | IAE | 56.2 | FAE-UA | 47.4 | DE – UCIII | 58.5 | FAE – UA | 50.2 | FAE - UV | 53.4 |
| 6 | FAE-UV | 33.9 | FAE-UV | 45.9 | AE - UZGZ | 30.8 | BDE | 57.3 | IAE | 43.4 | FAE - UA | 53.4 |
| 7 | DEE-UPF | 31.7 | BDE | 38 | IAE | 30.4 | FAE - UV | 43.8 | CEMFI | 32.1 | BDE | 42.9 |
| 8 | FAE2-EHU | 29.7 | CEMFI | 35.1 | CEMFI | 29.9 | FAE-UCM | 35.3 | AE - UZGZ | 31.3 | CEMFI | 32.3 |
| 9 | DE – UCIII | 25.7 | DAE-UZGZ | 30.2 | BDE | 23.6 | CEMFI | 32.7 | BDE | 31.2 | DAE - UZGZ | 31.6 |
| 10 | FAE2-UCM | 18.8 | FAE2-EHU | 23.6 | DEST-UCIII | 18.8 | AE - UZGZ | 28.3 | DEST - UCIII | 19.3 | FAE - UCM | 24.2 |

**Table 6: Departments. Classification according to the KMS Criterion**

| | 1985-1994 | | 1990-1999 | | 1995-2004 | | 1985-1999 | | 1990-2004 | | 1985 – 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | IAE | 100 | DEE-UPF | 100 | DEE-UPF | 100 | DEE - UPF | 100 | DEE-UPF | 100 | DEE – UPF | 100 |
| 2 | DEHE-UAB | 83.5 | DEHE-UAB | 53.6 | DE-UCIII | 61.6 | DEHE-UAB | 62.6 | DE – UCIII | 60.2 | DE - UCIII | 60.2 |
| 3 | BDE | 57 | DE - UCIII | 52.4 | DEHE-UAB | 40.1 | IAE | 52.7 | DEHE - UAB | 46.5 | DEHE – UAB | 49.1 |
| 4 | DEE-UPF | 47.8 | FAE-UA | 36.9 | FAE-UA | 37.9 | DE - UCIII | 52.4 | FAE – UA | 36.6 | IAE | 37.9 |
| 5 | CEMFI | 29.3 | IAE | 28.9 | CEMFI | 31.9 | FAE - UA | 38.8 | CEMFI | 34.2 | FAE - UA | 37.4 |
| 6 | DE - UCIII | 21.3 | CEMFI | 28 | IAE | 23.6 | BDE | 29.4 | IAE | 27 | CEMFI | 34.2 |
| 7 | FAE-UCM | 21.2 | DEST-UCIII | 18.8 | DEST-UCIII | 18.8 | CEMFI | 28 | DEST - UCIII | 19.5 | DEST - UCIII | 19.5 |
| 8 | FAE-UA | 14.8 | FAE-UV | 13.9 | FAE-UV | 13.9 | DEST - UCIII | 21.6 | FAE-UV | 13.8 | BDE | 17.4 |
| 9 | DEST-UCIII | 13.1 | BDE | 8.9 | BDE | 8.9 | DEMP - UCIII | 9.3 | BDE | 11.3 | FAE- UV | 13.8 |
| 10 | FAE-UV | 6.3 | DEMP - UCIII | 6.7 | DEMP - UCIII | 6.7 | FAE2 - EHU | 8.1 | DEMP - UCIII | 6.2 | DEMP - UCIII | 6.2 |

Statistics, whereas the Econometrics section was incorporated into the Economics Department.

## 5. Researchers

When moving to the individual level, we can benefit from having longer time spans, given that we have available data at least from the beginning of the seventies. We have considered again several time spans to check the robustness of the results.

In our first step we will perform the calculations until 1999, the last year the original study took. The first period is the one considered in the study (1990-1999); the second is the period 1985-1999; the third the period 1980-1999 and the fourth is the total length as researcher. We have defined the researcher-life as the range between 1999 and the year of their first international article registered in Econlit. As one can see from Table 7, the average researcher-life is relatively small (13 years). Less than one quarter of the sample have publications prior to 1985 and only three of them before 1980. The total range, however is high enough (21 years), suggesting we have at least three generations of scientists: those whose publications first appeared during the seventies (Barberà, Esteban[9], Mas-Colell and Silvestre), those whose publications first appeared during the first years of the eighties (Repullo and Vives), and a broad generation of young economists who first published at the end of the eighties and the beginning of the nineties.

**Table 7: Year of first recorded international publication**

| | | | |
|---|---|---|---|
| Arellano | 1987 | Motta | 1992 |
| Barberà | 1977 | Repullo | 1982 |
| Bentolila | 1990 | Rios-Rull | 1992 |
| Boldrin | 1986 | Saint-Paul | 1991 |
| Canova | 1991 | Sala-i-Martin | 1991 |
| Dolado | 1986 | Santos | 1989 |
| Esteban | 1972 | Sentana | 1991 |
| Galí | 1990 | Serrano | 1993 |
| Marcet | 1988 | Silvestre | 1977 |
| Marimon | 1987 | Vega-Redondo | 1985 |
| Mas-Colell | 1972 | Vives | 1984 |

One word of caution is needed before proceeding with the calculations: the indexes considered rely on journal weights sensible to the time-span considered, since most of them are based on data from the nineties. This fact is especially strong in Kalaitzidakis et al. and Bauwens, but somewhat mitigated in Dolado et al.. We think however that this shortcoming is not severe here since we are looking at the top end of the distribution, most of whom publishing mainly in the blue-ribbon journals, where the problem of time inconsistency is less severe. According to Laband and Piette (1994), time inconsistency is more pronounced under two situations: (a) second-tier generalist journals, which have been decreasing their impact on the community and (b) journals specialized in a particular area, whose share have gradually increased over time. Indeed this problem would only potentially affect a very small fraction of the sample, those whose bulk of academic publications was produced before 1990.

Finally we have followed the same methodology for building rankings but considering citations instead of publications.

Tables 8 to 10 show the relative positions of the ten most productive economists according to the different criteria (indexed to 100-point scale). At a first glance we can see that results derived from the UC3 and KMS criteria tend to be comparable, whereas the BAU criterion seems to produce different outcomes than the previous two. This is not a surprising result, and has been found in previous studies. Concentrating in the former two, we can see that increasing the time span tends to benefit certain senior researchers as one would expect. The most striking case is Andreu Mas-Colell, who does not appear in the list if we consider only the nineties, but tops the list if we consider longer time spans. Out of this case, we can see some stability in the tables, especially if we consider the top positions. Jordi Galí is benefited if we consider shorter time spans, while Xavier Vives is the most benefited if we consider intermediate periods (for instance, considering the 20-year span covering the eighties and the nineties).

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[9] The first article of Joan Esteban appearing in both Econlit and SSCI dates from 1985. However, he had published two articles in *Regional and Urban Economics* in 1972, which do not appear in any of the reference databases.

**Table 8: Researchers. Classification according to the UC3 Criterion**

|   | Up to 1999 |      | 1980-1999 |      | 1985-1999 |      | 1990-1999 |      |
|---|-----------|------|-----------|------|-----------|------|-----------|------|
| 1 | Mas-Colell | 100 | Vives | 100 | Vives | 100 | Galí | 100 |
| 2 | Vives | 79.4 | Galí | 80.3 | Galí | 85.6 | Canova | 80.3 |
| 3 | Galí | 63.7 | Mas-Colell | 75.7 | Canova | 68.7 | Vives | 74.5 |
| 4 | Canova | 51.2 | Canova | 64.5 | Mas-Colell | 61.8 | Santos | 65.5 |
| 5 | Barberà | 43.8 | Santos | 55.0 | Santos | 58.6 | Saint-Paul | 64.6 |
| 6 | Santos | 43.6 | Saint-Paul | 51.9 | Saint-Paul | 55.3 | Vega-Redondo | 55.9 |
| 7 | Silvestre | 42.4 | Vega-Redondo | 50.1 | Vega-Redondo | 53.4 | Sala-i-Martin | 49.4 |
| 8 | Saint-Paul | 41.2 | Silvestre | 48.0 | Dolado | 45 | Rios-Rull | 47.4 |
| 9 | Vega-Redondo | 39.8 | Dolado | 44.8 | Sala-i-Martin | 42.3 | Dolado | 44,1 |
| 10 | Dolado | 32 | Barberà | 42.7 | Marimon | 41.5 | Boldrin | 42.5 |

**Table 9: Researchers. Classification according to the BAU criterion**

|   | Up to 1999 |      | 1980-1999 |      | 1985-1999 |      | 1990-1999 |      |
|---|-----------|------|-----------|------|-----------|------|-----------|------|
| 1 | Mas-Colell | 100 | Vives | 100 | Vives | 100 | Saint-Paul | 100 |
| 2 | Vives | 75.6 | Silvestre | 79.1 | Saint-Paul | 79.5 | Canova | 95.5 |
| 3 | Silvestre | 66.6 | Saint-Paul | 74.7 | Canova | 75.9 | Galí | 86.1 |
| 4 | Saint-Paul | 56.5 | Canova | 71.4 | Galí | 68.4 | Vives | 78.7 |
| 5 | Canova | 53.9 | Mas-Colell | 70.9 | Silvestre | 62.7 | Silvestre | 61.4 |
| 6 | Galí | 48.6 | Galí | 64.3 | Dolado | 62.3 | Sala-i-Martin | 57.6 |
| 7 | Barberà | 46.1 | Dolado | 62.6 | Mas-Colell | 50.3 | Dolado | 57,1 |
| 8 | Dolado | 43.9 | Repullo | 48.2 | Vega-Redondo | 49.2 | Santos | 50.9 |
| 9 | Repullo | 36.5 | Vega-Redondo | 46.2 | Repullo | 47.1 | Serrano | 45.1 |
| 10 | Vega-Redondo | 34.9 | Sala-i-Martin | 43.0 | Sala-i-Martin | 45.8 | Vega-Redondo | 44.4 |

**Table 10: Researchers. Classification according to the KMS criterion**

|   | Up to 1999 |      | 1980-1999 |      | 1985-1999 |      | 1990-1999 |      |
|---|-----------|------|-----------|------|-----------|------|-----------|------|
| 1 | Mas-Colell | 100 | Vives | 100 | Vives | 100 | Galí | 100 |
| 2 | Vives | 61.6 | Mas-Colell | 92.5 | Galí | 91.6 | Canova | 84.0 |
| 3 | Galí | 51.0 | Galí | 82.7 | Canova | 76.9 | Santos | 82.2 |
| 4 | Silvestre | 48.3 | Canova | 69.5 | Santos | 75.4 | Rios-Rull | 61.3 |
| 5 | Barberà | 44.1 | Santos | 68.0 | Mas-Colell | 70.1 | Boldrin | 53.9 |
| 6 | Canova | 42.8 | Silvestre | 67.4 | Marimon | 56.9 | Saint-Paul | 52.4 |
| 7 | Santos | 41.9 | Marimon | 51.3 | Rios-Rull | 56.2 | Vega-Redondo | 52.0 |
| 8 | Marimon | 31.6 | Rios-Rull | 50.7 | Vega-Redondo | 55.2 | Vives | 47.6 |
| 9 | Rios-Rull | 31.2 | Vega-Redondo | 49.8 | Boldrin | 53.3 | Sala-i-Martin | 45.0 |
| 10 | Vega-Redondo | 30.7 | Boldrin | 48.1 | Silvestre | 52.5 | Barberà | 38.4 |

When considering the time span corresponding to the nineties our results diverge somewhat with Dolado et al. For instance, it is noteworthy that Gilles Saint Paul ranks at the top of our list based on BAU criterion, but does not enter in the original list. This is probably because we have used a different methodology to download the information.

Some of the shortcomings of the existing databases can explain to certain extent the nature and scope of these differences. However if we compare our results for the total researcher life with the results supplied by Coupé (2005) for the period 1969-2000, there is a high degree of matching, even taking into account we consider slightly different periods .

Table 11 shows the ranking of the ten most cited economists based on citations retrieved in December 2004, adjusted again by the square root of the number of authors. As the reader can see, results change slightly compared with the previous tables. Xavier Sala-i-Martin is the best performing researcher, regardless of the period considered. Xavier Vives and Jordi Galí again appear on the top of the lists. Noteworthy Manuel Arellano, who does not appear in any of the tables presented above, is placed between positions 3$^{rd}$ and 5$^{th}$ depending on the time-span considered. Again, Andreu Mas-Colell becomes the most benefited researcher if we consider longer time periods.

**Table 11: Classification of researchers according to the adjusted citations received**

|    | Up to 1999 |     | 1980-1999 |     | 1985-1999 |     | 1990-1999 |     |
|----|------------|-----|-----------|-----|-----------|-----|-----------|-----|
| 1  | Sala-i-Martin | 100 | Sala-i-Martin | 100 | Sala-i-Martin | 100 | Sala-i-Martin | 100 |
| 2  | Mas-Colell | 80.9 | Vives | 63.7 | Galí | 47.0 | Galí | 47.0 |
| 3  | Vives | 63.7 | Mas-Colell | 58.7 | Vives | 46.0 | Arellano | 45.0 |
| 4  | Galí | 47.0 | Galí | 47.0 | Arellano | 45.0 | Dolado | 25.4 |
| 5  | Arellano | 45.0 | Arellano | 45.0 | Mas-Colell | 43.0 | Vives | 23.0 |
| 6  | Barberà | 31.8 | Dolado | 29.8 | Dolado | 29.8 | Saint-Paul | 22.0 |
| 7  | Dolado | 29.8 | Boldrin | 24.8 | Boldrin | 24.8 | Canova | 20.1 |
| 8  | Boldrin | 24.8 | Marcet | 23.9 | Marcet | 23.9 | Boldrin | 16.6 |
| 9  | Marcel | 23.9 | Barberà | 23.2 | Saint-Paul | 22.0 | Santos | 14.8 |
| 10 | Saint-Paul | 22.0 | Saint-Paul | 22.0 | Canova | 20.1 | Motta | 14.5 |

If we extend the results to 2004 we can expect that seniority effect would fade as more junior economists have chances of seeing their work published. As expected, the range of distances, measured as the distance between the first and the tenth best-performing researcher, decreases. This can be easily seen if we compare the last-columns, corresponding to the total researcher life. In contrast, there are no changes in the top positions of the ranking, especially if we consider the longest time-spans: Mas-Colell, Vives and Galí are the three names that repeatedly appear on the top of the lists. The same pattern appears if we extend the ranking based on citations. Again Sala-i-Martin, Galí, and Vives are systematically on the top of the lists.

**Table 12: Researchers. Classification according to the UC3 Criterion**

|    | Up to 2004 |      | 1980-2004 |      | 1985-2004 |      | 1990-2004 |      |
|----|-----------|------|-----------|------|-----------|------|-----------|------|
| 1  | Mas-Colell | 100  | Vives      | 100  | Vives        | 100  | Galí         | 100  |
| 2  | Vives      | 89.9 | Galí       | 76.7 | Galí         | 80.6 | Canova       | 92.8 |
| 3  | Galí       | 68.9 | Mas-Colell | 71.3 | Canova       | 74.7 | Saint-Paul   | 92.3 |
| 4  | Canova     | 63.9 | Canova     | 71.1 | Saint-Paul   | 74.4 | Vives        | 88.9 |
| 5  | Saint-Paul | 63.6 | Saint-Paul | 70.8 | Mas-Colell   | 60.2 | Santos       | 71.9 |
| 6  | Barberà    | 54.9 | Santos     | 57.0 | Santos       | 59.9 | Boldrin      | 71.2 |
| 7  | Santos     | 51.3 | Boldrin    | 57.0 | Boldrin      | 59.9 | Rios-Rull    | 68.6 |
| 8  | Boldrin    | 51.2 | Rios-Rull  | 52.6 | Rios-Rull    | 55.3 | Vega-Redondo | 59.4 |
| 9  | Rios-Rull  | 47.3 | Dolado     | 51,3 | Vega-Redondo | 52.2 | Sentana      | 58.8 |
| 10 | Dolado     | 46.2 | Barberà    | 51.2 | Dolado       | 51.2 | Dolado       | 57.2 |


**Table 13: Researchers. Classification according to the BAU Index**

|    | Up to 2004 |      | 1980-2004 |      | 1985-2004 |      | 1990-2004 |      |
|----|-----------|------|-----------|------|-----------|------|-----------|------|
| 1  | Mas-Colell   | 100  | Vives         | 100  | Vives         | 100  | Saint-Paul     | 100  |
| 2  | Vives        | 85.8 | Saint-Paul    | 82   | Saint-Paul    | 86.3 | Canova         | 83.8 |
| 3  | Silvestre    | 69.6 | Silvestre     | 73.8 | Canova        | 72.3 | Vives          | 80.8 |
| 4  | Saint-Paul   | 70.4 | Mas-Colell    | 66.3 | Galí          | 64.6 | Galí           | 74.9 |
| 5  | Canova       | 58.9 | Canova        | 68.7 | Dolado        | 63.2 | Dolado         | 60.4 |
| 6  | Dolado       | 54.3 | Dolado        | 63.4 | Silvestre     | 60.3 | Silvestre      | 56.9 |
| 7  | Galí         | 52.7 | Galí          | 61.5 | Mas-Colell    | 49.4 | Serrano        | 50.5 |
| 8  | Barberà      | 50.5 | Repullo       | 49.8 | Repullo       | 48.5 | Santos         | 50   |
| 9  | Repullo      | 42.7 | Vega-Redondo  | 45.1 | Vega-Redondo  | 48.2 | Sala-i-Martín  | 49   |
| 10 | Vega-Redondo | 38.6 | Barberà       | 42.4 | Santos        | 45.2 | Vega-Redondo   | 41.9 |


**Table 14: Researchers. Classification according to the KMS Index**

|    | Up to 2004 |       | 1980-2004 |      | 1985-2004 |      | 1990-2004 |      |
|----|-----------|-------|-----------|------|-----------|------|-----------|------|
| 1  | Mas-Colell   | 100.0 | Vives         | 100  | Vives         | 100  | Santos         | 100  |
| 2  | Vives        | 67.2  | Mas-Colell    | 91.2 | Santos        | 88.8 | Galí           | 94.7 |
| 3  | Santos       | 54.9  | Santos        | 81.7 | Galí          | 84.1 | Canova         | 86.6 |
| 4  | Galí         | 52.0  | Galí          | 77.4 | Canova        | 76.9 | Saint-Paul     | 78.3 |
| 5  | Barberà      | 49.7  | Canova        | 70.7 | Mas-Colell    | 73   | Boldrin        | 70.0 |
| 6  | Canova       | 47.5  | Saint-Paul    | 63.9 | Saint-Paul    | 69.5 | Rios-Rull      | 68.9 |
| 7  | Silvestre    | 47.1  | Silvestre     | 61   | Boldrin       | 65.4 | Sentana        | 64   |
| 8  | Saint-Paul   | 43.0  | Boldrin       | 60.1 | Vega-Redondo  | 61.9 | Vega-Redondo   | 62.9 |
| 9  | Boldrin      | 40.4  | Vega-Redondo  | 57   | Rios-Rull     | 61.2 | Vives          | 61.2 |
| 10 | Vega-Redondo | 38.3  | Rios-Rull     | 56.3 | Sentana       | 56.8 | Serrano        | 53   |

**Table 15: Classification of researchers according to the adjusted citations received**

|    | Up to 2004 | | 1980-2004 | | 1985-2004 | | 1990-2004 | |
|----|------------|------|-----------|------|-----------|------|-----------|------|
| 1  | Sala-i-Martin | 100 | Sala-i-Martin | 100 | Sala-i-Martín | 100 | Sala-i-Martín | 100 |
| 2  | Mas-Colell | 79.4 | Vives | 62.7 | Galí | 53.0 | Galí | 53.0 |
| 3  | Vives | 62.7 | Mas-Colell | 58.3 | Vives | 46.0 | Arellano | 39.7 |
| 4  | Galí | 53.0 | Galí | 53.0 | Mas-Colell | 43.5 | Boldrín | 25.4 |
| 5  | Arellano | 42.9 | Arellano | 42.9 | Arellano | 42.9 | Vives | 24.4 |
| 6  | Barberà | 31.4 | Dolado | 28.6 | Dolado | 28.6 | Saint-Paul | 21.9 |
| 7  | Dolado | 28.6 | Boldrin | 25.4 | Boldrin | 25.4 | Canova | 19.6 |
| 8  | Boldrin | 25.4 | Barberà | 23.3 | Marcet | 23.1 | Santos | 15.8 |
| 9  | Marcel | 23.1 | Marcet | 23.1 | Saint-Paul | 21.9 | Dolado | 15.0 |
| 10 | Saint-Paul | 21.9 | Saint-Paul | 21.9 | Canova | 19.6 | Barberà | 14.8 |

Finally, and to complete the analysis we have graphed a scatterplot including the whole sample (Figures 2 and 3), plotting the values obtained for a given index against the citations received for the total researcher life. We should expect a positive and strong correlation among both measures: the best performing academics in terms of publications will be precisely those who will be mostly cited. We think however this relationship is not perfectly one-to-one: certain articles, for whatever reason, will deserve special attention for the academic community and will thus obtain an extremely high amount of citations. In that case, the corresponding author will lie significantly above the imaginary 45° degree line between publications and citations. For the Spanish case only Xavier Sala-i-Martin meets this condition. One of his articles ("Convergence", (1992)) has received 458 citations (229 if we adjust for the number of authors) up to December 2004.
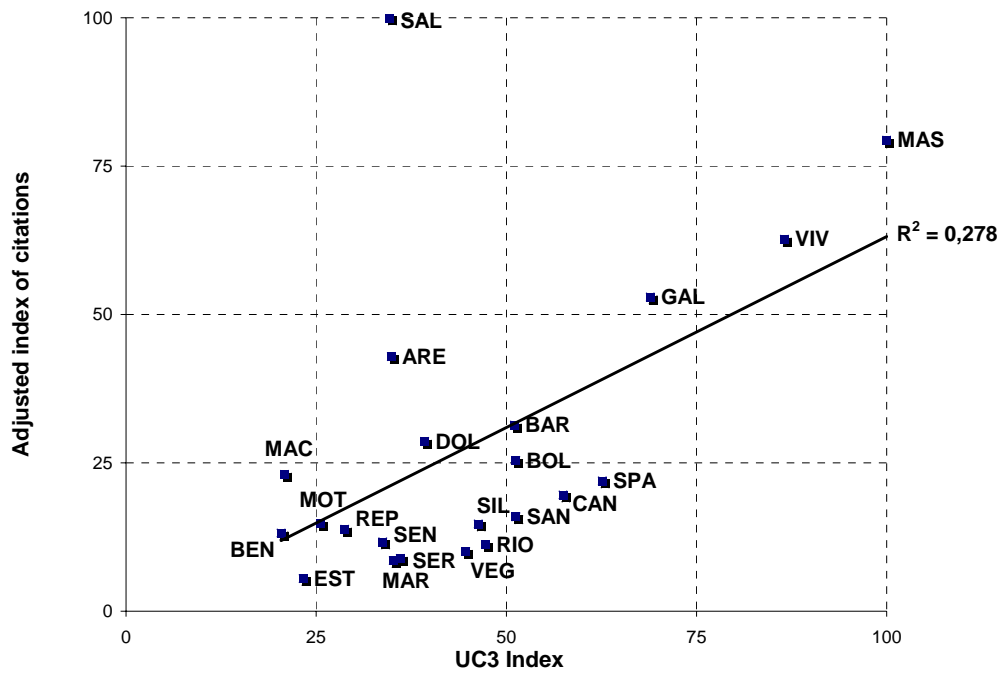
**Figure 2:** Publication-measures (UC3 index) against citations received (total researcher life)

Legend: ARE – M. Arellano; BAR – S. Barberà ; BEN – S. Bentolila; BOL – M. Boldrin ; CAN – F. Canova ; DOL – J.J. Dolado; EST – J. Esteban ;GAL – J. Galí ; MAC – A. Marcet; MAR – R. Marimon; MAS – A. Mas-Colell; MOT – M. Motta; REP – R. Repullo; RIO – JV. Ríos-Rull; SPA – G. Saint-Paul; SAL – X. Sala-i-Martin; SAN – M. Santos; SEN – E. Sentana; SER – R. Serrano; SIL – J. Silvestre; VEG – F. Vega-Redondo; VIV – X. Vives.
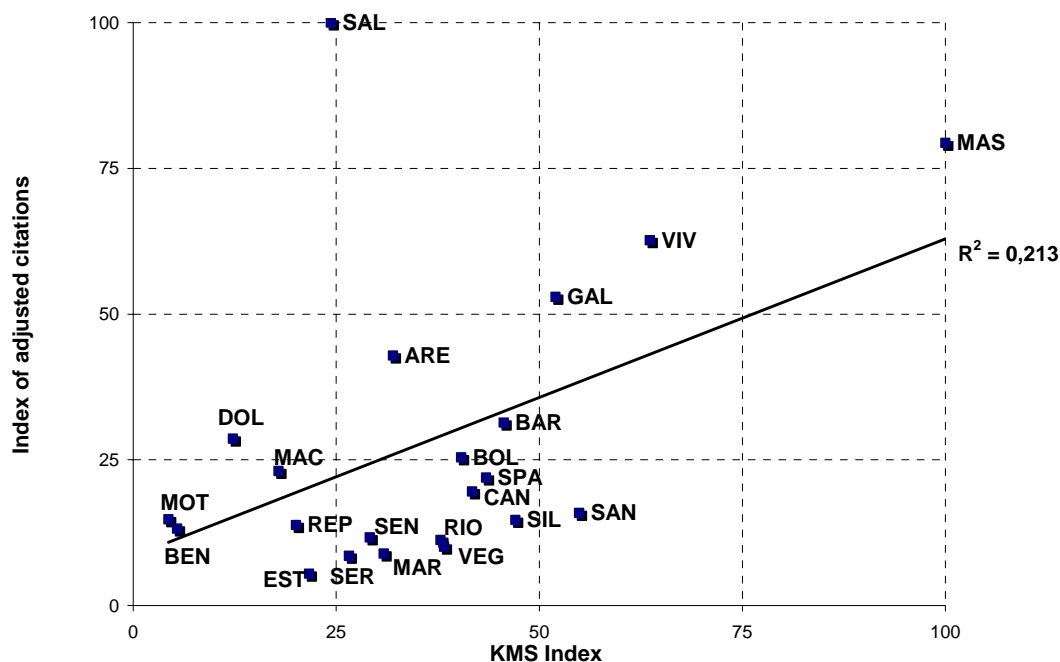
**Figure 3:** Publication-measures (KMS index) against citations received (total researcher life)

## 6. Conclusions

Few issues are more controversial than the way academic economists' performance should be evaluated. The existence of a vast literature offering different, and sometimes confronted, evaluation methods is the evidence than we are still far from reaching a universally-accepted method. In spite of this negative result, several advances have been done. Specifically at the Spanish level, the contribution made by Dolado et al. was remarkable because it was the first attempt to assess the productivity of economics researchers' at the Spanish level.

Results presented here have reinforced several of the main results outlined in the original article. The usage of several time spans helps us to evaluate researchers and institutions in a fairer way by skipping temporary shocks or unforeseen personal circumstances. For researchers the broadening of the assessed time spans is crucial to evaluate individual research careers. Results confirm that the choice of a particular time span strongly affects the author's (or the institutional) relative position in the ranking. In addition, the inclusion of departmental rankings in addition to individual and

institutional rankings, despite not changing significantly the results, increases transparency in the way collective evaluation can be carried out.

One of the last steps to reach a widely-accepted productivity measure is the adoption of a widely-accepted way of weighting journals. The UC3 Index has been successful in combining a rigourous journal weighting system with a wide journal selection. Aditionally, the way by which it has been generated, combining quantitative measures and survey responses, makes it less sensible to short-term changes compared with the alternative weighting methods, and thus more useful if we want to extend the analysis beyond a particular time span.

In spite of these advantages, however, there is still some room for improvement. The way the UC3 Index is generated  produces very plausible results, but fails to offer a completely bias-free assessment instrument. A straightforward improvement of the UC3 Index can be achieved by combining the quantitative measures with a survey broadened to a representative sample of the Spanish academics. Surely the construction of a new index will deserve an article on its own.

Last, but not least, we need to underline the main finding: academic production in economics done in Spanish institutions, regardless of the indicator used, has exponentially increased during the last two decades. Research in economics is no longer restricted to a handful of research centers whose faculty was academically trained abroad.  Despite this positive result, however, there are still shadows in the distribution of research productivity across institutions and inside institutions.  This article has outlined this issue, without going into the necessary depth. Probably more attention should be paid on this issue once the first step of the ladder, to achieve a higher level of aggregate productivity, has been successfully surpassed.

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