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UNIVERSITY RANKINGS OF DIFFERENT ACADEMIC POSITIONS FOR THE PRESENT AND THE FUTURE: THE CASE OF GREEK DEPARTMENTS OF ECONOMICS

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Abstract

University rankings have a long history and have been based on a number of criteria, the most important of which is research output and quality. There is a lot of discussion on the controversy that surrounds all the methods developed and whether research should be the only factor to examine. The present paper presents a methodology for ranking universities based on research using as criterion the different academic positions in a university i.e. professors, assistant professors, and uses the Greek departments of economics as a case study. The results are evaluated in the context of each position but also on a departmental level (all academic positions) producing useful conclusions for the present and future status of the institutes. Decision-makers can use the results as guidance to assess their present status and to identify if and how they want to improve.

Keywords: university rankings, academic position, Greek economics departments, economist
JEL classification: C12, C14, D63, I29

1. INTRODUCTION

The scientific community acknowledges that its output must be quantified to allow for comparisons and fair allocation of resources and funding. Questions such as which institute is most productive in research and which institute is best in Europe are commonly raised by general public, students, parents, academics and potential employers since higher education can become a financial burden and its quality therefore must not be neglected (Lukman et al., 2010). Considering the uncertainty that is inherent in the global economy and the recession that exists in most parts of the world and in particular Europe, rankings have gained considerable importance. Under the present circumstances infrastructure, health and educa-

tion are the most important sectors upon which countries will tend to invest in the longer term for sustainable development and competitiveness, (Schwab, 2010).

Rankings serve many purposes but in essence the intention of ranking tables is to objectively assess the quality of each university and overall influence the perceptions on university excellence. One reason that comparison and eventually ranking of universities is so attractive is because they help to attract the best students. Kalaitzidakis et al. (2003) support that rankings are often employed by university marketing departments to allocate education funds to different departments according to their success in these rankings. As such, there is vast literature on how to rank departments and consequently economic departments. Clearly there is need to evaluate academic output on the basis of objective metrics. Most of the ranking work is based on research output using scientific journals, citations and impact factors as the main means of knowledge exchange. Beyond the papers published in journals and their number of citations, other means of comparison, less frequently used, are the teaching quality, staff/student ratios and other social factors. In the US, where the interest in university rankings began in 1983, the basic evaluation criterion for a member of staff is the research productivity based on the number and quality of publications. In Europe, there are other criteria such as the contribution to the society and other positions. A comparative study between the US and European ranking systems is presented in Frey and Eichenberger (1993).

There are many bodies that produce international rankings (see for example the Leiden University or the Lisbon Council), however the two dominant international rankings are those of the Shanghai Jiaotung University and the Times Higher although they have been both strongly criticized. There are two fundamental problems in their evaluation. There is definitely difficulty in quantifying indicators of different activities such as education, innovation etc.; and further it is even more challenging to combine different categories of activity and produce meaningful results (Boulton, 2011). The European Union, in response to the legitimate concerns about the quality of Higher Education Institutions rankings funded two projects. The U-Map which aims to map the diversity of institutions and the U-Multirank which aims to produce international ranking of university performance in dimensions analogous to those used to map diversity. Although the value of these approaches is recognized, they are treated with skepticism recognizing the difficulty in collecting the large volumes of pertinent data and the use of inter-country statistics. A further challenge is whether the sub-parameters being employed become the objectives of education rather than how learning and true education takes place (Boulton, 2011).

In spite of most methodologies using research as a performance indicator, there are arguments as to which journals to use and their weighting, number of pages and number of citations to mention the most commonly met. Kalaitzidakis et al., (2003) present a problem that is inherent in most of the ranking studies which is the time relationship between the production of journals and their citations and the corresponding period under examination for the specific department. This hides the risk of producing rankings which are based on a number of research journals with weights from a different period eventually producing biased and unreliable rankings for the current period.

Further, it is arguable whether the evaluation of departments should take place in house or to be outsourced. In Europe and in particular in the UK and the Netherlands, the research evaluation is undertaken by scientific committees of recognizable scientific work on the subject. Times Higher Education Supplement (THES) ranking table however uses to a great extent, subjective evaluations by experts and recruiters, directed towards the prestige

and power of the university. This approach is heavily criticised by Marginson (2007) who supports that the THES ranking table does not examine the research dimension in depth and as a result produces tables that do not express the quality of education. On the contrary, in the US, evaluation happens internally and the most important criteria are the quantity of the publications, the quality of the publications (impact factor, citations), the contribution of full time members of staff in the committees of scientific journals (editors, referee, etc.) and the graduate success measuring their publication and citations. Enserink (2007) argues that this approach is controversial also.

In Greece, until recently there was no consistent way of ranking universities, at least dictated by a central governmental body, not to mention the controversy surrounding the subject. In countries, such as Greece, where the universities are governed by the state, the pace with which programs are tailored to the needs of the society and economy is slow (Bitros and Karayiannis, 2000). Recent legislation has come up according to which, the Greek universities will be evaluated by a third party.

Although several types of university rankings, based on different indicators and weighting factors exist, research-based rankings which satisfy public interest, students and academics remain scanty. There is evidence, however, that the current trend to university rankings approaches, shifts away from basic league tables and towards more subtle assessments using more criteria (even purely qualitative factors such as educational excellence) providing an overall better guidance to all interested parties (Butler, 2010). If research results were the dominant benefits that universities offered to society, then rankings that largely reflect these results would be the sensible means to stimulate their research efforts. However, the League of European Research Universities (LERU) strongly argues that research cannot be the only benefit that universities offer to society. This is a rather narrow view which isolates research from the totality of an academic institute and the benefits that offer to society. In response to this argument, the Times Higher Education journal are about to collaborate with the commercial publisher, Thomson Reuters, attempting to further develop its rankings. The aim is to include in the evaluation, besides the research citations, a worldwide survey of academic reputations. Although, as Boulton argues (2011), this approach might lack credibility, it nevertheless demonstrates the effort towards a more holistic view.

Irrespective of the criticism raised for the methodologies developed and the means used to rank the universities (for an extensive discussion see Boulton, 2011), the review of the literature demonstrates that although a large number of methodologies examine the research output of departments, very little is mentioned (see for example Bitros and Karayiannis, 2000), not to mention examined, on the importance of the work load of different academic positions in institutions and how this can affect the current and future status of the university in the local and/or more regional ranking. The present research does acknowledge the arguments that research indicators only are too narrow to be used for the ranking of universities. For this purpose the researchers have supported a unified system of assessment which takes into consideration both research and education quality (see Giannias and Sfakianaki 2011b). However the purpose of this research exploits further the research dimension which can be further integrated in the proposed unified system at a later stage.

In the methodology developed in this paper, the aim is to extend the methodology developed initially in Giannias and Sfakianaki (2011a) and fill in an important gap in the international literature by ranking economic departments using as a criterion the different academic positions in the universities i.e. professors, assistant professors etc. and their asso-

ciated research activities. The research will finally be applied to the Greek academic environment and provide an objective ranking of economic departments in Greece. The ranking is again developed on the basis of results derived from the EconLit and Social Science Citation Index (SSCI) for publications over the period 1969-2004 and the citations they received since their publication respectively. Ultimately such a methodology could help heads of institutions and their associates to focus on their strengths and distinctive roles within their national systems and at European level, establishing a rigorous policy framework for development.

2. PREVIOUS STUDIES

Academics, employers, students and society have developed a strong interest in the ranking of departments as a need to evaluate academic output on the basis of objective measures, such as citations and impact factors. Research on economic journal and department rankings has been conducted for some time and a brief discussion has been presented in the previous section. A detailed presentation of the most important methods employed is presented in Giannias and Sfakianaki (2011b). As such, in the following paragraphs only a short discussion is presented.

Kalaitzidakis et al., (1999) ranked European economics institutions and countries based on publications in a core set of 10 economic journals from 1991 to 1996. The findings of their research demonstrated the three leading universities in Europe and the three top-ranked countries. Coupé (2002) in his report employs performance indicators available in the literature (e.g. weighted journal ranking) to assess the work of individual researchers. He ranks economics departments on a world-wide basis and he also examines different methodologies and the rankings to which they conclude. An average of the different methodologies is produced and he presents the ranking that finally derives. The database of the research covers the period of 1969-2000 for economists and 1990-2000 for institutions.

On a country/region basis, Scott and Mitias (1996) and Dusansky and Vernon (1998) present US economics department rankings. Jin and Yau (1999) and Jin and Hong (2008), present ranking of Asian departments; Lucas (1995) and Davies et al., (2008) present Canadian; Towe and Wright (1995) and Neri and Rodgers (2006) present Australian; Lubrano et al., (2003), present European. Rankings are also constructed in other related disciplines such as finance (Chung and Cox, 1990), forestry and forest economics (Laband and Zhang 2006), environmental and resource economics (Auffhammer 2008; Rousseau et al. 2008), and agricultural economics (Beilock and Polopolus 1988; Kinnucan and Traxler 1994; Perry 2004).

In terms of research evaluation there are several criteria that can be used, the most important of which is usually the journals. Jin and Hong (2008), in the update of their research on ranking economic research in East Asia, used sixty journals over the period 1990–2005 using EconLit for their database. The selection of the sixty journals was based on a number of sources such as the selection proposed by Dusansky and Vernon, (1998), the selection proposed by Scott and Mitias (1996) and three best regional journals in Asia. Kalaitzidakis et al., (1999) in their research focused on 10 journals such as American Economic Review, Econometrica, Journal of Political Economy etc., trying to overcome the issue of journal quality, for the period 1991-1996. The risk involved in the above examined methods is the period of examination. If the period is short, then this is a convenient method of examination. If the period is extensive then these methods are not suitable and simple recording of

publications listed in the EconLit is sufficient irrespective of the journal of publication and its impact factor.

Another criterion is the number of articles and/or the pages per article per capita. The challenge in this case is how the pages are counted since journals have different page sizes and naturally, quality. One way to overcome this problem is the conversion of all journal pages to equivalent units using the American Economic Review (AER) size of page as a standard to unify size. Kalaitzidakis et al., (1999) for example employed the Laband-Piette approach and believe that the counting of pages per article using this conversion method reflects better the quantity of the research work produced and the overall effort (Laband and Piette, 1994). Jin (2005) also counts the page of articles published in his process of ranking after ensuring however that these articles are being referred. Similarly Jin and Hong (2008), counted the total number of pages for the articles published in the sixty journals selected. The researchers further converted the total pages published to the equivalent length of page of the AER. Dusansky and Vernon (1998) in their publication-based approach where the top 50 U.S. economic departments are presented, also counted the pages of articles by applying weights (converting journal's page to its AER equivalent or using the Laband-Piette approach).

The final most commonly used criterion is the number of citations. Coupé (2002) suggested using impact factors (available for 273 journals) that derive using the number of citations that can be expected for an article published in a journal measured one to two years after publication. A difficulty with this measure is that citations are weighted equally; the contribution of a citation from a top journal is considered the same as a citation from a lower ranked journal. Kalaitzidakis et al., (1999) also suggest the use of the actual citation impact of each article as an alternative way to measure the quality of articles. Although the authors have expressed their preference to the number of pages per article, they argue that citations could reflect institutions producing relatively few articles which are very highly cited compared with institutions which produce a lot of articles that disappear rapidly from the citations index. Citations require time to build up and this is an asset for the old articles compared to recent ones. The authors propose that one way of avoiding controversy is to simply count the citations of individual articles and avoid any weighting of journals.

Bitros and Karayiannis (2000) present a very well structured framework designed for the Greek academic environment where they take into consideration not only the research productivity of the member of staff but also the teaching quality, the administration work undertaken and the social contribution. The methodology is well structured and documented, however it requires the collection of different sources of data, in some cases non-tangible. Although, as Butler (2010) supports the trend of ranking universities moves towards this direction, in countries such as Greece where there is no tradition in ranking universities and there is no officially established system, the collection of data proposed by Bitros and Karayiannis (2000), can be an issue of controversy.

It is clear from the review of the literature that in the ranking of universities where research and its criteria, is the basic comparative element, departments are being evaluated using all academic members of staff. This paper presents a methodology which focuses on research and its components as a basis for comparison using data which are published in databases of international creditability and proceeds one step further; to evaluate the contribution of each position of academic members of staff as will be further defined in section 3. Ultimately the aim is to comprehensively rank academic institutions, particularly

focus on economics departments in Greece, and enable benchmarking for future improvement and monitoring.

3. CONCEPTUAL MODEL

The conceptual model presented herein is an extension of the model presented in Giannias and Sfakianaki (2011a). In the initial methodology, rankings of the Greek departments of economics were developed based on the research output and quality records[1] of all academic members of each department who have tenure or are on a tenure track.

The present model still employs research output and quality, however, this time the assessment for the nine Greek departments takes place separately for each position of academic staff. The indicators employed for the development of the present model are illustrated in Figure 1.

Based on the above, for each department of economics in Greece and for each position of academic staff, PA, we compute its mean research output **P(PA)** and its mean quality of EconLit publications **C(PA)**, where:

$$\mathbf{P(PA)} = \frac{\sum_{1}^{n} p_i(PA)}{n} \tag{1}$$

$$\mathbf{C(PA)} = \frac{\sum_{1}^{n} c_i(PA)}{n} \tag{2}$$

$i = 1, \ldots, n$ refers to the full-time academic member of staff of position PA listed as department member

PA refers to the academic position which is defined as PR (Professor), AP (Associate Professor), AsP (Assistant Professor) and L (Lecturer)[2],

$p_i(PA)$ is the number of publications by author i of position PA so $p_i(PA)$ would be the total number of publication by i;

$c_i(PA)$ is the number of citations that the publications of author i of position PA have received.

In the present study the nine departments of economics in Greece are examined. These are the departments of economics of: Athens University of Economics and Business, University of Crete, National and Capodistrian University of Athens, University of Macedonia, University of Thessaly, University of Patras, University of Piraeus, University of Ioannina, Aristotle University of Thessaloniki. The evaluation of these nine departments, which is presented in section 4, is based on their research output and quality using 2004 EconLit and Social Science Citation data. The data was collected as part of a research project undertaken in 2005-2006. A similar project is now up and running with an aim to cover the period

2005-2012. Once it is completed, the results will be re-evaluated for the whole period and at the same time the changes in the after the 2004 period will be identified.

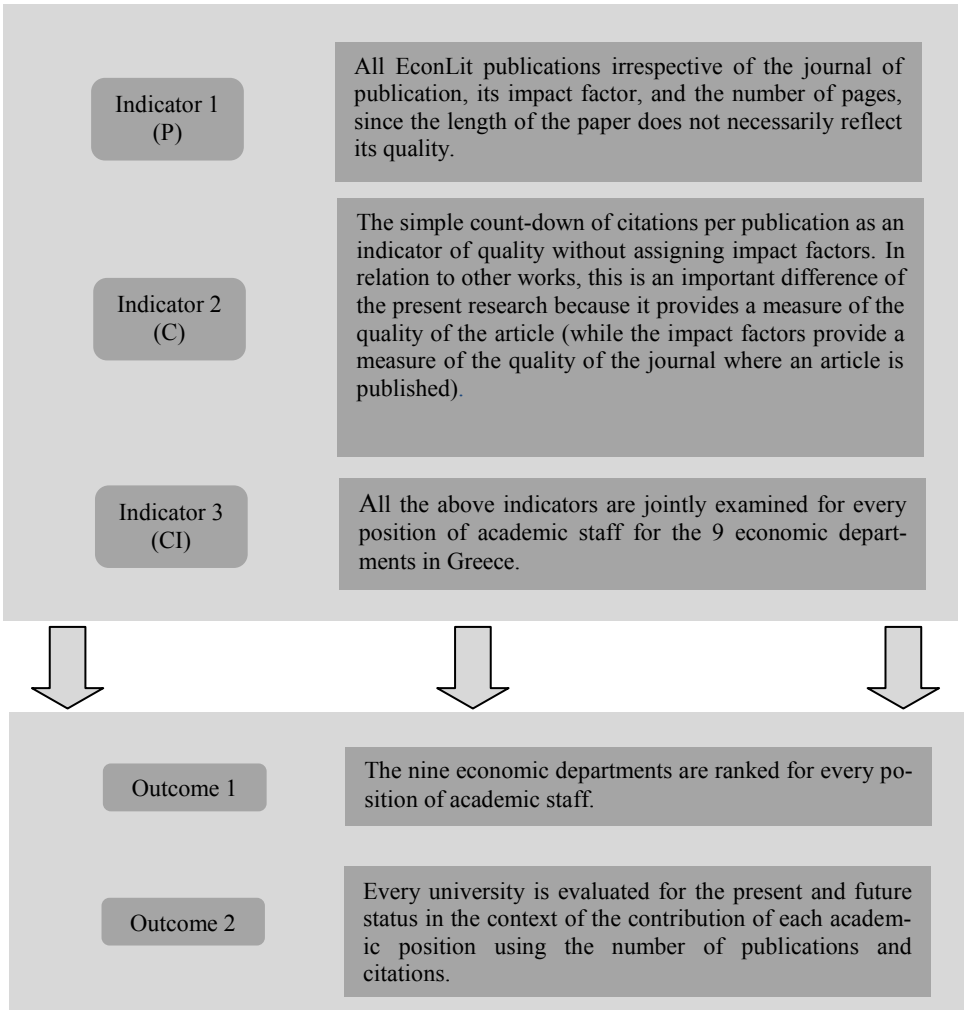

Figure no. 1 The research model

4. RESULTS

Table 1 gives the values for the position of professor (PR) of the nine departments of economics of Greek universities which are obtained after the application of Equations 1 and 2. The figures of Table 1 for the simplicity of comparisons, are mapped in to a 0 – 100 scale; where, 100 is mapped to the best value of a variable, and 0 to the worse. This is done using Equation 3:

$$X^{*} = \frac{(X - Xmin)}{(Xmax - Xmin)} * 100 \quad (3)$$

where, X = P(PA), C(PA)

The values, therefore, presented in Table 1 are already transformed to the above mentioned scale. Table 2 demonstrates the ranking of economic departments based on the results of Table 1 with respect to number of publications and citations. Figure 2 presents graphically the ranking of the departments for both categories.

Table no. 1 Per Professor Publications and Citations for the departments of economics of Greek universities

Economic Department	**Normalised Publication Average P*(PR)**	**Normalised Citations Average C*(PR)**
Aristotle University of Thessaloniki	10.21	13.44
National and Capodistrian University of Athens	57.55	67.46
Athens University of Economics and Business	100.00	100.00
University of Thessaly	43.84	16.67
University of Ioannina	0.00	0.00
University of Crete	84.50	60.52
University of Macedonia	19.32	68.40
University of Patras	9.85	9.13
University of Piraeus	8.05	5.03

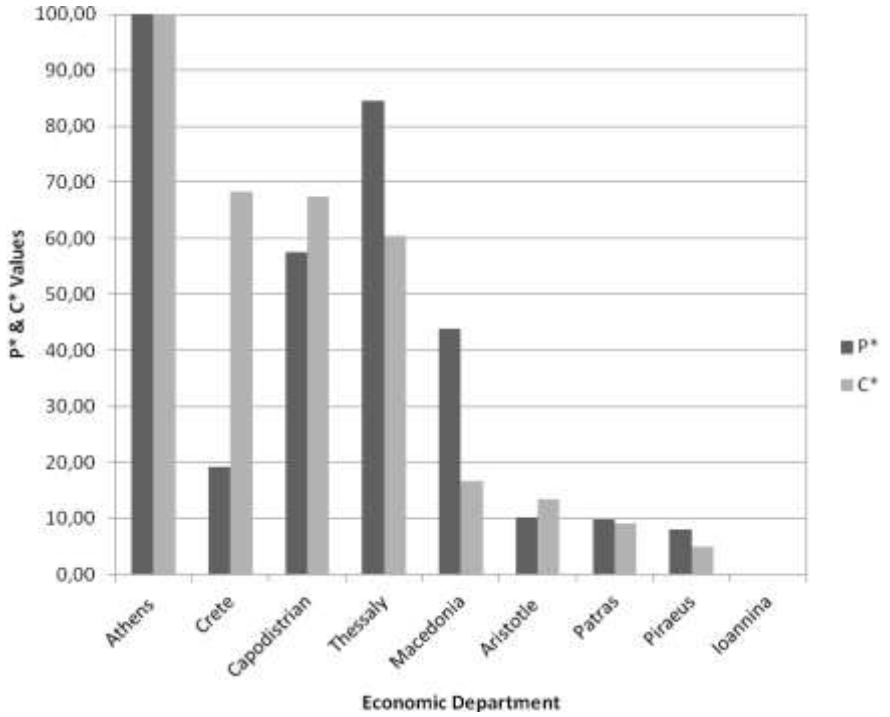

Figure no. 2 Graphic representation for the departments of economics' ranking for the position of Professor – for categories publication (P*) and citations (C*)

Table no. 2 Ranking for the departments of economics for the position of Professor based on their publication and citation results

Rank for the Position of Professor		
Economic Department	**Ranking based on P*(PR)**	**Ranking based on C*(PR)**
Athens University of Economics and Business	1	1
University of Crete	2	4
National and Capodistrian University of Athens	3	3
University of Thessaly	4	5
University of Macedonia	5	2
Aristotle University of Thessaloniki	6	6
University of Patras	7	7
University of Piraeus	8	8
University of Ioannina	9	9

In an attempt to produce a more comparable basis and therefore avoid the controversial conclusions of Table 2 (i.e. what counts more, number of publications or number of citations), the research further developed a composite index, CI(PA), for each position, PA, which combines the weighted mean of P(PA) and C(PA) values for each department using the w_p and w_c weights respectively. These are obtained from an experts' opinion survey[3], and are the following:

$$w_p = 0{,}60 \text{ and } w_c = 0{,}40$$

Subsequently, the following composite index, CI*(PA), is computed for each department of economics, where:

$$CI^*(PA) = w_p\, P^*(PA) + w_c\, C^*(PA) \qquad (4)$$

The CI*(PA) based results and ranking are illustrated in Table 3 for the position of Professor. The advantages of the proposed composite CI*(PA) index is that it is based on data bases that are easily accessible to academic community and can provide a quick basis for comparison. It is interesting to notice that the first and the last departments in the ranking are still the same as presented in Table 2.

Table no. 3 CI based results and ranking for the departments of economics for the position of Professor*

Economic Department	**Composite Index CI*(PR)**	**Ranking based on CI*(PR)**
Athens University of Economics and Business	100.00	1
University of Crete	74.91	2
National and Capodistrian University of Athens	61.51	3
University of Macedonia	38.95	4
University of Thessaly	32.97	5
Aristotle University of Thessaloniki	11.50	6
University of Patras	9.56	7
University of Piraeus	6.84	8
University of Ioannina	0.00	9

Based on the above results we classify the 9 department in four groups based on their CI* score as illustrated in Table 4.

Table no. 4 CI based group types*

Group Type	CI*
GROUP A – high quality Athens University of Economics and Business	Equals 100
GROUP B – medium quality University of Crete, National and Capodistrian University of Athens	between 75 and 60
GROUP C – low quality University of Macedonia, University of Thessaly	between 40 and 30
GROUP D – poor quality Aristotle University of Thessaloniki, University of Patras, University of Piraeus, University of Ioannina	below 15

Investigating further the above comparative evaluation results, we adopt one more indicator to examine the impact that each position of academic members of staff has on each department. This time the number of members of staff of each level of academic position as a percentage of the total number of members of staff of a department, (r), is being employed. To be more specific, to obtain the index CI** (Equation 7), which is used to obtain the results for the position of Professor given in Tables 5 and 7, we first define p*(PA) and c*(PA), (Equations 5 and 6 respectively), and their counterparts, P**(PA) and C**(PA), as follows.

$$\mathbf{p^*(PA)} = r(PA) \times P(PA) \quad (5)$$

$$\mathbf{c^*(PA)} = r(PA) \times C(PA) \quad (6)$$

P**(PA) is defined to be the p*(PA) values mapped in to a 0-100 scale using Equation 3,
C**(PA) is defined to be the c*(PA) values mapped in to a 0-100 scale using Equation 3, where,
100 is mapped to the best value of a variable, and 0 to the worse, and
$r(PA)$ is the member of academic staff of position PA as a percentage of the total number of member of staff of the department.

$$CI^{**}(PA) = w_p\, P^{**}(PA) + w_c\, C^{**}(PA) \quad (7)$$

*Table no. 5 P**, C** and CI**results for the departments of economics for the position of Professor*

Economic Department	P**(PR)	C**(PR)	CI**(PR)
Athens University of Economics and Business	100.00	100.00	100.00
University of Crete	48.46	34.71	42.96
National and Capodistrian University of Athens	30.06	35.24	32.13
University of Macedonia	15.01	53.16	30.27
University of Thessaly	23.74	9.03	17.86
University of Piraeus	5.60	3.50	4.76
Aristotle University of Thessaloniki	3.75	4.93	4.22
University of Patras	3.20	2.97	3.11
University of Ioannina	0.00	0.00	0.00

Based on the above results we classify the 9 department in four groups based on their CI** score; see Table 6.

*Table no. 6 CI** based group types*

Group Type	CI*
GROUP A – high quality Athens University of Economics and Business	Equals 100
GROUP B – medium quality University of Crete, National and Capodistrian University of Athens, University of Macedonia	between 45 and 30
GROUP C – low quality University of Thessaly	between 20 and 10
GROUP D – poor quality University of Piraeus, Aristotle University of Thessaloniki, University of Patras, University of Ioannina	below 10

*Table no. 7 Ranking for the departments of economics for the position of Professor based on their P**, C** and CI** results*

Economic Department	Ranking based on P**(PR)	Ranking based on C**(PR)	Ranking based on CI**(PR)
Athens University of Economics and Business	1	1	1
University of Crete	2	4	2
National and Capodistrian University of Athens	3	3	3
University of Thessaly	4	5	5
University of Macedonia	5	2	4
University of Piraeus	6	7	6
Aristotle University of Thessaloniki	7	6	7
University of Patras	8	8	8
University of Ioannina	9	9	9

Although it is not the only factor that naturally influences the ranking of departments, it can be seen from above that the number of professors compared to the total members of staff influence only the lower ranked institutes without significantly modifying the final ranking table. Further, a comparison of the CI* and CI** based ranking of Table 8 may show for the position of Professor how good, according to the criteria employed, are the professors of a department relevant to those of other departments, as well as the importance (impact) of the specific position within the department; for example, one department with many members of academic staff and only one but very good professor will score high at the CI* based ranking but low at the CI** ranking. To investigate the importance of a position relevant to all other departments as well as within a department we introduce below the rank criterion (*RC*), which is defined in Equation 8:

$$RC(PA) = R[CI*(PA)] - R[CI**(PA)] \quad (8)$$

where, PA = PR, AP, AsP, and L.

Positive RC values indicate that a department has valuable, according to the adopted criteria, members of staff at the specific position but relatively few to have an impact at the department according to their abilities. On the contrary, negative RC values indicate that a department has relatively less good members of staff at the position under examination but these have a relatively higher impact at the department because there are enough of them. A zero RC value indicates that things (relevant to the evaluation criteria used) are rather balanced.

Table no. 8 Comparison of rankings (RC) for the position of Professor based on their CI, CI** results*

Position of Professor			
Economic Department	**CI*(PR)**	**CI**(PR)**	**RC(PR)**
Athens University of Economics and Business	1	1	0
University of Crete	2	2	0
National and Capodistrian University of Athens	3	3	0
University of Macedonia	4	4	0
University of Thessaly	5	5	0
University of Piraeus	8	6	+2
Aristotle University of Thessaloniki	6	7	-1
University of Patras	7	8	-1
University of Ioannina	9	9	0

The above analysis is undertaken for the levels of Associate Professors, Assistant Professors and Lecturers and the results are given in Table 9. The calculations to obtain the results of Table 9 are given in the Appendix.

The RC values for AP, AsP, and L are greater or equal than zero for: University of Piraeus, University of Ioannina, and Aristotle University of Thessaloniki. The RC values for AP, AsP, and L are less or equal than zero for: Athens University of Economics and Business.The last part of the research presented herein is the evaluation of the current and future status of each institution as shown in section 3, Figure 1. Based on the results that have been produced for every institute for every position of academic staff (PR, AP, AsP and L), we attempt to evaluate, in context, which are currently the strong institutes and which are the institutes that have potential for the future. In this respect, head of schools, associates and educational agencies can evaluate their present position in the academic map and review and monitor where they want their institute to be placed in the future considering the present conditions.

Table no. 9 Comparison of rankings (RC) for the position of AP, AsP, L based on their CI, CI** results*

Economic Department	CI* (AP)	CI** (AP)	RC (AP)	CI* (AsP)	CI** (AsP)	RC(AsP)	CI*(L)	CI**(L)	RC(L)
National and Capodistrian University of Athens	4	1	**+3**	3	6	**-3**	4	4	**0**
University of Macedonia	7	2	**+5**	1	7	**-6**	5	6	**-1**
University of Crete	2	3	**-1**	4	1	**+3**	6	7	**-1**
University of Patras	5	4	**+1**	6	9	**-3**	1	1	**0**
University of Piraeus	6	5	**+1**	5	3	**+2**	8	8	**0**
University of Thessaly	3	6	**-3**	7	4	**+3**	8	8	**0**
Athens University of Economics and Business	1	7	**-6**	2	2	**0**	2	3	**-1**
University of Ioannina	8	8	**0**	8	5	**+3**	3	2	**+1**
Aristotle University of Thessaloniki	9	9	**0**	9	8	**+1**	7	5	**+2**

More specifically, assuming that for the evaluation of the present situation, the positions that are really strong and can contribute to the research output and quality of each institute is the position of Professor and Associate Professor, we assign the largest value of 1 and 0.75 respectively. The 0.5 and 0.25 values are assigned for the positions of Assistant Professor and Lecturer respectively. Subsequently, we introduce our Present Status index, PS, which has the structure shown in Equation 9.

$$PS(CI*) = 1 \times [CI*(PR)] + 0.75 \times [CI*(AP)] + 0.5 \times [CI*(AsP)] + 0.25 \times [CI*(L)] \quad (9)$$

where *PS(CI*)* is defined as the Present Status of the institute under examination based on the CI* score.

On the contrary, we assume that the future status of any institute is mostly based on the lower positions of academic staff who have the ambition to progress i.e. Lecturers and Assistant Professors, and for this reason, in the relevant index, Future Status (FS), we assign to these positions the largest values of 1 and 0.75 respectively; while at the same time we assign 0.5 and 0.25 to Associate Professors and Professors respectively. The structure of our FS index is shown in Equation 10.

$$FS(CI^*) = 1 \times [CI^*(L)] + 0.75 \times [CI^*(AsP)] + 0.5 \times [CI^*(AP)] + 0.25 \times [CI^*(PR)] \quad (10)$$

where *FS(CI*)* is defined as the future status of the institute under examination.

Similarly, we produce the *PS(CI**)* and *FS(CI**)* results based on the CI** score for each institute. All results are presented in Tables 10 and 11.

Table no. 10 Present and Future Status outcome based on the CI,CI** results for the departments of economics*

Economic Department	PS(CI*)	FS(CI*)	PS(CI**)	FS(CI**)
Aristotle University of Thessaloniki	14.18	13.61	14.87	21.98
National and Capodistrian University of Athens	136.23	117.84	110.33	81.99
Athens University of Economics and Business	217.63	192.70	157.13	120.76
University of Thessaly	83.08	45.16	56.67	45.17
University of Ioannina	21.86	64.40	31.33	85.88
University of Crete	149.94	99.25	126.52	105.60
University of Macedonia	108.20	106.77	90.12	57.70
University of Patras	75.39	119.52	63.38	106.42
University of Piraeus	52.04	45.05	49.10	46.06

Table no. 11: Present and Future Status rankings based on the CI,CI** results for the departments of economics*

Economic Department	PS(CI*)	PS(CI**)	FS(CI*)	FS(CI**)
Athens University of Economics and Business	1	1	1	1
University of Crete	2	2	5	3
National and Capodistrian University of Athens	3	3	3	5
University of Macedonia	4	4	4	6
University of Thessaly	5	6	7	8
University of Patras	6	5	2	2
University of Piraeus	7	7	8	7
University of Ioannina	8	8	6	4
Aristotle University of Thessaloniki	9	9	9	9

Table 11 can be discussed in two ways. Initially we can compare the Present and Future Status for each institute for the CI*, CI**based scores and subsequently we can

compare Present Status and Future Status for both categories. In the specific research it can be concluded that the Athens University of Economics and Business is well ranked on the top of the list with either the CI* or CI** based ranking both for the present and the future; whereas, on the opposite of the scale the Aristotle University is ranked last in all occasions. The rankings of the other institutes are not very differently positioned between the categories with the exception of Patras which is positioned in a much better rank in the case of CI**. Clearly the results can provide enough guidance to the decision-makers to decide if their present status is satisfactory and if they want to improve or maintain their position for the future against a national scale identifying where improvements should be sought.

5. CONCLUSIONS

In any competitive environment and in particular in an environment where the global economy is characterized by uncertainty, the evaluation and ranking of universities cannot come as a surprise. The quality of universities offers to the wider society the potential to evaluate whether the knowledge that is being produced and disseminated in the society through research and education could satisfy the conditions for continuous economic development. It cannot be denied that economies that want to move up and not simply produce processes and products need to invest in quality higher education. There are many reasons that justify the importance of rankings, the most important of which are to help the students choose a university, to help the industry to create links with the universities and thus further their objectives, to help governments to align their policies for universities to national needs.

Most rankings collect data that have been agreed or are believed to reflect quality. The type of data and how it is weighted differs largely. Indeed there are considerable differences between methodologies used and the number of indicators being employed. In some instances, the same criteria are examined with a different perspective. Although research output and quality has long been established as the most important ranking factor, there is tendency to shift away from the traditional examination of research only and include other factors such as teaching quality and social contribution. The authors acknowledge this trend with other publication; the present research extends previous work of the authors on the research output and quality only. It is important to emphasize that there is very little to no literature sources which examine the contribution of each position of academic member of staff in the research evaluation of a university as is proposed in the present paper. In essence, the methodology developed takes into consideration the contribution in terms of mean number of publications (P) and citations (C) listed in EconLit for the different positions of academic members of staff (Professor, Associate Professor, Assistant Professor and Lecturer) and ranks institutes after mapping values into a 0-100 scale. Weightings deriving from an experts' opinion survey were also applied to P* and C* producing the Composite Index (CI*). The same process was followed taking into consideration one more factor which is the percentage of the number of members of staff of each position to the total number of members of staff of a department. A Composite Index was again produced (CI**). All calculations were undertaken for the departments of economics of the Greek Universities.

In both cases the universities were grouped into categories from high to poor quality. The CI* and CI** values were examined and compared using the rank criterion (**RC**) which is based on the subtraction of the two composite indexes. A zero RC value indicates that there is balance between the CI* and the CI** results. In the case of positive RC values, it is

indicated that although the department under examination has notable members of staff at the specific position, there are not enough to have an impact at the department according to their abilities. Vice-versa, in the case of negative RC values, it is indicated that a department has relatively less good members of staff at the position under examination but these have a relatively higher impact at the department because there are enough of them.

Besides the Rank Criterion, the research also developed a further benchmarking tool the **PS** and **FS** for both the CI* and CI** based results to evaluate the present and future status of each institute for all positions respectively. In this respect the decision-makers can identify where they need to improve and if they are satisfied with their position on the education map. In all occasions, the Athens University of Economics and Business was ranked first which demonstrates that the specific institute has strong foundation not only for the present but also for the future.

The proposed ranking method extends previous work of the authors and investigates the contribution of each position of academic staff to the evaluation of universities. Considering the recent Greek law change in September 2011, which decreases the tenure or tenure track positions from 4 to 3, the research can move forward to re-evaluate the academic map and observe where this change modifies the conclusions produced in the present paper. Furthermore, the research will be enriched once the 2005-2012 data becomes available to study changes in the period which follows that of our analysis.

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Appendix

Table no. A-1 Comparison of rankings for the position of Professor based on their P, P**, C*,C** and CI*,CI** results*

Economic Department	P*(PR)	P**(PR)	C*(PR)	C**(PR)	CI*(PR)	CI**(PR)
Athens University of Economics and Business	1	1	1	1	1	1
University of Crete	2	2	4	4	2	2
National and Capodistrian University of Athens	3	3	3	3	3	3
University of Thessaly	4	4	5	5	5	5
University of Macedonia	5	5	2	2	4	4
University of Piraeus	8	6	8	7	8	6
Aristotle University of Thessaloniki	6	7	6	6	6	7
University of Patras	7	8	7	8	7	8
University of Ioannina	9	9	9	9	9	9

Table no. A-2: P, P**, C*, C**, CI* and CI**results for the departments of economics for the position of Associate Professor*

Economic Department	P*(AP)	C*(AP)	CI*(AP)	P**(AP)	C**(AP)	CI**(AP)
Aristotle University of Thessaloniki	0.00	0.00	0.00	0.00	0.00	0.00
National and Capodistrian University of Athens	60.78	54.49	58.27	73.38	100.00	84.03
Athens University of Economics and Business	83.33	100.00	90.00	12.75	23.25	16.95
University of Thessaly	95.00	10.53	61.21	41.98	7.07	28.02
University of Ioannina	10.00	0.00	6.00	3.31	0.00	1.99

Economic Department	P*(AP)	C*(AP)	CI*(AP)	P**(AP)	C**(AP)	CI**(AP)
University of Crete	100.00	21.64	68.65	70.18	23.08	51.34
University of Macedonia	57.83	5.96	37.09	100.00	15.68	66.27
University of Patras	46.11	55.56	49.89	36.68	67.17	48.87
University of Piraeus	44.17	31.58	39.13	33.46	36.36	34.62

Table no. A-3 P, P**, C*, C**, CI* and CI**results for the departments of economics for the position of Assistant Professor*

Economic Department	P*(AsP)	C*(AsP)	CI*(AsP)	P**(AsP)	C**(AsP)	CI**(AsP)
Aristotle University of Thessaloniki	0.00	0.00	0.00	26.52	3.56	17.33
National and Capodistrian University of Athens	0.98	100.00	40.59	0.00	57.56	23.02
Athens University of Economics and Business	56.82	70.41	62.25	100.00	30.79	72.32
University of Thessaly	2.04	17.98	8.41	40.94	27.60	35.60
University of Ioannina	5.98	7.06	6.41	39.98	8.97	27.58
University of Crete	10.99	79.46	38.38	81.39	100.00	88.83
University of Macedonia	100.00	24.53	69.81	31.47	0.00	18.88
University of Patras	1.57	40.55	17.16	1.96	23.59	10.61
University of Piraeus	2.50	75.51	31.70	18.01	64.85	36.75

Table no. A-4 P, P**, C*, C**, CI* and CI**results for the departments of economics for the position of Lecturer*

Economic Department	P*(L)	C*(L)	CI*(L)	P**(L)	C**(L)	CI**(L)
Aristotle University of Thessaloniki	13.06	7.24	10.73	10.53	4.00	7.92
National and Capodistrian University of Athens	18.37	79.66	42.89	8.20	24.38	14.68
Athens University of Economics and Business	88.07	57.93	76.01	42.34	19.10	33.04
University of Thessaly	0.00	0.00	0.00	0.00	0.00	0.00
University of Ioannina	27.66	100.00	56.60	40.34	100.00	64.20
University of Crete	29.03	0.00	17.42	4.27	0.00	2.56
University of Macedonia	43.54	0.00	26.12	4.73	0.00	2.84
University of Patras	100.00	48.28	79.31	100.00	33.10	73.24
University of Piraeus	0.00	0.00	0.00	0.00	0.00	0.00

Table no. A-5 Comparison of rankings for the position of Associate Professor based on their P, P**, C*,C** and CI*,CI** results*

Economic Department	P*(AP)	P**(AP)	C*(AP)	C**(AP)	CI*(AP)	CI**(AP)
University of Macedonia	5	1	7	6	7	2
National and Capodistrian University of Athens	4	2	3	1	4	1
University of Crete	1	3	5	5	2	3
University of Thessaly	2	4	6	7	3	6
University of Patras	6	5	2	2	5	4

Economic Department	P*(AP)	P**(AP)	C*(AP)	C**(AP)	CI*(AP)	CI**(AP)
University of Piraeus	7	6	4	3	6	5
Athens University of Economics and Business	3	7	1	4	1	7
University of Ioannina	8	8	8	8	8	8
Aristotle University of Thessaloniki	9	9	9	8	9	9

Table no. A-6 Comparison of rankings for the position of Assistant Professor based on their P, P**, C*,C** and CI*,CI** results*

Economic Department	P*(AsP)	P**(AsP)	C*(AsP)	C**(AsP)	CI*(AsP)	CI**(AsP)
Athens University of Economics and Business	2	1	4	4	2	2
University of Crete	3	2	2	1	4	1
University of Thessaly	6	3	7	5	7	4
University of Ioannina	4	4	8	7	8	5
University of Macedonia	1	5	6	9	1	7
Aristotle University of Thessaloniki	9	6	9	8	9	8
University of Piraeus	5	7	3	2	5	3
University of Patras	7	8	5	6	6	9
National and Capodistrian University of Athens	8	9	1	3	3	6

Table no. A-7 Comparison of rankings for the position of Lecturer based on their P/ P**, C*/C** and CI*/CI** results*

Economic Department	P*(L)	P**(L)	C*(L)	C**(L)	CI*(L)	CI**(L)
University of Patras	1	1	4	2	1	1
Athens University of Economics and Business	2	2	3	4	2	3
University of Ioannina	5	3	1	1	3	2
Aristotle University of Thessaloniki	7	4	5	5	7	5
National and Capodistrian University of Athens	6	5	2	3	4	4
University of Macedonia	3	6	6	6	5	6
University of Crete	4	7	6	6	6	7
University of Thessaly	8	8	6	6	8	8
University of Piraeus	8	8	6	6	8	8

Notes

[1] The research output was quantified by the per capita number of articles published in EconLit listed articles and citations shown in Social Science Citation Index (SSCI) for publications over the period 1969-2004

[2] The 4 positions of academic staff in Greek Universities, by state law, are: Professor (PR), Associate Professor (AP), Assistant Professor (AsP) and Lecturer (L). Professors and Associate Professors have tenure whereas Assistant Professors and Lecturers are on a tenure track. It is important to mention that with the recent law change in the educational sector (September 2011), the academic positions that are on tenure track have changed as will be explained further below.

[3] 30 Greek experts participated in a survey undertaken by the authors, each of which 1) had a minimum of 10 year research experience in social science research and 2) was a member of a committee for the evaluation of applicant for teaching positions in more than 5 occasions.