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**TOPICS, TECHNIQUES AND APPLICATIONS IN URBAN AND
REGIONAL SCIENCE IN THE NINETIES: A BIBLIOMETRIC
ANALYSIS**

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RESUMEN:

El actual estado de la ciencia regional y urbana ha sido un tema discutido en un amplio número de estudios que han especulado sobre las futuras tendencias en el desarrollo de esta disciplina. Sin embargo, se han realizado pocos análisis empíricos sobre los actuales patrones de publicación de las revistas especializadas en los ámbitos regional y urbano. Este documento estudia los diferentes tópicos, técnicas y tipos de datos usados en los artículos publicados en nueve de las más importantes revistas internacionales durante la década de los noventa con el objetivo de identificar las actuales tendencias en este campo investigación.

Palabras clave: Ciencia regional y urban, análisis bibliométrico.

Clasificación JEL: R10, A10, A11, A14

ABSTRACT:

The current state of regional and urban science has been much discussed and a number of studies have speculated on possible future trends in the development of the discipline. However, there has been little empirical analysis of current publication patterns in regional and urban journals. This paper studies the kinds of topics, techniques and data used in articles published in nine top international journals during the 1990s with the aim of identifying current trends in this research field.

Keywords: Regional and urban science, bibliometric analysis

JEL Classification: R10, A10, A11, A14

Publication patterns in regional and urban analysis. Have topics, techniques and applications changed during the nineties?

1. Introduction and objectives

The current state of regional and urban science has recently been evaluated by a number of studies which have questioned the practical dimension and the breadth of perspective of much of the research in the field. Several attempts have also been made to identify future directions in the discipline.¹

As BAILLY and COFFEY, 1994, point out, it is clear that interdisciplinarity is one of the most important principles in regional science, but it runs the risk of establishing a particular way of seeing the world: for instance, the positivist approach of spatial econometrics. In reaction to the trend of centering regional science upon the notion of the "space-economy", HÄGERSTRAND, 1970, 1989) reminded us that regional science is about people, and not just about economic locations. Against the background of the debate initiated by BAILLY and COFFEY, 1994, ANSELIN, 1995, showed that the articles published in five different volumes of the Papers in Regional Science covered a wide range of disciplines and presented a non-concentrated geographic distribution; ISARD, 1999, compared the four basic forces of particle physics with the future directions of regional science.

But, as JANSEN, 1991, asks, is regional science simply an academic discipline that exists for the benefit of regional scientists? Are we as regional scientists training our students in our own likeness to perpetuate the characteristics of a discipline that is living on borrowed time in an outmoded paradigm of technocracy? Or is it a live science with a normal evolution and an eventful future?

¹ See, for example, BAILLY and COFFEY, 1994; ANSELIN, 1995; FLORAX, 1999; ISSERMAN, 1995; ISARD, 1999; and AXHAUSEN, 2000.

Few studies have analysed the dynamic character of the discipline by focusing on the evolution of publication patterns in regional and urban journals in recent decades. For this reason, in this paper we try to improve on earlier rather partial analyses by studying aspects of regional research that have been systematically ignored. To broaden our understanding of the current state of the discipline, we have focused our attention on the topics, techniques and applications discussed in nine top journals in regional and urban research over the last ten years.

The empirical study of this paper is based on a sample of international regional and/or urban journals. Our aims are as follows: first, to analyse the publication patterns in regional and urban science during the nineties; second, to study the most common objectives of regional and urban research; third, to investigate the topics considered in research in this field and whether there have been changes over time; fourth, to identify the techniques most frequently used in this kind of analysis; and fifth, to compare the relative importance of different kinds of data analysed in the papers that use quantitative techniques.

With these objectives in mind, the rest of the paper is organised as follows: first, the literature on the application of bibliometric techniques in economic sciences in general, and in regional and urban sciences in particular, is briefly revisited; second, the methodological approach in the paper is clearly described; third, the empirical results are presented; and last, the main conclusions of the analysis are summarised.

2. Previous research of bibliometrics in economics and regional science

Bibliometrics is the application of mathematical and statistical methods to measure quantitative and qualitative changes in publications. By using quantitative techniques of this kind, it is possible to analyse the publication patterns of academic institutions or authors in different journals and to assess the

relevance of different subject fields or topics in published research. It can also help to study regional patterns of research and the extent of cooperation between researchers in different institutions or countries.

Standard bibliometric methods involve analysis of the patterns in the number of articles, pages, citations and co-words published in a selection of journals. These methods have been widely used in a range of scientific fields, and economics has been no exception. Trends in co-authorship and in the establishment of multi-national research collaboration networks are among the aspects which have been analysed, but the most important application of bibliometrics in economics has been in the establishment of rankings of institutions and authors on the basis of their productivity (understood as articles or pages published in different samples of journals).

However, more detailed analysis on subjects discussed and methods and techniques applied have been progressively introduced. HALL, 1987, 1990 ranks institutional activity in econometrics over the periods 1980-1985 and 1980-1988 in 14 journals, distinguishing between theoretical and non-theoretical econometrics. BALTAGI, 1998, 1999 updates these rankings in the field of econometrics and DIRKMAAT, 2001, analyses the articles published from 1981 to 1999 in the Journal of Econometrics taking into account the country of the authors and the most frequently cited articles.

This kind of analysis has rarely been applied to regional science, and the studies that have been performed have only focused on particular journals. For example, O'KELLY, 1999, analyses the topics in papers by frequent contributors and the most frequently cited papers in the last thirty years but only for articles in Geographical Analysis. STRATHAM, 1992, examines the impact of articles published using the citations reported in the SSCI between 1967 and 1980, but only for the Journal of Regional Science. ALLEN and KAU, 1991, analyse the relative importance of authors and institutions using the number of pages published from 1974 to 1989 as the main relevant variable, but limit their

analysis to the Journal of Urban Economics. TAYLOR and JOHNES, 1992, compare the number of citations received by articles published in Regional Studies during the period 1980-1989 with the citations received by articles in other academic journals in the field of urban and regional studies. Only two studies have adopted a more general approach. First, KAU and JOHNSON, 1983, calculated the output of academic institutions and authors from 1965 to 1980 in selected regional journals, finding a widespread interest in regional science. Second, REY and ANSELIN, 2000 (following the classification by ANSELIN, REY and TALEN, 2000) examined the publication patterns in five regional science journals during the nineties, finding an increasing interest in topics related to spatial structure.

In the following sections, we extend this previous research in three ways: first, by considering not only regional but also urban journals; second, by analysing a wider set of variables with regard to the articles published; and third, by changing the basic unit of analysis from “article published in a regional and/or urban journal” to “article on regional and/or urban topics published in a set of journals”.

3. Methodological approach

As CONROY and DUSANSKY, 1995, highlight, there are three fundamental conceptual problems in designing a study of this sort. The first is to select the set of journals upon which the analysis will be based. The second is related to the unit of analysis in the study: should output publication be measured by counting a) the number of published articles or b) the number of pages in every article? The third problem is related to the fact that the analysis in this paper requires specific information about articles that is not recorded in standard bibliographic databases (whether they are regional and/or urban, the topic considered, the technique applied and the kind of data used).

3.1. Selection of journals and articles

In reference to the first problem, and taking into account the objectives of the study, initially we considered every international journal published continuously between the years 1991 and 2000 in the field of urban and regional science. However, as the number of journals (and articles) was relatively high and the quality uneven, we decided to limit our analysis to a selected sample of top journals. The criteria applied to limit this sample can be summarised as follows: First, we chose journals included in the Econlit database² for at least a part of the time period considered. We then reduced this sample of journals further to those included in the Social Science Citation Index database³ in one or more of the following categories: Demography, Economics, Environmental Studies, Geography, Planning and Development, Transportation and Urban Studies. Next, we reviewed the “aim and scopes” section of all these journals to select only those that deal with urban, local, and/or regional problems. A final selection from this list gives the list of nine journals shown in table 3.1.

TABLE 3.1

The next step was to obtain detailed information about all articles published in the journals selected in the ten-year period. In economics, the standard source for this kind of information is the Econlit database⁴. However, not every journal in the list was recorded on Econlit over the entire period. We

² www.econlit.org

³ <http://www.isinet.com/isi/products/citation/ssci/index.html>.

⁴ The Econlit database in the analysis includes bibliographic information from 1969 to January 2001.

therefore compiled these data directly from the journals' contents pages⁵. As is standard practice in this kind of analysis, we only accepted refereed articles. For this reason, book reviews, book and publication notes, short comments, debates and surveys, and related sections (where available) were not considered. Some other articles were also excluded from this initial sample as will be explained in section 4.1.

3.2. Unit of analysis

Another issue to define was the unit of measurement to use in order to evaluate the relative importance of topics, techniques or data. We could choose either the number of articles or pages per article. Using the number of articles as a criterion would give equal weight to long and short papers using the same technique or considering the same topic. However, as journal editors have a limited number of pages per issue and a limited number of issues per year, during the evaluation process they are likely to allocate more pages to papers of higher quality, and to shorten those of lower quality. As a result, the number of papers published may not be an adequate indicator of the quality of research.

Another possible source of distortion is the disparity of characters and page size in the different journals. To avoid this effect we expressed all journal pages in terms of American Economic Review equivalents. Although the American Economic Review was not in our sample, we chose this journal format as our basis for two reasons: first, because it had been extensively used in the literature (see for example, CONROY and DUSANSKY, 1995); and, second, because the format of this journal was constant over the time period

⁵ The International Journal of Urban and Regional Research was only available in Econlit from 1996 to 2000, and the Papers of Regional Science was only available in this database from 1995 to 1998.

considered^{6,7}. In the standardization process we took great care to consider any changes in the format of the journals. For this reason, the weights differ over time for four of the journals analysed.⁸

In the rest of the paper the unit of analysis is standardized pages.⁹

3.3. Scope, purpose, topics, techniques and data

One way to identify the territorial scope, purpose, topics, techniques and the rest of the information desired on articles published is to analyse the information contained in the Econlit database. However, the information included is not as thorough as we would have desired, and for this reason we followed the approach of ANSELIN, REY and TALEN, 2000, and classified each published article, after a carefully check, in the different categories.

The variables considered for each paper were (see table 3.2): the scope of the article (regional, urban or both), the purpose of the analysis, the topic considered, the technique applied and the type of data used.

TABLE 3.2

⁶ Two procedures were applied to calculate the number of equivalent pages. The first consisted in multiplying the number of lines per page (on a representative page with no footnotes, figures, equations or other interruptions) by the average number of typed characters per line (an average of three full lines). The second involved using a scanner in conjunction with OCR software and counting the number of characters for this representative page using the Microsoft Word 2000 “word count”. The results, which were quite similar, are available from the authors on request.

⁷ In Kau and Johnson (1983) the Journal of Regional Science was the standard but its format did not remain constant over the whole of the period under consideration.

⁸ The following international journals made changes to their format: Annals of Regional Science (1992/1993 and 1999/2000), International Regional Science Review (1996/1997 and 1998/1999), Papers in Regional Science (1999/2000) and Regional Studies (1999/2000).

⁹ Detailed results by year using articles or non-standardized pages as unit of analysis are available from the authors on request.

The territorial scope of each article was classified as “regional” or “urban”. Articles with both scopes were included in a third intermediate group, named “regional & urban”.

For the second variable, the purpose of the analysis, four categories were considered: the three classical objectives of econometric analysis “policy analysis”, “structural analysis”, “prediction”, and a fourth category named "others", which included other possibilities such as methodological analysis.

As regards topics, fourteen categories involving regional and urban themes of analysis were considered. They are shown in the second column in table 3.2. Although it is possible that one paper may have focused on more than one topic in the list, we only considered one possibility, and tried to identify the emphasis of the author (for example, by looking at the keywords or the Econlit subject classification codes in the paper).

The classification of papers according to the techniques applied was rather more complex, since most papers used more than one of the techniques considered (see the third column in table 3.2). We therefore classified each paper on the basis of the most complex of the techniques applied, the one most frequently used, or the one that had most bearing on the conclusions of the research.

For the type of data used, two different criteria were applied: first, taking into account the time dimension of the data (i.e. “time series”, “cross section” and “panel data”) and second, the nature of data (i.e. “macro data” or “micro data”). For both criteria, there is another possibility: the use of “simulated data”. As different kind of data may be used in one and the same paper, we have assigned here the data used with the most complex of the techniques applied, the one most frequently used, or the one that had most bearing on the conclusions of the research (in concordance with the classification of techniques).

4. Empirical results

In this section, the results of considering the five characteristics mentioned above of published regional and urban research are shown, and will help us to illustrate the debates on the future of this science. In particular, we analyse the publication patterns in regional and urban science, and also, whether there have been differences and similarities in terms of the purpose of this research, the most important topics, techniques and the kind of data used in the analysis.

We hoped that the results would enable us to identify any major differences between regional and urban research, and second, to study whether there have been changes over time. In order to avoid nuisance distortions caused by yearly irregular observations, we split the time period into two subperiods: from 1991 to 1995 and from 1996 to 2000.

4.1. Publication patterns in regional and urban science

First, it should be borne in mind that although the journals analysed focus on regional and urban topics, some may also publish non-regional or non-urban articles. One way of excluding the articles that were irrelevant to our study would be via the subject field in the Econlit database. Indeed, in the Econlit subject classification there is a category for regional and urban analysis (R code). However, the Econlit classification usually reflects the author's vision of his/her own article and there is a limit to the number of subjects that can be indicated; so when an article is published in a regional or urban journal, it may be the case that the R code is not indicated and this space may be assigned another more informative code. For this reason, we started by inspecting each article in the sample and established whether it considered the territory under

analysis from a regional or an urban perspective. The final number of standardized pages included in the analysis can be found in table 4.1. In this table, the total number of published standardized pages including non-regional or non-urban articles can also be found (i.e., the whole data set) .We should note that during the period studied some journals increased the number of volumes (and articles and pages) published per year.¹⁰

TABLE 4.1

A first result from this table is that the articles that consider territory account for more than 80% of all standardized pages. This percentage has remained stable over the two five-years subperiods. This supports the idea that regional and urban science has a normal evolution.

From this table, it can also be seen that some journals devoted more space to territorial analysis than others. For example, RS and IJURR have the lowest proportion of standardized pages on regional and/or urban analysis (69% from 1991 to 1995 and 68% from 1996 to 2000, and 65% and 74%, respectively). Over the decade, this ratio has decreased in US, RS and JRS and has increased in the rest. Among those that have increased their coverage of territorial analysis, IJURR, ARS and IRSR predominate (accounting in turn for 14%, 8% and 6% of the increase over the decade in terms of standardized pages).

It is also possible to analyse whether certain journals have specialized in regional and/or urban studies. With this aim in mind, we computed the proportions of “regional”, “regional & urban” and “urban” articles published. These data are shown in table 4.2.

¹⁰ In Urban Studies the number of volumes published per year rose from 6 to 13, and in Regional Studies from 6 to 9. However, Regional Science and Urban Economics, which increased the number of volumes per year from 4 to 6, now publishes fewer articles than at the beginning of the study. The other six journals published 3 or 4 volumes per year during the ten-year period.

TABLE 4.2

From table 4.2., it seems clear that the group of journals formed by ARS, IRSR and RS are more favourable to articles involving regional analysis than articles considering the urban dimension. In the second group of journals, formed by IJURR, JUE, RSUE and US, “urban” articles predominate. JRS and PRS are somewhere in between, since both dimensions are well represented. In ARS and PRS a substantial proportion of articles are devoted to the mixed category of “regional & urban” analysis (around 10% of all standardized pages in both cases). Looking at time evolution, it is clear that the proportion of “regional” articles increased substantially in ARS and JUE, while the proportion of “urban” ones increased substantially in IJURR, US and JRS.

The average article is some 15 standardized pages in length (see table 4.3). During the second half of the nineties, the length of articles has tended to increase: the average number of standardized pages per article in 1991-1995 was 13.9 for regional and 13.6 for urban articles, while in 1996-2000 it was 15.6 for regional and 15.9 for urban articles. However, for “regional & urban” articles, the number of pages per article fell for ARS, IRSR and JRS. There are large differences between journals: for example, during 1991-1996 the average number of standardized pages in regional articles published in IJURR was around 17, and around 8 in IRSR. The only journal in which the average number of standardized pages per article decreased over the decade in all categories is RS, one of the journals that showed the largest increase in the number of articles published.

TABLE 4.3

4.2. Purpose of the analysis

As HÄGERSTRAND, 1970, 1989, remarks regional science is about people and it tries to solve problems that involve policies, a basic understanding of reality or simply an aim to predict the future. In order to see if the recent evolution of this science has followed this path, we have established four categories for our classification of the purpose of analysis of regional and urban research: “policy analysis”, “structural analysis”, “prediction” and “others” (the last category including mainly methodological articles).

Table 4.4. shows that there are clear differences between “regional” and “urban” articles in terms of purpose of analysis. Although in all sets of articles the main purpose of the analysis was “structural analysis”, more “urban” articles were dedicated to “policy analysis” and fewer to “prediction” than “regional” ones. In fact, in two of the journals under consideration, RSUE and RS, the percentage of standardized pages of “urban” articles devoted to “policy analysis” during both subperiods was the category most represented. In contrast, the percentage of “urban” articles published in IRSR accounted for only 13% in both subperiods, considerably below the average (36% in 1991-1995 and 40% in 1996-2000). Another interesting feature was that 14% of “urban” articles published in PRS from 1996 to 2000 were included in the category “others” (mainly methodological articles) and that the “prediction” purpose was relatively important for RS in the first subperiod and for IRSR in the second (7.8% and 5.4%, as against averages of 1.1% and 0.3%).

Among “regional” articles, a substantial number of methodological articles were not addressed to either “structural” or “policy” analysis or “forecasting” (i.e. methodological analysis). This percentage was relatively high for IRSR, PRS and RSUE during the first subperiod and for IRSR and PRS during the second subperiod. But “forecasting” was also important in IRSR, JRS

and PRS from 1991 and 1995 while from 1996 to 2000 this topic is more important is ORS. Regarding “structural analysis”, it was clearly more prominent in articles published in ARS, IJURR and RS than in the rest for the two subperiods.

TABLE 4.4.

Strictly comparing both time periods shows that “policy analysis” clearly increased in importance, in both “regional” and “urban” articles. An important exception can be found in “regional” articles published in PRS, where the proportion of “policy analysis” articles decreased over the decade (from 17.8% to 13.7%). The “prediction” and the “other” categories decreased in “regional” and “urban” articles. Two exceptions were JRS and PRS, in which methodological analysis increased significantly in both “regional” and “urban” articles.

Generally speaking, “structural” analysis was the more important purpose of the regional and urban research during the last decade, but “policy” analysis increased its relevance during the second part of the decade, specially in urban articles. Nowadays, it seems that regional and urban science is closest to the analysis of the problems of our societies than at the beginning of the decade.

4.3. Topics considered in regional and urban science

As BAILLY and COFFEY, 1994, point out, interdisciplinarity is one of the most important principles in regional science. Nevertheless, there are some topics that receive more attention from scientists than others. This is what we try to analyse in this section: has regional and urban science focused on the analysis of a few topics? Are regional and urban scientists interested in less topics now than at the beginning of the decade?. Table 4.5 shows the four most important

topics of interest in regional and urban research in terms of standardized pages during the two considered subperiods: 1991-1995 and 1996-2000.

TABLE 4.5

For regional articles, the most frequent topics were “economic growth and development”, “firm location”, “sectoral analysis”, and “social and political issues”, while for urban articles, the most commonly analysed topics were “social and political issues”, “housing analysis”, “economic growth and development” and “land use patterns and planning”. So, there were large differences here. The “regional & urban” articles category included topics that had been previously considered as important in both main categories. In regional articles, a decrease in the interest in “sectoral analysis” was also noted. In urban articles, the only change was in the third and fourth positions, where “land use patterns and planning” and “economic growth and development” swapped places.¹¹

We can conclude that regional and urban science has a high level of interdisciplinarity, although the analysis of “Economic growth and development” in regional articles and “Social and political issues” in urban articles have increased its relevance during the decade.

4.4 Are regional and urban scientists applying more complex quantitative techniques?

Some studies have considered whether scientists in general economics or other specialized economic fields are using more complex quantitative

¹¹ Results considering topics were also inspected journal by journal and the data were analysed thoroughly. Nevertheless, we prefer not to present or discuss these data here, due to the volume of additional figures which would not provide information relevant to the analysis. The results can be obtained from the authors upon request.

techniques than in the past. For example, using a sample of ten top general-interest journals, FIGLIO, 1994, reported that between 1960 and 1992 the proportion of articles presenting empirical research increased substantially, due probably to improvements in information technology. In the context of industrial relations, WHITFIELD and STRAUSS, 2000, analysed articles in top journals in this field and found a marked shift from inductive, qualitative and policy-oriented research to deductive, quantitative and discipline-oriented research. These results are similar to those found by AIGINGER et al., 1998, who surveyed the opinions of 114 industrial organization experts on the methods that should be used to analyse industrial markets. The interviewees assessed the importance of research topics and methods in recent years and likely development of these methods in the future; they acknowledged the importance of empirical research and expected an increase in its use over the coming decade.

STRATHAM, 1992, examined the articles published in the *Journal of Regional Science* between 1967 and 1980. In contrast to the results in other fields of economics, the report stated that the share of theoretical articles in the area of regional science had grown considerably.

Table 4.6 shows the share of published articles (in terms of standardized pages) that did not apply any quantitative technique in their analysis in the sets of articles considered. This ratio is around 15% for “regional” articles and around 24% for “urban” articles.

TABLE 4.6

Individual journals present substantial differences that have also changed over time. Comparing the results from 1991 to 1995 with those from 1996 to 2000, the proportion of non-quantitative articles decreased in the “regional” category but remained almost the same in the “urban” category. This reduction

was mainly due to the change in “regional” articles in the IRSR and PRS, while in RS the evolution was the reverse. As regards “urban” articles as well, the proportion of non-quantitative articles in JUE decreased, but increased in IJURR and RS.

As regards the kind of quantitative technique applied, figure 4.1 shows the percentage of standardized pages in which each technique was applied during the period 1991-1995 and figure 4.2 offers the same information for the period 1996-2000. In the first subperiod, the most frequently used quantitative technique was descriptive analysis, especially in regional articles. It was followed by (in descending order) quantitative regressions (20% for regional and 18% urban articles) and general equilibrium techniques (11% and 14% respectively). This figure also shows that econometric techniques (univariate econometric analysis, quantitative and qualitative regressions, multiequational regressions and spatial econometrics) were frequently used for both urban and regional research. Interestingly, regional articles varied more in terms of the number of techniques used than did urban articles. Looking at figure 4.2 and comparing it with figure 4.1, a first result is that non-quantitative articles decreased in the three considered categories. Regarding urban articles, there was a change from non-quantitative analysis in the first part of the decade to descriptive analysis in the second part. It is also interesting to point out that for urban but also for regional articles, computable general equilibrium techniques and qualitative variable models were more used during the second part of the nineties than during the first.¹²

As a conclusion, two findings should be highlighted: first, during the nineties, the application of quantitative techniques increased in “regional” and “urban” research (especially in the latter) and second, that the variety of techniques applied is greater in regional journals than in urban ones.

¹² The results for each journal as regards the techniques considered are not presented or discussed for the same reasons as in our analysis of techniques (see footnote 11).

4.5 What kind of data is used in regional and urban analysis?

In “regional”, “regional & urban” and “urban” articles, “macro” and “micro” “data” were much more frequently used than “simulated” data (see table 4.7). In turn, “simulated” data were much more likely to be used in “urban” and in “regional & urban” articles than in “regional” ones, both in terms of published articles and standardized pages.

TABLE 4.7

The use of “macro” data in “regional” articles was higher than the use of “micro” data (62% versus 29%). In “urban” articles, the proportion was the reverse (39% and 49%, respectively). In the intermediate category the pattern was slightly favourable to “macro” data (47% and 41%).

There was no substantial change between the first part of the decade (1991-1995) and the second part (1996-2000), although a slight increase in the use of “micro” data was found in “urban” articles, while in “regional” and in “regional & urban” articles a slight inverse trend was found. “Simulated data” increased in importance in “regional” and “regional & urban” categories, while “macro” data decreased in all categories.

Data can also be considered in terms of their relation to time. We inspected the use of “cross section” data, “time series” data and “panel” data. Considering the full set of articles, table 4.8 shows an interesting increasing trend in the use of “panel” data, and a relative decrease in the use of “time series” data. The final result is that “panel data” were used three times as much as “time series” data in the period 1996-2000. Analysing the differences between categories, in all cases “cross section data” were the most frequently used. Nevertheless, as in “regional” articles, it may be that in the near future

“cross section” data will be replaced by “panel data” in “urban” articles. Interestingly, “panel data” and “time series” data were applied much more in regional articles than in urban ones.

TABLE 4.8

5. Conclusions

Regional science is a controversial subject. Several authors have pointed out several problems that this science faces, such as focusing upon the notion of the “space-economy” or its trend to concentrate the analysis on only a few selected topics, losing its crucial character of interdisciplinarity. Regional science has also been described as a paradigm of technocracy, a discipline that uses highly complicated techniques and produces results that are only of interest to scientists. In this paper we have analysed the most usual purposes, topics, methods and data used in regional and urban research through a sample of nine regional and urban journals from 1991 to 2000 and compared the two subperiods 1991-1995 and 1996-2000 with the aim of shedding light on the current state of the art, and to answer the former critiques.

The results have shown that the number of published articles in regional and urban journals has risen considerably (by more than 30%) over the ten-year period under analysis, even taking into account changes in the journals’ format. The average number of pages per article (or the average number of standardized pages) has also increased. A second conclusion is that there were clear differences between journals in terms of the territorial scope of the articles. ARS, IRSR, PRS and RS are clearly regional journals while JUE, US, RSUE and IJURR are more concerned with urban analysis. JRS is in between.

The predominant purpose of analysis for regional and urban articles was structural analysis, although a relatively high proportion of articles were devoted

to policy analysis and a lower proportion of articles to prediction. Policy analysis has clearly increased in importance and this can be interpreted as a signal that regional science is today more about people than ten years ago.

The most frequent topics of “regional” articles were “economic growth and development”, “firm location”, “methodological issues” and “sectoral analysis”, while in “urban” articles, the most frequently analysed topics were “social and political issues”, “housing”, “economic growth and development” and “land planning”. The analysis of the two different sub-periods has shown that in regional research “economic growth and development” and “firm location” increased most during the decade while in urban articles the classification remained fairly stable, although there was a generalized increase of interest in “economic growth and development”. Then, we can say that regional and urban science has a high level of interdisciplinarity, although both regional and urban research have increased their trend to concentrate the analysis on only a few selected topics, “economic growth and development”, and “social and political issues”, respectively.

As regards the techniques used, the application of quantitative techniques has increased substantially in regional and urban research and a greater variety of techniques were used in regional “articles” than in “urban” ones. Macro and micro data were used considerably more than simulated data in regional and urban articles. Cross-section data also predominated over time series or panel data, although this last category is increasing rapidly, especially in “regional” articles.

Summarizing, certain differences between regional and urban research have persisted in the last decade. During the nineties, some of these differences have been reduced (for example, the use of quantitative techniques) but others, such as the topics addressed, are still noticeable. The disciplines of regional science and urban economics are very much alive. More topics are being considered, new techniques are being applied, and richer data sets are being

analysed but, more importantly, the analysis is becoming increasingly oriented towards policy analysis. There is a clear will to help society to deal with regional and urban problems. The future is promising.

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TABLES AND FIGURES

Table 3.1. Top international regional and urban journals included in the analysis

Annals of Regional Science (ARS)	Int. Journal of Urban and Regional Research (IJURR)
Int. Regional Science Review (IRSR)	Journal of Regional Science (JRS)
Journal of Urban Economics (JUE)	Papers in Regional Science (PRS)
Regional Science and Urban Economics (RSUE)	Regional Studies (RS)
Urban Studies (US)	

Table 3.2. List of categories for each of the considered variables

Scope	Topics	Techniques	Type of Data 1
Regional	Methodological articles	Non quantitative	Time Series
Regional & Urban	Natural resources management & environment	Descriptive analysis	Cross Section
Urban	Human resources: Demography	Multivariate analysis	Panel Data
	Human resources: Labour market	Univariate econometric analysis	Simulated data
	Economic growth and development	Uniequational Regression models: quantitative variable	
	Housing analysis	Uniequational Regression models: qualitative variable	
	Land use patterns and planning	Multiequational Regression models	
Purpose			
Policy analysis	Transportation	Spatial econometrics	Type of Data 2
Structural analysis	Sectoral analysis	Optimisation methods	Micro data
Prediction	Firm location	Geographical Information systems	Macro data
Other	Social and political issues	Cost-benefit analysis, valuation, project evaluation	Simulated data
	Monetary and financial issues	Demographic analysis	
	Trade	Computable General Equilibrium and Social accounting matrix	
	Other topics	Input output analysis	
		Other methods	

**Table 4.1. Description of the sample of regional and urban articles and the total sample
(number of standardized pages)**

Journals	Regional		Regional & Urban		Urban		Total	
	1991-1995	1996-2000	1991-1995	1996-2000	1991-1995	1996-2000	1991-1995	1996-2000
ARS	695.7	1470.9	310.5	151.5	155.5	221.1	1309	1913
LJURR	462.8	534.6	208.6	161	1143.7	1762.4	2812	3331
IRSR	509	599.1	58	56.8	150	139.2	855	895
JRS	807.1	783.4	81.3	112.3	525	967.4	1792	2379
JUE	114	387.2	101.1	158.7	2113.3	2309.8	2484	3014
PRS	676.7	769.4	191.3	158.5	449.4	480.2	1584	1661
RSUE	448.8	456.7	92.4	35	1463.2	1502.9	2408	2334
RS	2324.4	2873.1	260	235.5	378.9	382.6	4271	5116
US	1495.9	1015.8	645	501.4	3390.2	6322.2	5990	9074
TOTAL	7534.4	8889.9	1947.7	1570.6	9769	14087.9	23502	29720

**4.2. Percentage of standardized pages in each category:
Regional, Regional & Urban and/or Urban**

Journals	1991-1995			1996-2000		
	Regional	Regional & Urban	Urban	Regional	Regional & Urban	Urban
ARS	59.9%	26.7%	13.4%	79.8%	8.2%	12.0%
LJURR	25.5%	11.5%	63.0%	21.7%	6.6%	71.7%
IRSR	71.0%	8.1%	20.9%	75.4%	7.1%	17.5%
JRS	57.1%	5.8%	37.2%	42.0%	6.0%	51.9%
JUE	4.9%	4.3%	90.8%	13.6%	5.6%	80.9%
PRS	51.4%	14.5%	34.1%	54.6%	11.2%	34.1%
RSUE	22.4%	4.6%	73.0%	22.9%	1.8%	75.3%
RS	78.4%	8.8%	12.8%	82.3%	6.7%	11.0%
US	27.0%	11.7%	61.3%	13.0%	6.4%	80.6%
TOTAL	39.1%	10.1%	50.7%	36.2%	6.4%	57.4%

Table 4.3. Average number of standardized pages per article

Journals	Regional		Regional & Urban		Urban	
	1991-1995	1996-2000	1991-1995	1996-2000	1991-1995	1996-2000
ARS	11.79	14.01	12.42	11.66	11.10	13.01
LJURR	17.14	17.82	16.04	17.89	16.34	16.63
IRSR	8.34	14.26	11.59	11.35	8.82	11.60
JRS	13.68	16.67	16.26	16.05	12.50	15.35
JUE	11.39	12.91	12.64	14.43	11.42	13.83
PRS	12.30	15.70	11.95	15.83	13.21	16.56
RSUE	12.13	15.75	11.55	11.66	13.06	14.45
RS	16.84	16.14	18.56	18.11	18.04	17.39
US	15.75	16.93	15.36	16.17	15.20	17.32
TOTAL	13.93	15.60	14.32	15.40	13.61	15.92

Table 4.4. Percentage of standardized pages for each category of “purpose”

Regional	1991-1995					1996-2000				
	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL
ARS	29.3%	70.7%	0.0%	0.0%	100%	27.2%	69.9%	2.9%	0.0%	100%
IJURR	11.9%	79.5%	0.0%	8.6%	100%	27.0%	73.0%	0.0%	0.0%	100%
IRSR	2.4%	54.0%	10.4%	33.3%	100%	9.5%	69.4%	9.2%	11.9%	100%
JRS	17.7%	67.8%	14.5%	0.0%	100%	36.8%	54.3%	2.5%	6.3%	100%
JUE	34.8%	61.2%	0.0%	3.9%	100%	40.3%	54.2%	0.0%	5.5%	100%
PRS	17.8%	59.5%	6.1%	16.5%	100%	13.7%	58.1%	10.6%	17.6%	100%
RSUE	38.4%	45.0%	0.0%	16.6%	100%	43.4%	55.1%	0.0%	1.6%	100%
RS	24.1%	73.2%	1.1%	1.7%	100%	24.8%	73.1%	2.1%	0.0%	100%
US	32.6%	64.3%	0.9%	2.2%	100%	33.2%	66.8%	0.0%	0.0%	100%
TOTAL	23.8%	66.6%	3.3%	6.3%	100%	27.0%	66.9%	2.9%	3.2%	100%

Regional & Urban	1991-1995					1996-2000				
	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL
ARS	15.1%	84.9%	0.0%	0.0%	100%	20.0%	69.6%	10.5%	0.0%	100%
IJURR	47.0%	53.0%	0.0%	0.0%	100%	32.5%	63.9%	0.0%	3.6%	100%
IRSR	50.0%	46.7%	0.0%	3.3%	100%	0.0%	61.7%	0.0%	38.3%	100%
JRS	0.0%	100.0%	0.0%	0.0%	100%	0.0%	87.2%	0.0%	12.8%	100%
JUE	48.1%	51.9%	0.0%	0.0%	100%	51.6%	48.4%	0.0%	0.0%	100%
PRS	45.9%	8.6%	0.0%	45.5%	100%	41.3%	25.8%	8.5%	24.4%	100%
RSUE	63.6%	17.9%	0.0%	18.6%	100%	100.0%	0.0%	0.0%	0.0%	100%
RS	51.7%	48.3%	0.0%	0.0%	100%	25.0%	75.0%	0.0%	0.0%	100%
US	15.5%	82.9%	0.0%	1.6%	100%	52.5%	47.5%	0.0%	0.0%	100%
TOTAL	31.0%	63.0%	0.0%	6.0%	100%	37.4%	55.6%	1.9%	5.1%	100%

Urban	1991-1995					1996-2000				
	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL	Policy Analysis	Structural Analysis	Prediction	Others	TOTAL
ARS	24.5%	75.5%	0.0%	0.0%	100%	40.4%	59.6%	0.0%	0.0%	100%
IJURR	25.3%	73.9%	0.0%	0.8%	100%	34.2%	57.1%	1.1%	7.6%	100%
IRSR	12.6%	76.9%	0.0%	10.5%	100%	13.8%	75.4%	5.4%	5.4%	100%
JRS	13.2%	82.6%	1.7%	2.5%	100%	25.6%	63.0%	0.0%	11.4%	100%
JUE	33.2%	60.2%	1.0%	5.5%	100%	44.7%	49.6%	0.0%	5.7%	100%
PRS	55.8%	37.9%	0.0%	6.3%	100%	24.0%	62.0%	0.0%	14.0%	100%
RSUE	61.2%	28.6%	0.0%	10.2%	100%	60.8%	36.6%	0.0%	2.6%	100%
RS	44.3%	43.2%	7.8%	4.7%	100%	53.1%	46.9%	0.0%	0.0%	100%
US	32.5%	66.1%	1.4%	0.0%	100%	37.6%	62.2%	0.2%	0.0%	100%
TOTAL	36.1%	59.1%	1.1%	3.6%	100%	39.8%	56.5%	0.3%	3.5%	100%

**Table 4.5. Most frequent topics in the sample of articles
(proportion of standardized pages where the topic is analysed)**

Regional	1991-1995	1996-2000
Topic 1	Economic growth and development 18.5%	Economic growth and development 25.5%
Topic 2	Sectoral analysis 14.4%	Firm location 14.5%
Topic 3	Social and political issues 11.4%	Social and political issues 12.9%
Topic 4	Firm location 11%	Sectoral analysis 10.5%

Regional & Urban	1991-1995	1996-2000
Topic 1	Social and political issues 15.7%	Economic growth and development 16.8%
Topic 2	Human resources: Demography 12.9%	Human resources: Labour market 15.6%
Topic 3	Economic growth and development 11.7%	Social and political issues 14.2%
Topic 4	Firm location 10.5%	Firm location 10.3%

Urban	1991-1995	1996-2000
Topic 1	Social and political issues 21.3%	Social and political issues 24.8%
Topic 2	Housing analysis 18.2%	Housing analysis 19.9%
Topic 3	Land use patterns and planning 13.2%	Economic growth and development 9.8%
Topic 4	Economic growth and development 10.4%	Land use patterns and planning 7.7%

Table 4.6. Proportion of non-quantitative articles in terms of standardized pages

	Regional non-quantitative		Regional & Urban non-quantitative		Urban non-quantitative	
	1991-1995	1996-2000	1991-1995	1996-2000	1991-1995	1996-2000
ARS	9.00%	6.90%	12.60%	30.90%	4.20%	12.00%
LJURR	34.80%	38.50%	62.80%	36.70%	47.00%	55.20%
IRSR	48.00%	22.40%	53.30%	38.30%	52.10%	39.80%
JRS	3.70%	0.00%	0.00%	0.00%	0.40%	3.40%
JUE	3.90%	11.90%	11.40%	0.00%	27.80%	5.60%
PRS	19.80%	9.40%	9.80%	9.90%	8.30%	5.10%
RSUE	1.20%	0.00%	0.00%	0.00%	0.30%	0.80%
RS	8.60%	18.30%	14.30%	7.60%	22.00%	36.30%
US	23.20%	19.90%	27.10%	33.90%	32.00%	29.50%
TOTAL	15.80%	14.50%	22.80%	21.10%	24.80%	23.10%

Table 4.7. Percentage of standardized pages where different kinds of data are used

1991-1995	Macro data	Micro data	Simulated	Total
Regional	62.5%	30.4%	7.1%	100.0%
Regional & Urban	48.6%	42.2%	9.2%	100.0%
Urban	41.8%	46.2%	12.0%	100.0%
Total	51.5%	38.9%	9.6%	100.0%

1996-2000	Macro data	Micro data	Simulated	Total
Regional	62.0%	27.1%	10.8%	100.0%
Regional & Urban	44.8%	38.7%	16.6%	100.0%
Urban	37.8%	51.7%	10.5%	100.0%
Total	47.7%	41.4%	11.0%	100.0%

Table 4.8. Percentage of standardized pages where different kinds of data are used

1991-1995	Time Series	Cross Section	Panel Data	Simulated	Total
Regional	14.4%	43.9%	34.5%	7.1%	100.0%
Regional & Urban	12.7%	55.1%	23.0%	9.2%	100.0%
Urban	14.6%	54.6%	18.8%	12.0%	100.0%
Total	14.3%	50.0%	26.1%	9.6%	100.0%

1996-2000	Time Series	Cross Section	Panel Data	Simulated	Total
Regional	11.6%	42.7%	34.9%	10.8%	100.0%
Regional & Urban	12.1%	49.0%	22.3%	16.6%	100.0%
Urban	8.8%	50.3%	30.5%	10.5%	100.0%
Total	10.1%	47.2%	31.7%	11.0%	100.0%

Figure 4.1. Percentage of standardized pages according to technique (1991-1995).

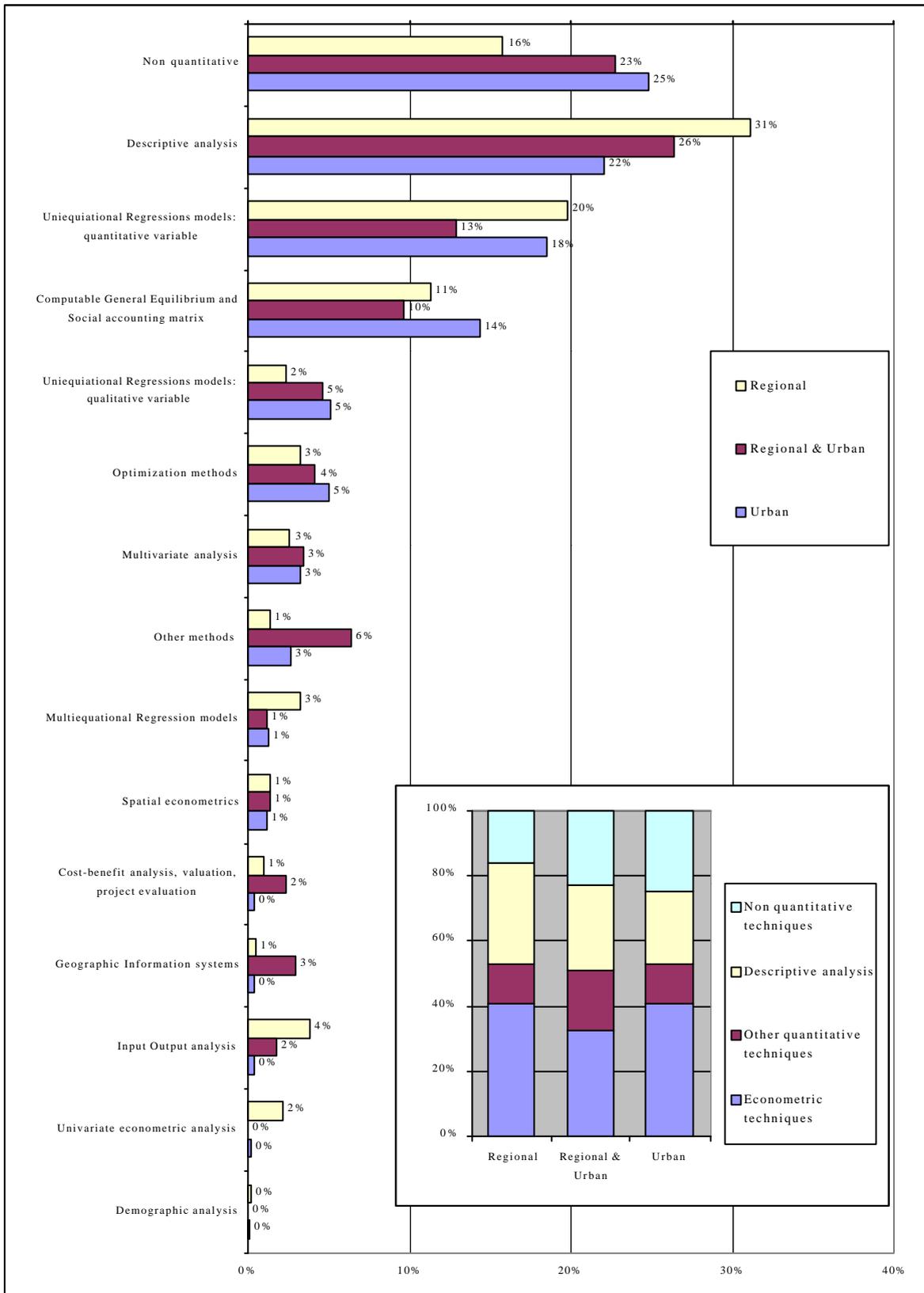


Figure 4.2. Percentage of standardized pages according to technique (1996-2000).

