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A Comparison of the Undergraduate Economics Major in Europe and in the United States

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A Comparison of the Undergraduate Economics Major in Europe and in the United States[†]

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ABSTRACT

In this work we compare the undergraduate Economics majors and their underlying structure in the top-ranked Economics departments of Europe and the United States. We identify the fundamental courses usually included in an Economics major by means of a cluster analysis. We further distinguish between those courses which are required and those which are usually offered as electives. We find striking differences between the USA and Europe, especially regarding the nature of the main electives offered. The insights from this comparative study could be especially useful for the ongoing restructuring of undergraduate Economics majors in some European countries caused by the Bologna Process.

JEL Code: A12, A22

Key words: Undergraduate Economics Major, Bologna Process, Cluster Analysis, United States, Europe.

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INTRODUCTION

In this work we compare the undergraduate Economics majors and their underlying structure in the top-ranked Economics departments of Europe and the United States of America. We also identify the main courses that are usually included in an undergraduate Economics major. The insights from this comparative study could be especially useful for the ongoing restructuring of undergraduate Economics majors in some European countries.

North American universities typically occupy the top positions in worldwide rankings of higher education institutions. This trend is even more pronounced in the ranking of Economics departments, where USA institutions can occupy as much as eighteen positions in the top twenty (Kalaitzidakis et al. 2003). In this specific ranking, we must look at the top forty departments to find six European institutions.

European policymakers already recognize the competitiveness gap between the two regions regarding higher education and scientific research. Narrowing the gap has been established as a top priority by European governments. Specific steps have been taken with this purpose in mind, namely in what is called the Bologna Process. This Process results from the intention of creating a single European Higher Education Area, mentioned in the Sorbonne Declaration signed in 1998 and reinforced in the Bologna Declaration, signed in 1999 by twenty-nine European ministers of Education. Since then, the number of signatory countries has increased to forty-five so it is clearly not restricted to the European Union borders. The Bologna Process (1999) has been through several changes since it began, including periods both of widening and of deepening with the meetings in Prague (2001), Berlin (2003) and Bergen (2005) as analyzed in (Wächter 2004). This Process has several strong implications, for instance, at the level of student exchange programs, comparability of degrees between countries, financing of higher education systems and even at the level of national sovereignty, because ministers responsible for higher education give up part of their autonomy by compromising with an international treaty as documented in (Tauch 2004) and (Huisman and Wende 2004).

Concerns for the competitiveness gap of higher education institutions and other related matters such as financing and institutional reform are well reflected in some studies, with the most recent being the one by (Jacobs and Ploeg 2005). Several studies have been published reporting the measures taken to adapt national higher education systems to the Bologna Process in, for example, France (Malan 2004), Austria (Pechar and Pellert 2004) and Flanders and the

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Netherlands (Dittrich et al. 2004). The implementation of a successful reform of European higher education institutions can give an important contribution to the achievement of the Lisbon Agenda's goals. The Lisbon Agenda is a strategic development plan in the economic, social and environmental fields, which has as its main goal to make Europe the most dynamic knowledge economy in the world by 2010, spurring innovation, productivity and economic growth.

Our study will not handle general competitiveness problems or higher education reforms. We aim primarily to provide information that is important for the reform of Economics education, especially in European countries. Some researchers have focused on the content of specific courses within the Economics major as in (Becker 2000) and (Gärtner 2001), although the latter also studies the duration and structure of degrees in an introductory way. We choose to focus on the specific topic of undergraduate Economics majors' study plan, comparing the leading Economics institutions in Europe and in the United States. The structure of the Economics major is summarily described in (Siegfried et al. 1991) for the USA and in (Gärtner 2001) for Europe, but no study that we know of compares the majors between the two regions. Besides this comparison, we also identify the main courses that are usually included in an undergraduate Economics major and test our empirical findings by means of a cluster analysis.

This article is divided in five sections. The second section explains the methodology we used. The third section presents a comparison between the Economics major in USA and in Europe in terms of length and structure and the fourth section uses cluster analysis to infer some similarities and differences about the two regions. The fifth section concludes.

METHODOLOGY

Our study's goal is twofold. On one hand we aim to identify the main courses that should be included in an undergraduate Economics major. On the other hand we mean to compare Europe with the United States of America in this respect.

To meet these goals we choose a benchmarking approach, instead of drawing random samples from the existing universities in these two regions. More than a description of a random sample of Economics majors we wanted to investigate course structure in the leading and most prestigious institutions, so that our results could provide guidelines for the undergoing restructuring process in Europe. Therefore, we have to establish some quality criterion for

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selecting the institutions that will provide the basis for our analysis. As far as our knowledge goes, there is no worldwide comparative assessment of teaching quality that would allow us to rank universities, forcing us to consider alternative criteria. University rankings are commonly based on the publication volume and on the impact of their faculty's research in peer-reviewed scientific journals. These are usually accepted as good proxies for assessing and ranking the teaching quality of these institutions. We use a ranking of Economics departments instead of a general ranking of universities due to the specific nature of our study. We follow the Economics departments' ranking by (Kalaitzidakis et al. 2003), which is one of the most recent rankings. The ranking is constructed based on the articles published and cited on the top thirty scientific Economics journals. The journal ranking itself is also updated by (Kalaitzidakis et al. 2003) based on article citations to avoid biases that could be introduced by using an outdated journal ranking.

After selecting the twenty highest ranking universities in each region (*vide* Appendix I, Table A1), we analyzed the study plans of their undergraduate Economics majors for the school year of 2004-05.[1] The data was collected through the degree description in university websites. A typology of one hundred and eighteen courses was created to accommodate all possible choices given to the students (*vide* Appendix I – Table A2). Special attention was given to sub-fields of Economics, which were disaggregated into sixty-two possible types. We wanted to be as exhaustive as possible regarding courses in Economics. Related scientific fields were given a lower level of disaggregation: management with twenty two types, social sciences with ten types, quantitative methods with six types, humanities with six types, law with five types and skills with two types. All other possibilities were accounted for in a more aggregate manner with single classes for computer science, engineering, foreign languages, natural sciences and physical education. For each of the two regions we collected information on three key dimensions: the existence of the course, its required or optional nature and the number of semesters required.[2]

From the data collected, we constructed four variables for each region: average percentage of universities which offer the course, average percentage of universities which require the course, average number of required semesters in the universities which require the course and average number of required semesters considering all universities. These variables were used for a cluster analysis, where courses were grouped into homogeneous classes according to the data to ascertain which essential courses make up an Economics major nowadays. We apply hierarchical aggregation procedures based on the Euclidean distance between groups. Using SPSS, we perform not only a global cluster analysis, but also partial cluster analysis for each region and each dimension to fully explore the differences between them.

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UNDERGRADUATE ECONOMICS MAJORS IN THE USA AND IN EUROPE

In this section we will be focusing on the structure of the undergraduate Economics majors in Europe and in the USA. It is important, however, to stress a significant difference between regions in the structure of higher education degrees. In the USA, a bachelor degree has three components: the university or college requirements, the major and the minor. University/college requirements usually consist of courses that have the objective of broadening the students' knowledge on other fields of study besides the one they will be majoring in. Such requirements commonly include writing courses, foreign language courses, courses intended to increase their knowledge of American society, culture or institutions, and courses which endow them with a liberal education on such different fields as arts, literature and humanities, natural and physical sciences and quantitative methods. University requirements typically take at least one year to fulfill. The major is the field of study they choose to specialize in. The largest part of a students' time is spent fulfilling the major requirements. Finally, the minor is a set of at least six courses on a different field. European degrees are generally more focused on the subject field of specialization the students choose at the beginning and, although they may include courses from other fields, their structure is not divided as in the USA.

The length of North American degrees is usually four years. Fulfilling the major requirements should take up to three years. In Europe, if we consider the current forty-five signatory countries of the Bologna Process, only 44% of them have three-year degrees. However, if we consider only the original signatory countries of the Bologna Declaration in 1999, the number rises to 62%. If we further restrict our analysis to the twenty top-ranked European institutions the proportion increases to 67%. Following the Bologna recommendations of comparability some European countries, like Belgium and Portugal, have already decided to shorten their Economics degrees to three years. Therefore, we believe it is more sensible to compare the European degrees with the North-American major.

CLUSTER ANALYSIS

In the following section we ran a global cluster analysis for the complete data set as well as partial cluster analyses for each region and each dimension considered (requirement and offering levels and requirement length). The variables used for each region are: average percentage of universities which offer the course, average percentage of universities which

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require the course, average number of required semesters in the universities which require the course and average number of required semesters considering all universities.

GLOBAL CLUSTER ANALYSIS

The distance coefficients between the clusters created point to an optimal number of only two clusters, because we find the biggest increase in the distance coefficients, both in difference and in proportion, between two and three clusters.

The cluster procedure returns two very different groups of observations (courses) both in number and in their characteristics. The six following courses are grouped in cluster 2: Introduction to Economics, Macroeconomics, Microeconomics, Econometrics, Mathematics and Statistics. We call these the *core courses*, because these are the essential courses in any undergraduate Economics major, the basic branches of Economics (Macroeconomics, Microeconomics and Introduction to Economics) and instrumental Quantitative Methods courses (Mathematics, Statistics and Econometrics).

All the other remaining one hundred and twelve courses are left in cluster 1. Table 1 presents the basic descriptive statistics for these two clusters.

Table 1

Descriptive statistics for the global cluster analysis

		N	Mean	Std. Deviation	Minimum	Maximum
Universities which offer the course (%) - Europe	1	112	.29422	.261618	.000	1.000
	2	6	.91667	.157056	.600	1.000
	Total	118	.32587	.291284	.000	1.000
Universities which offer the course (%) - USA	1	112	.32679	.320116	.000	1.000
	2	6	1.00000	.000000	1.000	1.000
	Total	118	.36102	.345368	.000	1.000
Universities which require the course (%) - Europe	1	112	.09107	.122698	.000	.500
	2	6	.84167	.177247	.550	1.000
	Total	118	.12924	.207480	.000	1.000

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		N	Mean	Std. Deviation	Minimum	Maximum
Universities which require the course (%) – USA	1	112	.00893	.036276	.000	.250
	2	6	.90000	.173205	.550	1.000
	Total	118	.05424	.202925	.000	1.000
Average number of required semesters in the universities which require the course - Europe	1	112	.80255	.937127	.000	7.000
	2	6	2.19200	.393997	1.636	2.750
	Total	118	.87320	.966320	.000	7.000
Average number of required semesters in the universities which require the course – USA	1	112	.11786	.378288	.000	2.000
	2	6	1.70483	.444127	1.105	2.150
	Total	118	.19855	.516506	.000	2.150
Average number of required semesters considering all universities – Europe	1	112	.13170	.197506	.000	.900
	2	6	1.90000	.687750	.900	2.750
	Total	118	.22161	.457627	.000	2.750
Average number of required semesters considering all universities – USA	1	112	.01027	.040901	.000	.300
	2	6	1.57500	.588005	.650	2.150
	Total	118	.08983	.368153	.000	2.150

Cluster 2 is characterized by much higher average percentages of universities which offer or require its courses and a much higher average number of required semesters.

COMPARISON OF EUROPE AND THE USA

In the next two sections we perform separate cluster analyzes for Europe and the USA. This will enable us to identify the specificities of each case. The analysis of the distance coefficients for Europe points to an optimal number of four clusters, instead of the two groups indicated by the global clustering. For the USA the optimal number of clusters remains two. We focus on the grouping of courses in two clusters because this was the optimal number for the global analysis, but we also look at what the grouping would look like if we chose to set the number of groups to four.

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CLUSTER ANALYSIS FOR EUROPE

If we cluster the courses up to two groups in the data for Europe we get a group with thirteen observations (cluster 2) and another with the remaining one hundred and five (cluster 1). The thirteen courses in cluster 2 are the six *core courses*, three sub-fields of Economics (Industrial Organization, International Trade and Public Economics), three sub-fields of management (Accounting, Business Management and Corporate Finance) and one related social science (Economic History). This result shows the importance that courses in management have in European Economics majors.

Cluster 2 clearly has higher average percentages of universities offering the courses or requiring them and a higher average number of required semesters (Table 2).

Table 2

Descriptive statistics for the cluster analysis for Europe

		N	Mean	Std. Deviation	Minimum	Maximum
Universities which offer the course (%)-Europe	1	105	.25527	.218900	.000	1.000
	2	13	.89615	.126592	.600	1.000
	Total	118	.32587	.291284	.000	1.000
Universities which require the course (%) - Europe	1	105	.07095	.096022	.000	.500
	2	13	.60000	.264575	.550	1.000
	Total	118	.12924	.207480	.000	1.000
Average number of required semesters in the universities which require the course – Europe	1	105	.74945	.942264	.000	7.000
	2	13	1.87277	.439431	1.636	2.750
	Total	118	.87320	.966320	.000	7.000
Average number of required semesters considering all universities – Europe	1	105	.09857	.149592	.000	.900
	2	13	1.21538	.803478	.900	2.750
	Total	118	.22161	.457627	.000	2.750

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If we increase the number of groups to four, the previous cluster 2 breaks up with Macroeconomics, Microeconomics, Econometrics, Mathematics, Statistics in one group and the remaining eight courses in the other. The former has the highest average levels in all variables except the average number of required semesters in universities which require the course. Finally, the Seminar course (which is a course with variable applied themes) breaks up from cluster 1 to form an individual class.[3]

CLUSTER ANALYSIS FOR THE USA

When we cluster the courses up to two groups in the USA data we get exactly the same groups obtained for the global analysis, with the six *core courses* in cluster 2 and the remaining courses in cluster 1. The descriptive statistics for these two groups were already presented in Table 1.

It is worthwhile looking at what the grouping would look like if we had set the number of clusters to four in the USA and compare it to the result of Europe. One result would be a break-up of the *core courses* group with Introduction to Economics, Microeconomics, Macroeconomics and Mathematics in cluster 3 and Statistics and Econometrics in cluster 4. Cluster 3 has higher levels of course requirement and duration requirement with values approaching respectively 100% and two semesters. These values are lower in cluster 4 with an average of 75% of universities requiring these courses and around one semester of duration requirement (see Table 3).

Table 3

Descriptive statistics for the partial cluster analysis for the USA

		N	Mean	Std. Deviation	Minimum	Maximum
Universities which offer the course (%) - USA	1	105	.28714	.289066	.000	1.000
	2	7	.92143	.085912	.750	1.000
	3	4	1.00000	.000000	1.000	1.000
	4	2	1.00000	.000000	1.000	1.000
	Total	118	.36102	.345368	.000	1.000
Universities which require the course (%) - USA	1	105	.00429	.026956	.000	.250
	2	7	.07857	.075593	.050	.250
	3	4	.97500	.028868	.950	1.000

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		N	Mean	Std. Deviation	Minimum	Maximum
	4	2	.75000	.282843	.550	.950
	Total	118	.05424	.202925	.000	1.000
Average number of required	1	105	.04762	.254987	.000	2.000
semesters in the universities which	2	7	1.17143	.372891	1.000	2.000
require the course - USA	3	4	1.98550	.112536	1.895	2.150
	4	2	1.14350	.054447	1.105	1.182
	Total	118	.19855	.516506	.000	2.150
Average number of required	1	105	.00476	.028185	.000	.250
semesters considering all	2	7	.09286	.093223	.050	.300
universities – USA	3	4	1.93750	.154785	1.800	2.150
	4	2	.85000	.282843	.650	1.050
	Total	118	.08983	.368153	.000	2.150

The second result from the increase in the number of clusters is the appearance of seven new courses in cluster 2, including three sub-fields of Economics (International Trade, International Finance and Labor Economics), three applied courses within Economics (Seminar, Applied Economics and Thesis) and a related social science (Economic History). This group has very high offering levels and very low requirement levels. This result demonstrates that electives in USA majors are mainly concerned with giving *breadth* to the students' knowledge, through the offering of several courses in sub-fields of Economics, and providing *depth* to their research capabilities, trough the offering of applied courses and seminars. These findings are consistent with the recommendations made by (Siegfried et al. 1991).

CLUSTER ANALYSIS FOR THE REQUIRED COURSES

After having delved into the regional differences, we now look into each dimension selected in our study. We start by performing and analyzing a partial cluster analysis on the

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requirement nature of the courses in both regions. The result is similar to the global cluster analysis. Two is the optimal number of clusters and the *core courses* stand out in cluster 2, while all other courses are left in cluster 1. As can be seen from Table 4, cluster 2 has higher requirement levels in both regions. Table 4 lists those courses with a requirement level above 30% enabling us to look more closely into the data to explain the clustering obtained.

Table 4

Course requirements[4]

Scientific Field	Course	Universities which require the course (%)	
		Europe	USA
Core courses			
Economics	Macroeconomics	100.0%	100.0%
Economics	Microeconomics	100.0%	100.0%
Quantitative Methods	Mathematics	95.0%	95.0%
Quantitative Methods	Statistics	80.0%	95.0%
Quantitative Methods	Econometrics	75.0%	55.0%
Economics	Introduction to Economics	55.0%	95.0%
Other required courses			
Management	Business Management	50.0%	0.0%
Social Sciences	Economic History	45.0%	5.0%
Management	Accounting (Financial Accounting / Cost Accounting)	45.0%	0.0%
Economics	Thesis	40.0%	25.0%
Economics	Applied Economics	40.0%	5.0%
Economics	International Trade	35.0%	5.0%
Economics	Industrial Organization	35.0%	0.0%
Economics	Public Economics	35.0%	0.0%
Computer Science	Computer Science	30.0%	5.0%
Economics	Economic Policy	30.0%	0.0%
Economics	Economics of Information and Uncertainty	30.0%	0.0%
Economics	Game Theory	30.0%	0.0%
Law	Introduction to Law	30.0%	0.0%
Management	Corporate Finance	30.0%	0.0%

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The *core courses* are required in the majority of the universities analyzed in either region. In the USA we found no other courses with a requirement level above 25%, rendering the USA majors' structure quite flexible and with easily identifiable fundamental courses. The majors in Europe are more rigid, with a greater number of required courses.

Table 4 includes instrumental Economics courses (Thesis and Applied Economics), sub-fields of Economics (International Trade, Industrial Organization, Public Economics, Economic Policy, Economics of Information and Uncertainty and Game Theory) and also courses from other scientific fields, namely management (Business Management, Accounting and Corporate Finance), social sciences (Economic History), law (Introduction to Law) and computer science. The inclusion of management, law and computer science courses in Economics majors may reflect a strategy to provide the students with specific skills in related fields with higher employability, in a context where economists compete with business graduates in firms, and also with a perceived decline in the demand for Economics courses.[5]

Clearly, there are differences in the course structure design in Europe and in the USA. They are not entirely explained by the existence of previous university requirements in the USA institutions, which are composed of wider scientific areas, like humanities, natural sciences or foreign languages, and are not focused on the above mentioned scientific fields striking the difference between both regions' majors.

CLUSTER ANALYSIS FOR THE OFFERED COURSES

In this section we perform and analyze a partial cluster analysis on the offering level of the courses in both regions. The result here is clearly different from the previous section. The optimal number of clusters to be formed is still two, but the number of courses included in the group which stands out with the highest average offering levels is much higher. Still we can point out most of them by looking at the twenty-three courses included in cluster 1. They are the six *core courses* plus eleven sub-fields of Economics (Money and Banking, Development Economics, Environmental Economics, Financial Economics, Game Theory, History of Economic Thought, Industrial Organization, International Finance, International Trade, Labor Economics, Public Economics), two sub-fields of management (Accounting and Corporate Finance), two applied Economics courses (Applied Economics and Thesis), one related social science (Economic History) and computer science.

The main courses offered as electives in an undergraduate Economics major deal with specific sub-fields of Economics. This feature is more striking in the USA than in Europe, where

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other scientific fields stand out as important electives as well, as can be seen in Table 5, which lists the most offered courses in an Economics major in Europe and in the USA, grouped in classes according to the relative importance they present in each region.

Table 5

Offered courses[6]

Group 1 - Courses offered by more than 75% of the universities in both regions					
Macroeconomics	Microeconomics	Mathematics	Industrial Organization	Statistics	Econometrics
International Trade	Public Economics	Development Economics	International Finance	Financial Economics	Money and Banking
Group 2 - Courses offered by more than 75% of the universities in Europe and between 50% and 75% in the USA					
Corporate Finance			Accounting		
Group 3 - Courses offered by more than 75% of the universities in the USA and between 50% and 75% in Europe					
Introduction to Economics	Applied Economics	Environmental Economics	Labor Economics		
Game Theory	Thesis	Economic History			
Group 4 – Courses offered by more than 75% of the universities in Europe and less than 50% in the USA					
Business Management					
Group 5 – Courses offered by more than 75% of the universities in the USA and less than 50% in Europe					
Transition Economics	Public Choice	Public Finance	Seminar		
Law and Economics	Health Economics	Natural Resource Economics			
Group 6 – Courses offered by more than 50% and less than 75% of the universities in both regions					
Economic Policy					
Group 7 – Courses offered by more than 50% and less than 75% in Europe and less than 50% in the USA					
Computer Science	History of Economic Thought	Marketing	Sociology	Political Science	
European Economic Integration	Other sub-courses of Law	Business Strategy	Foreign Languages		
Group 8 – Courses offered by more than 50% and less than 75% in the USA and less than 50% in Europe					
Economic Growth	Social Economics	Demography and	Economics of	Topics in Economic	

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		Population Economics	Information and Uncertainty	Theory
Asian Economy	Urban Economics	Latin American Economy	Economics of Discrimination	

Obviously all the *core courses* appear in Table 5, especially in Group 1. In Group 1 we find some of the traditional working subjects of Economics, namely the public sector, the regulation of the economy, the international environment, the financial markets and banking sector, both in developed and developing economies.

The other remaining groups, with the exception of Group 6, highlight the difference between the two regions. In the USA, other important electives are mainly concerned either with a sub-field of Economics, with the application of theory to specific regional economies, or with developing the students' competence to practice research, as the cluster analysis for the USA had previously shown. As for Europe, we find once again that Economics majors tend to give greater importance to other scientific fields, such as management, law, computer science, social sciences and foreign languages.[7]

CLUSTER ANALYSIS FOR THE AVERAGE NUMBER OF REQUIRED SEMESTERS

In this last partial cluster analysis we focus on the four variables regarding the average number of required semesters. Here, the optimal number of clusters remains two. Cluster 2 contains four of the *core courses*, namely Introduction to Economics, Microeconomics, Macroeconomics and Mathematics, which are courses that combine a greater length of attendance requirements (2 semesters on average) and a greater proportion of institutions requiring the course. Statistics and Econometrics, the remaining *core courses*, are left out of cluster 2 mainly because in the USA majors only one semester is required, as mentioned before. Nevertheless, this is offset by the inclusion of quantitative methods courses in the university requirements and a significant scope of electives in Econometrics.

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CONCLUSIONS

The results of our benchmarking approach combined with cluster analysis clearly show the main courses included in the undergraduate Economics majors of the top ranking institutions in Europe and in the USA. They further allow us to distinguish between those which are required and those which are usually offered as electives.

The conventional major requirements consist of a set of courses which introduce the student to the basic principles of Economics and to the main quantitative methods techniques, and also lead them to the intermediate levels of analysis in macroeconomics and microeconomics. This core is similar in both regions. The courses most often offered as electives apply the core theoretical principles to a scope of economic sub-fields, ranging from the public to the private sector, from domestic to international economic affairs, from monetary and financial markets to labor and goods markets. However, we find striking differences between the USA and Europe in the nature of the main electives offered. While in the USA we typically find research oriented and applied courses in Economics, in Europe the institutions give greater importance to courses in related scientific fields, like management, law, social and computer sciences.

We chose for our study only the top-ranked institutions in Europe and in the USA, according to publication volume and impact of their research in peer-reviewed scientific journals. More than a description of a random sample of Economics majors we wanted to investigate course structure in the leading and most prestigious institutions, so that our results could provide guidelines for the undergoing restructuring process in Europe. This approach is not without its critics, especially because it is based on research rankings and not on the quality of teaching in each of the institutions. However, to our knowledge, there is no worldwide ranking of institutions based on quality of teaching. Part of the undergoing changes in the higher education system in Europe caused by the Bologna Process are related to the main goal of the Lisbon Agenda, i.e., making Europe the most dynamic knowledge economy in the world by 2010. The results of these processes are not clear yet, making the comparison between the USA and Europe especially relevant. A good avenue for future research would be to compare them again in a few years, regarding the length of degrees, course structure and institutional rankings, to investigate the impact of the Bologna Process in bringing the European Economics departments closer to their leading North-American counterparts.

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APPENDIX I

Table A1

Selected Universities in Europe and in the United States

	European Ranking Position[8]	USA Ranking Position	World Ranking Position
Harvard University (USA)	-	1	1
University of Chicago (USA)	-	2	2
Massachusetts Institute of Technology (USA)	-	3	3
Northwestern University (USA)	-	4	4
University of Pennsylvania (USA)	-	5	5
Yale University (USA)	-	6	6
Princeton University (USA)	-	7	7
Stanford University (USA)	-	8	8
University of California, Berkeley (USA)	-	9	9
New York University (USA)	-	10	10
Columbia University (USA)	-	11	11
University of California, San Diego (USA)	-	12	12
University of Michigan (USA)	-	13	13
University of California, Los Angeles (USA)	-	14	14
Cornell University (USA)	-	15	15
University of Texas, Austin (USA)	-	16	16
University of Rochester (USA)	-	17	17
Tilburg University (Netherlands)	1	-	18
University of Wisconsin, Madison (USA)	-	18	19
London School of Economics (UK)	2	-	20
University of Minnesota (USA)	-	19	21
Boston University (USA)	-	20	22
University College of London, IFS (UK)	3	-	34
University of Cambridge (UK)	4	-	39
University of Oxford (UK)	5	-	40
Université de Toulouse (France)	6	-	46
Universitat Autònoma de Barcelona (Spain)	7	-	50
University of Amsterdam (Netherlands)	8	-	51
Universitat Carlos III de Madrid (Spain)	9	-	52
University of Essex (UK)	10	-	54
Universitat Pompeu Fabra (Spain)	11	-	55

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	European Ranking Position[8]	USA Ranking Position	World Ranking Position
Catholic Université de Louvain (Belgium)	12	-	56
Erasmus University (Netherlands)	13	-	57
Stockholm School of Economics (Sweden)	15	-	61
University of Warwick (UK)	16	-	64
University of Vienna (Austria)	17	-	65
University of Bonn (Germany)	18	-	67
University of Copenhagen (Denmark)	19	-	70
University of York (UK)	20	-	71
University of Southampton (UK)	21	-	72

Table A2

List of courses and scientific fields

Scientific Area	Course
Computer Science	Computer Science
Economics	African Economics
Economics	Agricultural Economics
Economics	American Economy
Economics	Applied Economics
Economics	Asian Economy
Economics	Contract Theory
Economics	Cultural Economics
Economics	Development Economics
Economics	Development Projects
Economics	Dynamic Modeling for Economists
Economics	Economic Growth
Economics	Economic Policy
Economics	Mass Media Economics
Economics	Economics of Crime
Economics	Economics of Defense
Economics	Economics of Discrimination
Economics	Economics of Education
Economics	Economics of Information and Uncertainty
Economics	Economics of the Family
Economics	Economics of the Firm

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Scientific Area	Course
Economics	Environmental Economics
Economics	European Economic Integration
Economics	Evolutionary Economics
Economics	Experimental Economics
Economics	Financial Economics
Economics	Game Theory
Economics	General Equilibrium Theory
Economics	Health Economics
Economics	History of Economic Thought
Economics	Industrial Organization
Economics	Economics of Innovation
Economics	Institutional Economics
Economics	International Finance
Economics	International Trade
Economics	Introduction to Economics
Economics	Labor Economics
Economics	Latin American Economy
Economics	Local Government and Finance
Economics	Macroeconomics
Economics	Methodology of Economics
Economics	Microeconomics
Economics	Middle-East Economics
Economics	Money and Banking
Economics	National Accounts
Economics	National Economy
Economics	Natural Resource Economics
Economics	Public Choice
Economics	Public Economics
Economics	Public Finance
Economics	Regional Economics
Economics	Seminar
Economics	Services Economics
Economics	Social Economics
Economics	Sports Economics
Economics	Teaching Economics
Economics	Thesis
Economics	Topics in Economic Theory
Economics	Tourism Economics

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Scientific Area	Course
Economics	Transition Economics
Economics	Transport Economics
Economics	Urban Economics
Economics	Global Economy
Engineering	Engineering
Foreign Language	Foreign Languages
Humanities	Ethics
Humanities	International Relations
Humanities	Philosophy
Humanities	Political Science
Humanities	Religion
Humanities	(Others: Arts, Architecture, Literature, National Language …)
Law	Law and Economics
Law	Economic Law
Law	Fiscal System
Law	Introduction to Law
Law	Other sub-courses of Law
Management	Accounting (Financial Accounting / Cost Accounting)
Management	Auditing and Management Consultancy
Management	Banking Management
Management	Business Strategy
Management	Business Management
Management	Commercial Management
Management	Corporate Finance
Management	E-business
Management	Entrepreneurship
Management	Human Resource Management
Management	Information Systems Management
Management	International Business Management
Management	Leadership
Management	Logistic Management
Management	Management Control
Management	Marketing
Management	Negotiation
Management	Production and Operations Management
Management	Project and Investment Management

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Scientific Area	Course
Management	Quality Management
Management	Services Management
Management	Tourism Management
Natural Sciences	Natural Sciences
Physical Education	Physical Education
Quantitative Methods	Data Analysis
Quantitative Methods	Econometrics
Quantitative Methods	Mathematical Finance
Quantitative Methods	Mathematics
Quantitative Methods	Operational Research
Quantitative Methods	Statistics
Skills	Development of Skills
Skills	Internship
Social Sciences	Anthropology
Social Sciences	Demography and Population Economics
Social Sciences	Economic History
Social Sciences	Geography and Urban Planning
Social Sciences	History
Social Sciences	Social Psychology of Organizations
Social Sciences	Psychology
Social Sciences	Psychology and Economics / Behavioral Economics
Social Sciences	Social Work
Social Sciences	Sociology

Endnotes

[1] Israeli universities were not considered in our analysis, although they are classified as European by (Kalaitzidakis et al. 2003) and they appear on the first twenty leading European institutions, since Israel is not a signatory of the Bologna Process.

[2] Not all universities organize their school year in semesters. For those which don't, we convert into semesters the number of required periods in the study plan.

[3] This is mainly due to the fact that a single institution (University of Bonn) includes an unusual number of required semesters for Seminar in its study plan.

[4] Table 4 presents only those courses which are required by at least 30% of the universities in at least one of the regions.

[5] The demand for undergraduate economics degrees presents mixed results in the USA. For example, for the time span 1990-2004, demand has been experiencing significant expansion periods as well as considerable consecutive reductions (Siegfried 2005).

[6] Table 5 presents only those courses which are offered by at least 50% of the universities in at least one of the regions.

[7] Foreign Languages represent a special case, since they are important in fulfilling university requirements in the US.

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[8] In the European ranking, the institution ranked 14th in (Kalaitzidakis et al. 2003), which is INSEE - L'Institut National de la Statistique et des Etudes Economiques (ranked 58th in the world), was excluded because it is a research and statistical institute and not a higher education economics department.

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