Economics Degrees in the French University Space: Heteronomy and Professionalization of Curricula 1970-2009

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Emmanuel Monneau *

Abstract: *»Wirtschaftswissenschaftsdiplome an französischen Hochschulen: Heteronomie und Berufsorientierung in den Lehrplänen 1970-2009«*. This article analyses the degree-granting economics programs offered in French universities in the period 1970-2009 from a disciplinary socio-historical approach. Archival data was compiled into a database used to map the space of these universities with the help of geometric data analysis (principal component analysis and ascending hierarchical clustering). Interpretation of the resulting space reveals a utilitarian shift in university curricula to the detriment of research, as well as a trend towards modelling studying programs on templates of professional schools. Economics instruction has become increasingly heteronomic, critical economics has been marginalized and professionalized programs are today perceived as the 'gold standard' of teaching.

Keywords: Social history of academic disciplines, economics, higher education, economics instruction, geometric data analysis, principal component analysis, ascending hierarchical clustering, professionalization.

1. Introduction[1]

Economic knowledge occupies a central position in the globalized world (Fourcade 2006). It is highly socially valued in France (Lebaron 2000, 169), especially in political and bureaucratic fields (Dulong 1996; Lebaron 1996, 20), and has spread throughout the French educational system[2] in the latter half of

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[1] I would like to thank the editors of this issue and the anonymous reviewers for their feedback, which helped me to further develop my interpretations. The translation of this article is the work of Juliette Rogers, who went above and beyond duty as an attentive reader and to whom I also owe thanks for improvements in the article.

[2] This public system of higher education has made a strong distinction between "universities" and what are known as *écoles* ("schools") in French higher education. The *école* model typically features a selective application process and a curriculum training students to practice a profession or specialized occupation, while the university model is intended to be open to all, with a curriculum oriented toward research. There is a wide range of *écoles*, which can

the twentieth century. It has thus contributed to the transmission of a common-sense "formative force of habit" conferring a general disposition on subjected individuals in the form of a cultivated habitus (Bourdieu 1967), specifically through economic habitus (Lebaron 1996, 19-20) that tend to focus on rational choice theory (Bourdieu 1997, 2003, 2005). Economics program curricula represent important social stakes, and its content in secondary and post-secondary education is actively debated. For instance, the association *Autisme en économie* was founded in 2000 by a group of highly scholastically endowed students concerned about the "lack of pluralism" and "deploring the abusive use of formalization" in economics.[3] It published an op-ed piece in *Le Monde* that sparked many reactions and prompted the Ministry of National Education to commission a report on economics instruction (Fitoussi 2001). In 2011 three initiatives were launched that all fight for the survival of critical (non-neoclassical) approaches in economics, another report was written (Hautcoeur 2014), and the student association *Pour un enseignement pluraliste dans le supérieur en économie*[4] as well as the professional association *Association française pour l'économie politique*[5] were founded to defend a more pluralist approach.[6] Even though "[the] structure of the academic system and the place of economics education and research within it are particularly relevant to understand the nature of economic knowledge production in each country" (Fourcade 2009, 22), there has been very little study of French economics programs[7] after the 1950s.[8] This article thus takes a socio-historical approach (Buton and Mariot 2009) to academic disciplines (Bourdieu 2004; Heilbron, Lenoir and Sapiro 2004; Boutier, Passeron and Revel 2006) to give an account of the development of knowledge, by exploring

> how educational institutions create new boundaries that will 'lock' intellectual undertakings into certain scholastic relations by legitimating alliances and styles of thought, and repudiating others. (Fourcade 2009, 23)

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be divided into "*grandes écoles*" and "*petites écoles*" (Bourdieu 1998, 142), according to "intellectual schools" (136), "establishment schools" (136), and "sanctuary schools" (147).

3 Autism in Economics: <http://www.autisme-economie.org> (Accessed June 7, 2018).

4 For Pluralist Economics Instruction in Higher Education: <http://pepseconomie.org/> (Accessed June 7, 2018).

5 French Association for Political Economy: <http://assoeconomiepolitique.org/> (Accessed June 7, 2018).

6 France has a tradition of critique in economics (Fourcade 2009, 185) that some even call heterodoxy (Weiller and Carrier 1994, see also James Galbraith's post on <https://blogs.mediapart.fr/edition/les-invites-de-mediapart/article/240215/lheterodoxie-en-economie-une-chance-pour-la-france> [Accessed June 7, 2018] or non-conformist economics).

7 We have chosen to refer to the academic discipline specialized in economic phenomena with the term "economics," although in France it may be referred to as either "*économie*" or "*sciences économiques*" (economic sciences, a term that is more controversial in English).

8 Lucette Le Van Lemesle (2004) has studied French economics instruction up to the 1950s.

Degree accreditation is a major issue in French universities and one of the primary activities of the *Administration centrale du ministère de l'éducation nationale* (ACMEN; Central Administration of the Ministry of National Education). Accredited degrees are furthermore "one of the elements upon which budgets are calculated" (Mignot-Gérard and Musselin 2001, 11). Until the late 1980s, disciplinary and national rationales structured the French university system, and degree curricula were mainly oriented to meet "internal requirements [those of the discipline]" (ibid., 12-3). With the implementation of a contractual policy for university oversight in the late 1980s, the university gradually gained importance as an institution relative to its constituent discipline-based faculties, and developed a wider range of action, acquiring what Musselin (2001, 118) refers to as the "establishment" dimension, which favored the investment of local authorities and economic sectors in university issues, leading in turn to greater consideration of "local needs" (Mignot-Gérard and Musselin 2001, 14-5). This context thus tended to orient degree curricula towards external requirements ("demand"). Additionally, with unemployment a major problem, graduate employability became a major concern, lending legitimacy to "external demands" that tend "to replace the purely academic criteria for quality, based on the intrinsic value of instruction" (ibid., 19). This concern with applicable occupational training in university education contributed to an inflation of the number of accredited degrees, and it became increasingly difficult to control and evaluate accreditation procedures (ibid., 22; Abélard 2003, 128-31). Regulating this now over-inflated educational supply became vital. These transformations occurred in a context of the "knowledge economy,"[9] new public management, and neoliberalism (Lorenz 2007, 35). They were instituted in the European Union (EU) through the Bologna Process (Abélard 2003; Charle 2007; Garcia 2007), which took shape in France in the early 2000s with the replacement of the former French degree system with the *license*/*master*/*doctorat* (L/M/D) system.[10] The policies established in the process contributed to accentuating hierarchies, inequalities, and differences between universities.

This article explores the repercussions of these transformations on university-based economics in France. Understanding these transformations makes it possible to relativize the pluralist and formalizing perspectives that dominate discussion of economics instruction. To this end, we analyzed French universities having offered at least one accredited economics degree program during

[9] The OECD, WTO, and GATT all play a key role in redefining the role of higher education (Milot 2003; Lorenz 2007).

[10] The L/M/D system organizes post-secondary education into a norm of 3-5-8: three years for a *licence*, two years for a *master*, and three years for a *doctorat*. Prior to this reform, the French system took two years for a *Diplôme d'études universitaires générales* (DEUG), one year for a *licence*, one year for a *maîtrise*, one year for a *Diplôme d'études approfondies* (DEA) or *Diplôme d'études supérieures spécialisées* (DESS) and four years for a *doctorat*.

the period 1970-2009. The start of the period was chosen to coincide with the formal separation of the discipline of economics from law in the French university system (Monneau 2016). The end of the period was chosen more arbitrarily as the year that research began, serving as a cut-off date to avoid the temptation to keep data up to date; it also has the advantage of being shortly after the establishment of the L/M/D system. Data was collected from archives and compiled into a database with university names as statistical individuals. Geometric data analysis (GDA) supplemented by principal component analysis (PCA) and ascending hierarchical clustering (AHC), was used to statistically analyze this "university database." Combined with more interpretative empirical work, these methods made it possible to map the space of universities having offered economics degrees while preserving a historical perspective (2.). The space resulting from PCA revealed two main oppositions: one between universities before and after L/M/D-transition, and another between research and professionalizing orientations. It also distinguished three models of institution: undergraduate universities, research universities, and university business schools. The historical perspective integral to PCA reveals a shift to professionalization in business-school inspired settings, where the discipline of management, devalued early in the period, tended to become established. This analysis of the space of economics and its transformation should serve as a warning of changes that may come to the university space as a whole, since economics seems to foreshadow what might ultimately happen in other social science and humanities disciplines (3.). This first view of the space of economics is then refined using AHC to create a typology of six university types: research universities in economics, undergraduate universities in economics, university management schools, institutionalist universities, dominant universities, and universities of 'standard' economics. This typology illustrates the changes that have taken place in the teaching of economics. Initially oriented towards economic research, universities have been inclined to borrow more elements from the *école* model and focus increasingly on the discipline of management and on professionalizing curricula. As professionalization became the "unsurpassable horizon" of economics programs, disciplinary teachings became increasingly subjected to outside forces, and critical economics was marginalized (4.).

2. Methods

What are the titles of the economics degrees French universities have offered since the discipline became independent from law? How are these degrees distributed nationwide? How have they changed? Degree titles and associated information (degree level, institution, discipline, year, and specialty) are important elements for describing the changes in economics instruction. Since this information was not available in a single consolidated source, it had to be re-

constructed (by Brice Le Gall and myself) from a variety of resources. This information furthermore made it possible to map the historical space of universities teaching economics, which is another way to account for changes in disciplinary curricula. Mapping of this space also allows specific case studies (our own and those of other researchers) to be situated and contextualized, and may serve as a point of comparison for similar studies in other institutions of higher learning or in other countries.

To compile information on accredited economics degrees in French universities, we first consulted the *Bulletin officiel de l'éducation nationale* (BOEN; National Education Official Bulletin). These findings were enhanced by a case study of the Faculty of Economics and Management (FEM) at the *Université Picardie Jules Verne* (UPJV), which led to the discovery of internal documents from the Ministry of National Education, Higher Education, and Research (MNEHER) that had been sent to relevant institutions. Further information from MNEHER used here includes a list of new degrees accredited in the area of "economics-management" and other subject areas that include economics or management in the academic years 2003-04 to 2008-09.[11] Research in the National Archives led to the discovery of the central archival resource for this study[12] (see Appendix 1). We were ultimately able to reconstruct a list of all ministry-accredited degrees[13] in French universities with a connection to economics and management between the academic years 1970-1971 and 2008-2009. The resulting data was compiled into databases and subjected to statistical analysis.

This article focuses on universities (hence, "university database") broken down into nine sub-periods reckoned in academic years[14]: 1970-1975, 1975-1980, 1980-1985, 1985-1991, 1991-1995, 1995-1999, 1999-2003, 2003-2006, and 2006-2009. Each university during each sub-period thus had the potential to be a statistical individual. These statistical individuals were studied using GDA.[15] It has three paradigms: correspondence analysis (CA) for crossed tabulation, PCA for numerical variables, and MCA for categorized variables (Lebaron 2006, 80; Le Roux and Lebaron 2015, 6). "PCA and MCA[16] place the

[11] This database lacks previously accredited degrees that were still valid for the studied period. Another difficulty is that it does not specify whether master degrees were research or occupationally oriented, so we referred to the Guides Lamy for coding.

[12] It consists of 84 articles that cover nearly all accredited degrees since 1970, by university.

[13] Given the amplitude of our task, there is a possibility of oversight or error.

[14] The divisions correspond to waves of ministerial accreditation, leading to a relatively constant number of years in each sub-period.

[15] GDA, or the "French school" of data analysis, emerged from the work of Jean-Paul Benzécri between 1963 and 1973 (Lebaron 2006, 79; Armatte 2008). This approach "seemed to Bourdieu [...] to be particularly suited to the structure of 'fields'" (Desrosières 2008, 55).

[16] "Geometric methods like PCA and MCA allow the construction of a social space, which is to say, defining a distance between statistical individuals based on the variables retained for this purpose (which we call 'active'). The individuals are then represented as points in a mul-

emphasis on individuals. They carry all the information, and interpretation and exploration will concentrate on the cloud of individuals" (Lebaron 2006, 80). We decided to conduct normed PCA for the entire studied period (1970-2009) using SPAD software (version 7). Statistical individuals are institutions, since each individual represents one university during one sub-period. There are 438 individuals considered to be statistically active.[17] In order to depict the sort of economics taught at a certain university in a certain period of time 69 variables were created: 35 active, 32 supplementary, and two nominal variables (see Appendix 3). All variables can be clustered into six broad categories. The first category (variables 1-13) is based on the general characteristics of specialized economics degrees (average number per year, occupational or research orientation, degree level, sub-discipline within the domain of "economics-management"). They are all continuous quantitative variables. The next three categories concern information about disciplinary sub-fields[18]: the second category (variables 14-34) for research-oriented programs, the third (35-55) for occupationally oriented programs requiring five years of post-secondary study, and the fourth (56-76) for non-occupationally oriented programs requiring three years of post-secondary study. They are all binary indicator variables (Le Roux 2014, 23), also known as dummy variables, and are thus quantitative. Based on practice in linear regression, dummy variables can be considered active. Variables from categories two through four were classified as either active or supplementary variables, based on a simple criteria[19]: if the variable concerned economics directly, it was retained as an active variable, and if not, it was categorized as a supplementary variable. Each of these categories has 21 variables: 12 from economics (thus active) and nine from management (thus

tidimensional space. Once the space is defined by the choice of active variables, the Geometric Data Analysis consists of reducing the number of dimensions of this space by creating a new system of axes (called principal dimensions, factorial axes, etc.), this new system of axes being such that the dispersion (variance) of the cloud projected on the first dimension is maximal (meaning that on this axis, the variance of the cloud is as high as possible) and so on for the following dimensions" (Lebaron 2006, 80).

[17] Each university appears in the database for each sub-period during which it was accredited to dispense an average of at least one degree in economics per year during that sub-period (those averaging less than one are considered as illustrative individuals, of which there are 102).

[18] Degrees were coded according to the concerned disciplinary sub-field: 28 sub-fields were created (11 for "economics," 10 for "management," and seven for "economics and management") (see Online Appendix available at <https://doi.org/10.12759/hsr.trans.29.v01.2018>. These disciplinary sub-fields were built by trial and error. The disciplinary sectors from the Ministry's software SISE (*Système d'information sur le suivi de l'étudiant*, for tracking students' educations) and coding of academic articles in economics in JEL (Journal of Economic Literature) were the basis of an initial coding, which, after some back and forth with sorting results, led to the one presented here. Additionally, some specialized degrees could be sorted into several disciplinary sub-fields.

[19] Remember that degrees were coded into three types: "economics," "management," and "economics and management."

supplementary). The fifth category of variables concerns 'other domains' beyond economics-management. It contains 12 continuous quantitative variables, all classified as supplementary. The sixth category concerns two nominal variables, classified as supplementary, one concerning temporality (with nine modalities relative to the nine sub-periods) and the other concerning universities, expressing the average individual over the whole period for each university retained for analysis. Studying these two variables enables a dynamic analysis of the space of universities delivering degrees in economics and a material representation of each university's offerings over the whole period. The resulting space contains nine axes with a value superior to one (see Table B in digital Appendix), and thus of statistical interest. This paper only presents analysis of the first four axes (of which only axes 1 and 2 are shown in the figures accompanying this text), because they lend themselves to sociological interpretation. In our GDA[20] approach, we mapped this space and discerned a typology of universities offering economics degrees, and then used AHC[21] to "build classes of individuals based on a database, and not on assumptions" (Lebaron 2006, 84). In SPAD, AHC is based on Ward's method (a Euclidean variance classification; see Le Roux 2014, 331-5), which finds a partition appropriate to the individuals, without a pre-determined number of classes, in our case identifying the most appropriate partitions as containing 5, 9, or 8 classes. For statistical interpretation, we conducted a bottom-up reading, identifying the classes most resembling each other at the base of the tree, based on the diagram and visual inspection of the tree (ibid., 2014, 335). In the end we decided on a partition into six classes after comparing iteration and the tree (as visual aid) to analyses of the variables characterizing each class, because this partitioning was best suited to sociological interpretation.

[20] "Methods of classification, alongside methods for determining the principle axes, are the second branch of geometric data analysis. Like all GDA methods, they are intended to sum up the initial data; to do so they produce homogeneous classes of objects, so that the objects of one class resemble one another as much as possible and objects in differing classes resemble each other as little as possible. In other words, we are looking for classes that form a coherent whole (compactness) and are distinct from each other (separability)" (Le Roux 2014, 321).

[21] "In GDA, we favor *ascending hierarchical clustering* (AHC) that leads to nesting systems of partition (following a natural sciences model); very quickly, the *Euclidean classification*, which consists of using aggregation to classify the points of a Euclidean cloud according to variation" (Le Roux, 2014, ch. 10; italics in original). It became established as the method that works the most smoothly with the mathematical foundations of correspondence analysis: euclidean AHC is, as Benzécri said, the companion method to CA (1992, 561). "The interpretation of axes and characterization of classes can thus be combined with their ellipses of concentration" (Le Roux and Lebaron 2015, 17). For examples of AHC applied to MCA, see: Denord, Hjellbrekke, Korsnes, Lebaron and Le Roux (2011), Hjellbrekke, Jarness and Korsnes (2015), and Savage, Le Roux, Hjellbrekke and Laurison (2015).

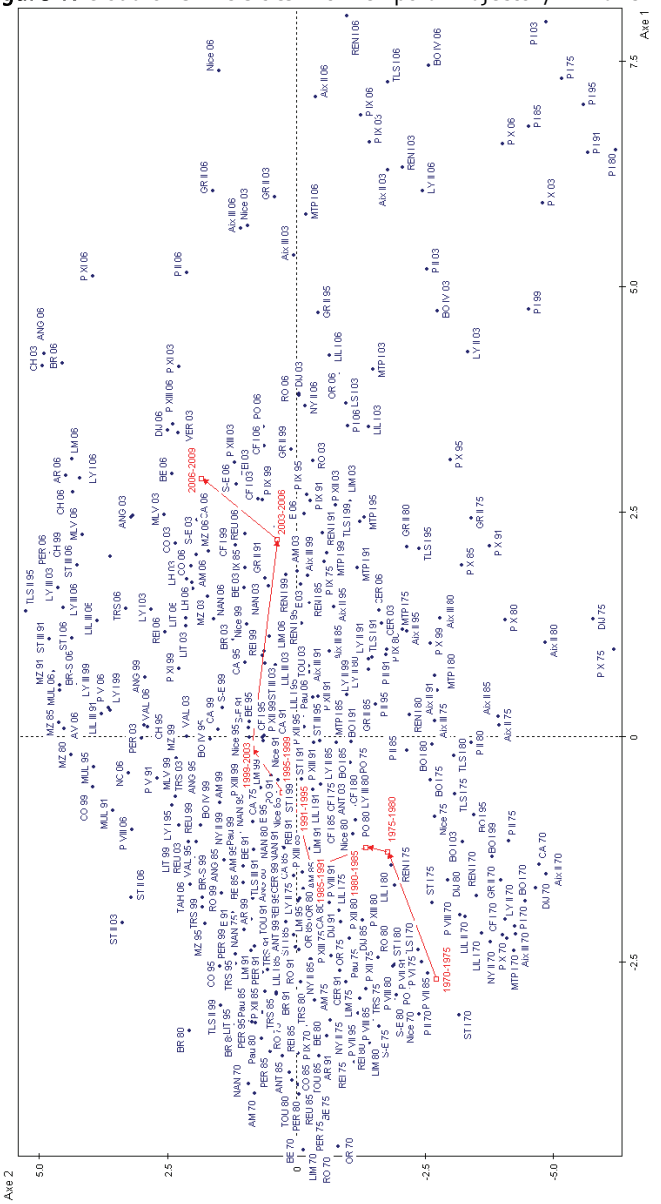
3. Configuration of the Space

The space of universities offering economics degrees is expanding (Table 1 and Figure 4 in Appendix 3). In terms of the number of specialized degrees, it is dominated by the *Université de Paris 1* (representing 9% of all specialized degrees of the entire period studied), which was the university with the greatest number of degrees offered from 1970-1971 until it transitioned to the L/M/D system in 2008-2009 (peaking at 15% of specialized degrees during the sub-period 1975-1980). After completion of the L/M/D transition (2006-2009), the *Université de Paris 10*, which had been in the second tier since the sub-period 1980-1985, was the one to offer the most (5% of all specialized degrees of the entire period studied). The universities of *Aix-Marseille 2*, *Grenoble 2*, *Lyon 2*, *Montpellier 1*, and *Toulouse 1* were the other institutions offering the largest selection of economics-related degrees for the period (Table 2 in Appendix 3). Since these institutions offered the greatest number of specialized degrees, they most likely had large student and faculty bodies[22] and considerable state recognition. We thus consider them to be the major institutions of the academic field of economics in France.

The mapped university space contains nine axes with a value higher than 1 and thus of potential statistical interest (see Table B in digital Appendix). Only the first four axes are relevant to sociological analysis. In order to interpret the data giving shape to the space of universities offering economics degrees, three broad categories were used that have shaped French universities and university governance in the second half of the 20th century: undergraduate universities (which only grant the lower degrees of *license* and *master*), research universities (granting *license*, *master*, and *doctorat*), and university business schools (see Box 1).

[22] Data on the number of students and instructors per institution and by discipline are difficult to assemble and were not our primary concern. Institutions considered dominant in terms of the number of specialized degrees are also significant in terms of the number of instructors and students, both at the beginning and end of the period (see Table 3 in Appendix 3).

Figure 1: Cloud of Universities with Temporal Trajectory in Plane 1-2[23]



[23] About thirty university names only are mentioned in the graphic for it to remain readable.

University	Short	University	Short	University	Short	University	Short
Aix-Marseille II	Aix II	Dijon	DIJ	Mulhouse	MUL	Perpignan	PER
Aix-Marseille III	Aix III	Evry	E	Nancy I	NY I	Poitiers	PO
Amiens	AM	Grenoble I	GR I	Nancy II	NY II	Reims	REI
Angers	ANG	Grenoble II	GR II	Nantes	NAN	Rennes I	REN I
Antilles-Guyane	ANT	La Réunion	REU	Nice	Nice	Rennes II	REN II
Artois	AR	La Rochelle	LR	Nîmes	NIM	Rouen	RO
Avignon	AV	Le Havre	LH	Nouvelle Calédonie	NC	Saint Etienne	S-E
Besançon	BE	Le Mans	LM	Orléans	OR	Strasbourg I	ST I
Bordeaux I	BO I	Lille I	LIL I	Paris I	P I	Strasbourg II	ST II
Bordeaux II	BO II	Lille II	LIL II	Paris II	P II	Strasbourg III	ST III
Bordeaux III	BO III	Lille III	LIL III	Paris III	P III	Tahiti	TAH
Bordeaux IV	BO IV	Limoges	LIM	Paris IX	P IX	Toulon	TOU
Brest	BR	Littoral	LIT	Paris V	P V	Toulouse I	TLS I
Bretagne-Sud	BR-S	Lyon I	LY I	Paris VI	P VI	Toulouse II	TLS II
Caen	CA	Lyon II	LY II	Paris VII	P VII	Toulouse III	TLS III
Cergy	CER	Lyon III	LY III	Paris VIII	P VIII	Tours	TRS
Chambéry	CH	Marne La Vallée	MLV	Paris X	P X	Valenciennes	VAL
Clemont-Ferrand I	CF I	Metz	MZ	Paris XI	P XI	Versailles	VER
Clermont-Ferrand II	CF II	Montpellier I	MTP I	Paris XII	P XII		
Corse	CO	Montpellier II	MTP II	Paris XIII	P XIII		

Box 1: Undergraduate Universities, Research Universities, and University Business Schools

This article refers to three models for post-secondary institutions: undergraduate universities, research universities,[24] and university business schools. These institutional types are modelled on the system in the United States and adapted to the French university system. Undergraduate universities only offer the first or the first two levels of degrees (the undergraduate *license* and sometimes the *master*). Research universities offer three levels of post-secondary degrees (*license*, *master*, *doctorat*), the doctorate setting them apart from undergraduate institutions. American business schools use the 'Harvard method,' which builds on case studies to foster rapid decision-making abilities. They are "independent but part of a university, alone producing more than a quarter of MBAs and nearly all doctorates" and "their reputation is based on relatively high selectivity (and not solely academic, especially with the generalized use of tests), a large permanent professorial body, and a non-descriptive approach to business administration" (Pavis 2003, 90-2). They have both professional and academic legitimacy (Fourcade and Khurana 2013). The American business school is the third model for the French university system borrowed from the United States, which we refer to as the university business school model.

In the space constructed, universities are differentiated along the horizontal first axis into university-individuals before and after the L/M/D transition (Figure 1). Universities on the right are for the most part post-L/M/D transition universities of varying sizes.[25] This group contains some rather large universities in the domain of economics and management, such as *Paris 1* and *Paris 10*, defined as having a high proportion of specialized degrees in management (0.75)[26] and other disciplinary domains and where economics and management are also very present (0.55). It also features smaller universities in the outskirts of Paris or elsewhere in France with notable proportions of specialized degrees oriented towards occupational training (0.56), especially programs requiring five years of post-secondary studies (0.64), where the sub-field "mathematics and quantitative methods applied to economics"[27] (0.60) are frequent. On the left of axis 1 are pre-L/M/D transition universities. They are smaller institutions featuring economics-oriented programs (-0.52), less concerned with occupa-

[24] This distinction between undergraduate and research university was planned in France prior to 1968, by cutting the university into two levels: selective universities for conducting research and educating elites, and standard universities for mass higher education (Damamme 2008, 118). Before, 'university colleges' also existed in France, offering only undergraduate (*licence*) educations, but with the Faure Law of 1968 and the reform they became universities and added training in research.

[25] These universities represent over 80% of the individuals making the highest contribution and are relatively well represented in the axis.

[26] The values in parentheses are the correlations of the active variables with the factors on the axis.

[27] The sub-field "mathematics and quantitative methods applied to economics" also tends to be taught in research-oriented programs (0.52).

tional training (-0.56), and generally requiring three years of post-secondary study, or four years for the sub-period 1970-1975, the lowest-level degree in the subject at the time (-0.54) (see Tables C and D in the digital Appendix).[28]

The vertical second axis distinguishes between occupationally oriented universities (top) and research-oriented universities (bottom) (see Figure 1). Those in the upper portion have a higher share of career-focused specialized degrees in economics (0.65), especially degrees requiring five years of post-secondary study (0.51), as well as a high proportion of specialized degrees in management among the total number of specialized degrees in the economics-management domain (0.61). It is essentially composed of universities from the early 1990s onwards (97% of the population of the cumulative period 1991-2009), not located in Paris, and of small size. Universities at the bottom have a higher proportion of research-oriented specialized degrees in economics (-0.69) and a higher proportion of specialized economics degrees not intended to provide occupational training (-0.65). They tend to be oriented towards economics (-0.67) and to be dominant institutions in the discipline (-0.64), such as *Paris 1* except for 2006-2009 and *Paris 10* for the whole period observed. Their research inclination means that these universities tend to offer the vast majority of the research-oriented sub-fields requiring five years of post-secondary study with the sub-fields of "history of economic thought, economic philosophy, epistemology, law, social sciences, languages" (-0.56) and "international economics and economics of development" (-0.51) having the greatest coefficients of correlation (Tables E and F in digital appendix).

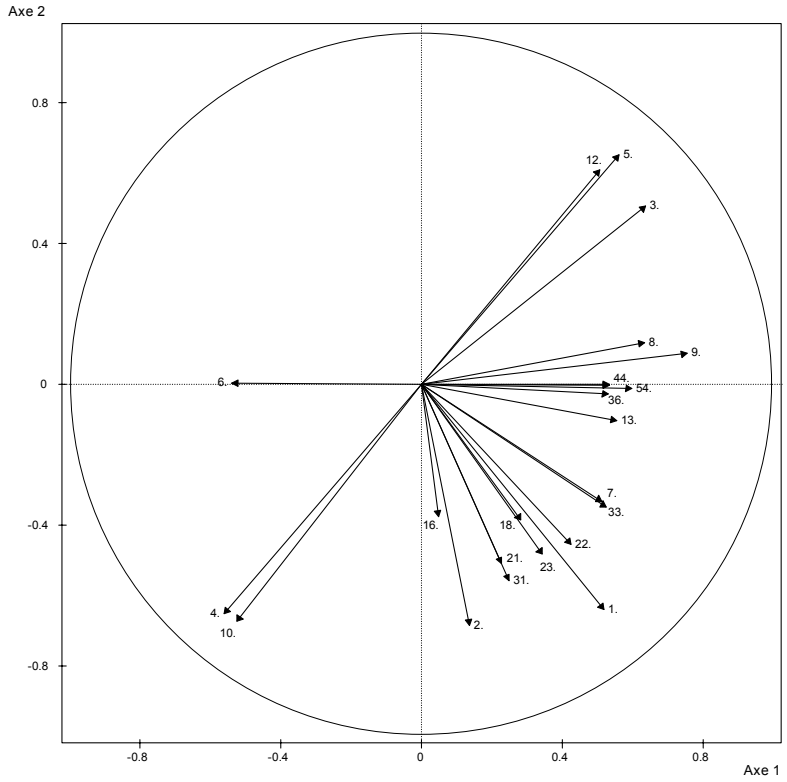
The third axis (not shown) sets institutions closer to the research university model apart from those more akin to the undergraduate university. Universities with a positive value on this axis have a significant proportion of specialized degrees requiring five or more years of post-secondary study relative to the total number of specialized degrees in economics (0.53) as well as a higher share of research-oriented specialized degrees (0.48), often offering the sub-field "business economics" (0.45). Universities with a negative value on this axis have a higher than average proportion of specialized undergraduate degrees in the total number of specialized economics degrees (-0.52) (Tables G and H in digital appendix).

Finally, the fourth axis (not shown) contrasts universities according to the disciplinary sub-fields they teach. On one side are universities with an institutionalist orientation. They offer sub-fields such as "economics of institutions and organizations" in programs requiring five years of post-graduate study, either intended to provide occupational training (0.73) or be research-oriented (0.68). These universities also tend to offer the sub-field "monetary and financial economics" in five-year programs intended to provide occupational train-

[28] Tables identified by letters can be found in the digital appendix at HSR-Trans 29: <https://doi.org/10.12759/hsr.trans.29.v01.2018>.

ing (0.25) and "history of economic thought, economic philosophy, epistemology, law, social sciences, languages" among their five-year research-oriented programs (0.20). Moreover, these universities have a significant proportion of programs requiring five years of post-graduate study (0.24). On the other side are universities oriented towards the worlds of work and industry, which tend to offer the sub-fields "economics of labor and human resources" (-0.33) among their research-oriented programs and "industrial economics" (-0.24) among their programs requiring five years of post-secondary study, oriented towards research as well as occupational training (Tables T and U in digital appendix).

Figure 2: Circle of Correlations of Plane 1-2 of the Principal Variables[29]



[29] The figures correspond to the numbers attributed to the variables detailed in Appendix 2.

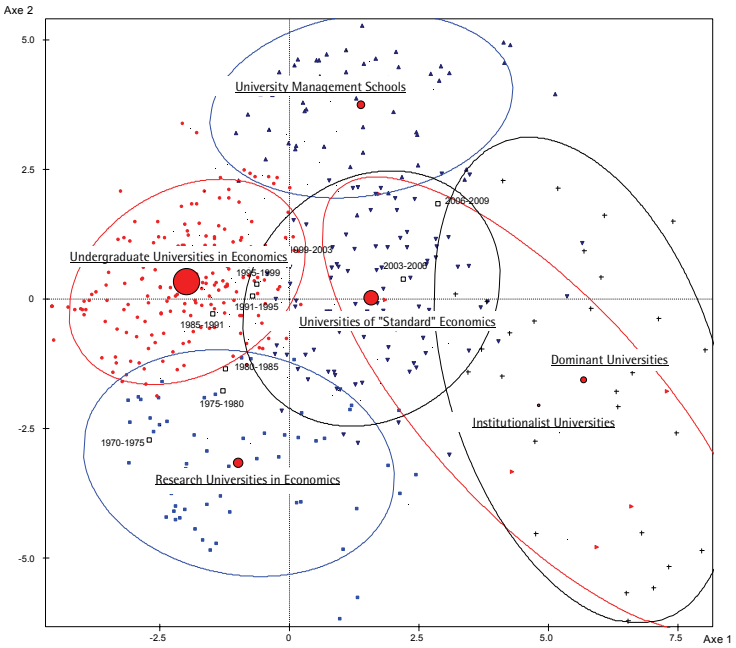
By introducing a supplementary nominal variable called "period," it is possible to analyze universities delivering specialized economics degrees dynamically. Figure 1 thus has an observable temporal trajectory from left to right on axis 1, and from bottom to top on axis 2. Universities whose economics degrees were initially more research-oriented have given their programs a more occupational focus over time. This trend seems to have been accelerated by the L/M/D transition, although it was already observable beforehand.

Analysis of French universities offering economics degrees between 1970 and 2009 reveals the main oppositions and their changes over time. Initially strongly research-oriented, programs have become more oriented towards occupational utility. This process is not new, but it was accentuated with the L/M/D transition. The long-standing opposition between research universities and undergraduate universities is gradually giving way to the business-school model. We will next enhance this initial analysis by using AHC to introduce a historical perspective in order to establish a typology of universities offering economics degrees.

4. Six Types of University

In complement to the PCA, AHC was used to classify the individuals into six classes that can be interpreted as institution-types making it possible to describe the space of universities offering economics degrees over the studied period in more detail. This typology of the transformed landscape of French university economics programs can be found in Figure 3, in which we can see the shift from research-focused instruction towards a management-focused curriculum closer to the business-school model.

Figure 3: Cloud of Universities in Plane 1-2, Divided into 6 Classes



Cut "a" of the tree, sorted into 6 classes	Symbol	Number
Research universities in economics	■	60
Undergraduate universities in economics	●	191
University management schools	▲	51
Institutionalist universities	►	7
Dominant universities	+	31
Universities of 'standard' economics	▼	98

4.1 Research Universities in Economics

The first class (Tables K and L in digital appendix) is composed of 60 universities (13.70% of the total number of individuals) mainly from sub-periods prior to the L/M/D transition. Over 80% of individuals in this class come from the first three sub-periods, and no post-L/M/D transition universities are in this class. Those in the class tend to be important in the field of university economics education offering an annual per-university average of 8.5 specialized degrees in economics, as opposed to six in the overall population. The universities of *Aix-Marseille 2* (6 sub-periods), *Bordeaux 1* (6 sub-periods), *Paris 10* (5 sub-periods) and *Grenoble 2* (4 sub-periods) recur frequently in this class. Concerning program offerings, universities in this class are distinguished by a

very high proportion of specialized research-oriented degrees (averaging 72% in this class as compared to 28% in the overall population), economics degrees (79% versus 45%), five-year degrees (70% versus 48%), and a generalist approach (95% versus 76%). Among their research-oriented specialized degrees, these universities have a marked presence of the sub-fields "history of economic thought, economic philosophy, epistemology, law, social sciences, languages" (53.5% versus 15.5%), "general economics" (42% versus 13%), "business economics" (37% versus 8%), and "international economics and economics of development" (67% versus 31.5%). In all, this first class can be characterized by its orientation towards research and economics, leading us to label it "research universities in economics." If this text had been written at the beginning of the period, specifying a research orientation would have been pointless, since all French universities were places of research in the early 1970s (just after the 1968 Faure law was passed in the aftermath of May 1968). This precision became necessary after subsequent transformations, one characteristic of which being the existence of institutions that do not offer research training.

4.2 Undergraduate Universities in Economics

The second class (Tables M and N in digital appendix) contains 191 universities (43.61% of the total number of individuals) coming from all sub-periods. Only one university stems from the last period, and a significant proportion of universities are from sub-periods between 1985 and the L/M/D transition, representing 70% of universities in this class. Frequently appearing in this class are the universities of *Amiens*, *Besançon*, *Limoges*, *Nantes*, and *Tours* (all 7 sub-periods), *Antilles-Guyane*, *Nancy 2*, *Paris 8*, *Paris 13*, *Pau*, *Perpignan*, *Rouen*, and *Strasbourg 1* (all 6 sub-periods), *Brest*, *Clermont-Ferrand 1*, *La Réunion*, *Lille 1*, *Orléans*, *Reims*, and *Toulon* (all 5 sub-periods), *Angers*, *Artois*, *Dijon*, *Le Mans*, *Poitiers*, and *Saint-Étienne* (all 4 sub-periods). The programs offered by universities in this second class feature a higher proportion of specialized degrees requiring three years of post-secondary study (40% versus 27%), taking a generalist approach (89% versus 76%), and being located in economics (55% versus 45.5%). Universities in this class can thus be called "undergraduate universities in economics." The intervening transformations of the French university system have tended to tip some of them towards the undergraduate university model.

4.3 University Management Schools

The third class (Tables O and P in digital appendix) contains 51 universities (11.64% of the total number of individuals) mostly from after the L/M/D transition (over 70%). The following universities are frequently recurring: *Chambéry* and *Lyon 1* (both 4 sub-periods), *Angers*, *Corse*, *Metz*, and *Mulhouse* (all

3 sub-periods). The specialized degrees of universities from this third class feature a significant proportion of occupationally oriented specializations (77% in universities of this class versus 24% in the population overall), programs for occupational training requiring five years of post-secondary studies (53% versus 18%), and management programs (80% versus 47%). Universities in this class are small, and their five-year post-secondary programs tend to aim to professionalize students with a management focus, so they can be designated as "university management schools."[30]

4.4 Institutionalist Universities

The fourth class (Tables Q and R in digital appendix) contains only seven universities (1.6% of the total number of individuals) that are for the most part major institutions in the economics-management domain with 13.5 specializations in economics versus an average of six in the total population, and 21 in management versus 9 in the total population. Looking at the supplementary nominal variables, it is evident that all universities in this class are from post-L/M/D transition sub-periods. This class contains the universities of *Amiens*, *Lyon 2*, and *Paris 10* (all 2 sub-periods), as well as *Toulouse 1* (1 sub-period). These universities are distinguished by the content of the programs they offer. Indeed they systematically associate the sub-fields of "economics of institutions and organizations," "history of economic thought, economic philosophy, epistemology, law, social sciences, languages," "monetary and financial economics," and "mathematics and quantitative methods applied to economics" in their research and occupationally oriented programs requiring five years of post-secondary study. Universities in this class are labelled "institutionalist universities," with some of them hiding behind the consensual notion of institution, but the term is also related to a tradition of economic thought critical of the United States.

[30] This term is based on that of "*école universitaire de gestion*" (university school of management), a category of institution created to be the equivalent of "engineering" schools (*écoles universitaires d'ingénieurs*), but for management studies, and within the university (Circulaire n°84-134 du 16 avril 1984). They offer programs requiring four or five years of post-secondary study. They came with the creation of the *magistère* degree by Jean-Hervé Lorenzi in the mid-1980s (interview with Roland Perez, January 18, 2011, conducted with Brice Le Gall). Additionally, in the 1960s university-based *Instituts d'administration des entreprises* (Business Administration Institutes) were developed, modeled on American business schools (Chessel and Pavis 2001; Pavis 2003, 2010). Another type of institution emerged, the "*école universitaire de management*" (which also translates to "university school of management," the adoption of the English term revealing the source of its inspiration). This term gradually came to be used alongside or instead of *Institut d'administration des entreprises*.

4.5 Dominant Universities

The fifth class (Tables S and T in digital appendix) contains 31 universities (7.08% of the total number of individuals), nearly all from post-L/M/D transition sub-periods. Additionally, universities in this class are major institutions in the university field of economics instruction, with an average 15.5 specialized economics degrees annually versus six for the total number of individuals, as well as in management, where they offer an average of 25.5 specialized management degrees versus nine for the total number of individuals. The universities composing this fifth class are *Paris 1* (8 sub-periods), *Grenoble 2* (4 sub-periods), *Aix-Marseille 2*, *Bordeaux 4*, *Lille 1*, *Montpellier 1*, *Nice*, *Paris 2*, *Paris 9*, *Rennes 1*, *Rouen*, *Paris 11*, and *Toulouse 1* (all 2 sub-periods). These universities' programs in other domains include a higher proportion of degrees where economics or management is present (12 specialized degrees versus six for the total number of individuals). The prominence of universities of this class means that their program offerings have a more marked presence of nearly all the economics sub-fields, relative to other universities. Since universities in the fifth class are mainly distinguished by their importance in the university field of economics-management, they are labelled "dominant universities."

4.6 Universities of 'Standard' Economics

The sixth and final class (Tables U and V in digital appendix) contains 98 universities (22.37% of the total number of individuals), whose average annual number of specialized degrees earns them a prominent position in the field of university management instruction, and management's domination over economics within the institution. The number of universities in this class started to increase perceptibly in the 1990s. Indeed, 90% of this class is composed of universities between 1991 and 2009, and there are no universities from the first sub-period (1970-1975). *Université de Paris 9* (6 sub-periods) was at the forefront of this class from 1975, only to leave with the L/M/D transition. The class also includes the universities of *Aix-Marseille 3* (7 sub-periods), *Caen*, and *Paris 12* (both 5 sub-periods), *Toulouse 1*, *Nice*, and *Montpellier 1* during the 1990s, *Grenoble 2* in the early 1990s as well as *Paris 10* in the late 1990s and *Paris 1* at the end of the period (all 1 sub-period). The program offerings of universities of this class are distinguished by the relatively important place accorded to economics research. The curricular content of these universities' research and occupationally oriented programs alike is marked by the presence of the sub-fields of "mathematics and quantitative methods applied to economics" and "monetary and financial economics." This class is comprised of major universities for management that grant a non-negligible place to economics research and offer the discipline's sub-fields as required curriculum. This has become standard practice as the discipline has been conforming to a model for economic education adapted from English-speaking countries (which seems to

indicate that major universities tend to shift towards this class late in the period). This class is thus labelled "universities of 'standard' economics."

5. Conclusion

Instruction in a given university discipline can be studied by analyzing its accredited degrees from a historical perspective using statistics and adding a sociological interpretation of the result. In the case of economics in French universities studied here, accredited degrees show that economics has expanded rapidly since it broke away from law to become its own discipline in the 1970s. This expansion is unambiguously rooted in the professionalizing turn in the degrees offered, which came with changed power relations between economics and managerial orientations (which the Ministry of Higher Education categorized as the same domain). Domination shifted from the former to the latter, which now offers more programs in research than economics (Monneau 2016).[31] Management now has more students and instructors, a phenomenon that can also be observed in Great Britain starting in the 1990s (Fourcade 2009, 49, 135-6). This is a

> two-part movement, barely perceptible but real, that homogenized the disciplines in 40 years or so: On one side is a phenomenon academicizing 'useful' disciplines […]. On the other, pressure to 'professionalize' learned disciplines. (Pavis 2008, 41)

The same can be observed in the domain of economics-management. This historically contextualized typology reveals a sort of homogenization of French universities inspired by the American model. More generally speaking, this is probably part of a globalizing phenomenon as nation-states adapt their domestic higher education systems to a new global norm. In the case of the economics-management domain in French universities, it is rather clear that university management schools (modelled on business schools and engineering schools) have grown in strength and significance, to the detriment of research-oriented universities with an emphasis on economics. I propose referring to this transformation as the *écolisation* of universities, indicating a shift that lets universities become more similar to the classic French *école* model. The implementation of the L/M/D system in 2006-2009 was a key moment in this process, although the process had begun much earlier with measures such as the 1984 circular on

[31] Management is also taught in the powerful establishment *grandes écoles*: *École des Mines de Paris*, *École des Ponts et Chaussées*, *Polytechnique*, *École Nationale d'Administration* (Fourcade 2009, 55).

the creation of university schools for managerial studies[32] and the founding of *Instituts d'administration des entreprises* (Business Administration Institutes) in the 1960s. At the same time, the *écoles* are becoming major actors in research in the French higher educational system. I propose referring to this transformation as the *universitification* of *écoles*. Once rather diametrically opposed, *écoles* and universities are, in a way, becoming more uniform (Musselin 2006, 34), revealing a second two-part movement, the *écolisation* of university programs on one hand and the *universitification* of *écoles* on the other.

These two movements tend to make the higher educational system more uniform and engender changes in power relations in the French academic system. Insofar as disciplinary faculties are concerned, power relations tend to tip in favor of temporal power, to the detriment of "spiritual" power (Faure and Soulié 2006, 72). This being the case, economics' break from law in the early 1970s was favorable to its gravitation towards research, which in turn made it independent from temporal power, a product of its history, due especially to its tutelage by law, and aligned? with spiritual power (Bourdieu 1998).[33] There was a consensus among economists at the time that teaching should be related to research. Their teachings, however, helped to spread dominant thinking to a new generation that, joining forces with some economists trained in the 1960s, set out to formalize economics instruction (Monneau 2016) and limit it to neoclassical economics. Soon after economics became an independent discipline, the movement making practical disciplines more academic and learned disciplines more vocational began to work against it. It was especially hard on its critical currents, which are poorly suited to the *écolisation* process, and beneficial to neoclassical currents promoting formalization and allowing for the selection of students suitable to the *écolisation* movement. This movement was mainly favored by learned disciplines' shift towards professionalization, making economics instruction increasingly utilitarian under intensifying competition from management, whose model tends to "set the tone" in the university field (Pavis 2003, 21).

All of these transformations also have repercussions on the production of knowledge (Faure and Soulié 2006, 72), as they tend to structurally marginalize economic knowledge in favor of managerial knowledge. Formalization and pluralism are thus important issues in teaching the discipline. They must not obscure the essential, however – the increasing heteronomy of curricula in the

[32] Circulaire n°84-134 du 16 avril 1984. Roland Perez, professor at *Université de Montpellier 3* at that time, was the referent as policy officer at the Research management, a scientific mission of the higher education and research department.

[33] This distinction was first made by Bourdieu to distinguish between two main poles in the university field: one concerned with temporal power (through investment in institutional positions and reproduction of the cultural order to obtain recognition) and the other concerned with "spiritual," often translated as "scientific," power (manifest in a more idealistic pursuit of research and intellectual recognition) (Bourdieu 1990, 73-4; 1998, x-xi, 187).

discipline, leading to the gradual disappearance of research-oriented programs to the benefit of professionalizing programs more focused on management skills. From this movement, economists have gone from a form of heteronomy under politics (understood as a plan for coexistence) to heteronomy vis-à-vis societal and economic demand (especially related to the employment market and growth; Garcia 2009). The discipline's independence seems to have only been a fleeting moment in the 1970s. Even more importantly, by expanding interpretation to the national level, these transformations tend to erase the "strange facts" Bourdieu noted in the French higher education system, which featured the following paradox:

> [T]he most scientifically rarefied education and educators go to the least highly selected students, while the students who appear to be the best prepared for research are submitted to the most scholastic education, which is the least open to research, but at the same time the most perfectly suited, through its strict organization and its entirely devoted body of teachers, to fulfil the social functions of the reproduction of the social structure. These strange facts can only be explained if we realize that the social stakes and consequences of the division into hierarchized channels do not all lie in the intellectual and scientific domain, and that the logic of the division of intellectual and scientific labor is constantly blurred by the logic of the division of the labor of domination. (Bourdieu 1998, 101)

The changes underway in the French higher education system are tending to undo this paradox, since *grandes écoles* have the supplementary purpose of producing research and are thus becoming more academic, while universities are being dispossessed of research, once their main form of capital, and are making their programs more practical. Since the 1960s the university in France has been an instrument of mass education built upon research and capable of critique and reflexivity, but over time this education for the masses has become based on professionalization. In the context of the knowledge economy and the quantitative evaluation of research, the stakes of research are of increasing importance for the state, which consequently tends to include it in its institutions for the education of elites, to the detriment of the masses. Heteronomy of the scientific field vis-à-vis the field of power is on the rise. The economic world's capacity to produce alternative ideas is therefore considerably reduced, as it is for the social world in general. Nonetheless, the fading of critical economics has not been without resistance or protest, as the recurring diagnosis of crisis in the discipline might lead one to expect. More broadly, university faculty members articulate this disciplinary crisis nationally at moments of economic crisis (note that the *Association pour la critique des sciences économiques et sociales* was founded in 1973 and the *Association française d'économie politique* in 2009). This concomitance of economic and disciplinary crises leads us to think that disciplinary protests are dependent on heteronomy – economic heteronomy in this case.

Last but not least, studying economics programs provides insights into the economic habitus of economics degree holders (cf. Lenger 2018). More open to research than at the beginning of the period, their skills in quantitative methods resulting from curricular formalization have favored technical dispositions. The domination of neoclassical economics in the 1990s favored a disposition to minimizing/maximizing calculations acquired through rational choice theory (as our study shows). The configuration of this space according to the *école* model leads one to think that managerial dispositions are becoming central, to the detriment of the civic and reflexive dispositions that predominated in earlier periods.

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Appendices

Appendix 1: Sources

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- Ministère de l'Education Nationale, Direction des Enseignements Supérieurs, Bureau de l'Information et de l'Orientation, Formations à finalité professionnelle dispensées dans les universités, année universitaire 1981/1982.

National Archives

- 20090282 art.2-84.
- 19980513 art.35.

Ministère de l'enseignement supérieur

Excel spreadsheets of the accreditations of degrees in economics and management and other domains where these disciplines are taught, provided by the Direction Générale des Enseignements Supérieurs et de l'Insertion Professionnelle.

Interviews

- Interview with Claudine Peretti, July 16, 2010 (conducted with Brice Le Gall).
- Interview with Roland Perez, January 18, 2011 (conducted with Brice Le Gall).

Appendix 2: List of the primary variables of the university database[34]

1. Annual average of total specialized degrees in economics
2. Frequency of research-oriented specialized degrees in economics in the total of specialized degrees in economics
3. Frequency of occupationally oriented specialized degrees in economics requiring five years of post-secondary study in the total of specialized degrees in economics
4. Frequency of non-occupationally oriented specialized degrees in economics in the total of specialized degrees in economics
5. Frequency of occupationally oriented specialized degrees in economics in the total of specialized degrees in economics

[34] For supplementary variables see digital Appendix at HSR-Trans 29: <https://doi.org/10.12759/hsr.trans.29.v01.2018>.

6. Frequency of specialized degrees in economics requiring three years of post-secondary study (four for 1970-1975) in the total of specialized degrees in economics
7. Frequency of specialized degrees in economics requiring five or more years of post-secondary study in the total of specialized degrees in economics
8. Annual average number of specialized degrees in economics and management
9. Annual average number of specialized degrees in management
10. Frequency of specialized degrees in economics in the total of specialized degrees in the domain of economics and management
11. Frequency of specialized degrees in economics and management in the total of specialized degrees in the domain of economics and management
12. Frequency of specialized degrees in management in the total of specialized degrees in the domain of economics and management
13. Annual average number of specialized degrees in other domains
15. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "agricultural, rural, energy, and environmental economics and economics of hospitality, tourism, sports, and leisure"
16. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "business economics"
17. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "economics of institutions and organizations"
18. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "economics of labor and human resources"
19. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "general economics"
20. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "industrial economics"
21. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "international economics and economics of development"
22. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "monetary and financial economics"
23. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "economics of the public sector, transportation, health, education, tertiary sector, welfare, and economic policy"
31. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "history of economic thought, economic philosophy, epistemology, law, social sciences, and languages"
33. Presence of at least one research-oriented specialized degree requiring five or more years of post-secondary study in the subfield of "mathematics and quantitative methods applied to economics"
36. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "agricultural, rural, energy, and environmental economics and economics of hospitality, tourism, sports, and leisure"
37. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "business economics"
38. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "economics of institutions and organizations"

39. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "economics of labor and human resources"
40. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "general economics"
41. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "industrial economics"
42. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "international economics and economics of development"
43. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "monetary and financial economics"
44. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study (or four years in 1970-1975) in the subfield of "economics of the public sector, transportation, health, education, tertiary sector, welfare, and economic policy"
52. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "history of economic thought, economic philosophy, epistemology, law, social sciences, and languages"
54. Presence of at least one occupationally oriented specialized degree requiring five years of post-secondary study in the subfield of "mathematics and quantitative methods applied to economics"
57. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "agricultural, rural, energy, and environmental economics and economics of hospitality, tourism, sports, and leisure"
58. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "business economics"
59. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "economics of institutions and organizations"
60. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "economics of labor and human resources"
61. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "general economics"
62. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "industrial economics"
63. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "international economics and economics of development"
64. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "monetary and financial economics"
65. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "economics of the public sector, transportation, health, education, tertiary sector, welfare, and economic policy"

73. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "history of economic thought, economic philosophy, epistemology, law, social sciences, and languages"
75. Presence of at least one non-occupationally oriented specialized degree requiring three years of post-secondary study (or four years in 1970-1975) in the subfield of "mathematics and quantitative methods applied to economics"

Appendix 3: Tables and Figures

Table 1: Evolution of the Number of Universities Accredited to Deliver Degrees in Economics and Management

Sub-periods	Number of universities delivering at least one degree in economics during the sub-period	Percentage of universities delivering at least one degree in economics during the sub-period, relative to the total number of French universities	Number of universities delivering at least one degree in management during the sub-period	Percentage of universities delivering at least one degree in management during the sub-period, relative to the total number of French universities	Total number of French universities
1970-1975	35	57%	22	36%	61
1975-1980	40	60%	33	49%	67
1980-1985	42	59%	33	46%	71
1985-1991	42	59%	39	55%	71
1991-1995	49	63%	50	64%	78
1995-1999	56	70%	61	76%	80
1999-2003	63	78%	72	89%	81
2003-2006	59	73%	73	90%	81
2006-2009	54	67%	71	88%	81

Figure 4: Evolutions of the Number of Universities Accredited to Deliver Degrees in the Domain of "Economics-Management"

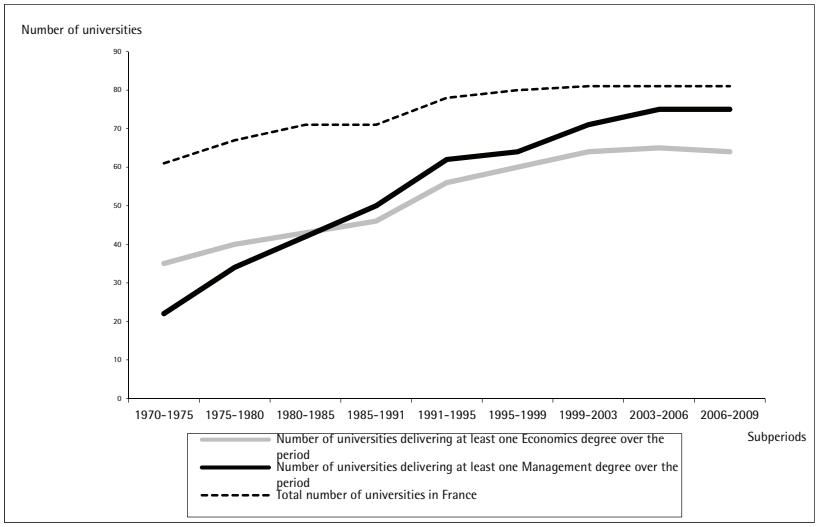

Table 2: Percentage of the Number of Specialized Degrees Offered by the Leading French Universities in the Total Number of Specialized Degrees in Economics, by Sub-Period

University	1970-1975	1975-1980	1980-1985	1985-1991	1991-1995	1995-1999	1999-2003	2003-2006	2006-2009
Paris I	8%	15%	11%	11%	10%	10%	8%	8%	4%
Paris X	3%	7%	7%	6%	5%	4%	5%	5%	5%
Montpellier I	7%	3%	4%	3%	5%	4%	4%	3%	3%
Toulouse I	2%	3%	4%	3%	3%	4%	4%	3%	4%
Bordeaux I & IV	5%	3%	3%	3%	2%	5%	4%	3%	5%
Lille I	6%	2%	2%	2%	2%	3%	3%	5%	3%
Aix-Marseille II	7%	5%	6%	6%	4%	3%	3%	4%	4%
Grenoble II	5%	8%	5%	3%	3%	3%	4%	3%	3%
Lyon II	5%	4%	4%	4%	3%	3%	4%	3%	4%
Dijon	6%	5%	4%	3%	2%	3%	2%	2%	2%
Caen	6%	2%	1%	2%	2%	2%	2%	1%	1%
Paris II	1%	4%	5%	4%	4%	3%	2%	3%	2%
Aix-Marseille III	1%	4%	5%	5%	3%	2%	2%	2%	3%
Nancy II	5%	2%	2%	2%	1%	1%	1%	1%	3%
Clermont-Ferrand I	5%	2%	2%	2%	2%	2%	1%	2%	2%
Rennes I	3%	3%	3%	3%	3%	2%	3%	3%	4%

Table 3: Data on the Number of Instructors and Students[35]

Universities	Instructors 1973	Universities	Graduates 1978
Paris 1	12.05%	Paris 1	13.32%
Paris 9	6.77%	Paris 9	9.20%
Aix Marseille 2	5.71%	Grenoble 2	4.60%
Grenoble 2	5.29%	Paris 13	4.51%
Rennes 1	4.65%	Paris 10	4.48%
Lyon 2	4.23%	Lille 1	4.45%
Toulouse 1	4.02%	Paris 2	4.42%
Paris 10	3.81%	Montpellier 1	3.60%
Bordeaux I et IV	3.81%	Nice	3.59%
Nice	3.59%	Toulouse 1	3.56%
Montpellier 1	3.59%	Lyon 2	2.68%
Poitiers	2.75%	Nancy 2	2.58%
Lille 1	2.75%	Aix Marseille 3	2.56%
Strasbourg 1	2.33%	Bordeaux I et IV	2.56%
Nancy 2	2.33%	Clermont-Ferrand	2.36%
Dijon	2.11%	Aix Marseille 2	2.25%
Clermont-Ferrand	2.11%	Amiens	2.19%
Rouen	1.69%	Poitiers	2.10%
Paris 2	1.48%	Rennes 1	2.03%
Amiens	1.48%	Nantes	1.86%

[35] Information on instructors was gathered from administrative documents listing all permanent faculty, and student information was compiled from documents from the Ministry of National Education. This table features the 20 leading universities in terms of faculty and student population. Colored cells are those of universities considered dominant in the analysis of specialized degrees.

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