

Cabello, Andrea

Article

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The relations between graduate programs in economics in Brazil: A structural equivalence analysis

Andrea Cabello

Universidade de Brasília, Brazil

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Abstract

We analyze the educational background of Economics Professors in Brazilian Economics Graduate Programs, in terms of PhD affiliations. Using a method of structural equivalence, we propose three groups among institutions that granted PhD degrees to Brazilian Economics Professors.

JEL classification: B20

Keywords: Structural equivalence; Economics Departments; PhD affiliation

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1. Introduction

“Men are not narrow in their intellectual interests by nature; it takes special and rigorous training to accomplish that end” (Jacob Viner¹)

It is widely recognized that the theoretical positions taken by economists regarding issues and their alliance to certain school of thoughts is related to where they studied, mainly where they obtained their PhD degrees — “what economists do is what they are trained to do in their graduate programs” (Hansen, 1991, p. 1054). Or yet, as Colander and Klammer (1987, p. 95) said,

“The graduate school experience plays an important role in determining economic discourse; it certifies economists as professionals, it establishes economists’ view of argumentation and guides them as to what is important to study and what is not. To understand economic discourse one should have a good sense of the professionalization of economists that occurs in graduate schools.”

Differences in views among Departments are not uncommon. The saltwater vs. freshwater divide is an example in the United States. The education pursued in a particular graduate school can influence an economist’s view of the

E-mail address: andrea@c.unb.br

¹ Cited in Colander and Klammer (1987, p. 98).

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world and, if they go on to become University Professors, it tends to have a much larger influence over third parties who did not have a direct contact with that particular school.

The study of the composition of Economics Graduate Programs is relatively common in the United States — there are many papers that show the importance of graduate school affiliation for the professional success of an economist (Siegfried and Stock 1999, 2004; Siegfried and Stock, 1999; Stock and Alston, 2000; Barbezat, 1992; Carson and Navarro, 1988). Other analyses focus on the educational background of those who publish in leading journals (Hodgson and Rothman, 1999; Kocher and Sutter, 2001; Kocher et al., 2002) showing the great importance of an economist academic history. There are also papers that focus on the differences between Departments and its effect on the education of new students and soon-to-be-economists like Colander and Klammer (1987), who analyzed graduate students' perceptions of the world in six top graduate programs.

Still concerning the profile and origins of Professors and its effects on student's education, there is a body of literature — unrestricted to Economics — that analyses what is known as academic inbreeding, that is, the hiring of former students as Professors by Universities. There is a consensus that the phenomenon is common, although, there are disagreements on its effects on department's productivity (Wyer and Conrad, 1984).

In Brazil, discussions regarding the importance of economists' education have been taking place ever since Economics was established as a separate field in the mid-twentieth century, focusing mainly on the low quality of teaching in the 1950s and 1960s (Gudin, 1956; Simonsen, 1966) to the need of graduate schools *in loco* (Furtado, 1962) and the evolution of this trajectory through time (Loureiro and Lima, 1994; Loureiro, 1997; Biderman et al., 1997). Analyses regarding the great number of institutions and their profile (Anuatti Neto, 1997; Szmrecsányi and Coelho, 2007) lacked, however, a more detailed investigation on the relationship between these Departments.

The goal of this paper is to analyze the educational background of Economics Professors in Brazilian Economics Graduate Programs, in terms of PhD affiliations and based on this information, understand the role of these institutions in the Brazilian Economics Academia as whole. From that, we wish to classify these institutions and to understand the roles they assume in this environment.

The discussion according to theoretical positions such as one of an Orthodoxy vs. Heterodoxy flavor is very heated in Brazil but it is very hard to classify an economist in such a way, let alone a whole Graduate Program. Most attempts to differentiate people and groups this way were carried by their theoretical positions — for this, they had to establish *a priori* these positions.

We chose to take a different approach. Our goal is to analyze Graduate Programs in Economics in Brazil without having to looking at individual theoretical positions — so we chose a “sociological” approach. For each individual institution, we will look at which other institution they have closer ties to, with the assumption that these closer ties determine the characteristics of this first institution. That is, they might claim to be something but it may not hold up to how they relate to one another — it may not match who they are close to.

There are obvious limitations in this approach, but we believe we bring a contribution as we did not find anything similar neither in Brazil nor in the international literature, and given that our community is rather divided, we think this might be an interesting exercise as to show an attempt of a quantitative picture of what is usually only guessed.

This paper is divided in four sections. Section 2 brings a brief description of the institutional background of the Brazilian Economics Academia, while the third section describes our data, our methodology and our results and the fourth brings our conclusions.

2. The institutional background

Economics was established as a separated field in Brazil in the mid-twentieth century and the first graduate programs were established a few decades after that. The expansion of Economics in Brazil is related to, in some cases, to an inflow of foreign Professors sponsored by several programs such as the Ford and the Rockefeller Foundations and to an outflow of Brazilian PhD candidates abroad, mainly to the United States (FGV, 2000).

In this more than half of a century of evolution, Brazil has successfully established a network of universities and research centers. However, the individual roles that each institution plays are not the same. Anuatti Neto (1997) argues that in the 1960s, the newly established Graduate Programs structure in Economics was a specialized one, in which

two institutions, USP,² linked to Antonio Delfim Netto, and EPGE, linked to Eugênio Gudin and Mário Henrique Simonsen, were “the main diffusers of economic theory while the others had to develop applied research and educate people for planning activities in national and regional scale”³; (Anuatti Neto, 1997, p. 183). Many of these institutions received financial and institutional support from governmental and foreign agencies.

Strong incentives for research and education led to a proliferation of graduate studies institutions (Anuatti Neto, 1997) and today, we have many institutions with graduate studies (that is, with a least a Master’s degree in Economics) and many are very small and sometimes with limited resources.

One of the possible reasons for this is that the motivations behind the actors engaged in the process seemed to be different. Furtado (1962) argued that bringing foreign Professors or that training Latin Americans abroad was not enough to develop basic research: in his view, teaching and supervising *in loco* were necessary for continuous research. Delfim Netto, speaking at the seminar on the 50 years of Economics in Brazil⁴ argued that “*We were made to produce economic development! That is the only justification for a school like this. Either we contribute, in a positive way for this, or we are good for nothing*”⁵; (Loureiro, 1997, p. 239). Bresser-Pereira, still following these lines at the same seminar, followed Furtado and defended the need to educate economists in Brazil as this would help understand and deal with Brazilian problems. This social duty approach is also clear in Delfim Netto’s view.

However, other actors had different views: Professor Sérgio Werlang argued at the same event that both teaching and research in Brazil were more and more in line with the international mainstream and this was a good thing as, otherwise, it would reduce the international value of Brazilian graduates — that is, he argues in favor of a market approach in terms of a greater adherence of international standards of education to increase the value of education of Brazilian economists (Loureiro, 1997). Faria (2000) also recommends an internationalization of research as a clear target for Brazilian Professors, a point also defended by Issler and Pillar (2002) who praise EPGE’s policy of hiring Young Scholar’s with clear Internationalization Strategies.

From this discussion, we see, therefore, that the Brazilian academia is made up of many institutions and that these institutions do not have the same interests or goals — and these differences makes the analysis of their relationships even more interesting.

3. Data, methodology and main results

Our data selection started by establishing the Economics Graduate Programs that had at least one active Academic⁶ Economics Graduate Program registered at Capes,⁷ and in operation in 2013. Then, we selected all the professors of these Departments,⁸ excluding those that either did not have a Currículo Lattes⁹ or that we could not find it. This initial sample had 1498 Professors.¹⁰

Since our goal is to analyze how Economics Graduate Programs relate to one another from the point of view of the educational background of their faculty, we then proceeded to exclude those Professors that did not hold a PhD degree in Economics.¹¹ Our final sample has 1015 Professors and therefore it comprises Economics Professors with

² The full name of all institutions and their locations are described in Table 1.

³ Original in Portuguese: “cabendo aos dois grandes centros, USP e EPGE, o papel de difusores de teoria econômica e aos demais a tarefa de desenvolvimento de pesquisa aplicada e formadores de quadros para as atividades de planejamento em âmbito nacional e regional”.

⁴ Published in Loureiro (1997).

⁵ “Fomos construídos para produzir o desenvolvimento econômico! Essa é a única justificativa para uma escola como esta. Ou nós contribuimos, de alguma forma positiva, para isso, ou não vamos servir para coisa nenhuma”

⁶ As opposed to having only a “Professional Master’s” degree or not having at all.

⁷ Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.

⁸ That is, not only those involved with the Graduate program.

⁹ A Currículo Lattes is a CV that researchers voluntarily keep at Plataforma Lattes, maintained by CNPq, the official body for research in the Brazilian Government, that integrates data bases regarding researcher CVs, institutions and research groups in Brazil. All information provided at Currículo Lattes is given voluntarily.

¹⁰ We discarded about 5% of the original sample with problems with Currículos Lattes.

¹¹ This means we only considered Professors that had a PhD degree. Professors with only a Master’s degree were also excluded.

Table 1
Selected institutions, number of Professors selected and date of creation of Graduate programs.

Institution	Professors Selected	Date of Creation ^a — Master's Program	Date of Creation — PhD Program
EPGE — Escola de Pós Graduação em Economia da Fundação Getulio Vargas — RJ	27	1961	1974
ESALQ/USP — Escola Superior de Agricultura Luiz de Queiroz — SP	26	1966	1990
FGV-SP — Escola de Economia de São Paulo da Fundação Getulio Vargas — SP	36	1988	1988
Insper — SP	27	2004	2015
PUC-Rio — Pontifícia Universidade Católica do Rio de Janeiro — RJ	24	1978	1993
PUC-RS — Pontifícia Universidade Católica do Rio Grande do Sul — RS	11	2002	2012
PUC-SP — Pontifícia Universidade Católica de São Paulo — SP	27	1977	—
UCB — Universidade Católica de Brasília — DF	14	1998	2006
UEL — Universidade Estadual de Londrina — PR	14	2009	—
UEM — Universidade Estadual de Maringá — PR	20	1995	2010
UERJ — Universidade Estadual do Rio de Janeiro — RJ	23	2003	2014
UFAL — Universidade Federal de Alagoas — AL	15	2008	—
UFBA — Universidade Federal da Bahia — BA	19	1973	2013
UFC — Universidade Federal do Ceará — CE	37	1972	2000
UFES — Universidade Federal do Espírito Santo — ES	17	1994	—
UFF — Universidade Federal Fluminense — RJ	39	1987	2002
UFJF — Universidade Federal de Juiz de Fora — MG	21	2006	2011
UFMA — Universidade Federal do Maranhão — MA	5	2011	—
UFMT — Universidade Federal de Mato Grosso — MT	9	2005	—
UFPA — Universidade Federal do Pará — PA	17	2006	2015
UFPB/JP — Universidade Federal da Paraíba — PB	26	1980	2011
UFPE — Universidade Federal de Pernambuco — PE	31	1967	1982
UFPEL — Universidade Federal de Pelotas — RS	9	2009	—
UFPR — Universidade Federal do Paraná — PR	32	1990	1999
UFRGS — Universidade Federal do Rio Grande do Sul — RS	43	1972	1992
UFMG — Universidade Federal de Minas Gerais — MG	32	1968	2001
UFRJ — Universidade Federal do Rio de Janeiro — RJ	73	1979	1987
UFRN — Universidade Federal do Rio Grande do Norte — RN	10	2005	—
UFSC — Universidade Federal de Santa Catarina — SC	19	1995	2012
UFSCAR — Universidade Federal de São Carlos — SP	16	2010	—
UFSM — Universidade Federal de Santa Maria — RS	14	2011	—
UFU — Universidade Federal de Uberlândia — MG	31	1996	2007
UFV — Universidade Federal de Viçosa — MG	14	1961	1972
UnB — Universidade de Brasília — DF	36	1973	1996
UNESP — Universidade Estadual Paulista Júlio de Mesquita Filho — SP	17	1998	—
UNICAMP — Universidade Estadual de Campinas — SP	63	1974	1977
UNISINOS — Universidade do Vale do Rio dos Sinos — RS	11	2006	—
USP — Universidade de São Paulo — SP	81	1970	1974
USP-RP — Universidade de São Paulo, Campus Ribeirão Preto — SP	29	2004	2015
Total	1015		

Source: Faculty extracted from each institution's website and the sample exclusion procedure described in previous paragraphs applied; dates obtained from Capes' website at Plataforma Sucupira. Search done between December 2014 and March 2015.

^a In the case that there was more than one program, we always chose the oldest program for each institution.

PhD degrees in Economics¹² that work in Economics Departments in Brazil that have at least one active Academic Economics Graduate Program registered at Capes, active in 2013. Table 1 shows how it is divided among institutions.

Table 1 also shows the date of creation of graduate programs in each institution in two levels: Master's and PhD degrees. Some things stand out here. First of all, not all institutions have a PhD program. Second of all, some

¹² This means we excluded those who did not obtain a PhD in Economics. We considered only Economics degrees that had Economics in the name. A few exceptions were made, such as Economic Theory or a specific field of Economics such as Macroeconomics, Mathematical Economics, Industrial Economics, Monetary Economics, Economic History and so on. In the case of Development PhDs, if it was not clear by the name that it was an Economics PhD, we made the arbitrary decision to cut it from our sample.

of these institutions have a much older tradition in graduate programs than others and can be considered “early entrants”. These two characteristics together mean that some institutions are responsible for a much larger share of Economics PhD graduates in general than the rest and this overrepresentation may be present among faculties as well.

The second consequence relates specifically to our choice of methodology. We chose to analyze this data in a social network sense, through structural equivalence, and our proposed relation for a network to be studied here is between the institutions where Economics Professors in Brazil obtained their Economics PhD and the Economics Departments where they teach today in Brazil.¹³ That is,

PhD degree from institution A \rightarrow Professor working in institution B

or

$A \rightarrow B$

where A and B represent nodes A and B in the network.

We consider this relation to be directed and weighted. Directed as to consider the way information and influence is transmitted from one institution to another. Weighted because we think that the more Professors one institution provides another, the stronger the relation between the two institutions is. From now on, we will call A a “sender” because it is sending the signal and B a “receiver” as it is receiving the signal. Some institutions can assume both roles depending on whether they granted or not PhD degrees to faculty members of other institutions, and some will assume only one of these roles.¹⁴

The main advantage of a social networks analysis is that it allows us to understand how actors relate to one another. They are described first in terms of their relations and then in terms of their characteristics or attributes. In our case, as it is very common in networks, we use almost the entire population that fits our requirements and not just a small sample.

To make visualization easier and to allow us to focus on the diffusion of knowledge between Brazilian institutions, we aggregate the institutions abroad, that is, we created nodes that represented all the institutions abroad together, divided by geographical areas: USA (which contains all the institutions in the United States and Canada in our sample), UK (which contains all the institutions in the United Kingdom in our sample), EUR (which contains all the institutions in the Continental Europe in our sample) and LA (which contains all the institutions in Latin America other than Brazil in our sample). Each of these nodes represents all these institutions in these areas as if they were only one. Behind this aggregation, lays the assumption that North American institutions have more in common with each other than with Continental European ones or with Brazilian ones and so on.¹⁵ The reasons for this are two: the first one is the great dispersion among institutions abroad, which makes it difficult for us to visualize patterns; the second reason is that since we are only analyzing the educational background of Economics Professors in Brazil, these institutions only send signals and do not receive them, that is, they only grant PhD degrees to people who will work in Brazilian Economics Departments and do not (or at least, we do not consider this in our sample) hire any Economist with a PhD degree from a Brazilian University — so, in this sense, all these institutions abroad are similar.

Our goal is to analyze how the relations between nodes lead to patterns that can signal the presence of groups or clusters among them.¹⁶

To consider these groups, we investigate how these institutions connect with each other. To do so, we consider a concept called structural equivalence. Borgatti et al. (2013, p. 208) define the concept, saying that actors i and j are structurally equivalent if they satisfy the statements below:

¹³ This means that if they teach Economics in departments other than Economics, they were also excluded from our sample. If they teach Economics in institutions outside of Brazil, they were also excluded from our sample.

¹⁴ This relates to the fact that not all of them have a PhD program (so only a receiver role) and also the abroad nodes (which will have only a sender role) that will be discussed ahead.

¹⁵ We know this is a strong assumption, as many of these places are characterized by heterogeneous Academic communities.

¹⁶ Ucinet 6 for Windows: Software for Social Network Analysis, developed by Borgatti et al. (2002).

= For every actor k different from i and j , whenever i is connected to k , then j is also connected to k , and if i is not connected to k neither is j .

- If i is connected to itself then so is j , and if i is not connected to itself then neither is j - so that both share the same relationship with themselves."

Borgatti et al., 2013 Borgatti et al. (2013, p. 208) summarize the definition for undirected networks without self-loops as "actor i and j are structurally equivalent if, excepting each other, they are connected to exactly the same other actors. This is not our case since our networks have both direction and self-loops, but the intuition is very clear.

To do this comparison, we construct and compare node profiles (that is, the type of connections that they have with other nodes) using correlation. We chose correlation because our data is valued and this measure takes into consideration the strength and direction of association, rather than the existence of the tie only (Hanneman and Riddle, 2005). In this case, a -1.00 correlation means that the two actors have exactly the opposite ties to each other while a $+1.00$ correlation means that they always have the same ties. A 0.00 correlation means that knowing one actor's tie to a third node will not help identify the other ties.

Borgatti et al., 2013 Borgatti et al. (2013, p. 211) describe the process:

"Suppose that we wish to use matching to compare the profile of row i with the profile of row j . For each element except the i th and the j th entry in each row or column that makes up the profile, we match the corresponding element in each vector. We then match i th entry in row i with j th entry in row j and the j th entry in row i with the i th entry in row j , repeating the process for the corresponding column entries. This process is known as 'reciprocal swapping' and is applied regardless of the method of comparing vectors."¹⁷

We then proceed to compare every pair of actors and from this information construct a structural equivalence matrix. The (i, j) entry in this matrix is the profile similarity measure of actor i with actor j . Regardless of how many relations are being considered, and whether they were directed or not, the structural equivalence matrix is a square matrix with the same number of rows (and columns) as the number of actors in the dataset."

Table 2 shows our matrix of structural equivalence by correlation.

After such a matrix of structural equivalence is obtained, we can submit it to a clustering method. Hanneman and Riddle (2005) described this process as an algorithm that initially places each actor in its own cluster and it combines the two most similar cases (that is, those with the highest correlation) into a group. Then, it re-calculates the similarity of this new group to the rest (by cluster average). So, in the end, all nodes are grouped together in a single class.

When constructing the hierarchical clustering of the equivalence matrix, UCINET rearranges the nodes, so that the order in which they show up in the upper part of the picture relates to the nodes they are going to connect first. For example, Insper and PUC-Rio are the first to connect, so they are close together. In the left side of Fig. 1, we see the levels of correlation — they go from $+0.934$ to -0.047 .¹⁸ All nodes will eventually be connected, so the important thing when analyzing Fig. 1 is to see which nodes get to connect with which other node first and how long it takes for groups to connect with other groups.

After Insper and PUC-Rio connected, the second ones to connect were UFU and Unesp (at the right side of the picture), with a correlation of $+0.919$. After that, the Insper-PUC-Rio duo (now treated as one) is joined by EPGE at $+0.899$, and then UFU and Unesp (also treated as one) were joined by UFRN at $+0.881$. PUC-RS and Unisinos (at the far-right side of the picture) at $+0.829$ then connected and so on.

Each of the peaks represents the start of a connection that will originate a cluster but that eventually will agglomerate everyone, as in lower correlation levels all units connect. So the way to interpret this picture is, again, to see who connects with whom first and how long it takes to connect with all others.

Before we start analyzing Fig. 1, we would like to make an observation. We chose this method, because it is constructed based on the similarity that each node has to the other nodes on the group — something in the lines of "show me your friends, and I will tell you who you are". This means that while certain explanations fit very well for certain members of the group, it may not do so well for others, but since they do have a similarity to the other nodes in the group, they were put together. This does not harm our purpose here. Our intention was to analyze possible channels of influence

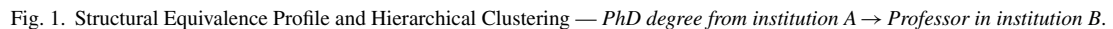
¹⁷ In our case, correlation but we could have chosen Euclidean distance, for example.

¹⁸ We did not have that many negative correlation values.

Table 2
Matrix of structural equivalence — Correlation.

UFJF	UFMA	UFMG	UFMT	UFPA	UFPB	UFPE	UFPR	UFPEl	UFRGS	UFRJ	UFRN	UFSC	UFSCAR	UFSM	UFU	UFV	UK	UNICAMP	USA	USP	USP-RP	UnB	Unesp	Unisinos
−0.03	−0.02	−0.03	−0.03	0	−0.02	−0.03	0.05	−0.02	0.02	0	−0.02	−0.04	−0.03	−0.02	−0.02	0.16	−0.05	0.08	0.03	−0.01	−0.02	0.08	−0.02	−0.02
0.07	−0.05	0.49	0.18	0.57	0.04	0.73	0.15	−0.04	0.32	0.33	−0.03	−0.04	0.35	0.09	0.32	0.11	0.07	−0.06	0.36	0.79	0.12	0.8	0.11	0.13
0.15	−0.02	0.33	0.21	0.44	0.03	0.54	0.23	−0.06	0.39	0.23	0.01	−0.01	0.41	0.1	0.25	0.35	−0.07	−0.01	−0.06	0.5	0.24	0.57	0.14	0.07
−0.13	−0.09	−0.1	−0.11	−0.15	−0.09	0.12	−0.1	−0.09	0.02	0.23	−0.08	−0.1	−0.11	−0.1	−0.11	0.07	0.65	0.34	0.39	0	−0.07	−0.05	−0.07	−0.07
0.16	0.04	0.5	0.2	0.55	0.11	0.61	0.26	−0.01	0.37	0.37	0	0.1	0.37	0.12	0.31	0.1	−0.03	0.1	−0.02	0.77	0.24	0.73	0.15	0.16
−0.04	−0.03	−0.05	−0.04	−0.04	−0.03	−0.05	−0.05	−0.03	0	−0.02	−0.02	−0.05	−0.04	−0.03	−0.03	−0.1	0.05	−0.07	0.28	−0.05	−0.02	0.11	−0.02	−0.03
0.26	0.01	0.64	0.23	0.62	0.11	0.77	0.31	−0.01	0.43	0.41	−0.03	0.1	0.4	0.12	0.36	0.12	−0.08	−0.03	−0.11	0.73	0.34	0.87	0.13	0.18
−0.08	−0.06	0.03	−0.07	−0.09	−0.07	−0.05	0.02	−0.06	0.04	0.07	−0.05	−0.09	−0.07	−0.07	−0.06	−0	0.33	0.32	0.04	−0.02	−0.05	−0.05	−0.04	−0.05
0.12	0.11	0.38	0.2	0.34	0.29	0.21	0.5	0.64	0.37	0.31	0.15	0.73	0.5	0.8	0.33	0.27	−0.1	0.01	−0.1	0.19	0.03	0.3	0.2	0.88
0.11	−0.04	0.52	0.2	0.6	0.05	0.72	0.19	−0.03	0.36	0.45	−0.03	−0.01	0.38	0.11	0.34	0.14	0.05	−0.02	0.17	0.72	0.13	0.83	0.12	0.14
0.47	0.06	0.25	−0.03	0.23	−0.04	0.16	0.34	0.11	0.27	0.1	0.22	0.14	0.02	0.12	0.33	0.04	−0.09	−0.01	−0.09	0.06	0.67	0.06	0.29	−0.1
0.01	0.01	0.21	0.04	0.38	0.12	0.16	0.19	0.71	0.02	0.09	−0.04	0.2	0.14	0.21	0.05	0.06	−0.1	−0.06	−0.09	−0.06	0	0.38	−0.01	0.33
0.07	0.06	−0.01	0.71	0.07	0.07	−0.02	0.06	0.06	−0.05	−0.07	0.03	0.18	0.65	0.26	−0.04	0.14	−0.09	0	−0.09	0.08	0.09	0.02	0.02	−0.3
0.33	0.21	0.25	0.59	0.47	0.1	0.22	0.42	0	0.35	0.18	0.43	0.26	0.66	0.45	0.49	0.34	−0.14	−0.03	−0.13	0.17	0.41	0.24	0.47	0.03
0.18	0.11	0.77	0.17	0.5	0.2	0.57	0.51	−0.05	0.41	0.6	0.14	0.28	0.31	0.14	0.45	0.17	−0.11	0.03	−0.11	0.52	0.24	0.71	0.21	0.29
0.22	0.56	0.33	0.12	0.34	0.61	0.04	0.54	0.1	0.3	0.43	0.58	0.51	0.15	0.44	0.48	0.19	−0.14	0.02	−0.15	0	0.17	0.13	0.41	0.38
0.18	0.57	0.4	0.34	0.58	0.51	0.45	0.58	−0.05	0.51	0.62	0.52	0.48	0.5	0.44	0.59	0.25	−0.13	0.05	−0.12	0.38	0.15	0.5	0.55	0.24
0.23	0.31	0.5	0.31	0.55	0.44	0.69	0.28	−0.01	0.37	0.45	0.04	0.22	0.41	0.16	0.24	0.08	−0.11	0.01	−0.11	0.58	0.25	0.75	0.09	0.21
0.28	0.34	0.5	0.16	0.21	0.33	0.11	0.66	−0.05	0.32	0.58	0.3	0.61	0.25	0.22	0.38	0.14	−0.11	0.12	−0.13	0.07	0.28	0.24	0.31	0.29
0.01	0.09	0.42	0.03	0.15	0.18	0.09	0.34	−0.04	0.18	0.69	0.16	0.22	0.06	0.04	0.27	0.14	−0.01	0.09	−0.06	0.09	0	0.21	0.1	0.24
1	0.14	0.42	0.06	0.17	0.2	0.25	0.2	0.05	0.18	0.04	0.03	0.16	0.08	0.09	0.09	0.05	−0.12	−0.08	−0.12	0.1	0.76	0.12	0.04	0.11
0.14	1	0.06	0.24	0.13	0.78	−0.03	0.32	−0.04	0.15	0.27	0.57	0.28	0.11	0.35	0.3	0.07	−0.1	0	−0.1	−0.01	−0.03	0.03	0.39	0.08
0.42	0.06	1	0.1	0.37	0.1	0.6	0.61	−0.01	0.39	0.52	0.05	0.33	0.21	0.08	0.33	0.12	−0.05	0.13	−0.1	0.53	0.43	0.65	0.14	0.22
0.06	0.24	0.1	1	0.13	0.3	0.14	0.12	−0.05	0.03	0.12	0.04	0.19	0.76	0.28	0.04	0.12	−0.11	0	−0.1	0.12	0	0.24	0	0.07
0.17	0.13	0.37	0.13	1	0.09	0.46	0.45	0.3	0.48	0.33	0.5	0.28	0.4	0.45	0.67	0.33	−0.14	−0.12	−0.14	0.45	0.22	0.54	0.58	0.23
0.2	0.78	0.1	0.3	0.09	1	0.12	0.14	0.18	0.04	0.19	0.26	0.36	0.2	0.37	0.03	0	−0.1	0	−0.1	0.03	−0.02	0.13	−0.01	0.39
0.25	−0.03	0.6	0.14	0.46	0.12	1	0.26	−0.03	0.44	0.33	−0.04	0.13	0.26	0.05	0.25	0.11	−0.12	−0.02	−0.02	0.59	0.32	0.69	0.09	0.12
0.2	0.32	0.61	0.12	0.45	0.14	0.26	1	0.09	0.57	0.6	0.56	0.68	0.28	0.48	0.71	0.27	−0.12	0.13	−0.15	0.25	0.21	0.39	0.64	0.26
0.05	−0.04	−0.01	−0.05	0.3	0.18	−0.03	0.09	1	−0.07	−0.07	−0.03	0.38	0.18	0.54	0.04	0.12	−0.09	−0.08	−0.09	−0.07	−0.02	−0.04	−0.03	0.69
0.18	0.15	0.39	0.03	0.48	0.04	0.44	0.57	−0.07	1	0.37	0.41	0.27	0.21	0.48	0.56	0.26	−0.07	0.07	−0.13	0.3	0.29	0.45	0.52	0.32
0.04	0.27	0.52	0.12	0.33	0.19	0.33	0.6	−0.07	0.37	1	0.32	0.44	0.26	0.27	0.47	0.14	0.2	0.25	−0.05	0.33	0.07	0.45	0.4	0.21
0.03	0.57	0.05	0.04	0.5	0.26	−0.04	0.56	−0.03	0.41	0.32	1	0.25	0.09	0.56	0.83	0.34	−0.08	−0.07	−0.08	0.02	−0.03	−0.04	0.92	−0.01
0.16	0.28	0.33	0.19	0.28	0.36	0.13	0.68	0.38	0.27	0.44	0.25	1	0.37	0.58	0.29	0.2	−0.14	0.05	−0.15	0.03	0.13	0.17	0.26	0.6
0.08	0.11	0.21	0.76	0.4	0.2	0.26	0.28	0.18	0.21	0.26	0.09	0.37	1	0.56	0.25	0.36	−0.12	0.01	−0.1	0.27	0.03	0.4	0.17	0.38
0.09	0.35	0.08	0.28	0.45	0.37	0.05	0.48	0.54	0.48	0.37	0.56	0.58	0.56	1	0.58	0.38	−0.1	−0.02	−0.1	0.09	−0.01	0.11	0.58	0.72
0.09	0.3	0.33	0.04	0.67	0.03	0.25	0.71	0.04	0.56	0.47	0.83	0.29	0.25	0.58	1	0.43	−0.1	−0.04	−0.09	0.31	0.04	0.32	0.92	0.14
0.05	0.07	0.12	0.12	0.33	0	0.11	0.27	0.12	0.26	0.14	0.34	0.2	0.36	0.38	0.43	1	−0.14	0.02	0	0.13	−0.03	0.11	0.38	0.17
−0.12	−0.1	−0.05	−0.11	−0.14	−0.1	−0.12	−0.12	−0.09	−0.07	0.2	−0.08	−0.14	−0.12	−0.1	−0.1	−0.1	1	0.31	0.6	0.13	−0.07	−0.02	−0.07	−0.08
−0.08	0	0.13	0	−0.12	0	−0.02	0.13	−0.08	0.07	0.25	−0.07	0.05	0.01	−0.02	−0.04	−0	0.31	1	0.13	0.05	−0.02	0	−0.05	0
−0.12	−0.1	−0.1	−0.1	−0.14	−0.1	−0.02	−0.15	−0.09	−0.13	−0.05	−0.08	−0.15	−0.1	−0.1	−0.09	−0.1	0.6	0.13	1	0.19	−0.06	−0.01	−0.06	−0.08
0.1	−0.01	0.53	0.12	0.45	0.03	0.59	0.25	−0.07	0.3	0.33	0.02	0.03	0.27	0.09	0.31	0.13	0.13	0.05	0.19	1	0.62	0.66	0.07	0.11
0.76	−0.03	0.43	0	0.22	−0.02	0.32	0.21	−0.02	0.29	0.07	−0.03	0.13	0.03	−0.01	0.04	−0	−0.07	−0.02	−0.06	0.62	1	0.17	0.07	0.01
0.12	0.03	0.65	0.24	0.54	0.13	0.69	0.39	−0.04	0.45	0.45	−0.04	0.17	0.4	0.11	0.32	0.11	−0.02	0	−0.01	0.66	0.17	1	0.1	0.21
0.04	0.39	0.14	0	0.58	−0.01	0.09	0.64	−0.03	0.52	0.4	0.92	0.26	0.17	0.58	0.92	0.38	−0.07	−0.05	−0.06	0.15	0.07	0.1	1	0.01

Note: The matrix is symmetrical, so diagonals equal 1 because the profile of actor i has a correlation of 1 with its own profile, since they have the exact same relation



We would also like to stress that in no way our explanation here is unique.¹⁹ As can be seen by Fig. 1, there are many peaks, so depending on the level of aggregation of schools, there are many possible groups for one to assemble. Also, had we chosen a different method to compare node profiles instead of correlation, for example, Euclidean distance, the distribution might have been different. Also when setting a correlation level for selection clusters, we tried to go as low as possible without including everybody and still selecting institutions that made sense from a practical point of view.

¹⁹ We did try other clustering methods available for network analysis such as forcing a division into faction or into a Newman- Girvan algorithm division but even when forcing it to divided the departments into 4–5 groups, they would still arrange almost all of them together and only pushing one or two in a separate group, due to great similarity between departments, which would escape the exercise we wished to perform here. Therefore, we emphasize the “*fine tuning*” of our classification, which, as we said, it is not unique, but based only on a chosen (*ad hoc*) level of correlation (0.252) on a structural equivalence analysis of ties.

Table 3

Doctorate affiliations for Professors in Economics (in percentage).

Institution	Percentage of Total	Cumulative Frequency	Institution	Percentage of Total	Cumulative Frequency
UNICAMP	13.9%	13.9%	University of Chicago	1.9%	63.5%
USP	11.2%	25.1%	UFV	1.7%	65.2%
UFRJ	7.2%	32.3%	New School for Social Research	1.6%	66.8%
UFRGS	5.4%	37.7%	UFF	1.5%	68.3%
University of Illinois	3.9%	41.6%	Cambridge University	1.4%	69.7%
ESALQ/USP	3.9%	45.5%	PUC-Rio	1.3%	71.0%
UFPE	3.3%	48.8%	UFMG	1.3%	71.3%
University of London	2.8%	54.3%	UFC	1.2%	73.5%
FGV-SP	2.7%	57.0%	London School of Economics	1.1%	74.6%
UnB	2.4%	59.4%	Princeton	1.0%	75.6%
EPGE	2.2%	61.6%	Université Paris 13 Paris-Nord	1.0%	76.6%

Therefore, we would like to emphasize that these groups of institutions proposed here are perhaps better described as clusters of influence rather than tied-knit groups. Our criteria for telling them apart is a lower level of correlation among the near-by institution in Fig. 1, which would allow to provide a “cut” in this cluster of influence.

The division between the first and second cluster was established at a level of correlation of +0.007; between the second and the third at a level of correlation of +0.295 and between the third and fourth at a level of correlation of +0.192.

Specially in the case of groups two and three and the +0.295 level, we are aware that within the other groups there is still clustering that still did not take place, but we given our purpose here, we do not feel it harms our explanation. Specially, in the far right of Fig. 1 this will imply a variety of influences as it will be discussed ahead, which is aligned with our proposed interpretation.

To make it easier to understand our interpretation, before we propose our groups, we would like to call attention to the institutions that granted the most PhD degrees in our sample — only four institutions (UNICAMP, USP, UFRJ, UFRGS) are responsible for granting PhD degrees for almost 40% of Economics Professors in our sample. Two things have to be remembered though: not all institutions offer a PhD program; and some offer a PhD program for a much longer time. We will get back to this information when analyzing Fig. 1.

i. The first one has to do with the nodes that have a dominant sender role rather than a receiver one. That is the case of the nodes that represent institutions abroad (USA, EUR, UK, LA), the case of those institutions that granted degrees to some of the Professors in the sample but that were not in the sample themselves (Impa²⁰) and the case of UNICAMP that, although sends and receives signals, it seems to have a more preeminent role sending them rather than receiving (we justify this by their leading role shown by Table 3). We see that their profiles do correlate only at a lower level than the other cases that we will analyze (it only starts at the +0.651 correlation level with EUR and UK nodes) — they are the first two peaks in the picture from the left all the way to USA. We call this group the “Senders” and they are at the left side of Fig. 1 (Impa, LA, USA, EUR, UK, UNICAMP).

The case of UNICAMP is a unique case among institutions as it has a low level of internationalization (measured by the percentage of faculty members with PhD degrees obtained abroad — 14.29%) but the highest level of academic inbreeding (77.78%) in our sample. Also, as Table 3 shows, it is the single institution that granted the most PhD degrees to Brazilian Economics Professors, so this might explain why it was placed so closed to the only-senders nodes.

Also, with the exception of the first two nodes (ASIA — 0.01% of our sample, Impa — 0.3% — and LA — 0.7%), all the others (UNICAMP, EUR, UK and USA) account for a vast number of graduates. This probably relates to the own construction of the nodes, where to form EUR (8.57% of our sample), UK (7.98%) and USA (20.30%) we put together very different institutions. However, we do see that UNICAMP (13.9%) also has a very strong and diversified reach, even though there are some noticeable exceptions in its list (namely, many of the institutions in the group “International”, which we will discuss next).

²⁰ They show up in our sample with degrees such as Mathematical Economics (in the case of Impa) which we classified in the Economics realm, but it was not in the CAPES classification, so therefore, out of our sample.

Table 4

Number of Individuals in the Sample with Degrees from Each Institution, Internationalization and Academic Inbreeding for the USP and ESALQ/USP influenced group.

Institution	Percentage of Individuals in the Sample with Degrees from Each Institution	Percentage of Faculty with PhD Degrees from Abroad	Academic Inbreeding Percentage	Percentage of Faculty with PhD degrees from USP	Percentage of Faculty with PhD degrees from ESALQ/USP
PUC-SP	0.00%	7.41%	0.00%	37.0% ^a	0.00%
UFJF	0.01%	9.52%	4.76%	28.6%	0.00%
USP-RP	0.00%	17.24%	0.00%	69.0% ^b	0.00%
UEL	0.00%	0.00%	5.00%	7.14%	57.1%
UEM	0.02%	10.00%	0.00%	15.0%	25.0%
UFMT	0.00%	22.22%	0.00%	0.00%	33.3%
UFSCAR	0.00%	31.25%	0.00%	0.00%	31.25%

^a PUC-SP has a strong FGV-SP percentage as well — 40.7%.

^b Not all Professors differentiated between USP, USP-RP and ESALQ/USP so we used advisers to tell them apart.

ii. Continuing from this point (from USA) further to the right, we go to the second group (all the way to UFSCAR). This group, with a few variations, seems to be composed of schools in smaller cities, such as UFMT, UEL, UFSCAR, UEM. We also see PUC-SP and USP-RP here. Many of these institutions do not have a PhD program, as [Table 1](#) shows. [Table 4](#) shows their levels of Internationalization and Academic Inbreeding, which corroborates these facts. With the exception of UFSCAR, the Programs in this group have less than 1/4 of their faculty with a PhD from abroad.

What seems to unite these institutions is that, with the exception of PUC-SP, the most common PhD affiliation for Professors in these Programs is either USP or ESALQ/USP (although USP is also very present among PUC-SP's faculty as well), as [Table 4](#) shows. That is, they seem to be under the influence of these two schools. We put them together, but they are almost composed of two subgroups a USP one, with PUC-SP, UFJF and USP-RP and an ESALQ/USP one, which contains the other schools — the last two columns of [Table 4](#) show this very well. We call this group the “USP and ESALQ/USP influenced” and they are the second block from the left.²¹

iii. The third group we propose is composed by ESALQ/USP, UERJ, UFMG, FGV-SP, USP, UFPE, UFC, EPGE, PUC-Rio, Insper and UnB. This group contains some of the “early entrants” we mentioned before, that is, institutions that have the oldest PhD programs in Economics in Brazil (a notable exception is UNICAMP, which is not in this group). What seems to unite this group is the fact that all these institutions have a considerable share of their faculty with PhDs from abroad. With the exception of USP and ESALQ/USP, all the Programs in this group have more than 50% of their faculties with PhDs obtained abroad and are the most internationalized Economics Departments in Brazil in this sense (and both USP and ESALQ/USP have more than 45% and are only surpassed by two other schools) — this will be shown by [Table 5](#).

Because of this common characteristic, we call this group the “International” Group and they are the third from the left, in the middle of [Fig. 1](#).²²

Besides this strong international characteristic, some of these schools also have an inbreeding trace (a noticeable exception is Insper, as its PhD program is very recent). Regarding the destination of their PhD graduates (that is, where they go on to work after they obtain their PhD from the schools in this group), with the exception of USP and UnB, it is usually limited to a handful of institutions. There is also a strong regional tendency in some cases, that is, in many cases, the data seems to suggest a geographical influence, such as UnB-UCB, UFPE-UFC-Northeastern institutions and UERJ seems to have ties to UFRJ, and also strong inbreeding trends, that is, many of these institutions absorb a considerable part of their own PhD graduates that became Economics Professors.

²¹ When we look at [Fig. 1](#), we see that the first ones to connect in this group were UFJF and USP-RP at +0.762. Then, UFMT and UFSCAR connected at +0.760. After that, UEL and UEM at +0.722. Then at +0.649, these two duos (UFMT-UFSCAR and UEL-UEM) connect to form one group. PUC-SP connects itself with the duo UFJF and USP-RP at +0.603, these two blocks connect at +0.221.

²² It starts with PUC-Rio and Insper connecting at +0.934 (the highest correlation we had), then EPGE joins at a correlation of +0.899, followed by UnB at +0.829. Then, FGV-SP and USP form a duo at +0.773 and so do UERJ and UFMG at +0.766. UFC then joins the first group (PUC-Rio-Insper-EPGE-UnB) at +0.758 and so does UFPE at +0.705. Then this group combines with the FGV-SP-USP duo at +0.692. The newly formed group later combines with the UERJ-UFMG duo at +0.598 to be finally joined by ESALQ/USP at +0.536.

Table 5

Number of Individuals in the Sample with Degrees from Each Institution, Internationalization and Academic Inbreeding for the International group.

Institution	Percentage of Individuals in the Sample with Degrees from Each Institution	Percentage of Faculty with PhD Degrees from Abroad	Academic Inbreeding Percentage
ESALQ/USP	3.94%	46.15%	38.46%
UERJ	0.00%	56.52%	0.00%
UFMG	12.80%	56.52%	12.50%
FGV-SP ^a	26.60%	63.89%	19.44%
USP	11.23%	46.91%	46.91%
UFPE	3.25%	61.29%	19.35%
UFC	1.18%	54.05%	13.51%
EPGE	2.16%	74.07%	14.81%
PUC-Rio	1.28%	70.83%	25.00%
Inspere	0.00%	74.07%	0.00%
UnB	2.36%	72.22%	19.44%

^a FGV-SP's profile reflects the changes this institution has been going through in the last few years.

Since the abroad nodes we created can be made of many different institutions, we investigated where these individuals did their Master's degree to understand which Brazilian institution could be closer related to the type of influence we are discussing here.

We noticed that only 5 institutions provided Master's degree to 52% of the Professors who went to the United States for a PhD degree and listed a Master's degree.²³ These are USP (31 out of 181²⁴), PUC-Rio (26 out of 181), EPGE (16 out of 181), University of Illinois (11 out of 181)²⁵ and UFC (10 out of 181). If we exclude the University of Illinois and consider all the universities in our "International" group, this percentage goes to 54% of all PhD degrees from the US in our sample with a Master's degree listed. For those who obtained their PhD in Europe,²⁶ the situation is much more diversified: UFRJ leads the way (13 out of 87), followed by UFC (7 out of 87), UFES (6 out of 87) and tied with 5 each, UFF, UNICAMP, UFBA and UFPB. Lastly, for the UK node,²⁷ UNICAMP and USP are tied at first place (7 out of 59 each), followed by UFRJ and UnB tied at second place (6 out of 59) and PUC-Rio, UFPE and UFMG tied at third place (5 out of 59). Based on this, ties to US institutions seem to be somewhat concentrated in this group we proposed, while to Europe (considering both the United Kingdom and Continental Europe) seem to be more diversified.

Given that some of the institutions in this group, namely PUC-Rio and EPGE seem to favor its Master's program so that it can send its students abroad for PhD degrees, we see a dispersion effect in terms of PhD affiliation. This does not mean that its influence is smaller though. This perhaps also helps us understand why, although EPGE is one of the most traditional institutions when it comes to graduate programs in Economics and the number of its PhD graduates in Economics Departments is not comparable to those of USP or UNICAMP (both of which have more than 100 each spread through many institutions).

iv. The fourth group we propose to be a residual one for reasons we will explain later, but for now — about half of its members do not have their own PhD program, only a Master's degree program. This group is formed by UFMA, UFPB,²⁸ UFV, UFF, UFRJ, UFBA, UFAL, UFES, UFPR, UFSC, UFRGS, UFPA, UFRN, UFU, Unesp, UCB, UFPel, UFSM, PUC-RS and Unisinos. Table 6 shows the number of graduates from these schools and their internationalization and Academic Inbreeding percentage and some other information on possible important influences.

²³ The same individual can be counted more than once here if he listed more than one Master's degree/institution.

²⁴ 181 is the total number of individuals who received a PhD degree in the United States in our sample and that have listed a master's degree.

²⁵ In many cases, when Professors listed more than one Master's degree, the second institution was the same one as the institution where they pursued their PhDs.

²⁶ In our sample, we have 87 Professors with PhD from institutions considered in the Europe node that have listed a Master's degree.

²⁷ We did not consider the ASIA and LA nodes in this analysis because we did not have that many observations.

²⁸ Given that these institutions are on the "border" of influence, they still may share some characteristic with the nearby group, but we felt (besides the lower level of correlation at which they connected with the left-side institutions) they were not similar enough to be placed in that group.

Table 6

Number of Individuals in the Sample with Degrees from Each Institution, Internationalization and Academic Inbreeding for the Residual group.

Institution	Percentage of Individuals in the Sample with Degrees from Each Institution	Percentage of Faculty with PhD Degrees from Abroad	Academic Inbreeding Percentage	Main Influence	Percentage of Faculty with PhD degrees from Main Influence	Percentage of Faculty with PhD degrees from UNICAMP
UFMA	0.00%	20.00%	0.00%	UFPE	40.00%	20.00%
UFPB	0.04%	23.08%	15.38%	UFPE	34.60%	0.00%
UFV	1.67%	7.14%	42.86%	UFV	42.86%	14.30%
UFF	1.48%	28.21%	23.08%	UFRJ	38.50%	2.60%
UFRJ	7.19%	42.47%	36.99%	UFRJ*	36.99%	13.70%
UFBA	0.02%	47.37%	0.00%	UNICAMP*	21.10%	21.10%
UFAL	0.00%	26.67%	0.00%	UFRJ*	20.00%	13.30%
UFES	0.00%	47.06%	0.00%	UFRJ*	17.60%	11.8%
UFPR	1.28%	40.63%	12.5%	UNICAMP*	21.90%	21.90%
UFSC	0.01%	36.84%	0.00%	UFRGS/UFPR*	15.80%	10.50%
UFRGS	5.42%	23.26%	46.91%	UFRGS	46.91%	16.30%
UFPA	0.00%	29.41%	0.00%	UNICAMP*	17.60%	17.60%
UFRN	0.00%	0.00%	0.00%	UNICAMP	60.00%	60.00%
UFU	0.03%	25.81%	9.68%	UNICAMP	57.14%	57.14%
Unesp	0.01%	11.76%	0.00%	UNICAMP	76.50%	76.50%
UCB	0.04%	21.43%	14.29%	UnB	42.90%	0.00%
UFPeI	0.00%	0.00%	0.00%	UFRGS/UnB	44.4/33.3%	0.00%
UFSC	0.00%	14.29%	0.00%	UFRGS	35.70%	28.60%
PUC-RS	0.00%	36.36%	0.00%	UFRGS	36.40%	9.09%
Unisinos	0.00%	36.36%	0.00%	UFRGS	54.50%	0.00%

We notice in this group a very large variation in terms of internationalization. Regarding inbreeding, with a few noticeable exceptions such as UFRJ and UFRGS, most of them have very low levels of inbreeding as they have very recent or small PhD programs (or no program at all).

The column that lists the main influence for each institution shows which school granted the most PhD degrees for the Professors of that institution. For example, in the case of the Professors of UFMA considered in our sample, 40.00% of them have PhD degrees from UFPE and, for UFMA, UFPE has the highest representation among any other institution. There is also a great diversity among this main influence, but among only a handful of schools — UFPE, UFV, UFRJ, UNICAMP, UFPR, UFRGS and UnB. Even among these, UNICAMP, UFRGS and UFRJ seem to stand out, corroborating the information shown by Table 3.

The last column shows the percentage of faculty with PhD degrees from UNICAMP. For the other two groups, with the exception of UEM (15.00%), PUC-SP (14.81%), UERJ (8.70%) and UFSCAR (6.25%), many schools have no faculty members with PhD degrees from UNICAMP or have a very low percentage of those (for all the others, it is 4.00% at most). So this means that UNICAMP's graduates are concentrated in this group.

Apart from this diversity of influences and UNICAMP's, UFRGS' and UFRJ's apparently larger role, we also see some geographical forces, as the order that Table 6 displays institutions show up matter — it is the same order that Fig. 1 displayed them, as it is the order that they correlated and clustered. So not only we see that UFRGS is usually the main influence for universities in the South of Brazil, and UFPE is for two in the Northeast (UFMA and UFPB) for example, but among lines close together, the influences may match. Again — “show me your friends, and I will tell you who you are”.

So the reason we call this group Residual it is because not one single actor seems to have a strong influence — in fact, it has many sources of influences, and it is defined by this very characteristic. It is not internationalized enough nor inbred enough. It does have a few strong actors, but none of them are strong enough in the group as whole to provide a single homogeneous trace.

So this leads to our main proposition – if we are to consider institutions from a “sociological” point of view – that is, here, by the social relations they establish with each other, we may have ourselves a possible classification. Our first group, the senders, are those institutions responsible for the education of our Economics Professors

– they have a preeminent PhD granting role and not a receiving one – as UNICAMP is the only in that group that is considered in our sample. Many of them are not even in Brazil, so we will leave them out of our classification.

But group two, three and four, USP and ESALQ/USP Influenced, International and Residual, we can draw different picture. We see that the first institutions to provide Graduate Degrees in Brazil still have a larger influence. Geographical factors also play an important role in the relationship between programs, and apparently the mix of these two factors – geography and path dependence – seem to be the most important when shaping how faculty distributes among institutions. This has important consequences for publishing ties and future cooperation as, on one hand, we have seen in past year a great expansion of Graduate programs in Brazil, which will have an interesting effect on this path dependence effect and on the other hand an inertia effect as geography and the early entrant pull seem to be quite strong still.

This setting is aligned with the findings of [Haddad et al. \(2017\)](#) who, when analyzing networks publishing ties (and not PhD affiliation), found also a strong geographical influence and also noted the importance of a few institutions such as USP, UNICAMP, UFRGS. This is an interesting related result as publishing ties and PhD affiliation tend to correlate.

4. Concluding remarks

The goal of this paper was to analyze the educational background of Economics Professors in Brazilian Economics Graduate Programs, in terms of PhD affiliations so that we could understand the relationships between each Program in terms of how one institution may influence the other.

We proposed four groups, and at least two of them seemed to have formed around the dominance of one or two schools when it comes to PhD degree granting: (i) USP and ESALQ/USP; (ii) International schools taken as a unit; and then we have (iii) the institutions that grant these PhD degrees and lastly (iv) a more diffused group we called the residuals where dominance is more dispersed and not so clear.

We saw that the “early entrants”, that is, the first institutions to grant PhD degrees in Brazil still seem to enjoy quite an advantage in this market — USP is still one of the most important schools and so is UNICAMP. EPGE may not show up in large numbers but it seems to be connected with a large share of those International PhD degrees even if indirectly. Small and less traditional schools, when they do grant PhD degrees to Economics Professors, do so to their own faculty limiting the reach of influence.

We also tried to classify these schools — our classification was based on adherence to ideas practiced and accepted abroad and we used Internationalization levels for this, a limited approach, but that yielded interesting results.

However, these conclusions have to be considered cautiously. The scenario is rapidly changing, new programs are being creating. So, the picture that emerges is one of a fast growing field, in which many PhDs are very “young”, one that we see a growing “nationalization” of our faculty. Perhaps if we redo our study in a few years, this trend might be even stronger²⁹ and we would have to rethink our method.

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²⁹ If this line of thinking is right, we might even see a diversification regarding the big four: Unicamp, USP, UFRJ and UFRGS, we the entry of new contenders.

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