

International cooperation: a Brazilian example of academic exchange

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1. Introduction

Brazil is a developing country with very big contrasts, some areas very well established and others very poor. The economic situation of the country is not good and adding to this is the increasing sophistication of technology that brings a high unemployment rate. One consequence of this is the need of specialized people generating a demand for more knowledge in order to compete for a job. Universities and their graduate courses will be asked to provide this.

Graduate studies in Brazil started at beginning of the 60's and the number of courses has been increasing (571 to 1453 Masters and 200 to 821 PhDs from 1976 to 2000).

International exchanges are a well-known way of improving the quality of teaching, learning and research and these have been greatly encouraged in Brazil in the last years. Organizations like CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) and the FAPs (Fundação de Amparo à Pesquisa, from several states of Brazil) have had a very important role in implementing this. CAPES and CNPq were created in 1951 and FAPESP (FAP of the state of São Paulo) in 1962. One of their aims has been to facilitate international cooperation in scientific work and promote scientific excellence in different branches of science. For this they have different kinds of programmes with grants that cover travel and subsistence expenses and tuition fees when necessary, for:

- students to go overseas to undertake Masters or Ph.D. degrees;
- post-doctorate students to go overseas for a research programme;
- scientists to participate in conferences overseas or to undertake a research programme;
- international visitors to teach courses or to give talks;
- Ph.D. students to participate in an overseas sandwich programme to develop part of the research for the thesis.

Also CAPES has a programme to help students from other Latin American countries to come to Brazil to do a Masters or a Ph.D. The University of São Paulo also provides some funds for living expenses through CCIInt (Comissão de Cooperação Internacional) for short periods.

Advantages of this are:

- internationalization of knowledge through the exchange of information and experience between students and scientists;
- increase of scientific production;
- building of links among different Universities and Research Institutes;
- opportunity for scientists to collaborate in research projects.

On the other side, this has become too expensive for Brazil: the Brazilian currency is weak and this makes life abroad too expensive and tuition fees prohibitive. The amount of money that the organizations have to support students and scientists is not increasing with the years and with this the number of financed projects has been decreasing. A solution to this has been to have bilateral agreements in which shared financial support comes from the countries involved, for example, the

air fare from the guest country and the living expenses from the host country, like in the agreement between CNPq and the Royal Society (RS) or in most cases own resources (OR) which came from Universities or research grants.

2. Exchange visits

My first visit overseas was in 1983 with a three weeks course on “Statistique Appliquée” in the Faculté de Sciences Agronomiques de L'Etat et Centre de Recherches Agronomiques de L'Etat Gembloux, Belgium, with financial support of EMBRAPA (Empresa Brasileira de Pesquisa Agropecuária) and Commissariat General Aux Relations Internationales (Consulat Général de Belgique). The course was on Planning of Experiments and Data Analysis in the Agricultural area with a similar way of treating the subject as we had in Brazil. This experience, besides the improvement of knowledge, showed me the flavor of international cooperation and the need to go abroad to have more time just to study and to learn.

With this idea I started looking for a place to go to study more and G.M. Cordeiro helped me to take the decision. I went for a year-and-a-half-post-doctorate (86/87), supervised by Prof. David Cox, at Imperial College, London, with a grant from CNPq. It was difficult at the beginning with problems of adaptation to a different culture, language and weather conditions, problems with my statistical background and high living costs, because of the weakness of our currency. But this resulted in a wonderful experience. I had the opportunity to improve my knowledge and my English and meet colleagues from around the world, building links for the future. It was when I started to learn the theory of Generalized Linear Models (GLMs) and in 1988 I gave the first course on GLMs to the Ph.D. students of my Department, initiating a new research area. I felt I needed to learn more and this could be achieved through going abroad or bringing people to the Department.

Another important trip to Europe, again with the help of Cordeiro, with financial support of FAPESP, was in 1989 to participate of the Workshop on Statistical Modelling in Trento, Italy, with a focus on GLMs, and to work on research with A. Davison at Imperial College. Talking to Prof. Nelder I discovered that there was the agreement between CNPq and the Royal Society (RS) and this became very important in planning future exchange visits.

These three trips to Europe gave me the support to continue going overseas and start inviting people to come to my Department who helped to improve our knowledge. Table 1 shows the visitors we had in my Department from 1985 to 2002 and the advantage of this is that more people profit from the visit.

The links established with the exchange visits facilitated the contacts between people and resulted in post-doctorate training of my Departmental colleagues: A.F. Iemma in Linear Models, supervised by P. Dagnelie (Faculté de Sciences Agronomiques de L'Etat, Gembloux, Belgium), for 15 months (90/91); J. E. Corrente, in GLM, supervised by D. Firth (Southampton University and University of Oxford, UK), for 18 months (92/93); R.A. Leandro, in Bayesian Models, supervised by A. O'Hagan (University of Sheffield, UK), for 18 months (99/00); C.T.S. Dias, in Multivariate Models, supervised by W. Krzanowski (University of Exeter, UK), for 18 months (01/02); with grants from CNPq or FAPESP.

These exchange visits were especially important for me as it resulted in a well-defined line of research and very strong research links with M. Ridout (University of Kent, UK), J. Hinde (National University of Ireland, UK) and C. Brien (University of South Australia).

3. Sandwich Programme

Another very successful experience has been a programme called the Sandwich Programme involving Ph.D. students who can develop part of the research for the thesis with a supervisor from abroad. It is important to say that this is tending to decrease because of the overseas tuition fees.

Table 1 – Visitors to the Department of Exact Sciences, ESALQ/USP, Brazil, from 1985 to 2002.

Visitor	Period	Financial support	Activity
P. Dagnelie (Fac. de Sciences Agron. de L'Etat, Gembloux, Belgium)	26 - 31/07/85 07 - 14/07/01	CNPq, OR CAPES, FAPESP	Talks
B. Jorgensen (IMPA, RJ, Brazil)	27/06 - 01/07/88 02 - 05/05/89 06 - 11/05/90	CNPq, CCInt CNPq CNPq	Short course short course short course
J.A. Nelder (Imperial College, London, UK)	11 - 13/01/89	CNPq, CCInt	Talks
A. Davison (Imperial College, London, UK)	09 - 13/01/89	CNPq, CCInt	Talks
N. Longford (University of Princeton, USA)	13 - 15/02/89	CNPq, CCInt	Talk
R. Palm (Fac. de Sciences Agron. de L'Etat, Gembloux, Belgium)	07 to 21/10/89	CCInt, OR	Short courses
A. Agresti (University of Florida, Gainesville, USA)	06 - 11/05/90	CNPq	Short course
D. Firth (University of Southampton, UK)	27/07 - 04/08/90	FAPESP, CCInt	Short course
M.S. Ridout (Horticulture Research International, East Malling, UK)	29/06 - 23/07/91	FAPESP, RS	Short courses joint research
C.J. Brien (University of South Australia)	23/07 - 05/08/92 12/03 - 17/06/00	FAPESP, OR	Short course course, talks joint research
A.C. Atkinson (London School of Economics, UK)	07 - 17/01/93	FAPESP, RS	Short course talks
L. Billard (University of Georgia, Athens, USA)	14 - 18/01/93	CCInt, OR	Talks
G. Reeves (Imperial Cancer Research, Oxford, UK)	12 - 27/05/94	OR	Talks
D. Hinkley (University of Oxford, UK)	21 - 28/05/94	CCInt, RS	Short course talks
J. Hinde (Exeter University, UK)	16/07 - 13/08/95 14/04 - 26/05/96 19/07 - 03/08/97 11/07 - 26/07/98 01/04 - 15/04/00	FAPESP, RS FAPESP, RS FAPESP, RS FAPESP, OR FAPESP, RS	Short courses talks joint research
D. Sorensen (Nat. Inst. of Animal Science Research Center Foulum, Denmark)	09 - 24/05/98	FAPESP	course talks
D. Cox (University of Oxford, UK)	22/07/00	FAPESP	
S. Gilmour (University of London, UK)	09 - 13/08/99 15/08/00, 07/08/02	FAPESP	Short course talks
A. Davison (Swiss Federal Institute of Technology, Switzerland)	15/02/01	FAPESP, OR	Talk
C. McCulloch (UCSF, USA)	10 - 13/07/01	FAPESP, OR	Short course
D. Johnson (Kansas State University, Manhattan, USA)	10 - 14/07/01	FAPESP, OR	Talks
D. Gianola (University of Wisconsin, Madison, USA)	08 - 14/07/01	CAPES, FAPESP	Short course
G. Molenberghs (Limburgs Universitair Centrum, Belgium)	08 - 14/07/01	FAPESP, OR	Talks
N. Wermuth (University of Mainz, Germany),	12 - 14/07/01	FAPESP, OR	Talks
Z.-B. Zeng (North Carolina State University, USA)	09 - 15/07/01	FAPESP, OR	Short course

This kind of programme gives international experience to the students improving their knowledge and the quality of the thesis by working with a specialist on the subject. Also, they have the opportunity to participate in scientific meetings and in general present a poster. Examples of this with grants from CAPES or CNPq were: *S.S. Zocchi* supervised by A. Atkinson (London School of Economics, UK), for 16 months (95/96); *S.M. Freitas* supervised by J. Hinde (University of Exeter, UK), for 18 months (99/00); *S.R. Giolo* supervised by R. Henderson (University of Lancaster, UK), for a year (01/02); *R.R. Lima* supervised by M. Ridout (University of Kent, UK), for a year (03/04), and *C. Candolo* supervised by A. Davison (Swiss Federal Institute of Technology, Switzerland), for a year (99/00).

4. Latin American cooperation and others

Cooperation between Latin American countries is another common type of exchange. CAPES has a programme to help students from other Latin American countries to come to Brazil to do a Masters or a Ph.D. These students, after returning to their own countries, invite some of their Brazilian lecturers to visit them. In this aspect I have been giving talks and teaching myself two courses on theory and application of GLMs in Argentina, one in Peru and two in Colombia and jointly with John Hinde one in Argentina and one in United States.

Also the cooperation inside Brazil is extensive. For example, I have taught more than 20 courses on theory and application of GLMs since 1988.

5. Final remarks

The international cooperation has proved to be a very successful experience in my Department opening new research areas, increasing and improving scientific production, giving opportunity for lecturers and students to collaborate in research projects and building links with other Universities and Research Institutes. For the future new visits are planned to build on previous collaborative work. There are a number of strands of ongoing work that need to bring to completion, while at the same time starting out on new avenues of associated work

There is also the value of the link for the visitor, the opportunity to meet different problems, especially perhaps in the biometrics area, recruiting good students through the sandwich programme (or general admission), post-doctorate links, and also the chance to strengthen the international network of statistics.

REFERENCES

CAPES – <http://www.capes.gov.br/>

CNPq – <http://www.cnpq.br/>

FAPESP - <http://www.fapesp.br/>

RÉSUMÉ

Coopération Internationale: un exemple d'échange académique brésilien.

Les échanges internationaux forment une manière d'améliorer la qualité de l'enseignement et de l'apprentissage. Les Recherches et Thèses furent énormément encouragées au Brésil ces dernières années. Notre expérience débute en 1983 avec un Cours en Statistiques Appliquées à Gembloux, Belgique, et de Février 1986 à Septembre 1987 comme visiteur au Collège Impérial de Londres. Dû aux résultats de cela, plus d'une vingtaine de collègues de plusieurs pays sont venus à notre Département pour échanger des informations, donner quelques cours et faire des recherches. Quelques collègues de mon département sont partis en programmes post-doctorat. La connaissance acquise fut étalée par nos cours à travers le Brésil (20) et dans d'autres pays d'Amérique Latine (6). Une autre expérience, aussi avec beaucoup de succès, est celle avec des étudiants de PhD, dans un programme appelé Sandwich Programme.