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# THE FUTURE OF AGRICULTURE

*Technology, Policies  
and Adjustment*

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## SPECIAL GROUP P

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### *Agricultural Economics Training at the Graduate Level in the Following Decade: The Case of Latin America\**

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#### 1. INTRODUCTION

THE efforts made in the past and the current decade by some Latin American (L.A.) countries to achieve adequate social and economic standards for their inhabitants have been considerable. The strategies and instruments used in the various countries have been determined and selected by their political, economic and social characteristics.

The economic strategy adopted by most of the L.A. governments has basically been that of the Economic Commission for Latin America (ECLA). It gives priority to the industrial sector in order to stimulate import substitution. In this strategy the agricultural sector is assumed to have a lesser role in economic development, consequently, it can be left aside as a secondary factor. As an alternative to ECLA's strategy some economists have recognized that the agricultural sector constitutes one of the key sectors in the process of development and modernization of the LA countries.

The lack of dynamic development in the agricultural sector has been explained by different schools of economic thought. The structuralists assign this backwardness to problems derived from the land tenure system, and the characteristics of the rural population. The Marxist school relates it to the contradictions derived from the historical process of class struggle, and to the dependent development induced by the capitalistic forms of production. Finally, the neo-classical school puts the emphasis on the disincentive to agricultural activity due to the decrease of agricultural prices relative to non-agricultural ones, which is generally done by protecting the national industrial sector with tariffs and de-stimulating agricultural production with a negative effective protection.

The impact of these barriers to development have evolved into increasing deficits of foodstuffs and agricultural raw materials, which can

\* I am indebted to the Professors Gerald Dean, Alain de Janvry and Rodrigo Mujica for their comments on the first draft of this paper.

be observed in the trade balance of some L.A. countries. These have had clear repercussions on the nutritional levels, balance of payments and the cost of living.

Nevertheless, in the current decade a deep transformation has taken place in the agricultural sector of some L.A. countries. This has brought with it profound changes in the social and economic characteristics of the rural and also of the urban population. Among the policies that induced these transformations, land reform and the organization and unionization of the peasantry must be stressed. In some countries the modernization of the sector has also been affected by the adoption of the green revolution and the use of non-traditional inputs.

These social and economic transformations present an interesting challenge to our culture and in particular to our profession. The educational system also has an important role, together with economic, social and political variables.

Recently the economists have given a lot of attention to the relationship between education and development, through the process of human capital formation\* but little has been said in relation to this particular point for the agricultural sector. It cannot be said that education is the most important factor in this process of change, but there is little doubt that it has a decisive influence on the final structure of the society. For this reason, it can be argued that one of the causes of the social and economic stagnation has been the lack of an adequate number of specialized professionals capable of dealing with the many different problems which arise as a consequence of the transformations, in particular, those related to the economic aspects of the agricultural sector. The necessity for this understanding is more evident as the peasant becomes the productive agent responsible for the management of the productive unit.

Since the end of the 1960s, L.A. has created and developed several graduate programs in agricultural economics. They started as a response to the necessity of having highly trained specialists endowed with a conceptual framework and analytical tools to participate and influence the socio-economic transformations that were affecting, or starting to affect, the agricultural sector. These transformations emphasized the need to consider the economic factors of the agricultural production, especially when traditional agriculture changes into market oriented or to decentralized planned economies. This becomes especially important as a consequence of the incorporation of the peasants as one of the central elements of the entire process.

Programs in agricultural economics have been one of the first graduate programs developed in the field of social and agricultural sciences. The moulding of these graduate professionals should not be understood as the formation of a new elite group, inasmuch as they are to educate other technicians, developing in this way a phenomenon of knowledge diffusion which should also reach the basic levels of the peasant. In effect, as will be seen later on, an important number of these graduates go to work at

\* T. W. Schultz, G. Beckez and J. Minces studies are the most outstanding ones.

universities and at governmental centers. In some of these programs more specific and more intensive courses are offered seeking to train a larger number of professionals.

This paper is divided in two parts: the first one includes a brief description of the L.A. graduate teaching in agricultural economics. The second focuses on the analysis of the academic needs of the field in the next decade.

## 2. THE TEACHING OF AGRICULTURAL ECONOMICS AT A GRADUATE LEVEL IN LATIN AMERICA

The graduate programs of agricultural economics in L.A. developed either within universities or national research centers. The former includes the programs of the following universities: Federal al Vicosa, São Paulo, and Rio Grande do Sul in Brazil; Nacional Agraria in Peru, Nacional de Agricultura in Mexico and Católica in Chile. The programs developed in research centers are those of the Instituto Colombiano Agropecuario (ICA) and the Escuela de Graduados from the INTA in Castelar, Argentina.

It is not easy to describe and analyze these graduate programs in agricultural economics. The best way of doing it seems to be to analyze four of the aspects that are basic namely: the educational system, the curricular system, and the characteristics of the faculty member, and of the students.

### *The educational system*

The educational system is one of the factors that determines social change since it has the capability of influencing the cultural values of the individuals. The graduate programs in agricultural economics seek to develop in the students the capability of being an active element in the changes which affect the agricultural sector. The students acquire the knowledge and analytical tools which permit them first to understand this process and secondly to influence it. They are able to do critical analysis and to design policies related to the main issues in the sector, by making use of the principles of positive and normative economics.

The fact that these programs are quite young has had an effect on their academic performance. The main negative effect seems to be the lack of an adequate research level.

The graduate programs were established even though there was not a critical mass of research going on. Hoping that they would stimulate the professionals and in this way create a research activity compatible with the necessities of graduate studies. In L.A. it is widely recognized that the graduate programs should have their staff doing teaching and research at the same time. This meant that during the first years the education given has not been an optimal one. This problem of generating research is vital to the development of an L.A. school of economic thought.

It is fair to point out that research has started in the various programs,

but with very little interactions among them, and also among the programs and the national and international centers of agricultural research. The only exception being the Castelar and the ICA programs.

### *The curricular system*

Most of the programs offer a quite rigid curriculum with a very limited number of optional courses available to the students. The only exception to this is the Catholic University programs which offer three fields of specialization,\* each of them with an adequate degree of flexibility in the curriculum. This is possible since the program is located in the same campus with the School of Economics and the School of Business Administration.

It should also be pointed out that at least two kinds of students enter these programs. Some are looking for an advanced and comprehensive theoretical training that would enable them to continue in this process of knowledge diffusion and, at the same time, progress with their own personal education. These aims and goals are sometimes contradictory with those of the students who are seeking in these programs an expeditious way to complement their economic training in order to work as professionals in the production process.

The curricula offered by the different programs are oriented toward the neo-classical school of economic thought. This approach is the dominant one because most of the faculty members received their economic training in schools with this orientation. They recognize the capability and limitations of neo-classical economies to interpret the economic world.†

Some efforts to include the structuralistic approach in the courses offered have been made.

### *Characteristics of the professors*

To develop their staff the programs have followed two alternative strategies. In the first scheme the idea was to bring professors from universities of the United States, and then at a latter stage replace them with national professors with graduate training.‡ In the other scheme the future national staff was sent to do graduate studies abroad, and then after their return, the graduate programs are established.§

In those programs where the majority of the staff are foreigners from developed countries, it is possible to see a natural difficulty in moulding their teaching and research to the social and economic reality of the L.A. countries. In some situations this has created a problem of cultural dependence and therefore a barrier for the further development of the

\* Farm management, regional planning and agricultural policy and development.

† An analysis of these limitations can be found in 'Pertinence of the economic analysis in the rural welfare problems', Peter T. Knight, in a paper presented at the Seminario de Asesores en Programas de Agricultura de la Fundación Ford, in Mexico City in November 1972.

‡ Chapingo, Vicos, Rio Grande do Sul, Paracibá, La Molina, e IICA followed this model.

§ The Catholic University of Chile and Castelar belong to this group.

program and the training of the staff and has reduced the interest of the students in applying for these programs.\* In these cases the research done has not developed in accordance with the natural conditions and the priorities defined by the transformation process of these countries.

In the other scheme most of the teaching and the research is done by national staff, who did their graduate training and obtained their M.S. or Ph.D. in American and Canadian universities. In these cases there is also a cost since they have to adapt their training to the reality of a developing country. These young professors have to start their academic experience with a reduced number of persons, without senior staff members, which makes the beginning of their careers much more difficult.

The alternative that has been the most convenient is to send future staff members to do their graduate studies at universities established in different continents. In this way it is possible to obtain a higher degree of complementarity of the different approaches and fields of specialization.

It is possible to identify in the faculty members a lack of teaching methodology and a limited teaching experience. It is important to realize that a good agricultural economist does not necessarily make a good professor. The institution therefore should offer this training to their staff. Since the teaching experience can be acquired through time, it can be argued that most of these problems should disappear over the years.

But on the other hand, there is a high degree of staff turnover in the graduate programs in L.A., and therefore it is unlikely that this problem will vanish over the years. Professors do not stay at the universities because the salaries they offer are too low relative to the salaries paid by governmental, private and international institutions. As an example of this problem; we could point out the cases of Católico which has had 30 per cent turnover of their staff in the period 1970–73, and la Molina which lost over 60 per cent in the period 1970–72. Similar problems have occurred in Chapingo, in Castelar and the Programa Pro Economio Agrario in Argentina.

The transformation that is taking place in the agricultural sector imposes on the faculty the necessity of knowing and understanding the process. In this, the experience at Católica where the professor's theoretical points of view have been continuously confronted with the professional experience of the graduate students, has been a very interesting one.

The graduate programs have been stimulus for the development of research careers oriented towards the main issues of an agriculture in transformation. It is important to stimulate research since it is a necessary complement for teaching and also since it is a source of knowledge of the countries on which research is conducted. In this way the professors can decide what are the non-relevant points for these countries and leave them aside.

Finally, we can say that the role of a staff member tends to become

\* This was the case in the first steps of the graduate program of la Universidad Agraria, and La Molina.

wider as the country develops. The professor ends up having an important role in the transformation process. This role as a researcher with critical view of the process allows him to see the advantages and the limitations of the different agricultural policies. His role as a teacher allows him to influence, in a direct way, the technical agents of the transformation process. And in some cases they can also get in touch and influence the groups that define policies at governmental level. It is possible to say that the L.A. agricultural economist is more policy-oriented than his American or European colleagues.

#### *Characteristics of the students*

Most of the students who enter the graduate programs do have some degree of professional experience within the agricultural sector. On the average, they have worked about five years after graduating from college and before applying for the graduate programs.\* The agronomist applies to these programs hoping to complement his training with economic concepts, realizing the importance of the economic problems in the whole process of transformation of the agricultural sector. Their background in mathematics, statistics and economics is, in general, very limited. This is why the programs offer some introductory courses on these subjects, previous to the graduate courses.

Finally, it is possible to say that the student himself tries to be an active element in the process. He sees his role as being very wide, going even beyond his professional duties and responsibilities.

### 3. TRAINING OF AGRICULTURAL ECONOMISTS AT THE GRADUATE LEVEL IN THE NEXT DECADE

The future of agricultural economics in the next decade, as a discipline and an area of work, will become wider and will have a more predominant role in the educational system of L.A. Efforts should be concentrated on the definition of programs relevant to the agricultural reality of the various L.A. countries and to identify and carry on research projects which would permit a better understanding of this reality. This research should be the basis of the graduate teaching.

The necessity for such programs arises from the lack of a number of professionals with a training that would enable them to analyze and to act upon the problems relevant to a traditional agriculture and also to those problems that arise from the transformation of the traditional agriculture into a more advanced and modern one. This means that to the demand derived from a traditional agriculture should be added the demand generated as the result of the reorientation of agriculture towards a market economy or a decentralized planned economy. This implies that in the near future the existing programs should be improved and enlarged. At the

\* Fienup, D. (1972) *Performance of Latin American graduate agricultural economics programs: and evaluation of the supply of trained professionals and research*, paper presented to the Seminar of OLAC, Program Advisors in Agriculture, Mexico.



same time programs should be created in those countries where they do not exist today. It must be recalled that only six of the twenty-one L.A. countries have programs of this nature.

Culture has an active and important role in this process of transformation. It also should be considered, at least partially as the result of this process, and also that professionals participate in the process of transformation. In this science, the depth of the transformation can be affected if there is not available an adequate number of professionals who can participate and act in such a process. From this situation emerges the responsibilities of the universities to develop graduate programs.

The formulation of these programs should be adapted to the particular conditions of each country and should also try to be self-sufficient in relation to their staff members. The work developed by foreign professors coming from developed countries should be a complement to the work done by the national staff. There is no need to emphasize the importance of this complementary activity.

As a conclusion, it can be said that the starting of the programs under non-ideal conditions, skipping some natural steps such as the development of a critical amount of research of good quality and the existence of an adequate number of staff members, can be considered as a positive effort. The institutions that intend to continue with their graduate programs and those with intentions of creating new ones, should analyze the problems and study the experience accumulated in these few years.

One of the problems which has limited the performance of these graduate programs has been their research level. Mainly, because of the difficulty in defining research lines, secondly because of the small amount of research done and finally, because of the lack of coordination in their work. An adequate way of generating more research of good quality is to reach a certain degree of integration among the various research programs. This can be done through the identification of common problems such as land reform, the economic model of new agricultural enterprises, the relation between technology and production, the minifundia problem, rural poverty, income distribution and employment.

Another way of stimulating research is to continue to demand a thesis as a mandatory requisite for the Masters degree. At the present time all the graduate programs have this requirement.

A second problem arises from the wide range of ideological positions existing in L.A. which can be observed also among the students. Therefore it is important that the institutions responsible for the programs seek to develop a degree of ideological pluralism. Unfortunately, the degree of pluralism which should exist has proved to be very difficult to achieve. In some cases the existence of independent groups has been the only real and possible form of co-existence.\*

The importance of the co-existence of these different ideologies can be

\* The problem experienced by the Economic Institute of the National University, in Chile, is a relevant example. The antagonism produced within the group ended in two economic faculties.

derived from the fact that the neo-classical approach has been found to have a set of tools which are useful to analyze and to define economic policies. On the other side, the Marxist approach gives a historical and dialectic viewpoint of the economic and social aspects of the countries, stating an interesting hypothesis, even though it does not have sufficiently powerful analytical tools. The integration of these and other approaches should allow for further development and enrichment of economic theory and economic research.

The predominant neo-classical approach of the actual curricula have been one of the targets of criticisms. These criticisms have come mainly from those professionals whose main interest is to obtain the Marxist framework of analysis that would allow them an integration of their ideology and their professional tools. They state that marginal approach favors the establishment which disallows deep changes in the socio-economic structure. But, as Knight has said, the neo-classical approach 'is at the service of the managers of a multi-national capitalistic corporation as well as to one of the Soviet Ministry or a commune of China'.\*

A third problem comes from the criticism that the present curricula do not have a multi-disciplinary approach to analyze the agricultural problem. This criticism is based on the fact that in a period of transformation the professional required all the necessary tools to be able to act. For precisely this reason, he required a wider knowledge of the sector, which could be obtained with a multi-disciplinary approach. The second element of this criticism is based on the fact that during periods of dynamic changes, the wider training background is more necessary than during static periods when a greater division of technical work becomes more relevant and necessary.

The criticism relative to the first element, can only be of value when the student does not have the opportunity to get in the standard curriculum, basic knowledge in the Social and Agricultural areas, but is not valid in the case when the courses offered carry with the economic, political and social dimensions as well.

Given the time constraint for the moulding of a Master and the progress achieved in the handling of agricultural problems with the tools of the economic science, it can be possible to produce an academic output basically with a uni-disciplinary training in economics with complementary support in the other areas relevant to the transformation process. It could be pointed out that part of this problem can be overcome by getting students coming from different fields.†

In relation to the last element of this multi-disciplinary approach its solution should be found mainly by means of the integration and

\* Knight, Peter, op. cit., p. 16. In this paper the author points out that *Pravda*, according to Theodore Shabad in the *New York Times*, 5 June 1973, has given its support to economists that are using production function, linear programming, system analyzes and other techniques proper to the bourgeois economist.

† Like agricultural engineers, sociologists, civil engineers, forestry engineers, economists and others.

stimulation of the candidates to joint research or to work on thesis projects in the research areas defined in each program.

A fourth problem arises from the necessity of adapting the fields of specialization and the curricular flexibility to existing institutional structures and to the interest of the students. The economic organization of the agricultural sector plays an important role on the labor market as regards these programs. The institutional framework generated by the degree of participation of the government and the private sector will define the qualitative and quantitative requirements of professionals.

In countries where the role of the state is limited, the education of specialists in planning seems to be less necessary than in those when the state is highly active. In any case, this adaptation of the lines to the students' interests, according to their own vision of their country's reality, is done automatically through the courses demanded and the number of students registered in each of them.

The curriculum should permit the adaptation of students to the changes to which the agricultural sector is impelled. This situation is especially true for those countries which have experienced land reform programs and/or the role of the state in the existing economic organization has increased. It is in this context that the theoretical instruments should allow the student to adapt to the new requirements, and in turn, impose on the professors a constant improvement and renovation of the examples needed for their teaching system.

The programs should offer, through the flexibility of their curricula, the solution to the dual interest of the students. Some of them expect after these courses a final degree which will enable them to work as professors or researchers. Others try to get the appropriate training to go and work directly in the agricultural sector. But over and beyond the different goals of the students the programs should demand a minimum, common, broad and solid training in economic theory and quantitative methods. Furthermore, the student should be permitted alternative areas of specialization.

The dualism of interests can be summarily quantified. Of 1969-72 graduates 36 per cent are employed in universities, 53 per cent in government organizations and 11 per cent in the private sectors.\*

Finally I would like to make a brief comment about the development of Ph.D. programs. Five of the existing Masters' programs† have shown interest in beginning Ph.D. graduate programs in the next two years. The most expeditious way of obtaining programs consistent with this level, can only be achieved with the experience acquired in the Masters level and with adequate research.

The alternative to the enlargement (in number and capacity of students) of the actual Masters' programs in L.A. versus the creation of Ph.D. degrees, seems to be a problem with only one solution for the following years. In the immediate future a larger number of 'Masters' able to

\* Fienup, D., op. cit. p. 15.

† Fienup, D., op. cit. p. 17.

understand and act in the transformation process as professors, researchers, private entrepreneurs and public policy-makers should be moulded. Furthermore, in the reduced number of existing programs, support should be given to the professionals who came from countries which do not have this type of program and which, at the present time, should strengthen their undergraduate teaching level.

The Ph.D. alternative should be left open to a limited number of academicians who are going to engage as professors of these graduate programs or in research teams of specialized institutions in L.A. In the following decade, as academic experience shows clear signs of improvements, the Ph.D. alternative might prove to be relevant.

### SPECIAL GROUP P REPORT

The discussion centred on the problem of providing suitable training programmes for agricultural economists in developing countries. Improving these programmes depended largely on obtaining the services of staff of the right calibre; experience gained, for example, in Malaysia had shown that when outside help was obtained it was essential to hire those who had proved their competence in position of seniority, such as deans of faculties and heads of departments. Because of their deep involvement with affairs in their own countries, staff of this kind could seldom be induced to spend several years at universities in developing countries organizing undergraduate and graduate programmes. One answer to this problem was to use aid largely to cover transport costs so that several stays of short duration could be made. Arrangements of this kind, which could be viewed as an alternative to sending students to overseas universities for post-graduate training, increased the chances that the training programmes would be closely related to local conditions. Ultimately, the need to hire foreign staff for this purpose would decrease and locally trained economists could visit universities elsewhere to broaden their experience.

It was acknowledged that the training of students in universities in the U.S.A. and Europe had helped enormously to strengthen the agricultural economics profession in developing countries. Even so, there was a need to recognize that training in sophisticated quantitative techniques was often quite inappropriate, bearing in mind the problems which existed in these countries. In discussion, a number of reasons were given to support this view. First, a significant proportion of course work in the U.S.A. and Europe was built around the large volume of data which flowed from the agricultural sector whereas in the developing countries the need was to generate that data. Secondly, where data did exist and sophisticated analysis was possible, few other trained people were around to understand and interpret the results. Consequently, the analytical techniques themselves were the main interest, often to those working in similar fields in developed countries. Thirdly, the need in developing countries was

basically to provide courses suitable for extension specialists, such as in credit and farm management techniques, which those returning with American and European Ph.D.s were not necessarily trained to provide; the result was that some economists returned to the countries where they had obtained the training.

Turning to the question of the need to provide a broad range of courses it was argued that one of the reasons why training programmes in Latin American countries had not succeeded was that particular disciplines tended to be studied in isolation. This was understandable given that the tendency seemed to be for the specialist to gain greater professional recognition than the generalist and that there were limitations on the amount of student's time that could be devoted to the study of say, agronomy and national economic policies. But what seemed to be needed was a general knowledge of subject areas of this kind such that direction and perspective could be added to the agricultural economics courses. The multidisciplinary approach would also help agricultural economists to communicate their ideas to those in other professions and to policy-makers.

On the problem of providing graduate training in the smaller developing countries, it was argued that the creation of courses of the right standard was limited by the finance available to provide adequate library facilities, a high staff-student ratio and sufficient staff of the right calibre. The answer could be to form regional graduate facilities on the lines of the Asian Institute of Technology which would serve South-East Asia. Whilst there was the danger that regional graduate schools in agricultural economics would draw away some of the more capable staff from local universities, such facilities could well be appropriate in many areas of the world, particularly in Latin America.

Among those who participated in the discussion were: Unglu A. Aziz, *Malaysia*; S. I. Friedmann, *Chile/Mexico*; A. Kamali-Nafar, *Iran*; R. M. Reeser, *Tunisia*.