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CENTER FOR ADVANCED TRAINING AND RESEARCH AGRICULTURAL ECONOMICS OF THE UNIVERSITY OF NAPLES[1]

General information—objectives

THE economic policies directed to economic development of the south brought about a growing and widespread awareness of the need for a better understanding of the region's economic and social problems. The objectives and problems of agriculture in the south are particularly complex and require special attention. Organization and potentialities of marketing, development and structure of farms, transformation and productivity of agricultural resources need studies in depth with the application of modern methods of economic and statistical analyses.

To meet the above needs it was deemed necessary to establish an agency continuous in nature, which would have as objectives: (1) to organize and execute programs of extensive research, and (2) to train the specialists interested in research as well as other experts needed for the fulfilment of various tasks in the adjusting and developing economy of the south.

The Center for Advanced Training and Research at the University of Naples was established to fill the above needs. It is the first graduate school in Italy which offers on an advanced level training in modern theory and methods of agricultural economics. While the Center serves as a research and training center for Mezzogiorno, its programs can find application in other areas where similar problems exist, particularly in the Mediterranean. The Center has opened its educational programs to students of other countries and has proposed joint research programs with interested scholars and experts from abroad.

Collaboration with the University of California

In the past years a special agreement between the Center and the Giannini Foundation of Agricultural Economics of the University of California at Berkeley has enabled the Center to formulate and carry out its programs of teaching and research with the advice and also the direct collaboration of this important center of agricultural

[1] Abstract from the Center's *Bulletin*.

economic studies. More specifically the agreement has enabled one or two of the professors from the University of California to come to the Center each year in order to participate in the Center's teaching and research and has also supported the residence in Berkeley, for varying periods of time and with programs agreed upon from year to year, of several students who have finished the Center's two-year curriculum as well as of several members of the staff.

To make possible the collaboration of the agricultural economists of the Giannini Foundation in the activities of the Center, the Ford Foundation on 29 October 1959 gave the University of California a grant of $125,000, the equivalent of 78 million lira, to be distributed over a five-year period to support the various aspects of the collaboration between the Giannini Foundation and the Center.

Since the establishment of the agreement mentioned above, two members of the staff and seven graduates of the Center have studied at the University of California. Meanwhile the following professors of the University of California have spent at least one academic year at the Center: Raymond G. Bressler, Sidney S. Hoos, Ivan M. Lee, Norman R. Collins, Gerald W. Dean, Kenneth R. Farrell, Trimble R. Hedges, George M. Kuznets, and Frank Orazem, Kansas State University.

Since 1965 the program has been extended to other countries, and the following professors have come to the Center to give classes or seminars of varying duration: Dr. J. Horvath—Institute of Regional Planning of Bratislava (Czechoslovakia); Prof. E. Malinvaud—École Nationale de la Statistique et de l'Aministration Économique, France; Dr. J.-M. Attonaty e J.-C. Tirel—Laboratoire d'Économie Rurale de Grignon (France); Prof J. S. Sargan—London School of Economics.

The two-year graduate program in agricultural economics

The Center's aims

The postgraduate course is subdivided into two branches: (*a*) Agricultural Economics; (*b*) General Economics and Economics of Development.

The first year is common to the two branches, and tends mainly to give the students full knowledge of modern tools of mathematical, statistical and economic analysis, which are needed to research both in the field of theoretical and of applied economics.

The second year consists of one semester course and one semester of research, and includes different curricula for the two branches.

The agricultural economic course develops further the theory of production and of agricultural markets, and at the same time tends to give direct knowledge of situations and problems relative to land tenure systems, farm management and marketing of agricultural products, in the general framework of economic development and with particular reference to southern Italy and to Mediterranean countries.

The course of general economics goes more deeply into the topics developed during the first year, and deals with other more advanced topics of economic theory, with particular reference to development problems of southern Italy.

Fellowships

The enrolment is open exclusively to graduate students (Italian and foreign) winners of the fellowships which are awarded by the Center every year.

The fellowships are awarded for twelve months and can be renewed for the second year for students successfully completing the first year program of study.

The fellowships are awarded by the Commission composed of the members of the Faculty of the Center.

The foreign students are required to have some basic knowledge of Italian and English.

The students are required to attend the lectures, exercises and seminars and they must actively participate in the Center's activities.

At the successful completion of the two-year program of study and research the students receive a certificate testifying their accomplishment.

Academic year

Academic year is divided into two semesters. The first three semesters are devoted to lectures and the final semester is reserved for students' research and seminars dealing with the Center's research programs.

From time to time seminars on some political and economic aspects of current interest are also held.

Agricultural extension programme

The Center's programs have been increasingly involved in experimental and research activity focused on problems and methods

of technical and economic extension programs for farmers. This activity grew out of the recognition that extension programs in Italy had to be changed to meet the different needs emerging from our rapid economic growth. Italian economic development has brought about tremendous changes in our agriculture and, as a consequence, the economic aspects of most of the farmers' problems have been becoming more and more important as compared to the purely technical aspects.

Competition in quality, production costs and prices is coming to be of prime importance even for Italian farmers. This implies that, though the importance of purely 'technical' assistance must not be forgotten, the extension programs need to be reformulated and reorganized to help farmers solve their basic problem, the 'economic' problem. This economic problem is a twofold problem, a management problem and a marketing problem.

This is why the Center decided to expand its analysis, research and experiments on methods and organizations best suited for agricultural extension in the two areas of farm management and marketing. This has been done by carefully studying the experience of foreign countries in these areas, in order to increase both public and private concern and activity in farm management and marketing extension.

The farm management section has for a long time been operating two different programs trying to find the appropriate solution to the problems of two types of farm operators.

In the new irrigation area of the Volturno valley a field station has been set up to specialize in the farm management problems for the very small family farms. Designed to test the use of efficiency indexes and of simplified methods of farm planning in the analysis of the management of farms of this kind, this station has developed a complete new system of book-keeping and accounting for this purpose.

On the other hand, with the close co-operation of a young modern farmers' organization, the Associazione Nazionale Giovanni Agricoltori (ANGA), an experimental center of farm management for medium and large commercial farms has been established. It has been recently equipped with its own IBM data-processing unit, the first of this kind in Italy. This Center's aims are to test new methods of measuring the economic efficiency of various farm methods and activities and the most advanced techniques of farm planning.

Additional extension programs recently started by the marketing section will be primarily orientated in three directions:

1. Supplying farmers with information needed for making decisions in planning their farm work. Outlook reports for the most important agricultural commodities of the Mezzogiorno will be prepared. They will interpret for farmers the possible long-run effects of present trends in prices, yields, total supply, developments of competing sectors and areas, as well as evaluate the effects of current farm policy.

The basic methodological problem will be to find ways to answer the questions of entrepreneurs faced with making decisions about problems of farm operation that are specifically related to the unique character of the particular area and conditions in which they operate.

2. Advising farmers, or farmers' groups, co-operatives, associations and marketing agencies about the planning, organization and management of marketing facilities. This phase at the Center's marketing program will be primarily orientated toward preliminary economic analysis, setting up objectives and pointing out limitations in the planning stage; increasing managerial efficiency and skills; and consultation on technical and marketing policy.

3. To organize, or to co-operate in organizing, extension courses for farmers, technicians involved in technical extension activity, or staff members at different levels of organizations with marketing responsibilities.

It should be recalled, finally, that the Center has for some time been very active in the area of technical education through its organization of qualifying courses for teachers and officers of the Public Administration. The content of these courses has been planned each time to meet the needs of the particular person involved. These classes, which always include lectures, seminars and demonstrations are administered jointly by Center staff members and collaborators from the outside.

Five of these courses, concerned with principles and methods of extension, have been conducted for officers of the Cassa per il Mezzogiorno, in co-operation with the Scuola di Addestramento Assistanza Tecnica Agricola di Borgo a Mozzano of the Shell Oil Company of Italy. Another one has been given to the officers of the Ministero dell'Agricoltura in charge of extension, and finally five more have been organized for the teachers of agricultural economics in the technical secondary schools.

TWO-YEAR GRADUATE PROGRAM

MATHEMATICS

Elements of analytical geometry
Matrix algebra
Systems of linear equations
Limits and continuity of functions
Theory and rules of derivatives
Functions of two or more variables
Partial derivatives and rules of differentiation
Maxima and minima
Theory and rules of integration
Differential equations

STATISTICS

Probability

Definitions and axioms
Marginal and conditional probability
Independence

Random variables

Frequency functions
Cumulative distributions
Marginal and conditional distributions
Expected values and moments
The binomial distribution
The Poisson distribution
Uniform distribution
Normal distribution

Sampling theory

Population and samples
Point estimation: sufficiency, unbiasedness and consistency
Best linear unbiased estimators
Maximum likelihood estimators
Distribution of the sample mean for the normal distribution χ^2 distribution
F distribution
'Student's' t distribution
Interval estimation
Confidence interval for the mean and the variance of a normal distribution

Test of hypotheses

Test of a simple hypothesis against a simple alternative
Composite hypotheses
Generalized likelihood-ratio test
Tests on the mean of a normal population
Tests on the variance of a normal population

Design of experiments

One-way experiments
Two-way experiments
Randomized block design

Linear regression

Descriptive linear regression
Classical linear regression model
Best linear unbiased estimates
Classical normal linear regression model
Maximum likelihood estimates
Tests on regression
Computation procedure
Special problems

Sampling design

Unrestricted random sampling
Stratified sampling
Systematic sampling
Cluster sampling
Two-stage sampling

GENERAL ECONOMICS

First year

Price theory

Theory of demand and supply
Theory of markets
General economic equilibrium
Efficient resource allocation
Neo-classical theory of distribution
General equilibrium and the theory of money

Macroeconomics

Elements of national accounting
Input-output system
Keynesian theory

Models of economic growth

Harrod's model
Domar's model
Kaldor's model

International economics

Pure theory
Absorption approach
Balance of payments and exchange rates
Problems of international liquidity

Elements of economic policy

Business cycle and anticyclical policy
Inflation and income policy
Underdeveloped countries
Problems of Southern Italy

Second year

Econometrics

History of economic thought

Structure of Italian economy

Postwar period; southern Italy; development in the short and long period; public and private enterprise
Seminars on official economic documents (annual report of the Bank of Italy, etc.)

General economics II

Theory of demand (advanced)
Theory of production (advanced)
The theory of oligopoly (advanced)
Money, banking
Inflation
Business cycle and models
Technical progress and neo-classical models of economic growth
General equilibrium; (existence of meaningful solutions)
General equilibrium; Straffa's and von Neuman's models
Welfare economics
Planning and related problems
Investment policy
Mathematical economics

PRODUCTION ECONOMICS

First semester

Introduction

Nature of economic science
Economics of production: problems and analytical tools

Production under certainty

Neoclassical production theory
Physical properties of the production function
Economic optima in the use of production factors
Cost and supply functions
Equilibrium of the firm and factors' derived demand
Multiperiod production
Investment criteria and capital budgeting

Linear programing and the theory of production
The theory of the firm with fixed production coefficients
Profit maximization and economic interpretation of the simplex
Profit maximization and economic interpretation of the dual
Parametric solutions of linear programing problems
Dynamic linear programing and the analysis of investment
Evaluation of production efficiency
Empirical production functions and the measurement of efficiency
Efficiency analysis by means of interfirm comparisons

Production under risk and uncertainty

Concepts of risk and uncertainty
Production models under risk and uncertainty

Second semester

Methods of analysis at the firm level

Economic choices within the farm and nature of the managerial function
Collection of physical and financial records
Income statement and measures of performance
Analysis of efficiency factors and profit maximization
Production functions estimation
Nature and use of experimental production functions
Nature and use of firm production functions
Application of linear programing to farm management
Nature and examples of maximization problems
Nature and examples of minimization problems
Dynamic linear programing in farm management
Basic principles of non-linear and integer programing
Simplified methods of farm planning
Risk and uncertainty in farm management
Risk and uncertainty in agricultural production
Production adjustment to risk and uncertainty
Quantitative models for analysis of risk and uncertainty

Methods of analysis at the aggregate level

Supply analysis
Nature of supply in agriculture
Agricultural adjustment: nature and problems
Supply estimation from farm data
Supply estimation through linear programing
Analysis of interregional production
Models of analysis of interregional allocation of agricultural production

AGRICULTURAL MARKETING

First semester

Problems of the distribution of agricultural products

I. Marketing channel and marketing institutions
Marketing functions and marketing services for agricultural products
Costs and marketing margins

II. Interregional marketing
Markets' interdependence in form, space and time
Problems of location and dimensions of market structures

III. Fundaments of the theory of imperfect competition
Oligopoly
Monopolistic competition
Demand concentration
Price discrimination

IV. The market structure approach
Structure, behaviour and performance
Relation of structure with market behaviour and with performance
Critique of the perfect market model; the concept of workable competition

V. Co-operative organization and horizontal and vertical integration
Agencies and policies for market stabilization and orientation
Organization of marketing services public and private
Problems of legislation

Second semester

Demand, Supply and Price Analysis

VI. Fundaments of the theory of consumers' behaviour
Individual and market demand for consumer goods
Demand curves and Engel curves
Price elasticity, income elasticity and indirect inelasticity
The influence of other variables on the demand function

VII. Basic elements of production theory
Cost curves and supply curves for individuals and for an industry in the short and long run
Particular aspects of cost and supply curves: adaptability divisibility and flexibility of constant and variable production factors
The demand for factors of production

VIII. Price formation in pure competition
Market prices at different levels of the marketing channel

IX. Demand estimation: problems and methods
Time series and family budgets
Regression analysis: uses and limits, problems of formulation of economic and statistical models, choice of the method and interpretation of results
Fundaments on multi-equation models

X. Estimation of an aggregate supply functions short and long run
Market response functions
Supply functions at the different levels of the marketing channel: empirical cost functions for marketing services

XI. Agricultural price analysis: interrelations among prices, seasonal and cyclical fluctuations, long-run trends
Generalities on short- and long-run outlook and forecast of demand, supply and price.

REGIONAL PLANNING

(with reference to agriculture)

General questions and calculation tools

Planning and it objectives
Outline of a regional plan
Benefit–cost ratios and rates of return
Comparison between heterogeneous values

Basic surveys

Physical environment (Geology, Climate)
Demography and labour forces
Regional economic accounts

Water resources and their utilization

Water resources analysis and evaluation
Water resources utilization plans
Irrigation plant project

Land use

Land use principles and local zoning criteria
Location of industrial activities: resources and market position
Location of industrial activities: concentration
Location of agricultural activities
Land consolidation in agriculture

Communications and services

Communication system
Traffic problems
Forecasts of public services (water and electricity supply)

Final economic criteria

Priorities in investment choices
Expense allocation: Government institutions and private firms

SOCIOLOGY

Introduction

Goals of the course and demarcation of the field of study
Sociology and its relation to other social sciences: its applications, methodology and goals
Sociological theory, social research and social policy

Society and culture

Their constituent elements, and criteria for the identification of different types; urban versus rural society; industrial versus agricultural society; urban versus rural culture; developed versus developing areas, etc.
Structure and organization of a society: its socio-demographic bases, different social systems, groups and their functions, the socio-economic functions of a society, etc.
Cultural models and relative scales of values as cause and effect of historical, economic, environmental and social conditions, etc.

Sociology of change

The sociological aspects of a society and of an economy under transformation: their relation to economic development
The agents of change (land reclamation and transformation, agrarian reform, structural modification, rural exodus and migratory movements, urbanization and urbanism, industrialization, etc.) and their effects
'City–country' relations and the new regional structure

Methodological problems

Need for evaluating the change and formulating forecasts
The Guttman scalogram method and its possible applications
Identification of 'fringe areas' and the modern analysis of the 'city–country' relationship

The Italian Mezzogiorno. The situation of southern Italy

Social components of the 'questione meridionale' (southern problems) and their implications
The transformations brought about both as an effect of external intervention (direct and indirect) and by internal adaptation
Prospects for the future