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GROUP 13. ECONOMETRIC APPLICATIONS TO AGRICULTURE

Chairman: Y. Maruyama, *Japan* *Secretary:* J. C. Tirel, *France*

Consultants:

E. W. Owens, *U.S.A.* R. W. M. Johnson, *New Zealand*

Econometrics has at present widespread applications in most developed and developing countries. Quite a lot of different fields are concerned at every level, ranging from single production units to the whole economy of one or several countries. Only a few countries and few research fields being represented in the group, it seemed better to focus discussion on a small number of topics in which participants had special interest or experience.

Problems in econometrics can be classified in relation to the level of analysis. The group considered econometric applications at enterprise or farm level (production function, regression analysis, linear programming), then at regional or inter-regional level (supply analysis models), and last, at agricultural industry level.

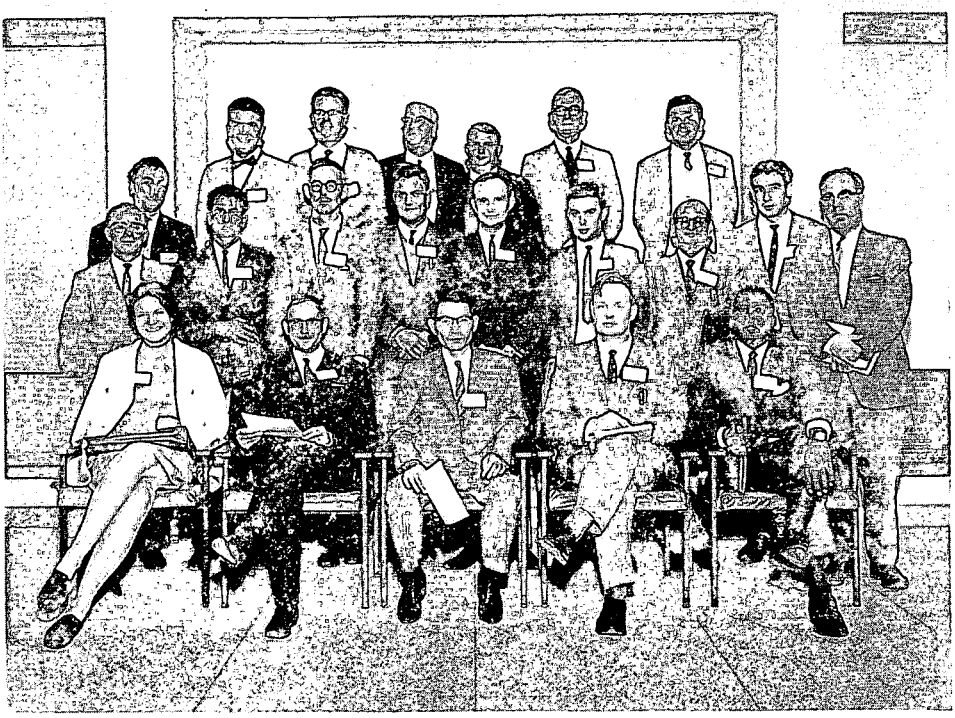
Opening discussion statements presented and discussed during the meetings dealt with the following subjects:

(i) Difficulties of regression analysis for the wool industry in Australia, in connection with complementary and competing products.

(ii) Regression and linear programming models used to study labour migration and the village economy in Central Africa. Starting from data collected through household inquiries, crop output was explained by constants and production elasticities, using dummy variables for soil fertility and managerial ability. The regression analysis was complemented by a linear programming model, used to examine the opportunity cost of family labour in relation to crop prices, subsistence needs and outside wages.

(iii) French agricultural model. This model is used to determine for each typical farm of each region what the productive system should be, and what would be supply and price of each product on the national market. A demand function for each commodity is introduced in the model using sales activities with decreasing prices. Flexibility of the model can be used to test different available choices for policy makers. The model was a dated but static one.

(iv) Transhipment model for whole milk in South East Queensland. The purpose was to determine the least-cost pattern of supply to the



GROUP 13. ECONOMETRIC APPLICATIONS TO AGRICULTURE

Front row, left to right:

Miss M. J. Slattery, *U.K.*
J. C. Tirel, *France*
Y. Maruyama, *Japan*
R. W. M. Johnson, *New Zealand*
E. W. Owens, *U.S.A.*

Second row, left to right:

J. M. Malecky, *Australia*
V. Y. Rao, *Australia*
G. T. Jones, *U.K.*
M. J. Lawrence, *Australia*
R. A. Bowman, *Australia*
J. L. Sault, *Australia*
M. C. Agrarwal, *India*
B. R. Martin, *Australia*
R. Spier, *Australia*

Third row, left to right:

C. D. Throsby, *Australia*
G. Weinschenk, *Germany*
J. W. Wood, *U.K.*
P. J. Thair, *Canada*
G. J. Ryland, *Australia*
D. E. Maccallum, *Australia*
C. D. Hamilton, *Australia*

Other members of group:

J. W. B. Guise, *Australia*
J. L. Joy, *U.K.*
R. N. Richmond, *Australia*

consumption areas. Given fixed prices to consumers, reducing costs in secondary sector was expected to give increasing prices for milk producers. The transhipment model was calculated using costs and capacity data relating to farms, factories, bottling plants and depots. 250 intermediate points were considered between 40 supply points and 40 demand points.

(v) Inter-regional programming for fresh milk transportation in Japan. The model is used to test the profitability of transporting milk from the Hokkaido producing area to the large consumption areas of Tokyo and Osaka. Main features of the basic model include detailed farm management options at farm level and three periods static analysis incorporated in a single tableau. A prediction model for 1970 is used to indicate new use patterns and anticipated inter-regional flows of milk.

Models and related problems were discussed by participants and a number of conclusions were reached. First it was felt that recent econometric work in agricultural economics demonstrated the flexibility of linear programming approach. It was noted that the models discussed tend to be normative rather than positive. Secondly, the group observed that many farm-management surveys tended to aggregate raw data at too high level, resulting in a loss of information important for proper applications of econometric methods. And thirdly it was agreed that the formulation of the economic problems should precede, as far as possible, data collection.

The majority of participants were interested in activity analysis and the discussion reflected this interest, although they were aware that other applications of econometrics could have been discussed such as least-squares models, the definition of objective choice criteria and the use of discretion rather than objective selection criteria.