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THE STRUCTURE OF PRODUCTION OF MULTIPLE-OUTPUT DAIRY FARMS IN THE
"CENTRO SANTAPECINO" REGION OF ARGENTINA; A MULTIVARIATE ANALYSIS

BY

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"CENTRO SANTAPECINO" REGION OF ARGENTINA; A MULTIVARIATE ANALYSIS

Mario Kaminsky

Under the supervision of Professor Rueben C. Euse

The study objectives were: To provide an assessment and interpretation of the development of the dairy sector of Argentina and its main geographic area devoted to dairy for manufacturing. To evaluate current dairy policy issues as represented by proposals for a National Dairy Law. To ascertain the technical and economic production structure of dairy farming in the "Centro Santapecino" region, and test related hypotheses.

These objectives were achieved by these means: The assembly of formerly scattered national and regional information related to the sector, and its subsequent analysis and evaluation. The economic evaluation of the effects of a National Dairy Law. The description of dairy farms in the region and the characterization of their production structure using microanalytic data generated by a special survey taken during 1970. These data were used for a tabular, graphic, and statistical analysis of the dairy farms' main traits, their levels of productivity, the factors affecting them, and the configuration of groups of farms with differences regarding these traits and especially those relating to managerial abilities. The estimation of single-output and multi-output production surfaces of several groups of farms, also using survey data.

A critical review of the literature in the areas of the theory and econometrics of production, and some additional developments provided the methodology for the analysis of the production structure. It included the explicit consideration of multi-output production in the estimation of production surfaces using Canonical Correlation Analysis; the derivation of a theoretically appropriate functional form for that purpose; a method of accounting for management bias using Discriminant Analysis; a procedure to evaluate service flows from capital goods; and a procedure to approximate the significance of individual coefficients estimated by Canonical Correlation Analysis. Multiple Regression Analysis was utilized to estimate single-output production surfaces, and Analysis of Variance for evaluating several secondary factors thought to influence productivity differentials. The use of binary or "dummy" variables allowed for further flexibility in the estimation of single- and multi-output production surfaces.

The overall approach proved fruitful and, among others, provided for the following findings: There are underdeveloped productive potentialities in the sector and region which, to be exploited require a purposive action to be facilitated by a National Dairy Policy. Low managerial levels constitute a barrier to the improvement of dairy farming and therefore demand preferential attention. The data indicate that extension efforts to disseminate new technologies should be capable of demonstrating to farmers that they more than compensate for the extra costs in terms of money and loss of leisure. The commonly held hypothesis that owner-operated farms are in some sense better than farms operated with share milkers is not warranted by the data. The study

also proves that a greater specialization in milk production is not a desirable goal for all types of dairy farms. This is shown by the derived optimum paths of adjustment for these groups in terms of input and output mixes. Special extension and credit policy efforts are also needed to reduce the high seasonality of production and lead to a more highly commercialized type of dairying in the region. Although dairy farmers in the area are generally aware of price relationships they fail to optimally adjust to them. This is partially due to rather severe fixities in resource availability reflected for example in intra-group differences in the marginal productivities of labor and higher or lower orientation towards beef production. The main difference between farms operated with and without share milkers was found to be the larger scale of operations of the former type.

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