AN ANALYSIS OF FEMALE BEEF CATTLE INVENTORY RESPONSE IN NEW SOUTH WALES USING THE ADAPTIVE RISK MODEL

A thesis prepared to fulfil the Requirements of the Degree of Master of Economics in the Faculty of Economic Studies

By

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ABSTRACT

An analysis of variations in the annual inventories of beef cows and heifers and female calves at the regional level in New South Wales is reported. The State was divided into six relatively homogeneous regions for the purposes of this study. Just's adaptive risk model provided the theoretical basis for the specification of equations for each region. This model explicitly considers farmers' subjective evaluations of risk. Geometric weighting of the variances of prices was incorporated in order to study variations in the numbers of female beef cattle in response to changes in price risk. The coefficients of the equations were estimated empirically using a maximum likelihood method. Data for the period 1950 to 1978 were used in estimation.

Wherever significant coefficients were obtained in the equations for the cow and heifer portions of the herd, inventories were positively related to expected beef prices and the variances of prices of alternative commodities; and negatively related to expected prices of alternative enterprises and the variances of beef prices. Beef price risk was significantly related to annual inventories of cows and heifers in the northern and coastal regions where, it was suggested, alternative enterprises are less readily available to the farmers possessing the majority of the beef breeding cattle. The estimated elasticities of cow and heifer inventories were higher in the Tablelands and Slopes regions than in the Coast and Western Plains regions; and higher in the central and southern regions than in the northern regions. The results of the empirical estimation of the equations to explain changes in the numbers of female beef calves were less satisfactory. Although
results similar to those of the cow and heifer equations were often obtained, unexpected positive signs were obtained on some estimated coefficients associated with the beef price risk variables. Lower estimated elasticities of the inventory of female beef calves were obtained for the Central and Southern Slopes and Coast regions than for other regions. Overall, the estimation of regional level equations provided more satisfactory results than estimates of State level models.

It is suggested that further research should be undertaken in order to more adequately assess the usefulness of the adaptive risk model in studies of beef cattle inventory response.
This work arose from the idea to study beef cattle supply response at the regional level in New South Wales in order to increase knowledge about the structure of the beef industry. I am most grateful to Dr. Bob Richardson for that suggestion. However, it was necessary to confine the study to an analysis of female beef cattle inventories since statistics of regional beef production do not exist.

The comments and computational assistance cheerfully given by my supervisor, Dr. Bill Griffiths are gratefully acknowledged. Thanks are also due to Dr. Roley Piggott and my former colleagues in the Division of Marketing and Economics, New South Wales Department of Agriculture, particularly Dr. Col Gellatly, for their helpful comments. Of course, they are not responsible for any omissions or errors in this thesis.

Most of the work in this thesis was undertaken while I was in the New South Wales Department of Agriculture. It was supported financially by the Australian Meat Research Committee. I wish to thank those organizations for their assistance.

In a final acknowledgement, I wish to thank the friends who encouraged me to push on with the final writing of this thesis. Otherwise, it would not have been completed.

The following publications arose from this study:


I certify that:

1. the substance of this thesis has not already been submitted for any degree and is not being currently submitted for any other degree;

2. any help received in preparing this thesis and all sources used have been acknowledged herein.
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