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## Agricultural Development: An International Perspective, by Yujiro Hayami and Vernon W. Ruttan

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# ***Agricultural Development: An International Perspective***

By  
YUJIRO HAYAMI AND VERNON W. RUTTAN  
THE JOHNS HOPKINS PRESS. 1971.  
Pp. 365. \$10.00.

The main concern of the authors was to identify the conditions necessary for agricultural growth by first accepting that growth in agricultural output is essential to the development process and that the contribution of agricultural growth to the development process is positively related to the rate of productivity growth in the agricultural sector. The research is limited therefore, to an examination of the forces which provide for productivity growth in the agricultural sector. An "induced development model" is specified which "attempts to make more explicit the process by which technical and institutional changes are induced through responses of farmers, agri-business, entrepreneurs, scientists, and public administrators to changes in the supply and demand of factors and products." This model relates the key role of the non-agricultural sector as the supplier of modern technical inputs to the simultaneous development in the agricultural and non-agricultural sectors having an effective system of market and non-market information linkages. The principal focus is on the agricultural development process itself with a comparison of intercountry examples of productivity and development.

The induced development hypothesis is tested starting with an analysis of productivity data for various countries. This test is used to trace the agricultural productivity gap among countries. Specifically, the hypothesis is tested using the agricultural development experience of Japan and the United States since 1880. These experiences are related to countries now experiencing the "green revolution."

Sectionalized in five parts, the book presents a) the problems and theories of agricultural development as part of the overall economic development process and alternative paths to development including the authors "induced development model"; b) intercountry comparison demonstrating the productivity gap among countries and sources of productivity differences; c) an analysis of the development path in the United States and Japan; d) the theories and processes of transferring knowledge and growth technology; and e) a discussion of the disequilibrium in world agriculture along with prospects for growth in the lesser developed countries and the application of the induced development model as a part of overall development.

This reviewer was troubled with the productivity data analysis

section and, in turn, with application of the productivity gap conclusions. Chapter four is devoted to the analysis of the agricultural productivity gap among countries. The authors state that "our first objective in this chapter is to establish the hypotheses that the observed differences in land and labor productivity are associated with differences in the level of biological and mechanical technology among countries and over time to identify the significance of industrial inputs for advances in both biological and mechanical technology." The intercountry comparisons were then calculated based upon output per male worker and per hectare of agricultural land as measured in wheat units for 1960. For example, this analysis indicates output per male worker ranged from 2.1 wheat units in India to 141.8 wheat units in New Zealand. The reviewer was unable to determine if labor input was restricted to male workers or if it was per agricultural worker. If in fact the analysis is based upon male workers only, a serious question is raised as to the validity of the productivity data for use in explaining intercountry development differences. The question is based on knowledge that, in many countries, female workers and children comprise a major portion of the agricultural labor force. Thus, when output is measured against only the male worker labor force, there is a resultant greater productivity per worker shown for the countries where male workers are a significant lesser part of the total agricultural labor force. In turn, the analysis of substitution of technology for labor is questionable.

In spite of the questions raised above, the book offers a thorough examination of the agricultural development process when one accepts the hypothesis that agricultural development is a first requirement to overall economic development in the lesser developed countries. This book is recommended to readers who seek a thorough review of past and current development theories in comparison with the "induced development" model suggested by the authors.

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