

ESSAYS ON TECHNOLOGY,  
EMPLOYMENT AND  
INSTITUTIONS IN  
ECONOMIC DEVELOPMENT:  
COMPARATIVE ASIAN EXPERIENCE

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BY  
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## PREFACE

More than ten years ago, I wrote a book in this Economic Research Series under the title of *Economic Development in Asian Perspective* (Kinokuniya Bookstore, Tokyo, 1967) in which I studied the issues of agricultural development, industrial development and their interrelations in the context of the Asian economy. The emphasis was placed on the endeavour to identify those initial conditions of economic development which were specific to contemporary developing countries (and hence were non-existent in contemporary developed countries in their developing stage) and thereby to clarify and formulate the specific development problems and policies that were facing them. The present volume consists of four chapters reproducing, respectively, four essays on economic development which I have written since then (with the exception of Chapter 2 which essentially originated from an article that I wrote jointly with Professor Kazushi Ohkawa). Postscripts for each chapter and appendices for two of the four chapters are provided. The selection of specific subjects and the approach and methods of analysis are broadly similar to, but in some respects more distinctive than, those that characterized the above book. The major subjects selected are (1) choice of appropriate technologies and technological development, (2) productive absorption of the ever-increasing labor force (both of (1) and (2) pose extremely difficult problems for the contemporary developing countries to solve) and (3) institutional arrangements, such as customary community relations and underdeveloped market economy

systems, which are closely associated with economic underdevelopment. The approach is essentially inductive, starting from intuitively or empirically grasped issues, while theories are used primarily as means for developing frameworks of study to deal with these issues. The method most often relied on here to grasp issues and to develop the framework of analysis is that of comparative study of economic development. In this respect, the prewar Japanese experience of economic development is heavily relied upon, this time not necessarily to contrast her initial conditions of development with those of the contemporary developing countries of Asia, but to derive insights into the issues and into the formulation of a framework, through comparing it with the experiences of other Asian countries. (In at least two chapters, the discussion is mostly devoted to the studies of Japanese experience in this regard for the purpose stated above. In the postscripts to these chapters, the implications of the Japanese experience for contemporary issues are described.) In these respects, the present volume is a continuation of the study which began in the previous book.

Chapter 1 studies the possibility of absorbing a significantly larger amount of labor than at present in agricultural production as the major means of solving the unemployment and underemployment problems of developing Asian countries which have become pronounced since the early 1960s. The study starts from the empirical finding in the previous book that the man-day input of labor per hectare of rice land (for a single rice crop as well as for total crops) was a few times larger in Japan during the entire prewar period after the 1860s than in most of the contemporary developing countries in South and Southeast Asia. It then explores the technological, economic, and institutional factors responsible for the differences. The analysis of the labor utilization effects of irrigation and agricultural mechanization receive particular attention. It is argued also that a clear difference exists in the choice of techniques in rice and other crop production between the early-comer country (in the case of modern rice

production, Japan) and the late-comer countries (namely, the countries of South and Southeast Asia). This is due to the fact that, *first*, in the early-comer country, when the deliberate effort began to be made to increase per hectare crop output, most of the yield-increasing inputs were labor-using, but with the progress of industrialization these inputs became labor-saving; *second*, for the contemporary late-comer countries, these yield-increasing and labor-saving inputs are available, and they are in many cases much cheaper than other kinds of yield-increasing inputs and thus constitute the only alternative inputs. This suggests the possibility that the scope for reducing the large differentials in labor input between Japan and the South and Southeast Asian countries may not be as large as it first appeared to be. Yet, it seems that there still remains a substantial scope for such a reduction in several respects. An inquiry into this possibility is the focus of the discussion on the policy side.

Chapter 2 studies the process and characteristics of technological change in agricultural production and the impact it tends to exert on the agrarian structure (defined as the ownership, tenure and size structures of rural farms), taking as a case study the Japanese experience in the course of prewar agricultural development. Technological changes are dealt with in two dimensions: *one* in a technical and engineering dimension, as a combination of individual inputs and practices, and *two* in an economic dimension as types of shift in the production function. It is attempted in each dimension to isolate the particular elements of technological change that affect the agrarian structure. The aim is to facilitate the development of a framework of study regarding the so-called Green Revolution (which began to take place since the mid-1960s) and its impacts on the agrarian structure. An evaluation of the performance of the Green Revolution so far is attempted in the postscript on the basis of the framework thus derived.

In Chapter 3, investigation is made with regard to institutional arrangements for resource allocation which seem to be

more or less in operation in the developing economies, and which are different from those assumed to be in operation in almost all discussions in development economics, *i.e.* from the arrangements of well-developed market economy. The former institutional arrangements, which may be called customary community relations, are to be found in countries, such as in Japan, where they have remained in operation and have played at least two important roles in economic development: first that of securing fuller employment of the community members and second that of making joint investment and joint operation among them possible. In contrast, in the countries and regions where community relations disappeared prior to the attainment of economic development of a sufficiently high level, such as in prewar northern China, the danger of serious unemployment is likely to exist. The mechanisms of employment determination under these different institutional arrangements and of the society's determination of particular institutional arrangements are studied under two different assumptions, the first in the text and the second in the appendix. In the postscript are elucidated some cases in which community relations are found to be actually working in Southeast Asian countries much more strongly than was previously thought and to be playing some positive roles in development.

Chapter 4 investigates how prewar Japan solved the issue of identifying and developing appropriate technologies in the face of fierce competition from the highly sophisticated and capital-using technologies of the Western industrialized countries which were capable of producing low-cost products by capturing significant economies of scale. Among a number of types of appropriate technologies for different industries, particular attention is paid to the type which was developed by adapting the product design and product quality of imported manufactured goods to the progressively changing real incomes and market demand of the Japanese consumers. This type of appropriate technologies provided the opportunities for new industries to emerge as non-traded goods industries and, after a period of learning under

that status, to transform themselves into internationally competitive industries with technologies almost comparable to those of the West. This chapter is also concerned with the manner in which the choice of appropriate technologies is conditioned by market underdevelopment (meaning in this case the weak operation of the market economy principles of resource allocation) and a low level of domestic technological capability, factors which are often neglected in the discussions of development economics. In the postscript, the issue of appropriate technologies in contemporary developing countries is discussed in the case of the tractor and power-tiller industries in Southeast Asia by following the framework of analysis thus developed.

In the course of preparing these four chapters, I have benefited from the discussions with and comments and criticisms from a large number of people. Among them, I would like to express my deep gratitude to Professors Randolph Barker, John C. H. Fei, Yujiro Hayami, Shigemochi Hirashima, Toshihiko Isobe, A. R. Khan, Yukihiro Kiyokawa, Raymond Meyers, Hla Myint, Konosuke Odaka, Vernon Ruttan, A. Vaidyanathan, Saburo Yamada and, in particular, to Professors Kazushi Ohkawa, K. N. Raj, Lloyd Reynolds and Austin Robinson, who provided me with the stimulus to write the original papers. In a more general sense, my study of economic development has also been facilitated also by the kind help of many other economists. For this I would like to thank particularly Professors G. S. Bhalla, Bart Duff, Jose Encarnacion, Jr., Sayuti Hasibuan, Shinichi Ichimura, Yoichi Itagaki, Simon Kuznets, John W. Mellor, Saburo Okita, Harry Oshima, Gustav Ranis, C. H. Hanumantha Rao, Amartya K. Sen, Akira Takahashi, Seiichi Tobata, Shigeto Tsuru, Vinyu Vichit-Vadakan, Susumu Watanabe, A. M. Weisblat and Larry Westphal. I have also benefited from constant discussions with many of my colleagues at Hitotsubashi, to whom I wish to extend my appreciation.

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