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**PATTERNS OF  
JAPANESE ECONOMIC DEVELOPMENT  
A QUANTITATIVE APPRAISAL**

Edited by  
**KAZUSHI OHKAWA**  
and  
**MIYOHEI SHINOHARA**  
with  
**LARRY MEISSNER**

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## **PATTERNS OF JAPANESE ECONOMIC DEVELOPMENT**

## Foreword

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This volume is one in a series of studies supported by the Economic Growth Center, an activity of the Yale Department of Economics since 1961. The Center is a research organization with worldwide activities and interests. Its purpose is to analyze, both theoretically and empirically, the process of economic growth in the developing nations and the economic relations between the developing and the economically advanced countries. The research program emphasizes the search for regularities in the process of growth and changes in economic structure by means of intercountry and intertemporal studies. Current projects include research on technology choice and transfer, income distribution, employment and unemployment, household behavior and demographic processes, agricultural research and productivity, and international economic relations, including monetary and trade policies, as well as a number of individual country studies. The Center research staff hold professorial appointments, mainly in the Department of Economics, and accordingly have teaching as well as research responsibilities.

The Center administers, jointly with the Department of Economics, the Yale master's degree training program in International and Foreign Economic Administration for economists in foreign central banks, finance ministries, and development agencies. It presents a regular series of seminar and workshop meetings and includes among its publications both book-length studies and journal reprints by staff members, the latter circulated as Center Papers.

Hugh Patrick, Director

## Preface

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In connection with the ongoing LTES project, two international conferences have been held on the economic growth of Japan, in 1966 and in 1972, sponsored by JERC (Japan Economic Research Center). At the 1972 meeting the publication committee recommended preparation of a single volume summary of the statistical estimates and suggested Kazushi Ohkawa and Miyohei Shinohara be coeditors.<sup>1</sup> This volume is the result.

A special study group was formed at Tokei Kenkyukai (Institute of Statistical Research) to prepare what was tentatively titled RSE (the Revised Summary Edition of LTES). First drafts were presented at a workshop held in Tokyo in December 1974. From outside the group, Simon Kuznets, Tsunehiko Watanabe, Yuichi Shionoya, and Yasukichi Yasuba kindly participated, giving valuable comments.

Since then, over three years have been spent incorporating the comments received at this workshop as well as the discussion held among ourselves into final drafts. During this time Larry Meissner was invited to Tokyo twice to assist us, and rather extensive revisions have been made in response to his painstaking efforts. During the course of the work the number of project participants increased to some 25. While only half are named as authors of specific chapters—generally those who led the original research for the LTES volume covered by a chapter—this has been very much a team effort.

What has come to be called the Hitotsubashi group, though it has included some from other universities, has spent almost 25 years on this project. During that long period many have come and gone, each

1. Committee members (in alphabetical order) were Dale Jorgenson, Lawrence R. Klein, Simon Kuznets (chairman), Kazushi Ohkawa, Saburo Okita, Gustav Ranis, Henry Rosovsky, Tsunehiko Watanabe, and Yasukichi Yasuba.

making a contribution. To all of them, we are grateful, for without their efforts this volume would not have been possible.

Toyo Keizai Shimposha has generously permitted publication of most of the data in this volume before implementing its own plan to publish a summary version in Japanese. Funding for publication has come from the Sumitomo Fund gift to Yale University, whose Council on East Asian Studies and Economic Growth Center also assisted, and from the Japan Foundation under a special grant. The Japan Foundation and Asia Foundation provided travel grants.

Tokei Kenkyukai served as the office for carrying out much of this project. Kokusai Kaihatsu Senta (IDCJ, the International Development Center of Japan) funded and hosted the 1974 workshop, and assisted a great deal in preparing the entire draft, including travel grants and office space.

As individual scholars, Simon Kuznets, as chairman of the publication committee, continuously cooperated with us, as did Gustav Ranis and Hugh Patrick as successive directors of the Economic Growth Center at Yale. Nobukiyo Takamatsu spent many hours checking the data and sources to assure the most recent of our estimates have been used and to identify the differences among authors. Tamiko Sakatani at IDCJ and Louise Danishevsky at the Economic Growth Center diligently deciphered our (and Larry Meissner's) handwritings and editing notations on the manuscript as it metamorphosed into final typed form. To all of them we express our sincere thanks.



## Editors' Note

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Japanese personal names are written in the western order of given plus family name. Japanese government agencies are always cited by their Japanese names to facilitate finding the sources in library card catalogs, although in the text common English abbreviations are sometimes used (see below). English titles are given in the bibliographies only where the work can be used by those not reading Japanese. Information contained in figures and tables is included in the index. Appendix tables are in the same topical sequence as the text. In part 1 the references for all three chapters follow chapter 3; in parts 2–4 each chapter is followed by its references.

### ABBREVIATIONS

#### Agencies

- EPA    Economic Planning Agency (Keizai Kikakucho)  
ESB    Economic Stabilization Board (Keizai Antei Honbu)  
MITI   Ministry of International Trade and Industry (Tsusho Sangyosho)

#### Published works

- ARNIS   *Annual Report of National Income Statistics*  
GRJE    *Growth Rate of the Japanese Economy Since 1878*  
LTES    *Estimates of Long-Term Economic Statistics of Japan*  
SIL      *Choki Keizai Tokei no Seibi Kaizen ni Kansuru Kenkyu*



## Introduction

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Japanese economic development has attracted students of growth theory, economic historians, and countless others fascinated by the country's successes (and failures). The process is studied as a model, or at least an object lesson for the developing countries, it is analyzed and compared to the other developed countries for insights into how modern economies are structured and operate, and of course it is studied by those interested in Japan for its own sake. This book is designed to help all these groups in their work on Japanese development.

Statistics on Japan are abundant—so much so they can be a source of confusion, as studies sometimes present just bits and pieces of data from diverse sources in the course of exposition and analysis. In the 1950s a project was begun to provide a set of data as complete and accurate as possible. The result is the *Estimates of Long-Term Economic Statistics of Japan since 1868*, commonly referred to as LTES, a projected 14 volumes published by Toyo Keizai Shimposha starting in 1965. As of early 1979, ten volumes had appeared. The tables in LTES have English headings, notes, and a summary of the estimating procedures.

While the detailed LTES data are thus available to non-Japanese, to make the series more accessible it was decided to publish this book to do the following:

1. Present the most important series in a national income accounting framework in one volume (while all the LTES volumes are not yet published, the research for them is substantially finished).
2. Introduce important new work not covered by LTES (Minami and Ono's discussion in ch. 11 on factor incomes).
3. Provide data from forthcoming LTES volumes (Yamamoto

and Yamazawa's trade data in ch. 7, which includes important revisions in price indexes, and Umemura's population and labor force series in ch. 14).

4. Include revisions and extensions of already published LTES series.

5. Discuss the patterns and the data to help understand some of the whys.

6. Describe data sources and methods so a user can relate material to his own analytic work or comparisons with other countries or refer back to more detailed data.

7. Provide references to analytic and descriptive studies of the data and patterns.

This is, in short, a reference book, a handy guide not just to the LTES series but to Japanese economic studies in general. While about half tables, the text provides a summary of the patterns in the data and describes some of the analysis done on Japanese economic development.

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## PART 1: OVERALL PATTERNS



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## Aggregate Growth and Product Allocation

*Kazushi Ohkawa*

Study of the quantitative aspects of development is a relatively new field of economics. Although there are many pre-World War II works on national income and expenditure, most are not systematic and reliable enough to clarify the quantitative aspects of modern economic growth. Not until the beginning of the 1950s were more or less systematic studies undertaken in the developed countries, under the leadership of Simon Kuznets.

In 1951 Yamada published his pioneering work on Japan and one of our preliminary studies (published as Tsuru and Ohkawa 1953) was presented to the International Conference on Income and Wealth. GRJE was published in 1957 as an interim report. The most important prewar work was done by Hijikata (1933; other early studies by both Japanese and foreigners are discussed in GRJE, pp. 35–47).

The significance of national income estimates in analysis has greatly expanded in recent times, aided by government compilation of official statistics, international standardization, and progress in evaluation techniques. In Japan official estimates were made during the occupation, but during the 1950s use of national income statistics for grasping the macro-pattern of the economy was very limited. One reason was strong reservation about their reliability, but more important might have been a simple lack of any scholarly intention of using them for analytical purposes, and thus a lack of interest in improving long-term series extended to prewar years. Such an intention was a driving force in our group's studies.

By the beginning of the 1960s progress in constructing a conceptual framework, reconciling and integrating various estimates, as well as improving reliability through continued research, had created a set



of statistics usable in analytic studies. Most of these have been published in LTES. I believe the entire revised series can be used to formulate national product and expenditure, even though several parts need further exploration, as is discussed in chapter 3. Linked with the official postwar series, the data are more or less satisfactory for broad continuous observation and for illuminating the pattern of Japanese economic growth since 1885, if carefully used and interpreted.

Estimates prior to 1885 are of course desirable, but due to the limited availability of relevant statistical records, we refrain from making them. Especially for services and other intangibles, estimation faces great difficulties, and much more time and effort are needed to overcome them. Available evidence shows the years 1868–85 are the transition period, characterized by institutional innovations. Real modern economic growth started later (see Ohkawa and Rosovsky 1965), and our estimates cover its entire period.

#### SOME CONCEPTUAL PROBLEMS AND THE QUANTITATIVE HISTORICAL PATTERN

Although simplicity is preferred, national income accounts have become more and more elaborate even for developing countries. Such complexity has the disadvantage of requiring too much data, given the limited availability of basic statistical materials. Similar problems exist with estimates for the early years for developed countries, because reliable sources are limited and there is no way to create new data by design.

For estimating prewar national product and expenditure, the so-called conventional concepts and premises have been adopted. They are similar to those used in the government's postwar official estimates. I share the view the concepts behind and the procedures for estimating national income accounts can be plural. This volume presents one possible estimate but other kinds of series can be constructed. As an example, there can be different frameworks for short-term and long-term settings. The conventional framework is designed primarily for short-term purposes; when applied to long-term analysis, it may be biased in scope, netness, and valuation. This may be especially true in Japan's case because growth and structural change have been so rapid by international standards. Nonetheless, no special devices have been used. The rationale of adopting the conventional framework is its historical and international comparability.

The essentials of statistical procedure depend on the proposed use, and since our aim is to clarify the quantitative aspects of modern economic growth, two points seem especially important: the meaning of quantification in long-term measurement, and the significance of what we call the historical pattern.

### The Meaning of Quantification

Measuring a macroindicator of economic *activity* is one of the essentials. For this we use GNE (gross national expenditure) and its equivalent, GNP (gross national product). The use of GNP is reasonable and useful for our purpose because of its comprehensiveness, consistency, and netness. In view of a recent tendency to distrust GNP, I must stress our emphasis is on the level of activity, rather than the level of welfare.

An inseparable aspect of this problem is the composition of GNP and changes in it over time. Nonetheless, this problem has drawn less attention than it deserves. Two circumstances may explain why. First, increasing use of GNP by political and administrative authorities in the postwar years has become an international phenomenon. Developed countries stress GNP growth rates, and developing countries use it to set objectives for their economic plans. Second, the historical experience of modern economic growth in western developed countries has revealed no striking differences in compositional changes. Thus they are more similar to one another than to, say, Asian countries, including Japan.

A more technical problem is the relativity of measuring the quantitative features of modern economic growth. I will not repeat the discussion of problems dealt with elsewhere, such as scope (particularly the nonmarket portion of the traditional economy) and netness (see GRJE). Possible estimation errors are covered in chapter 3. Here I mention only my basic view on this controversial problem.

Quantitative measurement based on market prices of goods and services can and should be accepted despite some misgivings if only because we have no alternatives. The important point is to make appropriate reservations in interpreting the results. In particular, one must recognize quantification depends on the price system used. Different price systems give different results, this is inherently unavoidable. A technical discussion of the index number problem is beyond the scope of this chapter, but I reject the classical view, which