ちまちであり，相互関係はあまりみられない。

上野裕也，寺西重郎氏による「長期モデル分析の基礎と課題：２部門モデルの理論的フレーム・ワーク」(第１章)は，「金融，財政を含む日本経済の生産・分配・支出構造を明らかにするためのミニマム・エッセンシャルなシステム」(389ページ)としての勘定体系を中心として，対象分析期間の選定，産業分割のあり方，などモデル作成にあたっての基本的課題が論じられている。

勘定体系としては，第１生産部門，第２生産部門，家計，銀行，日銀，政府の６部門の収支バランス，第１部門生産物，第２部門生産物，貨幣，預金，貸出・有価証券，労働の６つの財，サービスに対する市場均衡条件が定式化されている。

このような勘定体系の下で，ワルラス法則と $I=S$ 均衡との関係，家計的側面と企業的側面の区別し難い個人業主などの主体の取扱い，などが論ぜられていて興味深い。

このように精密な勘定体系の提示に対し，行動方程式の議論は，きわめて一般的な実物，金融資産の選択モデルに多少ふれている以外は，二重構造と賃金格差を明示的に考慮するために熟練労働，非熟練労働を区別する生産函数を示唆するにとどまっている。

１つの勘定体系に基ずいて構成される経済モデルは，行動方程式の選択の方法により数多く存在するわけであるから，この論文にこれ以上期待することは間違いであろう。

南亮進，小野旭氏による「二重構造下の雇用と賃金」(第４章)は戦前の日本経済における雇用および賃金に関する諸問題を計量経済モデルによって分析している。

13本の方程式より成る「二重構造モデル」は，利潤極大原則に基ずいて運営される資本主義部門と，この原則が支配しない非資本主義部門から構成されており，後者における賃金水準は生存水準によって外生的に与えられるのがこのモデルの特徴である。

推計にあたっては，資本主義部門を非１次産業で，非資本主義部門を第１次産業で近似させている。従ってサービス業のすべてが資本主義部門に含まれている。

このモデルを使用して，シミュレーション分析が行われている。シミュレーションで考慮されている要因の変化は，有業人口総数の成長率，第１次産業の実質賃金成長率，技術進歩率，２産業間の労働の移動性の上昇などである。

二重構造を考える場合，賃金格差成立のメカニズムを理解することが重要であろう。上記のシミュレーション分析から賃金格差に関しては次のような結論が導かれている。「有業人口増加率の上昇は部門間賃金格差を縮小させる」，「非資本主義部門実質賃金の低い上昇率は部門間賃金格差を拡大させる」，「資本主義部門の技術進歩率の上昇は賃金格差を拡大させ，非資本主義部門のそれは格差の縮小をもたらす」，「労働市場の流動化は賃金格差をせばめる」(492ページ)。

無制限労働供給の存在，労働市場の非流動性，２部門間の技術差が格差形成，拡大の要因であるという既存の仮設は，このモデル分析結果と両立している。

このモデルによるシミュレーション分析には，かなりの苦労のあとがみられるが，あえて欠点を指摘すると，変化の方向の指摘にとどまり，シミュレートされた数値の妥当性にたいするコメントが少ない点である。数値の吟味，軌跡の検討などがあればモデルの性格がより一層理解しやすくなったであろう。

石渡茂，尾高氏による「需要変動と趨勢加速」(第３章)は，「趨勢加速」の検討を供給面からでなく，需要面から検討してみようということが中心課題となっている。モデルは17本の方程式，定義式および均衡式から成り，シミュレーション・テストから，政府支出は趨勢加速に対する１主要因であること，輸出の効果は弾力性でみるかぎりあまり大きいとはいえないこと，利子率の民間投資や輸出に対する高い負の弾力値は，利子率のもつ趨勢加速への効果が大きかったこと，などが指摘されている。

モデル作成の段階において，流動性選好関教の導入による利子率の内生化の試みは，利子率の係数が正となったことにより放棄され，古典的数量説が採用されている。

フィシャー効果などの存在の可能性は検討されたのであろうか。貨幣，物価，利子率などの充分な検討が日本のようなインフレ的成長を説明する上では大切であろう。

〔大槻聡幸〕

速水佑次郎他

『日本農業成長の一世紀』

——アジア開発への妥当性——

Yujiro Hayami, *et al.*, *A Century of Agricultural Growth in Japan, Its Relevance to Asian Developmemt*, University of Tokyo Press, 1975, xvii＋248pp.

I

Those of us who have come to expect much from Professor Yujiro Hayami are pleased with his new, slim but neat, book. Once again he provides us with

a very lucid description and analysis of the historical development of modern Japanese agriculture. According to the author, the present volume represents a final report of a research project entitled "Science and Agricultural Progress: The Japanese Experience" conducted during the period 1972–1974. This research itself was an extension of a highly successful joint research carried out by the author and Professor Vernon W. Ruttan, the results of which were published in the celebrated *Agricultural Development: An International Perspective* (Johns Hopkins, 1971). This genealogy defines the scope and nature of the present volume and reflects altogether a span of some two decades of productive work by the author and his associates.

The book's major objectives are clear from the title itself; to identify the sources of productivity growth in a century of agricultural growth in Japan and to examine its relevance to solving the problems that "Asian farmers are now facing." Its basic analytical approach is that of positive economic analysis. The author's strength is in simplifying a complex history and a constellation of technological–institutional as well as economic forces into a manageable set of coherent hypotheses. The quantitative measurement of the input–output relations takes the barest essentials of testable hypotheses without sacrificing much of the theoretical vigor. One has to admire the author's skill and professional competence here. A major focus and concern of the volume, however, is the institutional development of Japanese agriculture, where "public support and group action for allocating resources for the provision of such public goods as irrigation and new technology represented a key to growth in output and productivity." The investigation is based on a working hypothesis that the development of "critical infrastructure was induced by dynamic interactions between farmers and public agents."

II

The book is divided into four parts. Part 1, Chronology of Growth, contains a careful empirical study of trends in output, inputs and productivities (Chapter 2) and a thoughtful chapter on the institutional aspects of agricultural development (Chapter 3). Despite its length, this chapter is concise and provides a respectable balance to the conventional growth accounting of the preceding chapter. Part 2, Accounting for Growth, comprises relatively short Chapter 4 which analyzes sources of long–term productivity growth in the lines familiarized by Zvi Griliches' 1964 paper and Chapter 5 where technical progress in Japan's growth phases is studied in reference to a hypothesis regarding time lags between the accumulation and diffusion of technological potential in agriculture. After refining the growth accounting by the aggregate production function method that incorporates the "unconventional inputs" such as education, research and extension (Chapter 4), the still remaining "unexplained residuals" are subjected to test whether the sequences in which positive and negative residuals appear resulted from sequences in the accumulation and diffusion of the potential in agricultural technology. Although the variables selected are too macro to be capable of making a fine distinction between invention and diffusion ("science–oriented research," "technology–oriented research," and extension) and although the econometric hypothesis is too sweeping to distinguish, but most crudely, accumulation of the potential and diffusion of technology, these two chapters in Part 2 represent perhaps the most fascinating set of hypotheses and their quantitative tests.

Part 3, Public Factors in Growth, inherits the analytical conclusions of the preceding parts and extends the study into another crucial dimension. The starting point for this part is that all–important research, extension, and land infrastructure investments are characterized by indivisibility, externality, and jointness in supply and utilization. Given these "public goods" characteristics, markets fail to ensure socially optimum levels of supply of these services. And, market failures, in turn, necessitate interventions by public bodies. Based on these premises, Chapter 6 reports the first serious effort at measuring public investment in and social returns from rice–breeding research.

The results show that the social rate of return was approximately 25% before and about 75% after the crop–breeding programs were reorganized into the Assigned Experiment System, whereby "the conflict between the constraint of research resources and the need for location–specific breeding research was solved by organizing a division of labor among the national and the prefectural experiment stations." It is not surprising perhaps that these rates are well above those realized from more conventional investments. The estimated social rates of return have been high in almost all situations including the pioneering study of hybrid corn by Griliches in the late fifties. They indicate, however, that investment levels have been far below optimal. Of course, investment decisions are made on the basis of expected returns, and therefore *ex post* measured rates of return are not necessarily equal to *ex ante* perceived returns. Nevertheless, the extremely high rates of return reported should be taken to show that investment levels (public or not) have been too low to represent optimum allocation. The question is not whether the market mechanism requires supplementing, but whether the type and extent of supplementary support was too large or too small, and whether it was allocated properly. Despite all that have been done, these results seem to indicate that the questions

are still very much open regarding whether public sector investments were (and are) closely guided by perceived economic returns(the basic hypothesis of the present volume), and whether the *increased* rate of return (as calculated for the period after the Assigned Experiment System) would indeed indicate improvement in the efficiency in research by the "induced" institutional innovation. It seems that one has to moderate interpretation of these results with acknowledgement of uncertainty in perception, imperfection in access to information, and various constraints of research resources that yet limit the scope of positive equilibrium analysis in this field of inquiry.

Chapter 7 focuses on the role of land infrastructure in Japanese agricultural development in terms of its basic complementarity with seed–fertilizer technology. This short chapter uses simple cost/benefit ratios, defined as the cost of land–infrastructure investment required to produce one *yen* of value-added in agriculture, and develops an informative narrative on the legislations that were instrumental in organizing agriculturalists for group action and in mobilizing resoruces for construction of irrigation and drainage facilities.

Part 4 contains one single chapter on implications of the Japanese experience (Chapter 8). Here the author presents a concise summary of his perspective on this important subject that sometime ago pitted B. F. Johnston, K. Ohkawa, and H. Rosovsky on one side and J. I. Nakamura on the other. The perspective of the younger generation represented by the author reflects a dialectical synthesis and is briefly as follows:

(a) Japanese agriculture in the Meiji period, starting from a level of labor productivity comparable to today's Asian countries, was able to grow at a rate "sufficiently rapid to generate surpluses for supporting the development of the nonagricultural sector, concurrently with industrialization."

(b) The growth in output and labor productivity was based on the advance of land productivity by the government's purposeful exploitation of biological technology which was made possible by a favorable set of initial conditions, especially of land infrastructure and rural institutions.

(c) Although the Japanese experience suggests a "general direction" for agriculture in Asian countries with poor land/man ratio, it is not directly applicable because of the differences in population pressures, international technology gap, the level of development of irrigation systems and rural institutions consistent with land-saving biological technology.

III

No doubt there are differences between Japan and today's LDCs so that one should not attempt to directly draw "lessons" from the former to the latter. Nothing succeeds like a success. And, the temptation is great to hold up a successful experience as a model. One ought not to forget that the Japanese "success" story evolved over a century. Perhaps more strongly than the author I would like to emphasize that this process inevitably entailed mistakes and some tortuous routes. It is quite likely, as the author states, that none of the specific "lessons" from Japan's experience can be transferred directly. In other words, each country will require a slow, often painful process of experimentation, just as Japan has gone through, to exploit the available opportunities in a given set of circumstances and constraints. Obviously, to drop the issue with such a conclusion is unsatisfactory. One ought to learn the lesson from successes *and* failures, the latter of which would have yet to be examined seriously.

It is a pity that the present volume makes no serious analysis of farm (relative) price movements and management data (farm budgets) at the farm household level. This neglect is serious when one considers the importance attached to input/output prices and subsidies in present-day LDCs. The concern of the agricultural authorities reflects of course the role the prices play in developing improved farming systems and in distributing the benefits of growth as well as in influencing output growth among different groups of farmers (with respect to, e. g., regional characteristics, farm sizes, ownership/tenurial relations). One would like to know more specifically the structural/institutional innovations by which the spirit of economic calculations, reckoning of costs and benefits through price structure, was inculcated and encouraged to motivate the Meiji farm households to innovate and improve.

I would hasten to add that these deficiencies are by no means unique to this volume, as they are shared by many other studies of technical change and growth accounting in agriculture, and that they do not diminish much the fundamental contributions the present volume makes.

〔**Hiromitsu Kaneda**〕

D. S. ポー・J. C. H. フェイ

『開放二重構造経済の変遷』

Paauw, Douglas S. and John C. H. Fei, *The Transition in Open Dualistic Economies: Theory and Southeast Asian Countries*, Yale University Press, New Haven, and London, 1973, xii+306 pp.

本書は台湾，フィリピン，タイ，マレーシア4ヵ国の経済発展に関する理論的，実証的研究である。

研究の対象となる期間は1950～70年の20年間であ