

**Economic Growth Center
Yale University**



Annual Report 1979-1980

T. Paulsen

THE ECONOMIC GROWTH CENTER

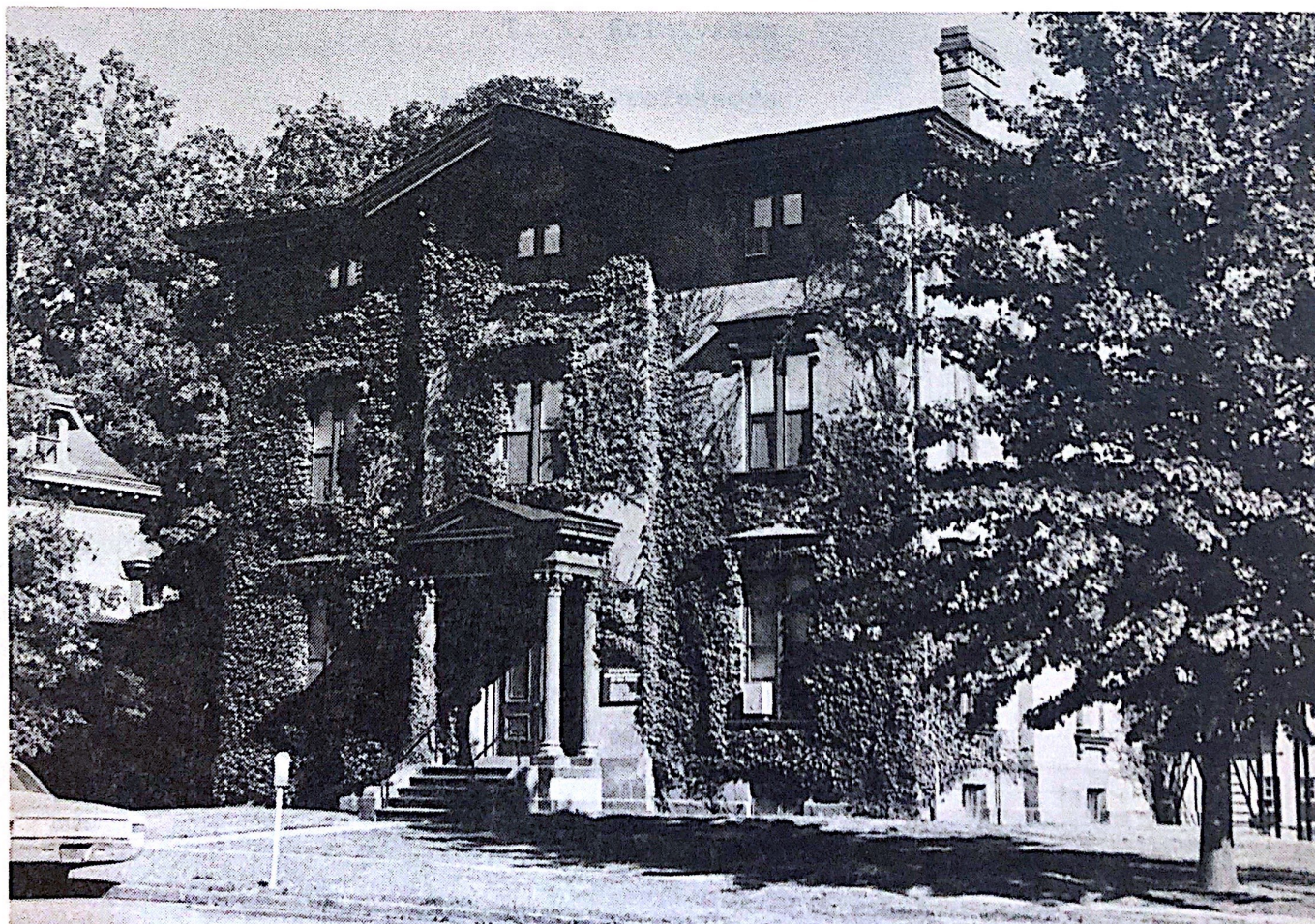
YALE UNIVERSITY

Box 1987, Yale Station

New Haven, Connecticut 06520

ANNUAL REPORT

1979 - 1980



ECONOMIC GROWTH CENTER

YALE UNIVERSITY

Hugh Patrick, Director

Nicholas R. Lardy, Assistant Director

Judith Zyskowski, Business Manager

PROFESSIONAL STAFF, 1980-1981

Professors

Carlos F. Diaz-Alejandro

Robert E. Evenson

John C. H. Fei

Hugh Patrick

Gustav Ranis

Lloyd G. Reynolds

T. Paul Schultz

T. N. Srinivasan

Associate Professors

Nicholas R. Lardy

Kenneth I. Wolpin

Brian Wright

Assistant Professors

Louka Papaefstratiou

Jennifer Roback

Lecturer

Zvi Eckstein

ECONOMIC GROWTH CENTER

YALE UNIVERSITY

ADVISORY COMMITTEE, 1980-1981

Co-Chairmen:

Malcolm K. Brachman	Chairman of the Board & Chief Executive Officer, Pioneer American Insurance Company
Henry J. Heinz II	Chairman of the Board, H. J. Heinz Company

Members:

Frank Altschul	Chairman Emeritus, Board of Directors, General American Investors Company, Inc.
Jack F. Bennett	Senior Vice President, Exxon Corporation
Marvin Bower	Former Director, McKinsey and Company, Inc.
Irving Friedman	Consultant, First Boston Corporation
Ichiro Hattori	President, Daini Seikosha Company, Ltd. (Seiko)
John R. Petty	Chairman of the Executive Committee, President and Director, Marine Midland Bank, Inc.
Alexander M. Vagliano	Executive Vice President, Morgan Guaranty Trust Company
Paul C. Warnke	Partner, Clifford & Warnke Former Director, United States Arms Control and Disarmament Agency
Frazar B. Wilde	Chairman Emeritus, Connecticut General Life Insurance Company

TABLE OF CONTENTS

Introduction to the Economic Growth Center.	1
Financial Support	4
Staff and Visiting Scholars, 1979-80.	5
Executive Committee	8
Advisory Committee.	8
Publications	9
International and Development Economics	10
Pacific Trade and Development Conferences Secretariat	11
The Library	12
 Programs of Research	 14
Economic Development Processes	14
Income Distribution	17
Technology	20
Economic Demography	21
Agriculture and Natural Resources	30
International Trade and Monetary Relations	34
The Public Sector	35
 Major New Research Projects 1979-80	 37
Technology in Economic Development	37
Agricultural Research in the United States	37
 Appendix A. Seminars and Discussion Groups	 39
Appendix B. Economic Growth Center Publications	43
Appendix C. Other Publications	47
Appendix D. Related Professional Activities	51

This report summarizes the programs of research and publications of the Economic Growth Center for academic and fiscal year 1979-80. Faculty and visiting fellows during the year conducted research on economic development processes, income distribution, choice of technology, economic demography, agriculture and natural resources, international trade and monetary relations, and public finance as well as a number of individual country studies. Several countries served as the basis for one or more empirical studies. A selective summary of these projects is provided in this report under the heading, "Programs of Research" beginning on page 14. Publications growing out of these studies are listed in Appendices B and C.

Introduction to the Economic Growth Center

The Economic Growth Center was established at Yale University in 1961 in the conviction that an overriding challenge of our era is the economic development of the less developed world. The Center seeks through theoretical and empirical research to assist in meeting this challenge and thereby to contribute to the improvement of human welfare in the developing countries. The central objective of the Center's research program is to advance our understanding of the processes of economic development within the developing countries and the relationships of these countries with the economically advanced nations. The results of Center research are designed to contribute useful inputs for decision-making and policy formulation by relevant national governments, public and private organizations, and others. In addition Center staff serve in their individual capacities as advisers and consultants to international agencies such as the World Bank, national governments, private foundations, other research institutions, and to business.

Over the years the Economic Growth Center has gained international

recognition by scholars and policymakers as one of the world's leading research institutions devoted to the economic problems of the developing countries. The Growth Center is by far the best established and largest research organization on economic development at any academic institution in North America; more important, its research output is professionally regarded as high in quality and substantial in amount.

Since its establishment, research at the Economic Growth Center has encompassed empirical and historical studies in development processes in individual countries, theoretical work on economic development in the context of societies with abundant supplies of labor, the roles of multinational corporations, the relationships between economic development and the distribution of incomes, trade policies and development, technology choice and transfer, and population growth. These studies have been concerned with the roles of the public sector and governmental policy strategies in fostering economic growth, as well as with understanding the importance of private sector decision-making within industry, agriculture and individual households.

A significant portion of the research output of the Economic Growth Center has been influential both in shaping the international focus of discussion and research on economic development and as a significant intellectual input in the formulation of policy. The studies by John Fei and Gustav Ranis on the labor surplus model of development in the early 1960s, for example, have won considerable acclaim in advancing the understanding of policymakers in developed and developing nations of one particular and very important type of developing economy, with its emphasis on the importance of the food-producing agricultural sector, on the one hand, and the industrial sector, on the other. More recent work by Fei and Ranis on income distribution which rigorously links measures of distribution for the first time to the factors underlying growth, tested empirically by the historical experience of Taiwan, has exploded the widely held notion

of the necessity of a conflict between economic growth and equity in the distribution of incomes. Their work has already won wide attention and has recently been published for the World Bank by Oxford University Press.

In recent years, the decision-making of households, important but neglected private institutions in developing countries, has been one central focus of research at the Economic Growth Center, led by Robert Evenson and Paul Schultz. This work, based on large sample surveys, has demonstrated the responsiveness of household behavior to economic incentives and has contributed in particular to the discussion of population policy in less developed countries by shedding light on both the limitations and efficient implementation of family planning programs aimed at attenuating high population growth rates.

The Center does not attempt to promote particular development strategies or policies; its strength lies in the intellectual independence, objectivity, and diversity of approach of its research staff. At the same time the Center is responsible both for defining an overall research strategy and for creating an intellectual environment that stimulates the research activities of its faculty. Thus, while projects are separate, because development problems are by their nature interrelated, interaction among researchers in areas of mutual interest is both extensive and intensive. The Center's research output is made available to the scientific, business and government communities through several channels. The Center publishes a series of monographs through the Yale University Press; a number of other book-length studies are published by other academic and commercial presses. Reprints of selected journal articles by staff members are circulated to scholars and institutions in the field of development economics throughout the world as Center Papers. Preliminary work receives limited distribution in the form of Center Discussion Papers. The faculty participate extensively in both academic

and non-academic forums throughout the world.

Another important aspect of the Center is the further training in economic development provided economists as junior faculty or visiting scholars; these "alumni," now more than a hundred, enrich the staffs of a large number of government and academic institutions in the United States and abroad. Moreover, as members of the research staff hold professorial appointments in the Yale Department of Economics and have teaching as well as research responsibilities, the Economic Growth Center building hosts a continual flow of graduate students in Department seminars, workshops, and courses. In addition, the Growth Center sponsors a number of seminars and discussion meetings. The research of the faculty and visiting fellows is supported by a small staff of computer programmers, research assistants, secretaries, and administrative personnel.

Financial Support

The Economic Growth Center's research program is significantly dependent on funding from non-Yale sources. External support makes possible a somewhat larger staff than required by the University's teaching goals, including both professorial appointments and particularly research support staff. It provides not only a certain amount of time released from teaching during the academic year and research support during the summer, but also supports some research abroad by the faculty during leaves of absence.

Funding for Economic Growth Center research during 1979-80 was received from a variety of sources. The University, of course, provided the essential basic support through funding of faculty positions, maintenance of the specialized Economic Growth Center Library and other University library collections, and the provision of offices and other services. Grants for specific projects were made by the Henry Luce

Foundation, Inc., the Andrew W. Mellon Foundation, the Select Commission on Immigration and Refugee Policy, the U.S. Agency for International Development, National Science Foundation, Rockefeller-Ford Foundations' Research Program in Population and Development Policy, the National Institutes of Health and the Japan Foundation. The Flora and William Hewlett Foundation, the Exxon Educational Foundation, the Ford Foundation, the Lemberg Foundation, the Marine Midland Bank, the Mobil Foundation, the Morgan Guaranty Trust Company, the Overbrook Foundation, the Rockefeller Foundation, and private individuals made broader, multi-purpose grants less tied to specific projects. These were specially important as seed money for "intellectual risktaking" purposes. These funds are used to develop new projects; to hire exceptionally able junior faculty staff members prior to the availability of project funding; to cover staff costs arising between funded projects; to undertake developmental research in important frontier areas for which research funding may not always be available due to the exigencies of government or foundation policies; and to respond flexibly and quickly to new intellectual opportunities as they arise.

Staff and Visiting Scholars, 1979-80

Professor Gustav Ranis became Acting Director of the Growth Center and Associate Professor Nicholas Lardy served as Assistant Director.

The Growth Center professional staff included nine professors, two associate professors, four assistant professors, one lecturer, and a senior consultant, as follows:

Professors: Richard N. Cooper (on leave as Under-Secretary of State for Economic Affairs, Washington), Carlos F. Diaz-Alejandro, Robert E. Evenson, John C. H. Fei, Hugh Patrick, Gustav Ranis, Lloyd

G. Reynolds, T. Paul Schultz, and T. N. Srinivasan.

Associate Professors: Nicholas Lardy and Kenneth Wolpin.

Assistant Professors: Mary Ann Baily, Paul Krugman, Louka Papaefstratiou, and Brian Wright.

Lecturer: Jennifer Roback.

Senior Consultant: Simon Kuznets.

The Growth Center made one junior appointment during the year, Zvi Eckstein. Eckstein's special fields of interest include trade and development economics, macro and monetary theory and applied econometrics. His Ph.D. dissertation, "Rational Expectations Modeling of Agricultural Supply: The Egyptian Case," provides a framework for investigating the influence of product prices on agricultural production and land allocation in a small open economy. Eckstein's appointment is of great importance to the Growth Center since he brings needed strengths in the theory of rational expectations and econometrics.

Because tenure openings at Yale are extremely limited, inevitably the Center loses some non-tenured faculty as opportunities arise elsewhere. During 1979-80 Mark Rosenzweig resigned to accept a tenured position in the Department of Economics at the University of Minnesota; Paul Krugman resigned to become Associate Professor of Economics at the Sloan School of Management at the Massachusetts Institute of Technology; and Mary Ann Baily left for Washington to become Staff Economist of the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research.

We regret the resignation of Richard N. Cooper, Frank Altschul Professor of Economics, and long a valued member of the Growth Center faculty. Mr. Cooper had been on leave since January 1977 to serve as Under-Secretary of State for Economic Affairs. He will become the Maurits Boaz Professor of International Economics at Harvard University.

The Postdoctoral Program in Economic Demography continues to be a

major focus of research activity at the Growth Center. During 1979-1980 Kathryn Anderson, a postdoctoral fellow from North Carolina State University who had come to the Growth Center in 1978-1979, extended her study under the auspices of a fellowship awarded her by the National Institute of Health. She assumed a position as Assistant Professor of Economics at Vanderbilt University beginning in the academic year 1980-1981. Nancy Folbre, a postdoctoral fellow from the University of Massachusetts, completed the term of her appointment and left to become Assistant Professor of Economics at Bowdoin College. M. Anne Hill, a postdoctoral fellow from Duke University who joined the Growth Center in January 1979, will remain through the academic year 1980-1981 continuing her research on the relationships between schooling, fertility, and the labor supply of women. The research carried out by these individuals is summarized below in Programs of Research.

Two new postdoctoral appointments have been made in the Economic Demography Program for 1980-1981. David Blau, who received his Ph.D. from the University of Wisconsin-Madison, will analyze household decisions relating to child and adult nutrition in Nicaragua. Anil Deolalikar, a postdoctoral fellow from Stanford University, will be modeling intertemporal resource allocation and demand behavior using Indian sample survey data.

A number of visiting fellows spent all or part of the academic year engaged in research at the Growth Center. Hans Binswanger, a previous visitor from the International Crops Research Institute for the Semi-Arid Tropics in Hyderabad India, returned for several months to continue his joint research with Robert Evenson on Indian agriculture. Masumi Kishi, a visitor from Tokai University in Tokyo, was here to do research on international monetary economics. Erlinda Medalla, from the Philippine National Economic and Development Authority, visited the Center under the auspices of the United Nations Development Program. Sharif Mohammad, of the Institute of Economic Growth at the University of Delhi, worked

on issues related to trade, growth and income distribution in Indian economic development. Tatsuyuki Ota visited the Growth Center from Nagoya University of Commerce for several months in the summer of 1979. Keijiro Otsuka, from the Tokyo Metropolitan University, pursued his work on research in Indian agriculture. Edward Sparling, from Colorado State University, is pursuing research on agricultural economics. Victor Tokman visited the Growth Center from the International Labor Office's World Employment Program in Santiago, Chile. Peter Warr visited from Monash University in Australia. The research contributions of these visitors are summarized below under Programs of Research.

Executive Committee

The activities of the Center are overseen and guided by its Executive Committee, which includes the full professors in the Center, the Chairman of the Department of Economics, the Director of the Concilium on International and Area Studies, the Associate Provost of the University, and a senior consultant. During 1979-80 the Executive Committee members were Carlos Díaz-Alejandro, Robert Evenson, John Fei, Albert Fishlow, Simon Kuznets, Merton J. Peck, Sherry Penney, Gustav Ranis, Lloyd Reynolds, T. Paul Schultz, and T. N. Srinivasan.

Advisory Committee

The Economic Growth Center benefits from an Advisory Committee consisting of outstanding business leaders concerned with the developing countries. This Committee provides a forum for consideration of basic issues of Center structure, organization, research focus, and finance. In 1979-80 the Advisory Committee reviewed Center longer-run research opportunities and priorities, hiring strategies, and funding. The Advisory Committee continued its efforts to assure annual

support for the Economic Growth Center from a select number of corporate and individual donors in order to meet the need for basic seed money for new intellectual risktaking. For these and other purposes, the Center staff prepared "An Introduction to the Economic Growth Center," a brochure available upon request.

Members of the Advisory Committee in 1979-80 were:

Henry J. Heinz II, Chairman of the Board, H. J. Heinz Company (Co-Chairman);

Malcolm K. Brachman, Chairman of the Board and Chief Executive Officer, Pioneer American Insurance Company (Co-Chairman);

Frank Altschul, Chairman Emeritus, Board of Directors, General American Investors Company, Inc.;

Jack F. Bennett, Senior Vice President, Exxon Corporation;

Marvin Bower, Director, McKinsey and Company, Inc.;

Irving S. Friedman, Consultant, First Boston Corporation;

Ichiro Hattori, President, Daini Seikosha Company, Ltd., Tokyo Japan;

John R. Petty, President, Marine Midland Bank, Inc.;

Alexander M. Vagliano, Executive Vice President, Morgan Guaranty Trust Company;

Paul C. Warnke, Former Director, United States Arms Control and Disarmament Agency, Partner, Clifford & Warnke;

Frazar B. Wilde, Chairman Emeritus, Connecticut General Life Insurance Company.

Publications

Economic Growth Center publications during 1979-80 are listed in Appendix B. They include books; the Center Paper series, which reprints journal articles and book chapters authored by Center staff; and the Discussion Paper series, which circulates research results in preliminary form for professional comment. Considerable faculty research is

published elsewhere but should be regarded as part of the Center output. Writings not included in the list of Growth Center publications include books that are published elsewhere, rather than in the Economic Growth Center series at the Yale University Press, and articles and essays, especially those contained in books that cannot be included in the Center Paper reprint series because of high reprinting costs. A representative list of such related publications by Center staff for 1979-80 appears in Appendix C.

The following book to be published in the Center series at the Yale University Press was in press in 1979-80:

Nural Islam, Foreign Trade and Economic Control in Development:
The Case of United Pakistan (Yale University Press, due 1981).

International and Development Economics

The Department of Economics and the Economic Growth Center offer a one-year program of study in International and Development Economics leading to the Master of Arts degree. Closely associated with the research program of the Economic Growth Center, the International and Development Economics Program replaces the International and Foreign Economic Administration Program previously offered. The Program provides an intensive course of study for students from developing and developed countries with a professional interest in international economics and development. Most students in the Program have experience in central banks, foreign ministries, planning agencies and other public and private agencies concerned with international economics and development.

The International and Development Economics program of study requires the completion of eight courses including five required courses specifically designed for the program, and three elective courses. The required courses are intended to provide an understand-

ing of basic economic theory and quantitative methods useful for economic policy analysis. An option of a second-year of non-degree elective study is available to a few highly qualified students whose career plans, prior training, and/or performance in the first year indicate further course work is advisable.

Twelve students received degrees in the Program during 1979-80. They came to Yale from the following countries: Mexico, Taiwan, Surinam, Philippines, Bangladesh, Japan, Korea, Chile, and Pakistan. Eighteen students were accepted for the Program in 1980-81 representing Mexico, Argentina, Japan, Taiwan, Israel, Philippines, United States, Lebanon, India, France, and Thailand.

Pacific Trade and Development Conferences Secretariat

The Economic Growth Center serves as American Secretariat for the Pacific Trade and Development Conferences Series. These conferences, which began at Japanese initiative in 1968, examine economic policy issues affecting relations among nations bordering the Pacific Ocean. The purpose of these conferences is not primarily to originate specific policy proposals--although that sometimes results--but to delineate issues and to consider policy options, to present basic relevant empirical evidence, to make national interests and points of view explicit, and generally to provide a more informed basis for policy discussion of these issues in the Pacific nations. Participants are mainly well-known academic economists from the Pacific nations who have considerable policy experience in their own governments and elsewhere; international organization and government officials have also attended but in a private capacity. Several Growth Center faculty have been involved in Pacific Trade and Development Conferences. Hugh Patrick has attended all the conferences, and is a member of the International Organizing Committee and its Executive Committee. Richard

Cooper, Robert Evenson and Gustav Ranis have presented papers at one or more of the conferences in areas of their special expertise.

The Papers and Proceedings of the Tenth Pacific Trade and Development Conference, held in March 1979, were published by Australian National University Press in summer 1980, as ASEAN In a Changing Pacific and World Economy, Ross Garnaut, editor. Planning proceeded for the Eleventh Conference, on trade and growth in the advanced developing countries, to be held in Seoul, Korea in September 1980. The Twelfth Conference, on the theories of development and trade in non-food renewable resources (land and ocean) will be held in Vancouver, Canada, August 1981.

This series of policy-oriented conferences on trade and other economy relationships among the Pacific nations has become a major source of research on the economic interaction among these economies, which has taken on heightened relevance with the recent public policy discussions about a Pacific economic community. The concept and basic features of an Organization for Pacific Trade and Development were developed in substantial part through these conference discussions. Participants in these conferences from throughout the region have been active participants in these recent discussions on the possibilities of regional economic cooperation including the formation of a Pacific economic community.

The Library

The holdings of the Economic Growth Center Collection are concentrated on materials relating to statistics, economics and planning in developing countries. Particular strength resides in holdings of more than 4,000 serially issued government documents and research publications.

Because of the specialized reference service provided at the Social Science Library, where the collection is housed, and increased visibility

resulting from an integrated catalog covering both the Center and Social Science Library collections, Economic Growth Center materials are widely used. In 1979-80 circulation rose over 30% from the previous year to 11,076 volumes. Undergraduate students working on senior essays and graduate students in Sociology and Political Science Departments use the Collection in increasing numbers as do students of the School of Organization and Management and the School of Forestry.

Increased use can be attributed to the fact that the Collection is in good condition and continues to grow in size. During the two academic years 1978-79 and 1979-80 over 6,500 monographs and serials were added to the Collection. This occurred in spite of the continuing erosion of the purchasing power of the acquisition budget. Key factors include inflation, the slow growth of the acquisitions budget within University libraries as a whole, the need to utilize book dealers abroad at greater cost, and price increases for materials acquired directly from government offices and printers. Exchanges for Center Papers and Center Discussion Papers brought a significant share of the volumes received.

The Center's library, one of the most comprehensive collections of its kind in the United States, continues to extend services to those doing research outside the Yale Community. Visiting scholars have full use of the Collection. Internships for librarians from less developed countries help them in organizing their own collections and open channels for sharing the benefits of expertise developed within the Center's Collection. Inter-library loans are transacted with other universities and institutions. They are expected to grow considerably because all current cataloging of the Collection is now being entered in a computerized system of The Research Libraries Group, an inter-university consortium. Over twenty universities throughout the United States, including Stanford, Berkeley, Princeton, Columbia and others, will have direct access to information about Growth Center Collection holdings.

PROGRAMS OF RESEARCH

Scholars at the Economic Growth Center during 1979-80 conducted research on economic development processes, income distribution, technology, economic demography, agriculture and natural resources, international trade and monetary relations, and the role of the government sector. The geographical coverage of this work was world-wide, with somewhat greater focus on Asia--in particular China, India, Japan, the Philippines and Taiwan--and Latin America, especially Brazil and Colombia.

Economic Development Processes

Lloyd Reynolds continued his analysis of economic growth in selected third world countries from 1870 to the present time. His sample includes about 30 countries with populations of 10 million or more for which reasonably comparable statistical measurements are available from about 1950 on. For earlier periods, he is relying on economic histories of particular countries plus fragmentary quantitative data, mainly relating to international trade. The country studies produced at the Growth Center are proving to be decidedly helpful. An initial tour d'horizon of his hypotheses and research methodology was presented at the December 1979 meetings of the American Economic Association and has been published as "Economic Development in Historical Perspective" (Center Paper No. 288).

Reynolds' initial hypothesis is that sustained growth in some of the third world countries began earlier than has often been assumed--in the mid-nineteenth century for some Latin American countries, in the years 1870-1914 for some Asian countries. A second hypothesis is that the growth prospects of third world countries have been dominated throughout by growth rates in the advanced industrial

countries and by associated trends in international trade. There was a strong growth escalator from 1870-1914, onto which quite a few countries were able to climb. Conditions were less favorable from 1914-1945, but the world economic boom of 1945-73 again provided a strong stimulus to development. In each period, however, some countries climbed onto the escalator while others did not, and quite a few third world countries have still not embarked on sustained growth. To explain these differing country experiences, which presumably derive from internal economic and social structures, is the most difficult task in development analysis.

Carlos Diaz-Alejandro was a Visiting Professor in the Department of Economics, Pontificia Universidade Catolica do Rio de Janeiro, Brazil from February through June 1980 where he pursued his major research interest--the economic history of Latin America. This interest is reflected in "Latin America in Depression, 1929-1939," which analyzes the exchange rate as a variable which can stimulate growth and avoid monetary deflation (Center Discussion Paper No. 344), and in "Exchange Rates and Terms of Trade in the Argentine Republic 1913-1976" (Center Discussion Paper No. 341). Finally, he authored "Southern Cone Stabilization Plans" (Center Discussion Paper No. 330), an analysis of attempts to control chronic inflation and balance of payments disequilibria in major Latin American countries.

John Fei, in collaboration with Ts'ui-jung Liu of Academia Sinica in Taiwan, wrote "The Growth and Decline of the Chinese Family Clan" (Center Discussion Paper No. 334). This research, which is an outgrowth of earlier works on Chinese demography in an historical context, was based on primary data from Chinese genealogies.

On research leave during the academic year, Hugh Patrick spent the fall at Australian National University, Canberra, and the period from January 1980 at Tokyo University in Japan. His research was in three main areas: the problems and prospects for regional economic

cooperation among the Pacific Basin economies, and evaluation of possible institutional mechanisms for economic cooperation; Japan's foreign trade and economic relations; and the postwar development of the Philippine commercial banking system. His leave was funded by grants from the Luce Foundation and the Economic Growth Center's program of research on Japan in the World Economy.

Possible economic cooperation among the Pacific nations has received increasing public policy interest over the past year, especially in the United States, Japan, and Australia. Patrick prepared (with Peter Drysdale of Australian National University) an "Evaluation of a Proposed Asian-Pacific Regional Economic Organization" published July 1979 by the Senate Committee on Foreign Relations. He also testified in July before the Senate and House Subcommittees on Asian and Pacific Affairs; his testimony, "The Pacific Community" was later published by the House Subcommittee. In Australia and Japan Patrick participated in academic and governmental discussions on the Pacific economic community.

The main thrust of Patrick's research efforts was on Japanese foreign trade and economic relations with particular focus on U.S.-Japan economic relations. He continued his research with Gary Saxonhouse of the University of Michigan on Japan's expanding role in the world economy from 1955 to 1980. Considerable time was also devoted to a project with Hideo Sato of Yale's Department of Political Science on the political economy of U.S.-Japan trade in steel and agricultural products. In November 1979 he was appointed by President Carter as one of the four American members of the Japan-United States Economic Relations Group, which will issue a report in December 1980 with recommendations on how better to manage the bilateral economic relationship. He was actively involved in the Group's discussions and efforts to organize background studies for its report. He also completed a survey of Japan's postwar economy (Center Discussion Paper

No. 349).

In addition, as an extension of his earlier research on the development of the Japanese financial system (see, for example, Center Discussion Paper No. 345) and its relevance for the contemporary LDCs, he began a project on the postwar development of the Philippine commercial banking system. Important issues being considered include the evolving structure of the banking system, differential patterns of bank performance, credit allocation by banks, and central bank monetary policy.

Income Distribution

Two major Center Discussion Papers on income distribution by Simon Kuznets were issued in 1979-80. The first (Center Discussion Paper No. 342) analyzes the association between income per household and household size. The paper shows that larger households have higher income per household but lower household income per person. Two important consequences follow. First, larger households dominate the higher income levels of the distribution of income per household, while smaller households dominate the higher income levels of the distribution of income per person. Second, the greater the inequality in the distribution of households by size, the greater the inequality in the distribution of household by income per household or in the distribution of persons by household income per person, or both. Thus wider inequality in the distribution of households by size may contribute to wider inequality in the total distribution of income among persons.

This finding leads to great interest in inequalities in the distribution of households by size, the central topic of the second paper (Center Discussion Paper No. 343). An unexpected finding was that a large group of countries widely distributed among levels of development

showed very narrow differences in inequality in the distribution of households by size. The exceptions were a small number of countries in the SubSaharan and Caribbean regions. It is particularly striking that in the cross-section, less developed countries with their large average household size and more developed countries with their small average household size showed similar magnitudes of relative inequality in the distribution of households by size. There was no any marked trend over time in the movement of inequalities in the size distribution of households over time.

This rough invariance in cross-section and rough stability over time in inequality in the distribution of households by size means the absence of a direct contribution of this factor to possible differences or trends over time in inequality in the distribution by income per household or per person.

Kuznets' research on the demographic components of conventionally derived income distributions is continuing. He notes that the per person incomes of larger households are usually significantly lower than those of smaller households but that large households usually contain a much greater proportion of children. His research is now focusing on two related issues. First, is there a significant negative association between the number of children in the household and the level of per person income over the full lifetime span? Second, is the relative differential between per unit incomes of children and adults wider in the developed countries, with their much lower but more concentrated proportion of children in the household population, than in the less developed countries, with their much higher but more widespread proportion of children in the household population?

Kuznets' Discussion Papers issued during 1979-80 have been accepted for publication in volumes three and four of Research in Population Economics edited by Julian L. Simon and Julie Da Vanzo.

A major work by John Fei, Gustav Ranis and Shirley W. Y. Kuo

(Professor of Economics, National Taiwan University), Growth With Equity: The Taiwan Case, was published by Oxford University Press in late 1979. This study presents a new methodology for analyzing systematically the linkage between growth and equity during the process of development.

Fei and Ranis both continue to be engaged in other research on income distribution. Fei's earlier paper "Equity Oriented Fiscal Programs" (Center Discussion Paper No. 306) has been accepted for publication in Econometrica. This is a theoretical paper which shows that a rational fiscal program which is progressive but preserves incentives can be uniquely determined once the size of the government budget has been determined. Fei has also coauthored (with Graham Pyatt, Senior Advisor, Development Research Center, World Bank) an investigation of the magnitude of error introduced when grouped data are used to calculate measures of overall income inequality. This paper will be published in the Quarterly Journal of Economics. Ranis' further research in this area is an analysis of the influence of fertility behavior across socio-economic groups on the distribution of income.

T. N. Srinivasan joined a growing number of scholars commenting on earlier work carried out by Gary S. Fields at the Economic Growth Center. Srinivasan and several coauthors, in a paper "Who Benefits from Economic Development?: Comment" published in the American Economic Review in March 1980, argue that Fields' data do not support his contention that the average incomes of the poor in Brazil have grown faster than the non-poor.

Victor E. Tokman, Director of the Program on Regional Employment in Latin America and the Caribbean, devoted part of his visit to the Growth Center to research on the effects of the informal sector on economic inequality. This work, which appeared as "The Influence of the Urban Informal Sector on Economic Inequality" (Center Discussion

Figure No. 337). Evidence on the linkages between the informal sector and other economic activities and the roles determining incomes within the informal sector. Using data from several Latin American countries, this analysis suggests that inequality in the informal sector is smaller than that in the formal sector and that the transition from agricultural to urban activities leads to less inequality where the informal sector is more important.

Technology

Robert Freeman and Gustav Ranis completed the first phase of a National Science Foundation project on technology choice in developing countries. The project consisted of several interrelated components. The first, carried out primarily by Gustav Ranis, is an analysis of how the choice of technology in developing countries is influenced by the economic and policy environment and how such choices affect employment, growth and distribution performance. This component of the research is based largely on an analysis of the Japanese industrial revolution. A second component, carried out by Robert Freeman, focused on determinants of foodgrain supply in Asian countries. This research shows the importance of technical change originating in both international and national agricultural research programs in stimulating output growth. Surprisingly investment in agricultural extension appears to have had little or no effect.

Robert Freeman also was responsible for the third and fourth components. These were an analysis of investments in agricultural research by state governments in India and of the factors influencing indigenous inventive activities in India. The first of these projects showed that research and extension programs were supported primarily by interest groups deriving short-run benefits from the programs, much as in the United States. The analysis of inventions focused on the

importance of market structure as a determinant of patents issued to Indian firms. The results showed that, except in the chemical and transportation equipment industries, small and medium size firms were more invention intensive than the largest firms. This pattern is quite similar to that observed in the United States and indicates that the capacity to produce inventions is broadly distributed among firms.

The findings of the first phase of the National Science Foundation Project on technology choice are being written and will appear as future Center Discussion Papers. A second phase of the research is described below under Major New Research Projects 1980-81.

Economic Demography

The central focus of research on economic demography at the Growth Center is the household. It emphasizes quantitative studies based on models of private household decision-making in relation to the economic environment. Research includes studies of labor supply, allocation of time by family members, investment in human capital, fertility, marriage, health, mortality, migration, contraception and techniques of measuring demographic events.

During the last year Mark Rosenzweig and Paul Schultz have worked on three projects on the determinants of child health in the United States, India and Colombia. The first study outlines a methodology for estimating the determinants of a child's health characteristics at birth. An objective of the research is to show that factors influencing child health in the household, such as use of prenatal medical care, smoking and work of the mother, the mother's age and number of births, are all decision variables that are demanded in different amounts because prices, incomes and education of parents differ. An economic model is formulated in order to estimate jointly

(1) the factors influencing the birthweight of children (a measure of child health at birth) and (2) the biological/technological relationship between parent behavior and the characteristics at birth.

The theoretical model illustrates the advantages of estimating jointly the health production technology and the determinants of the activities potentially affecting infant health, particularly when households differ (are heterogeneous) with respect to factors affecting health which are known to parents but not to the researcher. The empirical analysis is based on a sample of over 9000 legitimate births in the United States from 1967 to 1969 and geographical information on prices, and health and family planning programs. Four factors influencing health--smoking while pregnant, time of prenatal medical care, age at birth and birth order--and three birth outcomes were ultimately considered--birthweight, gestation, and birthweight normalized by gestation.

The analysis is set forth in detail in "Birthweight, the Production of Child Health and Input Demand" (Center Discussion Paper No. 352). Rosenzweig and Schultz show that smoking while pregnant has a very large negative effect on birthweight, as found in other single-factor direct correlation studies of birthweight and smoking. Significant interactions were also found among birth order, timing of births, prenatal care, and smoking. Since these inputs have less explanatory power in the case of gestation than they do in the study of birthweight, gestation may be less readily affected by socioeconomic conditions and more a reflection of biologically exogenous variability. The availability of government supported health programs is associated with somewhat better infant health characteristics, as anticipated.

A working assumption underlying much study of household behavior is that a family utility function exists, permitting study of intergenerational allocation as an orderly optimizing process. The question addressed in a study of Indian data by Rosenzweig and Schultz is

whether parents allocate their investments across offspring to complement the distribution of genetic endowments of their children or to compensate for these endowments, and thereby to equalize the economic opportunities available to their children. In a low income country child survival may be a sensitive indicator of parent investment in children. Their paper, "Market Opportunities, Genetic Resources and the Intra-Family Distribution of Resources: Child Survival in Rural India" (Center Discussion Paper No. 347), suggests that the preference for compensating investments in offspring, assumed by other economists, does not necessarily dominate behavior. Rather the random differences in genetic traits of children, associated in this case with sex, evoke in India a reinforcing allocation of family resources. Children who are expected to be more economically productive adults receive a larger share of family resources and have a greater propensity to survive as children. These results imply that attempts to equalize the earnings opportunities of men and women in the current generation, therefore, may reduce the dispersion of earnings more in future generations than in the contemporaneous period. Moreover, the general association found between household wealth and improved female relative to male survival also suggests that greater equality in survival opportunities between children is sought as the wealth of families increases in India.

The third study by Rosenzweig and Schultz examines the determinants of fertility and child mortality in Colombia. Although the investigation is not yet complete, a number of findings may be noted. The schooling level of the mother has a negative and statistically significant effect on fertility and child mortality in all age groups in both urban and rural areas. In urban areas family planning expenditures and the number of clinics and hospital beds per capita are associated with both lower fertility and child mortality. Thus family planning and health programs appear to reinforce each other

in terms of achieving the parallel goals of lower fertility and higher child survival in Colombian cities. However, neither set of programs have a consistent effect on the surrounding populations living in the rural areas of these same municipalities. Distance to the administrative center of the region, measured in time required to reach the capital of the Department (Province), is consistently positively associated with the level of child mortality among rural and urban residents in the municipality. Increased mean temperatures, which closely parallel decreased altitude in Colombia, are associated with increased child mortality, at least up to the range 20-25 centigrade. Fertility also follows this general pattern with respect to temperature levels, rising initially and then eventually falling at very high temperatures. More research is planned to understand these strong temperature gradients in vital rates across Colombia.

Paul Schultz began research that appraises how differences in demand behavior of migrants and nonmigrants may reflect the distinct preferences of migrants and regional variation in relative prices. If migrants differ in their preference orderings for a good and the price of this good differs across regions, then when average prices and wage opportunities are held constant, migrants will demand on average less of the good than will nonmigrants in a region where that good is relatively costly. Conversely, migrants will demand relatively more of the good in regions where it is relatively cheap. The hypothesis that migrants are selectively drawn according to their preferences implies that if children are more costly to parents in urban than in rural areas, then rural-urban migrants should exhibit a long-run tendency to prefer lower fertility than urban nonmigrants, other things equal. Also, migrants within the rural sector should exhibit higher fertility than those who do not move from their rural birthplace. A joint paper, "Migrant and Native Fertility in Colombia in 1973: Are Migrants Selected According to Their Reproductive Prefer-

ences?" (Center Discussion Paper No. 355) with Helena Ribe, a pre-doctoral fellow in the Economic Demography Program, confirmed the predictions of the migrant selectivity hypothesis with regard to reproductive behavior. Schultz is continuing to formalize this approach to migrant behavior across several categories of demand, including female labor force participation, and investments of parents in child schooling and survival. In each case relative prices are thought to differ systematically between rural and urban areas in most low income countries, and thus the direction that migrants move may reflect systematic differences in their preferences for these several demands.

Kenneth Wolpin, Robert Evenson and Mark Rosenzweig completed a research project on "Fertility and Child Health" funded by USAID. This study, utilizing household survey and other data from both India and the Philippines, shows that family characteristics, such as income and parental schooling, did influence child health and mortality in the expected direction, but that these effects were relatively small in magnitude. The availability of health services at low cost, for example through rural health center programs, appears to be a major determinant of health and mortality in both countries.

Kenneth Wolpin completed a paper "A New Test of the Permanent Income Hypothesis: The Impact of Weather on the Income and Consumption of Farm Households on India" (Center Discussion Paper No. 340). This paper utilizes weather information to examine Milton Friedman's hypothesis that households tailor current consumption to permanent rather than to current income. This theory is difficult to test because permanent income is unobservable. This paper circumvents the problem by examining traditional Indian agriculture where technology is stable and in which a component of permanent income, namely that due to permanent weather, can be observed and measured. Using a three-year household survey panel of farm households in India combined

with district level rainfall data, the permanent income elasticity of consumption is estimated to be around unity as asserted by Friedman. Estimates of the transitory income effect on consumption, based upon self-reported weather data in the survey, provide weaker support for the ordering of the transitory and permanent income effects predicted by Friedman.

A second paper by Wolpin, coauthored with Robert Evenson and Mark Rosenzweig, explored the effect of governmental family planning and health programs on fertility, child mortality, and child health in India and the Philippines. These programs are assessed in a household decision model where government programs are considered to affect prices faced by households. For example, a family planning clinic reduces the price of contraception and a health clinic reduces the price of health care. Viewed in this way, programs designed to influence one aspect of behavior will affect other dimensions as well, since, for example, health and fertility may be substitutes or complements in consumption. Rural Indian data indicate that the availability of family planning centers has a negative effect on recent births but no effect on children ever born, possibly reflecting increasing effectiveness, and a negative effect on child mortality as well. They did not find strong evidence of family planning effects in the Laguna area of the Philippines. Dispensaries and hospitals in India and Rural Health Centers in the Philippines appear to reduce mortality rates. Sources of water supply also influenced mortality and fertility in India. Mark Rosenzweig and Ken Wolpin are extending the India component of this research to incorporate schooling decisions in the same theoretical and empirical structure.

Rosenzweig and Wolpin are also continuing their work on the issue of household structure. They intend to extend the analysis discussed in last year's report to several other countries, including Colombia and the United States. Wolpin is also studying the household structure

of immigrants to the United States to discover the degree to which there is convergence to the household structure of natives. It appears that immigrants are more likely to reside in households with a complex structure, i.e., in non-nuclear arrangements. However, the analysis relating length of U.S. residence to household structure is not yet complete. In another study, Randall Olsen and Ken Wolpin are using retrospective data on the entire pregnancy, child mortality, employment, and contraception histories of 1500 Malaysian women to study the technical and behavioral determinants of child mortality and fertility. Finally, Mark Rosenzweig and Ken Wolpin are studying intra-family resource allocation decisions. By looking at the effect on different children within the family of governmental health and schooling interventions which come in the middle of the child rearing period, they hope to discern the degree to which families allocate resources efficiently to individual children.

Kathryn H. Anderson and M. Anne Hill, who held postdoctoral appointments in the Economic Demography Program, completed two joint studies of age at marriage patterns in Japan and Malaysia. The first, "Marriage and Labor Market Discrimination in Japan" (Discussion Paper No. 348), extends Gary S. Becker's model of the decision to marry so that it explicitly incorporates age at marriage as a choice. They find in the Tokyo Metropolitan Area that both the socioeconomic variables--the wife's and the husband's values of time, their levels of schooling and the wife's family background--have significant effects on the age at marriage. Holding constant an exogenous time trend, they find that a 1966 Japanese court ruling against such discrimination lowered the average age at marriage by about one year.

A second paper by Anderson and Hill, "Determinants of Age at Marriage in Malaysia and Japan" (Discussion Paper No. 351), shows there is a marked difference in the response of the marriage age to changes in the value of the wife's time in the two countries. In Malaysia, a

higher value of time encourages an earlier marriage. The opposite holds true for Japan although both effects were quite small. The responses to male and female schooling and to the husband's wage were very similar in the two countries. They also found a significant upward time trend in the age at marriage in both countries. For Malaysia, however, this time trend is much steeper than for Japan.

Kathryn Anderson completed two papers utilizing Guatemala household data. The first, "Determination of Fertility, Child Quality, and Child Survival in Guatemala" (Discussion Paper No. 332), was a study of fertility and child survival which tested the response of child mortality to changes in economic variables such as wage rates, education, and ownership of land. Results, in general, supported the theory; fertility and survival were affected by the household's economic status. In the second paper, "The Estimation of Wage Elasticities in Fertility Demand Equations" (Discussion Paper No. 346), showed that the choice of assumption about the distribution of errors in correcting for selectivity bias is very important in determining the magnitude of the elasticity.

Anderson is also completing a paper on the influence of public services on household behavior in Malaysia. Fertility, child survival, breastfeeding length, and labor supply are several of the issues she is exploring. Initial analysis shows that access to hospitals and clinics reduces the length of breastfeeding and increases fertility but has no effect on survival or labor supply.

M. Anne Hill is also completing a separate study of the labor force decisions of married women in the Tokyo Metropolitan Area, focusing particularly on the choice between the formal and informal labor markets. In Japan, as in many developing countries, a large proportion of married women work in agriculture or in small family businesses. The model is specified so that the probability of entering the labor force depends on the potential wages in the formal market

and the informal market, years of schooling, experience, and the husband's income and schooling. The results show the labor force responses of Japanese women are very similar to those estimated for women in the United States. These results, however, are highly sensitive to the inclusion of two variables that are closely related to the underlying "taste" for work: the number of young children and the ownership of a family business.

Nancy Folbre, a post-doctoral fellow during the 1979-80 academic year, brought a rather different perspective to the Economic Demography Program. In her paper, "Of Patriarchy Born: The Political Economy of Fertility Decisions" (Discussion Paper No. 350), she acknowledges the importance of factors that the neoclassical "new household economics" emphasizes, such as household capital, level of education, wages, etc. But she stresses the importance of what she calls "patriarchal control" variables that affect, for example, both the percentage of a child's lifetime earnings that parents receive and the value of women's time. In this paper she illustrates the relationship between the neoclassical and patriarchal control variables and explores the ways in which patriarchal control changes over time. Such changes may be linked to changes in the class structure of employment, particularly the decline in the percentage of those in the labor force who are unpaid family workers and the often concomitant increase in the percentage of wage laborers.

Folbre's approach is further reflected in a second paper, "Discrimination Comes Home: A Critique of the New Household Economics." Here she argues the success of the "new household economics" is undermined by its failure to address the causes and consequences of inequality between the sexes. If sex discrimination occurs in the market it is also likely to occur in the home. The ways in which discrimination occurs in the market are likely to affect both household fertility decisions, and the supply of female labor are analyzed in the first

section of this paper. In the second section, she offers an alternative approach to the analysis of discrimination and exploitation in the home, focusing on the origins of inequality and how inequality is reproduced over time.

Finally Folbre began a third paper in which she is using household survey data from the Philippines to test her non-neoclassical approach to household production.

Agriculture and Natural Resources

Robert Evenson and Hans P. Binswanger (a Growth Center visitor from the International Crops Research Institute for the Semi-Arid Tropics in Hyderabad, India) moved to the final stages of a U.S. Agency for International Development funded project on Technology and Rural Incomes in India and related studies on the Philippines and Bangladesh.

Core estimates of systems of output supply and factor demand equations have been completed for the five major agro-climatic zones in Indian agriculture (northern irrigated wheat, northeastern rainfed rice, coastal irrigated rice, black soils semi-arid tropics and red soils semi-arid tropics). Two papers by Binswanger and Evenson describe these estimates based on farm level data from India Farm Management Studies and district level data.

Evenson and his collaborators now have adequate data to investigate policy questions and to measure and analyze productivity change in Indian agriculture. Deraendra B. Gupta of The Institute for Economic Growth, University of Delhi, visited the Growth Center to assist with this phase. Studies by Hans Binswanger and Gurushi Swamy estimating food demand functions, Sanjay Dhar, estimating labor migration functions, and Jaime Quizon and Hans Binswanger developing the implications of distributional theory for the problem have been completed.

The related projects for Bangladesh and the Philippines have been completed and are summarized in dissertations by Salahuddin Ahmad (Yale 1980) and Jaime Quizon (University of the Philippines 1980).

T. N. Srinivasan wrote a paper, "Bonded Labor Contracts and Incentives to Adopt Yield Raising Innovations in Semi-Feudal Agriculture," which will be published in the Indian Economic Review. His analysis, which is part of a larger empirical and theoretical study of forms of contract and their implications in Indian agriculture, shows that some forms of semi-feudal contracts between tenants and landlords do not inhibit the adoption of yield raising innovations.

Nicholas Lardy completed two papers on Chinese agricultural development since 1949. Both papers utilize newly available information on Chinese agriculture in 1977-1979 that provide an opportunity to compare contemporary Chinese agriculture with that of the 1950s--the last period for which reasonably reliable data are available. The first paper on food consumption analyzed the apparent contradiction between the vast increase in malnutrition in contemporary China compared with the 1950s and the constancy of per capita cereal production in these two periods. This paper points to increased disparities in regional production trends and a decline in marketing as the major causes of increased malnutrition. A second related paper focuses on the relationship between productivity growth and alternative forms of planning in China's collectivized agriculture. In periods of indirect planning, which is characterized by greater use of price incentives, greater freedom for producing units to specialize according to comparative advantage, and flourishing rural private markets, Chinese agriculture has grown most rapidly and experienced rising factor productivity. In periods of direct planning, when the state imposes detailed sown area targets and specific cropping patterns on producing units and restricts private marketing, Chinese agriculture has

grown relatively slowly and experienced declining total factor productivity.

Brian Wright continued work on estimates of the cost of energy conservation in the economy as a whole. A paper, "The Cost of Tax-Induced Energy Conservation," published in the Bell Journal of Economics (Spring 1980), analyzes the relationship between partial equilibrium and general equilibrium approaches to energy conservation. This paper shows that the effect of an energy cutback on labor and capital demand is a general equilibrium question which is not resolved by measures of factor substitutability or complementarity. However, partial equilibrium studies, which ignore these factor responses, can provide useful outer bounds on the general equilibrium economic cost of energy conservation.

Brian Wright and Paul MacAvoy (Yale School of Organization and Management) initiated work on a National Science Foundation research project on medium-term agricultural policy modeling. A stochastic dynamic programming model which combines rational expectations, responsive supply, and profit-maximizing storage activity has been constructed as part of this project. This model, which is an extension of work on production stabilization reported in "The Effects of Ideal Production Stabilization: A Welfare Analysis Under Rational Behavior," Journal of Political Economy, October 1979 (Center Paper No. 281), will be used to examine the implications of government market interventions such as price supports, buffer stocks and non-recourse loans. A paper written with Jeffrey Williams, "The Welfare Effects of Storage as a Market Innovation," uses this model to examine the effects of introducing profit-maximizing storage into a simple market model. It shows that storage has welfare effects that can be significantly different from those caused by direct stabilization of production. Further, when supply is rationally responsive to economic incentives, the redistribution associated with the introduction of storage can be

much less than indicated by examples where planned supply is assumed to be fixed. A companion paper with Williams, "The Economic Function of Storage," explores the general effects of storage in the simple market model, emphasizing the subtle interplay between the specification of demand, the storage response, and the production response. Work is proceeding on the effects of government policies, taking into account the response of private storage to these policies. In another line of work, stochastic market stimulations incorporating optimal storage rules and profit-maximizing producer response are being used to provide synthetic data to assess different approaches to estimating agricultural supply response.

Tatsuyuki Ota, a visiting fellow from Nagoya University of Commerce, carried out a study of the Mitsugoro project in Sumatra, Indonesia. Undertaken by Mitsui and Company incorporation with the Indonesian government, the project's goal was to develop uninhabited lands and increase agricultural production. The research, which will appear as a discussion paper of the Department of Economics of the Nagoya University of Commerce, focused on a number of problems in the field of economic development.

Keijiro Otsuka, a postdoctoral fellow from Tokyo Metropolitan University, was engaged in research on the diffusion of modern high-yielding wheat and rice varieties in India. His results, which will appear as a Growth Center Discussion Paper, show that the introduction of semi-dwarf high-yielding seed varieties in India induced indigenous research that had a further indirect productivity raising effect. Increased wheat and rice prices are also shown to have affected productivity growth by stimulating state research investment.

International Trade and Monetary Relations

Louka Papaefstratiou, who was on leave with a Junior Faculty Fellowship, worked on research projects concerned with problems of macroeconomic adjustment following the oil price increase, and with the implications of Greece's entry into the European Common Market on agricultural prices, income and terms of trade. Her article, "Transmission of External Price Disturbances and the Composition of Trade," was published in the Journal of International Economics (May, 1980) and a second article, "Income Instability, Terms of Trade and the Choice of Exchange Rate Regime," coauthored with William H. Branson, Princeton University, appeared in the Journal of Development Economics in its March 1980 issue. A review article on the theory of purchasing power parity was published as Princeton Special Paper in International Finance No. 13.

Jorge de Macedo's research focused on macroeconomic stabilization policies of industrial countries and many-country portfolio models of exchange rate behavior. A joint paper with Pentti Kouri, forthcoming in Weltwirtschaftliches Archiv, assesses the experience of stagflation in the 1970s and criticizes the use of monetary policy to deal with supply shocks. In his paper, "Portfolio Diversification Across Countries" (Center Discussion Paper No. 321), de Macedo derives a portfolio rule from an intertemporal consumption-savings maximization problem in continuous time and computes the optimal portfolio of eight major currencies from the perspective of an international investor.

De Macedo used the portfolio approach to exchange rate determination to analyze exchange rate behavior in the presence of black markets for foreign exchange in Center Discussion Paper No. 319. The Portuguese currency experience is examined in Center Discussion Papers Nos. 320, 322 and 323. He also estimated a portfolio model of the

Portuguese escudo-U.S. dollar black market rate (Discussion Paper No. 324). He and Paul Krugman assess the economic consequences of the Portuguese Revolution of April 25, 1974 in the framework of a simple small open economy model with flexible real wages (Discussion Paper No. 326).

Masumi Kishi, a visiting fellow from Tokai University, Tokyo, examined alternative theoretical approaches to the adjustment of the balance of payments between the United States and Japan. Examining the Keynesian elasticities, absorption, and monetary approach to the problem, he argues in a forthcoming paper that the monetary approach provides the best explanation of exchange rate instability and trade imbalances between Japan and the United States.

The Public Sector

T. N. Srinivasan, jointly with Jagdish Bhagwati (Columbia University), wrote two papers on the theory of project evaluation in open economies. The theory is aimed towards developing rules for evaluating social costs and benefits of a project in an environment where private and social costs or benefits differ. They show the validity of one such rule, namely the so-called Little-Mirrlees rule in which the social cost or benefit of a unit of any commodity is equated to its price in world markets, may fail when trade distortions arise due to import quotas or when some goods are not traded in world markets or when unexploited monopoly power in world markets exist. The second paper relates some measures of tariff distortions in an economy such as effective rates of protection and domestic resource costs to rules of project evaluation. Another paper by T. N. Srinivasan, also written jointly with Bhagwati, analyzes the implications of "lobbying" for the allocation of revenues generated by a tariff. Even though such lobbying will divert resources from productive activities, in some cases lobby-

ing could improve welfare if it diverts resources away from an activity which is socially wasteful but privately worthwhile because of the tariff distortion.

Peter Warr, a visiting fellow from Monash University in Australia, prepared three research papers on benefit-cost analysis. The first deals with the shadow pricing of non-traded commodities in the presence of market distortions. This paper shows that several seemingly conflicting rules which have been proposed are equivalent and correct, but not equally useful. The informational requirements of pursuing 'optimal' rules can be extreme, particularly when benefit-cost analysis is to be applied widely within the public sector. Two commonly proposed approximations of shadow prices, the use of (distorted) market prices and 'foreign exchange equivalent' shadow prices, are found to be inferior to other feasible approximations.

The second paper, written jointly with Brian Wright, deals with the appropriate rate of discount for use in benefit-cost analysis when private savings are subject to what has been called an 'isolation paradox', causing private saving to be socially non-optimal. This paper shows that even if this occurs, it is still appropriate to discount public investment projects at the market rate of discount, rather than a below market rate, as has sometimes been suggested. Warr's third paper discusses the appropriate income distributional weighting system for benefit-cost analysis when private charity exists. It is argued that equal weights for all income groups should be used in this case, regardless of the degree of income inequality, and regardless of the form of the government's 'social welfare' function. This point is made with the aid of a general equilibrium model, which takes account of the response of individual charitable donations to the income effects of public projects.

MAJOR NEW RESEARCH PROJECTS, 1980-1981

Funding has already been assured for two major research projects that will be undertaken in 1980-1981 at the Growth Center. They are the phase two of a National Science Foundation project on the role of technology in development and a United States Department of Agriculture sponsored study of the agricultural research and extension system in the United States.

Technology in Economic Development

Yale has been awarded a major grant in a special national competition under the National Science Foundation's Study Programs in Science and Technology Policy Research. The Growth Center was one of several institutions previously selected for a phase I award, the results of which are reported above under Programs of Research. The phase II grant, which is effective in the fall of 1980 for a period of three years, was made subsequent to successful competition with other research groups receiving phase I awards. The principal investigators will be Gustav Ranis, Robert E. Evenson, and John C. H. Fei, all Professors of Economics and members of the Economic Growth Center. They will explore the factors determining technology choices and change, as well as consequences of such patterns for the performance of developing countries. Agriculture and a number of industries will be studied comparatively in India, the Philippines, Taiwan, South Korea, and Japan.

Agricultural Research in the United States

Robert Evenson and Wallace Huffman, Associate Professor of Economics, Iowa State University, are the principal investigators of a historical

study of the United States agricultural experiment station system. Since the system is approaching a century of public service, Tamm and Hoffman hope to explain the long-term growth of expenditures on agricultural research and to analyze the results of the research. In a following stage they propose to undertake a profit function approach to the measurement of productivity and the influence of research and extension activity.

APPENDIX A

SEMINARS AND DISCUSSION GROUPS

July 1979 - June 1980

- September 10 Yoav Kislev, Hebrew University, "Scale Economies and Price"
- September 24 Gerald Jaynes, Department of Economics, Yale, "Surplus Labor and Disguised Unemployment"
- October 18 Keijiro Otsuka, Postdoctoral Fellow, Economic Growth Center, "Determinants of Public Sector Agricultural Research in India"
- October 25 Nancy Folbre, Postdoctoral Fellow, Economic Growth Center, "The Life Cycle of the Patriarchal Family: Deerfield, Massachusetts, 1760-1840"
- October 29 Max Corden, Australian National University, "Taxation, Real Wage Rigidity and Employment"
- November 8 Peter Warr, Visiting Fellow, Economic Growth Center, "The Isolation Paradox and the Rate of Discount"
- November 15 Jorge Sapoznikow, Visiting Fellow, Economic Growth Center, "Industry in a Model of a Less Developed Economy"
- November 26 Paul Krugman, Department of Economics, Yale, "Intra-Industry Specialization and the Gains from Trade"
- December 7 The Honorable Seymour Mullings, Minister of Agriculture and Lands, Jamaica, "The Role of Agriculture in Jamaica's Economic Development"
- December 17 John Dutton, National Bureau of Economic Research, "American Foreign Investment and the National Advantage"
- February 4 Howard Pack, Swarthmore College, "Development of LDC Capital Goods Industry"

- February 12 Victor Tokman, Visiting Fellow, Economic Growth Center, "The Influence of the Urban Informal Sector on Economic Inequality"
- March 24 Robert Lindner, University of Adelaide, "The Innovation Decision Time Lag"
- April 4 Richard N. Cooper, Under-Secretary of State for Economic Affairs, "North-South Relations: U.S. Approaches"
- April 7 Rafael M. Salas, Executive Director, United Nations Fund for Population Activities, "International Assistance in the Field of Population and Development"
- April 7 Robert Herdt, International Rice Research Institute and Cornell University, "Who Benefits from New Rich Technology in Asia"
- April 14 Ashok Kotwal, Boston University, "Contractual Arrangements in Indian Agriculture"
- April 24 Edward Sparling, Visiting Fellow, Economic Growth Center, "Efficient Farm Size: A Function of Managing Idiosyncratic Tasks"
- April 28 John E. Roemer, Department of Economics, Yale, "Inequality, Exploitation, Justice and Socialism: A Theoretical-Historical Approach"
- May 1 Jorge Sapoznikow, Visiting Fellow, Economic Growth Center, "Internal Migration and Urbanization in Less Developed Countries"
- May 15 James Roumasset, University of Hawaii, "Induced Institutional Change, Rural Development and Adam Smith"

Labor and Population Workshop

- September 21 Kenneth Wolpin, Economic Growth Center, "Economic Analysis of the Extended Family"
- September 28 Robert Evenson, Economic Growth Center, "Estimating Labor Demand Functions in a System of Equation: North Indian Agriculture"

- October 5 Bruce Chapman, Graduate Student, Department of Economics, Yale, "A Model of Voluntary Labor Mobility"
- October 12 M. Anne Hill, Postdoctoral Fellow, Economic Growth Center, "Female Labor Force Participation in Japan"
- October 19 David Coppock, Graduate Student, Department of Economics, Yale, "Structure and Determinants of the Duration of Unemployment"
- October 26 Edward Lazear, University of Chicago, "Efficient Compensation Schemes Where Wages Deviate from Marginal Product"
- November 2 Kathryn Anderson, Postdoctoral Fellow, Economic Growth Center, "Effect of Child Mortality on Fertility and Child Quality"
- November 9 David Ellwood, Harvard University, "Teenage Unemployment: Permanent Scar or Temporary Blemish"
- November 16 John Newman, Graduate Student, Department of Economics, Yale, "The Onset and Pace of Childbearing: Costa Rica"
- November 30 Joel Hay, University of Southern California, "Physician Specialty Choice and Specialty Income"
- December 7 James Medoff and Katherine Abraham, Harvard University, "Experience, Performance and Earnings"
- December 14 Paul Taubman, University of Pennsylvania, "Parental Preferences and Provision for Progeny"
- January 18 Zvi Eckstein, University of Minnesota, "Formulating and Estimating Dynamic Models of Agricultural Production and Land Allocation - The Egyptian Case"
- January 25 Adonis Yatchew, Harvard University, "Discrete and Continuous Variables in a Demand Analysis of Labor Supply"
- February 1 Randall Olsen, Department of Economics, Yale, "Estimating the Effect of Child Mortality on the Number of Births"

- February 8 David Blau, University of Wisconsin, "Nutrition, Fertility and Labor Supply in Nicaragua"
- February 15 David Bloom, Princeton University, "Essays in Labor Economics and Demography"
- February 22 Kathryn Anderson and M. Anne Hill, Postdoctoral Fellows, Economic Growth Center, "Determinants of Age of Marriage in Japan"
- February 29 Donald Parson, Ohio State University, "The Male Labor Force Participation Decision: Health, Reported Health, and Economic Incentives"
- March 7 Farrukh Iqbal, Wellesley College, "Borrowing, Savings and Investment: A Model of the Financial Behavior of Farm Households in India"
- March 28 Elizabeth Quizon, Graduate Student, Department of Economics, Yale, "Fertility, Human Capital Investments and Labor Supply Behavior in Farm Households"
- April 4 John Abowd, University of Chicago, "Unemployment and Compensating Wage Differentials"
- April 7 Peter Orazem, Graduate Student, Department of Economics, Yale, "Black-White Schooling Differentials in Maryland"
- April 18 Tom MaCurdy, Stanford University, "An Empirical Model of Labor Supply in a Life Cycle Setting"
- April 25 Mateen Thobani, Graduate Student, Department of Economics, Yale, "A Joint Choice Model of Mode Ownership and Mode to Work for the City of Karachi"
- May 2 Curtis Eaton and Willard White, Department of Economics, Yale, "Trust and the Wages of Agents"

APPENDIX B

ECONOMIC GROWTH CENTER PUBLICATIONS

July 1979 - June 1980

Books

Kazushi Ohkawa and Miyohci Shinohara, editors, Patterns of Japanese Economic Development: A Quantitative Appraisal, Yale University Press, 1979.

Center Papers

278. "Nominal Tax Rates and the Effectiveness of Fiscal Policy", by Louka T. Katseli-Papaefstratiou, National Tax Journal, Vol. XXXII, No. 1, March 1979.
279. "Economic Benefits from Research: An Example from Agriculture," by Robert E. Evenson, Paul E. Waggoner and Vernon W. Ruttan, Science, Vol. 205, September 14, 1979.
280. "Stagflation in an Open Economy," by Richard A. Brecher and Christopher J. Heady, Oxford Economic Papers, Vol. 31, No. 2, July 1979.
281. "The Effects of Ideal Production Stabilization: A Welfare Analysis Under Rational Behavior," by Brian D. Wright, Journal of Political Economy, Vol. 87, No. 5, Pt. I, October 1979.
282. "Factor Market Structure and Technology Choice in the Colombian Brick Industry," by Mary Ann Baily, Journal of Development Economics, Vol. 6, No. 4, December 1979.
283. "Testing the Quantity-Quality Fertility Model: The Use of Twins as a Natural Experiment," by Mark R. Rosenzweig and Kenneth I. Wolpin, Econometrica, Vol. 48, No. 1, February 1980.
284. "Neoclassical Theory and the Optimizing Peasant: An Economic Analysis of Market Family Labor Supply in a Developing Country," The Quarterly Journal of Economics, Vol. XCIV, No. 1, February 1980.

285. "Economic Mobility, Monopsonistic Discrimination and Sex Differences in Wages," by Lucy A. Cardwell and Mark R. Rosenzweig, Southern Economic Journal, Vol. 47, No. 4, April 1980.
286. "Regional Inequality and Other Sources of Income Variation in Colombia," by Gary S. Fields and T. Paul Schultz, Economic Development and Cultural Change, Vol. 28, No. 3, April 1980.
287. "Life-Cycle Labor Supply and Fertility: Causal Inferences from Household Models," by Mark R. Rosenzweig and Kenneth I. Wolpin, Journal of Political Economy,

Discussion Papers

316. "Effective Protection and the Distribution of Personal Income by Sector in Colombia," by T. Paul Schultz, July 1979.
317. "An Economic Analysis of the Extended Family in a Less Developed Country: The Demand for the Elderly in an Uncertain Environment," by Mark R. Rosenzweig and Kenneth I. Wolpin, August 1979.
318. "Interpretation of Relations Among Mortality, Economics of the Household, and the Health Environment," by T. Paul Schultz, September 1979.
319. "Exchange Rate Behavior with Currency Inconvertibility," by Jorge Braga de Macedo, September 1979.
320. "Portuguese Currency Experience: An Historical Perspective," by Jorge Braga de Macedo, September 1979.
321. "Portfolio Diversification Across Currencies," by Jorge Braga de Macedo, September 1979.
322. "Foreign Exchange Market Efficiency and the Currency Inconvertibility: The Case of the Exchange Rates of the Portuguese Escudo Against the U.S. Dollar 1973-78," by Jorge Braga de Macedo, October 1979.
323. "Monetarist Models of Exchange Rate Determination: Evidence from Portugal 1973-78," by Jorge Braga de Macedo, October 1979.
324. "Exchange Rates in Portugal 1973-1978: A Portfolio Model of an Inconvertible Currency," by Jorge Braga de Macedo, October 1979.

325. "Shadow Pricing Rules for Non Traded Commodities," by Peter G. Warr, October 1979.
326. "The Economic Consequences of the April 25th Revolution," by Paul Krugman and Jorge Braga de Macedo, November 1979.
327. "The Cost of Aggregate Energy Conservation," by Brian D. Wright, November 1979.
328. "Factor Substitution Possibilities in Indian Manufacturing Industries," by Sharif Mohammad, November 1979.
329. "An Empirical Verification of Keesing's Hypothesis - Skill Intensity of Exports and Import Replacement in India," by Sharif Mohammad, November 1979.
330. "Southern Cone Stabilization Plans," by Carlos F. Diaz Alejandro, November 1979.
331. "Trade, Growth and Income Redistribution: A Case Study of India," by Sharif Mohammad, November 1979.
332. "Determination of Fertility, Child Quality, and Child Survival in Guatemala," by Kathryn H. Anderson, December 1979.
333. "The Isolation Paradox and the Discount Rate for Benefit-Cost Analysis," by Peter G. Warr and Brian D. Wright, December 1979.
334. "The Growth and Decline of Chinese Family Clan," by John C.H. Fei and Ts'ui-jung Liu, January 1980.
335. "Charity, Taxation and Distributional Weights in Benefit-Cost Analysis," by Peter G. Warr, January 1980.
336. "Employment and Income Distribution Constraints in Latin America," by Gustav Ranis, February 1980.
337. "Flexible Consumer Demand System with Linear Estimation Equations Food Demand in India," by Gurushri Swamy and Hans P. Binswanger, March 1980.
338. "Estimating the Effect of Child Mortality on the Number of Births," by Randall J. Olsen, February 1980.

339. "Flexible Consumer Demand System with Linear Estimation Equations Food Demand in India," by Gurushri Swamy and Hans P. Binswanger, March 1980.
340. "A New Test of the Permanent Income Hypothesis: The Impact of Weather on the Income and Consumption of Farm Households in India," by Kenneth I. Wolpin, March 1980.
341. "Exchange Rates and Terms of Trade in the Argentine Republic 1913-1976," by Carlos F. Diaz Alejandro, March 1980.
342. "Size of Households and Income Disparities," by Simon Kuznets, March 1980.
343. "Inequality in the Size Distribution of Households: Differences and Trends," by Simon Kuznets, March 1980.
344. "Latin America in Depression, 1929-1939," by Carlos F. Diaz Alejandro, March 1980.
345. "The Evolution of Japan's Financial System in the Interwar Period," by Hugh Patrick, March 1980.
346. "The Estimation of Wage Elasticities in Fertility Demand Equations," by Kathryn H. Anderson, March 1980.
347. "Market Opportunities, Genetic Endowments and the Intra-Family Distribution of Resources: Child Survival in Rural India," by Mark R. Rosenzweig and T. Paul Schultz, March 1980.
348. "Marriage and Labor Market Discrimination in Japan," by Kathryn H. Anderson and M. Anne Hill, April 1980.
349. "The Postwar Economic History of Japan," by Hugh Patrick, April 1980.
350. "Of Patriarchy Born: The Political Economy of Fertility Decisions" by Nancy Folbre, June 1980.
351. "Determinants of Age at Marriage in Malaysia and Japan," by Kathryn H. Anderson and M. Anne Hill, June 1980.
352. "Birthweight, The Production of Child Health, and Input Demand," by Mark R. Rosenzweig and T. Paul Schultz, June 1980.
353. "The Resource Allocation Problem in Research and Development," by Brian D. Wright, June 1980.

APPENDIX C

OTHER PUBLICATIONS BY FACULTY OF THE ECONOMIC GROWTH CENTER

1979 - 1980

Jorge Braga de Macedo, "Perspectives on the Stagflation of the 1970's," (with Pentti J.K. Kouri), Germany, 1979.

Carlos F. Diaz-Alejandro, review of Corporate Imperialism: Conflict and Expropriation. Transnational Corporations and Economic Nationalism in the Third World, by Norman Girvan in Journal of Comparative Economics, 2, 1978.

_____, review of Primary Commodity Exports and Economic Development: Theory, Evidence and a Study of Malaysia, by John T. Thoburn in Journal of International Economics, Vol. 8, No. 4, November 1978.

_____, review of Dependency and Development in Latin America, by Fernando Henrique Cardoso and Enzo Faletto in The Journal of Economic History, Vol. 39, No. 3, September 1979.

_____, "An Introduction" to a Symposium on Exchange-Rate Policy in Semi-Industrialized Countries, Journal of Development Economics, Vol. 6, No. 4, December 1979.

_____, comment in Challenges to a Liberal International Economic Order, edited by R.C. Amacher, G. Haberler, and T.D. Willett, American Enterprise Institute for Public Policy, Washington, D.C., 1979.

_____, discussion of "Changes in Trade Shares and Economic Growth," in The American Economic Review, Vol. 70, No. 2, May 1980.

_____, "Colombian Minor Exports and Their Effect on Income Distribution," (with Albert Berry), Ronald Soligo, editor, Economic Policy and Income Distribution in Colombia, Westview Press, Boulder, Colorado, 1980.

Robert E. Evenson, "Work and Demographic Behavior in Rural Philippine Households," (with E. King-Quizon and B. Popkin) Rural Households in Asia, (editor with C. Florencio, B. White, and H. Binswanger), University of Singapore Press, 1980.

Fei, C.H., Growth With Equity: The Taiwan Case, (with R. Ranis and S.W. Kuo), Oxford University Press, 1979.

_____, "Demography and Development in the 1980's," (with N. Birdsall, S. Kuznets, G. Ranis, T.P. Schultz), World Population and Development, Philip Hauser, editor, Syracuse University Press, 1979.

Louka Katseli-Papaefstratiou, "Income Instability, Terms of Trade and the Choice of Exchange-Rate Regime," (with W.H. Branson), Journal of Development Economics, March 1980.

_____, "The Impact of Greece's Entry in the EEC on Greek-American Economic Relations," Greek-American Relations, edited by T. Coulombis and J. Iatrides, Pella, 1980.

_____, "The Reemergence of Purchasing Power Parity in the 1970's," Special Paper in International Finance #13, International Finance Section, Princeton University, December 1979.

_____, "Transmission of External Price Disturbances and the Composition of Trade," Journal of International Economics, May 1980.

_____, "The Devaluation of the Drachma: Myth and Politics," To Vima, March 16, 1980.

Nicholas Lardy, "China Trade Relations Expected to Stabilize", Boston Globe, 28 October 1979.

_____, review of China's Future by Robert Dernberger and Allen Whiting in Economic Development and Cultural Change, October 1979.

Hugh Patrick, "Evaluation of a Proposed Asian-Pacific Regional Economic Organization," (with Peter A. Drysdale), in Congressional Research Service, An Asian-Pacific Regional Economic Organization: An Exploratory Concept Paper, for the Committee on Foreign Relations, U.S. Senate, Washington, D.C., July 1979.

_____, "The Pacific Community," in The Pacific Community Idea, Hearings before the Subcommittee on Asian and Pacific Affairs, Committee on Foreign Affairs, House of Representatives, Washington, D.C., 1979.

_____, "Foreward," (with James Tobin), Money and Banking in Contemporary Japan, Yale University Press, 1980.

Gustav Ranis, "Asian Development and the United States," Encounter at Shimoda: Search for a New Pacific Partnership, edited by Herbert Passin and Akira Iriye, Westview Press, 1979.

_____, "Appropriate Technology and the Development Process," Appropriate Technology and Social Values - A Critical Appraisal, Franklin A. Long, editor, Ballinger Publishing Company, 1980.

_____, "Appropriate Technology: Obstacles and Opportunities," Technology and Economic Development: A Realistic Perspective, Samuel Rosenblatt, editor, Westview Press, 1979.

_____, "Appropriate Technology in the Dual Economy: Reflections on Philippine and Taiwanese Experience," Appropriate Technologies for Third World Development, Austin Robinson, editor, MacMillan, 1979.

_____, "Demography and Development in the 1980's," (with N. Birdsall, J. Fei, S. Kuznets, T.P. Schultz), World Population and Development, Philip Hauser, editor, Syracuse University Press, 1979.

_____, "Appropriate Technology in the Context of the Redirection of LDC Industrial Development Strategy: Concepts and Policies," Conceptual and Policy Framework for Appropriate Industrial Technology, United Nations Industrial Development Organization, 1979.

_____, "Income Distribution and Growth in Colombia," in Desarrollo y Sociedad, No. 3, 1980.

_____, "Foreign Aid: Euthanasia or Reform?," Worldview, March 1980.

_____, "The 1979 Nobel Prize in Economics," Science, December 1979.

_____, "Shoes and Gloves - Keys to U.S.-Mexican Locks," Christian Science Monitor, September 1979.

_____, Growth With Equity: The Taiwan Case, (with J. Fei and S. Kuo), Oxford University Press, 1979.

Lloyd G. Reynolds, "Economic Development in Historical Perspective," American Economic Review, May 1980.

_____, review of The Ideal Worlds of Economics, by Benjamin Ward, in Journal of Comparative Economics, March 1980.

- Lloyd G. Reynolds, review of A Theory of Pay, by Adrian Wood, in Journal of Economic Literature, June 1980.
- T. Paul Schultz, "Demography and Development in the 1980's," (with N. Birdsall, J. Fei, S. Kuznets, and G. Ranis), World Population and Development, Philip Hauser, editor, Syracuse University Press.
- _____, "Interpretations of Relations among Mortality, Economics of the Household and the Health Environment," in Socioeconomic Determinants and Consequences of Mortality Differentials, WHO/UN, Geneva, 1980.
- _____, "Women's Work and Their Status," Role of Women in Demographic Change, N. Youseff, editor, ILO, Geneva, 1980.
- _____, "El Retorno a la Educación en Bogotá," Economía y Educación, Bogota, Universidad de los Andes, 1980.
- _____, "An Economic Interpretation of the Decline in Fertility in a Rapidly Developing Country," Population and Economic Change in Developing Countries, University of Chicago Press, 1980.
- T. N. Srinivasan, "Domestic Resource Costs, Effective Rates of Protection, and Project Analysis in Tariff Distorted Economies," (with J. Bhagwati), Quarterly Journal of Economics, February 1980.
- _____, "Who Benefits from Economic Development?: Comment," (with M.S. Ahluwalia, J.H. Duloy, and G. Pyatt), The American Economic Review, March 1980.
- Brian D. Wright, "The Cost of Tax-Induced Energy Conservation," Bell Journal of Economics, Spring 1980.

APPENDIX D

RELATED PROFESSIONAL ACTIVITIES

1979 - 1980

Jorge Braga de Macedo:

Participant:

II International Conference on the Portuguese Economy (Lisbon)
Conference on the Crawling Peg (Rio de Janeiro)
Hearings before the Subcommittee on Africa

Carlos F. Diaz-Alejandro: Visiting Professor, Pontificia Universidade Cat6lica do Rio de Janeiro.

Member:

Council on Foreign Relations
AEA Policy and Advisory Board for the Economics Institute
Academic Panel of the Consultative Group on International and Economic Monetary Affairs
Editorial Board of World Development

Robert E. Evenson:

Lecturer:

University of British Columbia
Columbia University
Princeton University
University of Minnesota
University of Michigan
Northeastern University
University of the Philippines

Discussant:

Conference on Current Issues in Productivity, Columbia University (presented paper)
Symposium on Tropical Forests, Yale University (presented paper)
American Agricultural Economics Association, Pullman, Washington (presented paper)
Conference on Rural Labor Markets in Asia, Hyderabad, India (presented paper)
Conference on Agricultural Research Evaluation, University of Minnesota (presented paper)

Conference on Productivity Change in the
U.S. Economy, Asilomar, California
(presented paper)

Conference on NSB Science Indicators,
Washington, D.C. (presented paper)
Director, IDE Program

Member, Southeast Asia Studies Council

John C. H. Fei:

Lecturer, International Development Center
of Japan, Tokyo

Participant, Development Consortium Confer-
ence, Harvard University

Consultant, Academia Sinica, Taipei, Taiwan
Member:

International Board of Editors, Pakistan
Development Review

Advisory Board of the Encyclopedia of
Economics and Business

Social Science Library Advisory Committee
IDE Admissions Committee

Director, Taiwan Institute of Economic
Research, Taipei

Louka Katseli-Papaefstratiou: Consultant for the Ford Foundation
Participant:

NBER Summer Institute

Conference on "Integration and Unequal
Development: The Implications of the
Second Enlargement of the EEC," Madrid

Nicholas Lardy:

Lecturer:

Maxwell Lecture Series, Syracuse University
United States Agency for International
Development

Johns Hopkins University

Southern New England Regional China Coun-
cil, Connecticut China Trade, New Haven

China Tomorrow Lecture, the Yale China
Association, New Haven

Association of Yale Alumni group traveling
in Asia

Southern Center for International Studies,
Atlanta

Discussant:

American Economic Association, Atlanta

Social Science Research Council, Subcommittee on Research on the Chinese Economy Conference, New York City
La Modernizzazione Economica in China, Turn, Italy (presented paper)
Continuity and Change in China, Bocconi University, Milan, Italy (presented paper)
Social Science Research Council, planning workshop on Chinese peasant organization, University of Chicago
Department of State, Conference on the Future of U.S.-China Relations, Washington, D.C.
Luce Seminar in American-Asia Cultural Relations, University of Chicago
Ninth Sino-American Conference on Mainland China, Taipei, Taiwan
Pacific Forum symposium, "China's Role in the 1980's: A Perspective from Hong Kong," Hong Kong
Guest interview, National Public Radio, "All Things Considered"
Yale Activities:
Freshmen Faculty Advisor, Class of 1983
Sophomore Advisor
Fellows Committee, Pierson College
Yale College Committee on Teaching in the Residential Colleges
Assistant Director, Economic Growth Center

Hugh Patrick:

Lecturer:

University of Papua, New Guinea
Australian National University, Australia
University of New England, Australia
University of Adelaide, Australia
University of Tasmania, Australia
Pacific Institute, Australia
Vision Group, Tokyo
Kobe University, Japan
Kobe Chamber of Commerce, Japan
SRI-WEFA World Economic Outlook Conference, Tokyo
Yale Club of Japan, Tokyo
International House of Japan, Tokyo

Participant:

Conference on the Contemporary Chinese Economy, Tokyo
Hearings on Pacific Economic Community, Committee on Foreign Relations
Co-organizer, with Gary Saxonhouse, Seminar on Japan-U.S. Economic Relations, Aspen Institute of Humanistic Studies
Co-moderator, with Robert Ingersoll, Seminar on Modern Japan, Aspen Institute of Humanistic Studies
MIT Conference on Japan-U.S. Economic Relations, Hawaii
Asian Dialogue Conference on the Pacific Basin, Japan
Yomiuri Newspaper Colloquium on North-South Relations, Tokyo

Member:

Philippine Institute of Development Studies
International Steering Committee Executive Committee
Advisory Board, Kobunsha Encyclopedia of Japan
Japan-United States Economic Relations Group
Editorial Board: Journal of Economic History, Japanese Economic Studies, Journal of Japanese Studies, Savings and Development
Committee on Japanese Economic Studies, Association for Asian Studies

Gustav Ranis:

Participant:

Miami University Business Conference on "The Future of Private Enterprise," Cincinnati, Ohio
AAAS Conference on "Internal and External Constraints on Technological Choice in Developing Countries," San Francisco (presented paper)
National Bureau of Economic Research Conference on "Trade Prospects Among the Americans: Latin American Export Diversification and the New Protectionism," Brazil (presented paper)

Development Consortium Conference, Harvard University (presented paper)
International Symposium on Development and Cooperation in Latin America, Israel (presented paper)

Member:

Advisory Board of the Regional Research Program on Scientific and Technical Development in Latin America, Inter-American Development Bank

Executive Committee of the Concilium on International and Area Studies
Council on Science and Technology for Development

Advisory Committee, Resources for the Future

Adviser to the President of Ghana

Consultant, Food and Agriculture Organization on inter-relations between population factors and rural development

Lecturer, AID, Development Studies Program

Lloyd G. Reynolds:

Member, Board of Directors, National Bureau of Economic Research

Chairman, Committee on U.S.-Soviet Exchanges, American Economic Association

Advisory Committee on Investor Responsibility, Yale

Executive Fellow, Berkeley College

T. Paul Schultz:

Elected Fellow, American Association for the Advancement of Science

Director, Population Association of America

Chairman, Finance Committee and Public Affairs Committee of Population Association of America

Member:

University Committee on Sponsored Research

AAUP Committee Z on Economic Statistics and Committee on Retirement

Advisor Program of Joint Studies in Latin American Economics

National Advisory Committee on 1940 and 1950 Census Public Use Sample Project

Social Science Advisory Committee of the
Population Resource Center
SSRC, Latin American Population Studies
Subcommittee

Lecturer:

Boston University

State University of New York at Stonybrook

Discussant:

Population Association of America meetings,
Denver (presented paper)

Conference on Labor Supply, ECIEL, Rio de
Janeiro (presented paper)

T.N. Srinivasan:

Lecturer:

Cornell University

Michigan State University

Participant:

Expert Group Meeting on Living Standard
Measurement Study, World Bank, Washing-
ton, D.C.

Conference on Import Competition and Adjust-
ment: Theory and Policy, National Bureau
of Economic Research, Cambridge, Massa-
chusetts

Workshop on Estimates of Nutrient Require-
ments and Economic Planning, United
Nations University and M.I.T., Cambridge,
Massachusetts

Kenneth I. Wolpin:

Participant, American Economic Association
meetings

Brian D. Wright:

Member, Provost's Advisory Committee on
Fringe Benefits

Participant:

Northeast Universities Development Con-
sortium Conference, Harvard University

International Research Seminar, Chicago
Board of Trade, Chicago

Western Economics Association Conference,
San Diego, California

Lecturer, University of Pennsylvania