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# HUMAN RESOURCES

*Fiftieth Anniversary Colloquium VI*



NATIONAL BUREAU OF ECONOMIC RESEARCH  
NEW YORK 1972

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Since the present volume is a record of colloquium proceedings, it has been exempted from the rules governing submission of manuscripts to, and critical review by, the Board of Directors of the National Bureau.

*(Resolution adopted July 6, 1948, as revised  
November 21, 1949, and April 20, 1968)*

## Prefatory Note

This volume of the Fiftieth Anniversary Series contains the proceedings of the Human Resources Colloquium, which was held on the campus of Clark College, Atlanta University, Atlanta, Georgia on May 13, 1971. We are indebted to those members of the Bureau's Board of Directors who served on the committee to plan and coordinate the session: Charles H. Berry, Wallace J. Campbell, Eugene P. Foley, Marion B. Folsom (currently not a Board member), Eli Goldston, Vivian W. Henderson, Harry W. Laidler (deceased), J. Irwin Miller, Boris Shishkin, and Lazare Teper. We wish to acknowledge, too, the splendid cooperation of the faculty of the Department of Economics at Clark College, who contributed substantial time and effort to ensuring the success of the Human Resources Colloquium. Finally, we are grateful to Ester Moskowitz, Hedy D. Jellinek, and Ruth Ridler, who prepared the manuscript for publication.

GARY S. BECKER



## Fiftieth Anniversary Colloquium Series

To commemorate its fiftieth anniversary the National Bureau of Economic Research sponsored a series of colloquia to explore the effects of pending and anticipated policy issues on future research priorities for areas of long-standing Bureau concern. As a basis for the panel and audience discussions, economists specializing in the subject area prepared papers in which they reviewed relevant research advances through time and presented their opinions for the direction of future effort. These papers, and in some instances edited transcripts of panelists' comments, appear as part of the National Bureau's Fiftieth Anniversary publications series. Papers developed for the colloquia and publications series and participants in the program included:

### THE BUSINESS CYCLE TODAY September 24, 1970—New York City

#### Moderators:

Morning session: Paul A. Samuelson  
Afternoon session: F. Thomas Juster

#### Presentations:

- |   |  |
|---|--|
| "Dating American Growth Cycles"   | <i>Ilse Mintz</i>                      |
| "The 'Recession' of 1969-1970"  | <i>Solomon Fabricant</i>               |
| "The Cyclical Behavior of Prices"   | <i>Geoffrey H. Moore</i>               |
| "Forecasting Economic Conditions: The Record and the Prospect"  | <i>Victor Zarnowitz</i>                |
| "Econometric Model Simulations and the Cyclical Characteristics of the U.S. Economy"  | <i>Victor Zarnowitz</i>                |
| "A Study of Discretionary and Nondiscretionary Monetary and Fiscal Policies in the Context of Stochastic Macroeconometric Models" | <i>Yoel Haitovsky and Neil Wallace</i> |

**Panelists:**

Morning session: Otto Eckstein, Henry C. Wallich

Afternoon session: Bert G. Hickman, Arthur M. Okun

**FINANCE AND CAPITAL MARKETS**

October 22, 1970—New York City

**Moderator:** Robert V. Roosa**Presentation:**

"Finance and Capital Markets"

*John Lintner***Panelists:** William J. Baumol, Sidney Homer, James J. O'Leary**A ROUNDTABLE ON POLICY ISSUES AND RESEARCH  
OPPORTUNITIES IN INDUSTRIAL ORGANIZATION**

November 5, 1970—Chicago, Illinois

**Moderator:** Victor R. Fuchs**Presentations:**

"Industrial Organization: Boxing the Compass"

*James W. McKie*

"Antitrust Enforcement and the Modern Corporation"

*Oliver E. Williamson*"Issues in the Study of Industrial Organization in a Regime of Rapid  
Technical Change"*Richard R. Nelson*

"Industrial Organization: A Proposal for Research"

*Ronald H. Coase*

**PUBLIC EXPENDITURES AND TAXATION**

December 2, 1970—Washington, D.C.

**Moderator:** Walter W. Heller

**Presentation:**

“Quantitative Research in Taxation and Government Expenditure”

*Carl S. Shoup*

**Panelists:** James M. Buchanan, Richard R. Musgrave

**ECONOMIC GROWTH**

December 10, 1970—San Francisco, California

**Moderator:** R. Aaron Gordon

**Presentation:**

“Is Growth Obsolete?”

*William D. Nordhaus and James Tobin*

**Panelists:** Moses Abramovitz, Robin C. O. Matthews

**HUMAN RESOURCES**

May 13, 1971—Atlanta, Georgia

**Moderator:** Gary S. Becker

**Presentation:**

“Human Capital: Policy Issues and Research Opportunities”

*Theodore W. Schultz*

**Panelists:** Alice M. Rivlin, Gerald S. Somers

**THE FUTURE OF ECONOMIC RESEARCH**  
April 23, 1971—South Brookline, Massachusetts

**Presentation:**

“Quantitative Economic Research: Trends and Problems”

*Simon Kuznets*

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## Foreword

Economists have been aware of the effects of education and training on earnings and productivity ever since Adam Smith's comment that "a man educated at the expence of much labour and time to any of those employments which require extraordinary dexterity and skill may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expence of his education, with at least the ordinary profits of an equally valuable capital."<sup>1</sup> We need only note here the statements by McCulloch, that "man himself should . . . be considered as forming a part of the national capital";<sup>2</sup> of Marshall, that "the most valuable of all capital is that invested in human beings";<sup>3</sup> and of Fisher, that "the 'skill' of a mechanic is not wealth in addition to the man himself; it is the 'skilled mechanic' who should be put in the category of wealth."<sup>4</sup>

Yet, prior to the mid-fifties this awareness was not used to develop a major tool of analysis.<sup>5</sup> Investment in human beings was largely ignored in the discussions of economic growth, labor incomes, inequality in personal income distribution, international comparative advantage and specialization, savings and investment, unemployment and job turnover, or consumer expenditure patterns.

All this changed dramatically in the fifties, stimulated largely by a few puzzles and paradoxes that, as Schultz rightly emphasizes, contribute so much to advances in economic thinking. Studies largely at the National Bureau<sup>6</sup> showed that the growth in labor and capital as con-

<sup>1</sup> *Wealth of Nations*, p. 101, Modern Library Edition. Of course, Petty's calculations of the money value of a human being preceded Smith's work.

<sup>2</sup> See his *The Principles of Political Economy*, Alex Murray & Son, 1970, p. 66. I owe this reference to B. F. Kiker's "The Historical Roots of the Concept of Human Capital," *Journal of Political Economy*, October 1966.

<sup>3</sup> See his *Principles of Economics*, Macmillan and Co., 1938, p. 564.

<sup>4</sup> See his *The Nature of Capital and Income*, Macmillan and Co., 1930, p. 9.

<sup>5</sup> The one exception is the important study by Milton Friedman and Simon Kuznets *Income from Independent Professional Practice*, NBER, 1945.

<sup>6</sup> See, for example, Moses Abramovitz, *Resources and Output Trends in the United States Since 1870*, NBER, 1956.

ventionally measured failed dismally in explaining the growth in per capita incomes during the twentieth century in the United States. Or, contrary to expectations from factor-endowment trade theory, the United States apparently exports labor-intensive and imports capital-intensive goods.<sup>7</sup> A giant, yet in retrospect obvious, step in resolving both puzzles was the recognition that labor cannot be measured simply by man-hours since trained persons are more productive than other persons. Thus, the United States exports goods that use relatively large amounts of *skilled* labor, and the true labor input in the United States grew much faster than man-hours because investment in education and other training grew rapidly.

In the last fifteen years the analysis of investment in human capital has developed from these modest beginnings into a major field of study responsible for a significant breakthrough in our understanding of economic behavior. Its vitality is attested to by more than 1,000 entries in Blaug's bibliography of writings on the economics of education alone, by the prominence of economists in the National Academy of Education (chartered in 1965), by the proliferation of courses and research centers, by the demand for new Ph.D.'s with this specialty, by chapters in the annual reports of the Council of Economic Advisers, and by recognition from quarters initially hostile.

Any field that develops so rapidly is bound to take on trappings of a fad since much of the work is necessarily mechanical, repetitive, and of embarrassingly low quality. The analysis of investment in human capital has certainly had these trappings, and some critics are patiently waiting for the balloon to burst. Although periods of digestion and slow advance are inevitable, I am confident that this field will continue to grow rather than diminish in importance. My confidence results from the close ties of the kind already mentioned between theoretical developments and discussion, and empirical data and problems. This intimate relation of theory and observation has built a solid foundation that cannot easily be torn down or ignored.

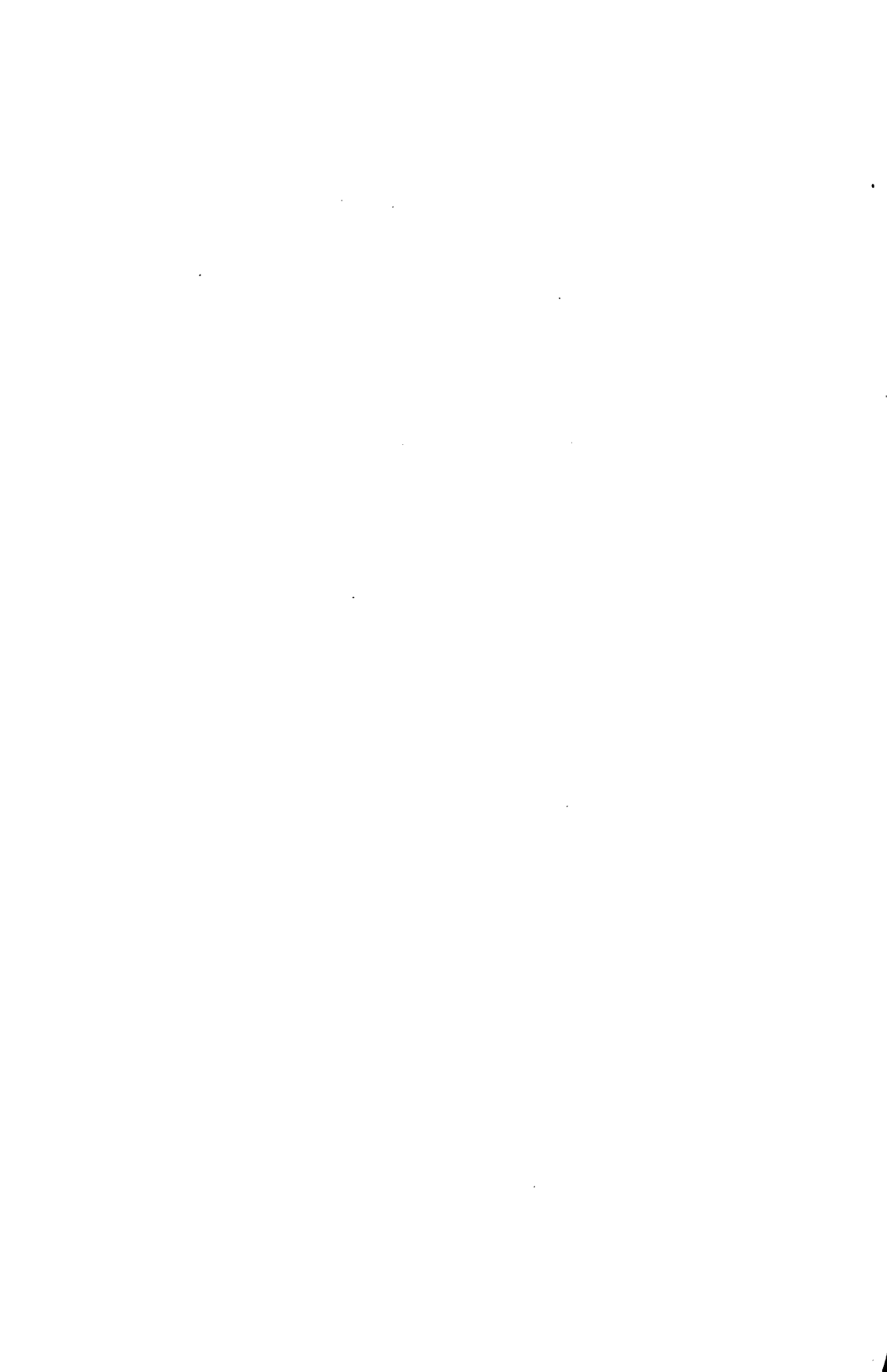
What about future developments? Schultz gives an excellent discussion of the demand and supply considerations that determine the course of any economic research. He also offers a wide-ranging and insightful set of research opportunities on human capital provided by public and private demands for information, unsolved economic puzzles,

<sup>7</sup> See Wassily Leontief, "Factor Proportions and the Structure of American Trade: Further Theoretical and Empirical Analysis," *Review of Economics and Statistics*, 38, 1956, p. 386.

and advances in economic theory and empirical work. My own crystal ball says that the major breakthrough during the next decade will come in the application of human capital analysis to behavior in the nonmarket sector, an application also stressed by Schultz.

Practically all studies of the effects of investment in human capital have dealt with earnings, unemployment, occupation choice, and similar market decisions. Yet, education, for example, also affects whom one marries, the number of one's children and the amount invested in each child, labor force participation, health, expenditure patterns on goods and services, whether and how one votes, and many other dimensions of nonmarket behavior. Recent developments in the theory of the allocation of time and household production functions provide the tools for a rigorous analysis of the effects of human capital in the nonmarket sector. Before this decade is over we will have, I venture to guess, reliable and valuable estimates of the effects of human capital on nonmarket rates of return and productivity, and of the variety of changes in household decisions and expenditures of time and goods that are induced by a change in human capital.

GARY S. BECKER  
*The University of Chicago*



## Acknowledgments

John R. Meyer arranged for a small group to convene with me at the meetings of the directors of the National Bureau, September 20, 1969, to consider the objectives and scope of the proposed survey. Gary Becker served as chairman of this group. In doing the survey, I drew heavily upon my work that had been made possible by the generous grants of the Ford Foundation and upon the Ph.D. research of students supported by generous training grants in the area of human capital provided by the National Institute of Mental Health. It will be evident to the reader that I was privileged in having access to numerous as yet unpublished papers in the area of human capital. I owe a special debt to colleagues who critically reviewed early drafts of this survey: Gary S. Becker, Mary Jean Bowman, Samuel Bowles, Barry R. Chiswick, Richard B. Freeman, Zvi Griliches, W. Lee Hansen, Harry G. Johnson, Simon Kuznets, Jacob Mincer, Marc Nerlove, Yoram Ben-Porath, T. Paul Schultz, George J. Stigler, Luther G. Tweeten, Burton A. Weisbrod, and Finis Welch.

May 13, the day at Atlanta sponsored by the National Bureau to "test" the product, came off well indeed. I profited professionally from the presentations of the two panelists, Alice Rivlin and Gerald Somers, and from the incisive comments by members of the large group in attendance. Gary Becker presided and also entered actively into the discussions.

Nancy Steinthal of the NBER as "entrepreneur" and my secretary, Susan Gallager, as "translator" of what I wrote did much to make my task a pleasure. In preparing the bibliography I was assisted by Virginia Thurner.

THEODORE W. SCHULTZ  
*The University of Chicago*



## Human Resources



