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NATIONAL BUREAU  
**report**



NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. NEW YORK, N. Y. 10016

**CHANGES IN THE WORLD ECONOMY**

The economic fortunes of the United States and the rest of the world become more closely intertwined with every passing year. It used to be said that "When the United States snuffles, Europe catches pneumonia." Although recent National Bureau studies suggest that this may be putting the sequence the wrong way around, it is clear that lately the United States has suffered periods of severe inflation and recession simultaneously with many other countries. Moreover, the lives of all Americans, as well as others, have been significantly affected by the policies of the Organization of Petroleum Exporting Countries regarding the embargo of oil shipments and increased oil prices.

Some economic policies initiated in other countries have strained the comity of nations in almost ludicrous squabbles. The so-called "chicken war" of the early 1960's, for example, occurred when Common Market countries imposed a high tariff on their poultry imports from the United States. Sharp exchanges between the Common Market nations and the United States ensued. More recently a diplomatic furor known as the "cheese war" arose when the United States alleged that Common Market countries were unfairly subsidizing their cheese exports.

United States decisions on monetary and fiscal policy have been concerned not only with domestic inflation and unemployment but have increasingly had to take into account the policies of other countries and the levels of foreign interest rates, which may lead to large out-flows of short-term capital and affect the value of the dollar. Currently the United States shares with other countries a renewed concern about world monetary reform and the problem of excess liquidity which is reflected in large part in the huge amount or "overhang" of United States dollars held by other nations' central banks.

Straining  
 International  
 Relations

“The Eurocurrency Market and the Recycling of Petrodollars”

An understanding of the financial arrangements and instruments that influence international transactions is, therefore, becoming increasingly important for businessmen and policymakers both here and abroad. One such instrument, Eurocurrency, is discussed in the Supplement to this *National Bureau Report*. It was prepared by Raymond F. Mikesell, professor of economics at the University of Oregon, and coauthor of a National Bureau study of the international position of the dollar. After examining the growth of the Eurocurrency market, Mikesell explores, among other things, the contention that it has fostered global inflation, and analyzes the impact that the investment of Petrodollars has on this market.

### TRADING POLICIES OF DEVELOPING NATIONS

One major focus of the National Bureau's international studies program has been the analysis of the trading policies of less developed countries. By examining in depth the economic and political forces determining these policies and their consequences, the National Bureau's effort should provide insight into a better utilization of the resources found in these countries and the United States and into their potential as partners in a program of global economic growth.

The economic viability and growth of the developing nations depend in large measure upon their ability to compete in the world's marketplace and to maintain balance in their international accounts. As a result, much of their economic planning is directed toward achieving some combination of increasing exports and reducing imports.

About five years ago the National Bureau undertook a program of studies designed to analyze the foreign exchange and trade policies of a number of developing nations and to assess the effects of these policies on their economic growth and general welfare. At the start of the project an analytical framework, specifying the dimensions of the research task, was developed by its Co-Directors, Jagdish N. Bhagwati and Anne O. Krueger, National Bureau senior research associates. Hal B. Lary, who recently retired as a National Bureau vice president-research, assumed administrative responsibility. The undertaking, funded in considerable part by the Agency for International Development, entailed the participation of a group of distinguished economists, each of whom was familiar with one of the countries chosen for study. The countries and economists involved were:

Foreign Trade Regimes and Economic Development

Brazil	Albert Fishlow, University of California, Berkeley
Chile	Jere R. Behrman, University of Pennsylvania
Colombia	Carlos F. Díaz-Alejandro, Yale University
Egypt	Bent Hansen, University of California, Berkeley, and Karim Nashashibi, International Monetary Fund
Ghana	J. Clark Leith, University of Western Ontario
India	Jagdish N. Bhagwati, Massachusetts Institute of Technology, and T. N. Srinivasan, Indian Statistical Institute
Israel	Michael Michaely, The Hebrew University of Jerusalem
Philippines	Robert E. Baldwin, University of Wisconsin

- South Korea Charles R. Frank, Jr., Princeton University and The Brookings Institution; Kwang Suk Kim, Korea Development Institute, Republic of Korea; and Larry E. Westphal, Northwestern University
- Turkey Anne O. Krueger, University of Minnesota

Most of the developing nations, including all those examined in this project, have at one time or another instituted trade programs that employ exchange controls and quantitative trade restrictions. Under an exchange control system, all purchases and sales of foreign exchange are subject to regulation by the government, which allocates or rations the supply of foreign currencies to its citizens and imposes quantitative restrictions on what can be imported, by whom, and sometimes from what source. Exchange control regimes contrast with those systems where the primary mechanism of adjustment operates via overall monetary and fiscal policy or exchange rate adjustment (either through formal parity changes or adjustments in trade taxes and subsidies).

Exchange  
Control

One of the major purposes of the country studies undertaken within this National Bureau project was to compare the nature and effects of restrictionist systems by examining the experiences of the selected individual countries. What sorts of political and economic factors lead to the initial adoption and eventual expansion of restrictionist measures? Do the types of restrictive measures employed significantly influence the operation of the control system and its effects over time? What are the effects of such systems on resource allocation, income distribution, and especially economic growth? Is there some tolerable degree of restriction that can be maintained without a significant decrease in economic efficiency and retardation of growth rates, in contrast to greater degrees of protection from the international economy that would be more harmful? Finally, how can the restrictiveness of different systems of control be measured and compared?

Most often exchange controls and quantitative trade restrictions are invoked to cope with a deficit in a country's external accounts arising, for example, from domestic inflation, or crop failures, or deterioration in foreign market conditions. Such restrictions tend to protect the country's own industries from outside competition and lead to new import-substituting activities. Imports that would be competitive with domestically produced goods are prohibited or severely limited to ensure a home market for domestic production. India, for example, ruled out all imports for which local substitutes were available. Indian authorities maintained lists of local producers for different product lines, and the burden of proof was on the import license applicant to show that he could not physically (as distinct from economically) utilize the local output. The results were so extreme that they led to a number of anecdotes. Bhagwati recounts the story of a minister who was about to inaugurate a hospital. Having been taken to witness a surgery prior to cutting the ribbon, the minister announced in his speech that it was a matter of pride for the country that the

Protecting Infant  
Industries via  
Import  
Substitution

Bilateral  
Trade  
Agreements

hospital was using indigenously manufactured equipment and that at the surgery he had just witnessed even the anesthetic used had been "local!"

Trade policies may also produce bilateral agreements that result in irrational and uneconomic trade patterns. In Israel, for example, Michaely notes that in 1953, "as some capacity for industrial exports developed, it was assumed that such exports could materialize mainly by enjoying access to protected foreign markets, the instrument for protection being bilateral trade and payments agreements. Israel thus entered into a number of such agreements, in which the partner country was to purchase from Israel mainly industrial products while Israel would buy in exchange mainly foodstuffs and raw materials. The most important partner country to such an agreement was Turkey, with Yugoslavia coming next. Stated in terms of convertible currencies, Israel's imports from these countries were clearly more expensive than similar goods in the free world market. Each of the partners to such an agreement . . . tried to sell to the other its most expensive goods and to exclude exports which would compete freely in convertible-currency markets."

Aid-Tying

Special bilateral ties may also be involved in the extension of aid by donor countries to developing nations. In this case donor countries would supply monetary aid to a developing nation provided that the developing nation, in turn, would spend the money received on imports from the donor country.

These examples give some idea of the numerous types of restrictionist mechanisms that can develop. As Bhagwati points out in the draft of his summary volume, ". . . control mechanisms and methods . . . were combined with varying degrees of resort to a variety of *price* measures in each of the countries in the project. Thus, on the import side, there were 'prior deposit' requirements, tariffs, multiple exchange rates and exchange auctions, to take the most important examples. On the export side, there was resort to tariffs, cash subsidies, export-import links yielding access to lucrative imports, preferential access to profitable investments, tax rebates on imported inputs and so on." Whatever short-run benefits may accrue from these measures, it becomes clear that they are quickly outweighed as import-substitution possibilities are exhausted. Their adverse effects on economic efficiency and growth are heightened, moreover, by the internal workings of the restrictionist systems—bureaucratic allocational procedures that invite illegal abuses, political pressures surrounding the administration of controls, and private sector responses to unintended incentives created by the system—all of which work counter to the very goals they were designed to achieve.

The Phase  
Format

To permit comparisons among the exchange control systems and liberalization experiences of the various countries studied in the project, the Co-Directors and country authors agreed that the exchange control systems should be classified into five phases. This delineation of the phases through which a developing nation's economy may pass is somewhat contrived and artificial. By their very nature the precise restrictionist content of exchange control systems is constantly changing. But a framework for classification of stages of change can serve as a convenient analytical and expository

device for comparisons among different countries, even though the actual courses of change in particular countries do not conform neatly to the hierarchy of phases.

The characteristics of each phase were specified by the Co-Directors in the analytical framework they prepared at the inception of the project. During Phase I relatively undifferentiated quantitative controls are imposed or sharply intensified. Phase II follows as the detailed workings of the control system become increasingly complex and pervasive without consideration for the initial principal goals. The undifferentiated licensing rules of Phase I prove incompatible with planners' and policymakers' priorities, with plants shutting down due to "insufficient spare parts," and production reduced because of inadequate supplies of raw materials. "Priorities" are therefore established to attempt maintaining flows of intermediate imports and capital goods. Import categories are broken down—by destination, into actual users and wholesalers; by categories, into capital goods, intermediate goods, and consumer goods; by "priority" attached to the using industry—the classification lists become virtually endless. With each increase in the number of categories, the rules and regulations surrounding classification of imports into these categories mount, both as a matter of policy and to protect bureaucrats from allegations of favoritism (although a friend in the administrative hierarchy often proves a valuable asset). Almost every government ministry becomes involved in one or more aspects of the decision-making process and as a result decision making becomes highly fragmented and often internally inconsistent. Thus, the Ministry of Agriculture may attempt to increase fertilizer or tractor imports to encourage agricultural production, while the Ministry of Industries is trying to reduce imports of those very goods to encourage domestic production.

The other major feature of Phase II is an increasing resort to price measures as distinguished from direct restrictions, to buttress the functioning of the control system. This generally occurs with respect to both imports and exports. To absorb part of the excess demand for imports, price measures such as increased tariffs, import surcharges, or guarantee deposits may be applied for various categories of imports. (Guarantee deposits are prescribed sums that importers must place with a designated bank for a specified period of time, usually earning no interest and serving only to tie up scarce capital.) At the same time, to ameliorate the effects that such measures may have on exporting industries, export incentive plans (e.g., rebates and special credits) are developed.

The economic difficulties which may surface during Phase II are illustrated by Krueger's discussion of Turkey's rather extreme experience. In the mid-1950's the Turkish government was granting export subsidies on a number of commodities, with the rate of subsidy altered on a commodity-specific basis every few months. Nevertheless, most exports took place at well below the internal Turkish price level for those commodities, and the government was incurring large subsidy costs. At the same time, import licensing regulations were frequently changed (with prohibition of an increasing number of items), partly in response to declining foreign ex-

From  
Undifferentiated  
to Detailed  
Controls

Resort to  
Price  
Measures

Complex  
Trade  
Controls  
and  
Agreements—  
the Turkish  
Experience

change earnings, partly in an effort to stem evasions through faked invoicing or other devices, and partly to try solving problems arising out of prior licensing arrangements. Simultaneously, guarantee deposit requirements on imports, which had been initially imposed at a rate of only 4 per cent in 1953, jumped to levels of 100 and even 150 per cent of the costs of the imports. Multiple exchange rates for different categories of imports and invisible transactions proliferated, and by 1957 commodity- and currency-specific rates were in effect. On top of those rates, a uniform 40 per cent across-the-board tax on all imports was imposed to absorb part of the premium that they commanded in the domestic market. To bolster her export market and thereby obtain some increase in finance for imports, Turkey resorted to bilateral payments agreements. It soon became clear, however, that Turkey's imports under these agreements were far outpacing her exports. Turkish foreign exchange balances remained severely negative and her bilateral trading partners reduced their exports.

Despite all the steps taken to increase the cost of imports in domestic currency, there was still strong excess demand for imports. At the same time, the Central Bank was unable to provide importers with foreign exchange to meet their obligations, even for those importers who had earlier received valid import licenses. Incentives were established for importers to arrange foreign financing, and import licenses were granted on preferred terms to those able to arrange suppliers' credits or other foreign financing. The result was an accumulation of foreign indebtedness and an inability of the government and Central Bank to meet existing obligations. Importers were able to obtain further credits only at increasingly unfavorable terms, and finally not at all, as the Turkish government negotiated with western European governments to permit using part of Turkish export earnings to meet debt arrears.

By the summer of 1958, imports of most commodities had fallen sharply. A petroleum shortage, for example, halted tractors in the midst of the harvest season and immobilized trucks for transporting crops to ports. As a result there was an absolute absence of coffee in a country noted for its speciality in this regard. It became apparent to Turkish officials that new foreign loans would not materialize without major alterations in their trading system, and that continued inability to increase imports would have serious consequences for the economy. In that context, a devaluation decision was made and Turkey entered a Phase III system of controls.

A parity change or devaluation is the common element of Phase III episodes, devaluation lowering the value of a nation's currency relative to the currency of other countries. As in the Turkish example, devaluation usually occurs when a country is having serious balance of payments difficulties; that is, when the relative prices of its goods and services are such that the value of its imports far exceeds the value of the goods and services that it exports. Devaluation of the currency helps to increase a country's physical exports (because they are now cheaper than before to foreign buyers) and to decrease its physical imports (which are now more expensive on the home market). The formal devaluation of Phase III is usually accompanied by the partial or total removal of special export incentives

Empty  
Coffee  
Coffers

Devaluation

and surcharges upon imports. As a result, a move toward greater reliance on price allocation in the foreign exchange regime begins. The exchange control system ends when quantitative restrictions are eliminated as the device by which international accounts are adjusted.

Phase IV is entered if and when the Phase III experience has resulted in sustained export growth. The average import premium has fallen, the bias against exports has substantially diminished (the effective exchange rate for exports coming closer to the effective exchange rate for imports), and the degree of dispersion in the incentives to expand different activities has diminished. If, in fact, foreign exchange receipts grow rapidly enough, a country will assume increased reliance upon the price mechanism for the allocation of foreign exchange and reduce the role of quantitative controls.

Phase IV continues as long as reliance upon remaining quantitative restrictions is unchanged or diminishing. It can end either with the resumption of detailed controls if the liberalization effort fails to accomplish its aims (thus a move back to Phase II), or with the abandonment of quantitative restrictions as an allocative device, in which case the country is said to be in Phase V. The last phase continues as long as the growth of foreign exchange receipts is approximately equal to the growth of demand for foreign exchange. This prevails either because the price of foreign exchange is maintained at or above its equilibrium level, possibly entailing further upward adjustment of rates, or because monetary and fiscal policy are employed as instruments for achieving payments balance.

The dislocations and discomforts (such as inflation and recession) usually attendant to liberalization attempts are more readily borne by countries that are able to shift from an import to an export orientation. This conclusion was reached by the Co-Directors and authors after the experience of the individual countries was documented. It is also interesting, parenthetically, that an analysis of the experiences of the specific set of countries studied within the National Bureau project indicates that the economic costs of incentives favoring export promotion appear to be lower than those favoring import substitution. The growth performance of countries oriented toward export promotion, moreover, seems more satisfactory than that of countries favoring import substitution. A lesson that may be drawn from these observations is that in many (though not all) developing nations policy should err on the side of allowing a higher marginal cost for earning than for saving foreign exchange.

The most essential ingredient of a sustained liberalization effort, however, is the maintenance of an appropriate exchange rate in real terms—that is, one that is adjusted to relative price changes at home and abroad. There are basically three ways in which the real exchange rate can be maintained: (1) monetary and fiscal policy can be geared to the achievement of relative price stability; (2) various export incentives and import charges can be levied and changed periodically in such a way that the effective rate is maintained; and (3) a sliding peg can be adopted, whereby the government alters the exchange rate by small amounts at frequent intervals approximately in proportion to changes in relative domestic and foreign price

Liberalization—  
Reliance upon  
the Price  
Mechanism

Export vs.  
Import  
Policies

Maintenance  
of an  
Appropriate  
Exchange  
Rate



levels. There are instances of each of these policies proving relatively successful among the countries under study, but the overall conclusion seems to be that in most cases the adoption of a flexible or sliding peg exchange rate provides the best basis for the success of a liberalization effort.

The best liberalization policies will not be considered successful, of course, if they do not eventually result in improving a nation's economic performance. While the dislocations inherent in the transition toward liberalization may at first offset the gains, Krueger suggests in the draft of her synthesis volume that a sustained policy will make the effort worth the interim sacrifice in the long run. She points out that the benefits that accrue from eliminating the irrationalities of a quantitative trade restrictions system, including the improved export performance associated with a more realistic exchange rate, are worthwhile in terms of increased economic growth.

Is there an  
Optimal Phase  
for all  
Nations?

As previously noted, the actual course of events in particular countries may not fit clearly into the five phase classification of changes. For example, even during a period of increasing restrictions (Phase I) there might be some changes which would be designed to offset the perceived adverse effects of the system. Then, too, one of the implied features of a complete Phase V system is full currency convertibility (that is, a holder of the country's currency is allowed unrestricted purchase of other nations' currencies), a situation which now does not exist without at least some limitation in any country. This system therefore is only approached but not fully realized in today's world. Moreover, developing countries have experienced different sequences in their progression through the phases. Some have entered Phase I from an initial approximation of Phase V, gone into Phase II, and remained there. Others have moved on to a Phase III liberalization scheme, which has then failed and led to a return to a Phase II position. It should also be understood that while countries' policies are classified in respective phases, their actual operations may differ from country to country and the numbered order used to differentiate the phases is not meant to imply that Phase V or IV is the optimal goal for which all nations should strive. In sum, this classification was intended to outline the general frame of reference which the National Bureau studies adopted without specifying the sequence or the variety of measures that the particular developing nations instituted as they implemented one or another trading policy. The determinants of a developing country's overall growth rate are, of course, numerous. The trade and payments system adopted is only one factor, and its effects on growth cannot be analyzed without regard to other aspects of the domestic economy. The country studies explore these interactions in some detail. In addition, the synthesis volumes, which the project's Co-Directors are preparing, will draw together and analyze the findings of the individual country studies.

Conferences to  
Disseminate  
Findings

To help disseminate the results of the studies to policymakers in less developed countries, the Agency for International Development provided additional funding for two conferences, one in Manila (cosponsored and hosted by the Asian Development Bank) and one in Bogota (cosponsored

and hosted by the Banco de la Republica and cosponsored also by the United Nations Economic Commission for Latin America), in which leading economists and government officials from the respective surrounding areas participated.

At the conclusion of this project, Krueger undertook to explore the relationship between alternative trade strategies and employment growth. One of the basic purposes of her new National Bureau project, which is also being funded by the Agency for International Development, is to discover the differences between the amount and pattern of employment associated with exporting and that associated with import-substitution activities in developing countries. A series of country studies and several cross-country analyses are planned. This study will also involve the collaborative approach used in the first undertaking, but in this instance the authors will be residents of the various countries under examination.

Trade  
Strategies  
and  
Employment

The studies described above are but one segment of the National Bureau's international studies program. Other work in this area includes the development of a set of international indicators of business cycle fluctuations, studies of multinational firms, and an analysis of the role of prices in international trade. In addition, the National Bureau has been participating in the U.S.-U.S.S.R. Scientific and Technological Program of Cooperation in the application of computers to econometrics and management science. Several meetings of the United States and Soviet coordinators and experts have been held in the United States and in the Soviet Union, resulting in the formulation of a program which includes information exchange, conferences, seminars, and long-term visits. The United States side of this program is being funded by the National Science Foundation.

Other  
NBER  
International  
Studies

The relationship between domestic and international economic problems is also reflected in expansion of the National Bureau's conference programs. A Latin American Computer Workshops series was instituted to explore the econometric and technological efforts and experiences of researchers in Latin American countries. This series, directed by M. Ishaq Nadiri of the National Bureau's senior research staff, has held six major conferences drawing participants from a number of countries around the world. This series of workshops has been made possible by a grant from the IBM World Trade Corporation and the Ford Foundation. Another conference, organized by Sherman Maisel, Co-Director of NBER-West, examined questions relevant to the trade and economic development of countries bordering the Pacific Ocean for the purpose of determining approaches for fruitful research. Ideas that surfaced during this meeting will, in part, form the nucleus of work in the international area to be conducted at NBER-West.

Conferences on  
International  
Problems

## NBER RESEARCH FELLOWS

According to the Annual Report of the National Bureau prepared by Wesley Clair Mitchell for 1929, the most signal development in the National Bureau's history of 1929 was ". . . due to the generous grant from the Rockefeller Foundation . . . of a sum of up to \$75,000 a year for five years as may be matched by income of the National Bureau from other sources." This grant made possible the award of the National Bureau's first Research Fellowships to young postdoctoral economists who were, to quote Dr. Mitchell again, "persons of maturity and accomplishment, interested primarily in quantitative studies." Fellowship applicants were to be judged on the basis of academic record, recommendations, the quality of a research proposal made to the National Bureau, and the relationship of the proposal to National Bureau work.

On October 1, 1930, the Research Fellowship program got under way with the appointment of three Fellows—Dorothy Bacon, Arthur Burns, and Arthur Gayer. Since then, eighty-five economists have received National Bureau Research Fellowships. The selection guidelines set down by Dr. Mitchell forty years ago are still adhered to, and, more importantly, their merit has been justified in terms of the achievement record of Research Fellowship alumni. Some have been sought out by government on a number of occasions to fill positions of national importance; many are currently teaching and pursuing their research interests at universities; eleven now occupy prominent places within the National Bureau, five as Directors and six as members of the senior research staff. More than half of the Fellows appointed before 1970 are listed in the current edition of *Who's Who*.

In an atmosphere suited to the needs of an economic researcher, a National Bureau Research Fellow is offered the opportunity to sharpen his skills, broaden his ideas, and engage in intellectual exchange which will augment his educational growth. The National Bureau provides a locale for large-scale, long-term research requiring continuity and mobilization of specialized technical skills which would be neither convenient nor readily available at a university setting. Each Fellow devotes his full time to research, with access to National Bureau computer and library facilities, as well as research and secretarial assistance. He works in close association with members of the research staff who are experienced in empirical research and who may have considerable familiarity with the research problems he is investigating. The Research Fellow is free to choose a program of research that appears to him to maximize the achievement of his educational objectives. When a Research Fellow leaves the National Bureau, he takes with him one of the most important concepts in economic research—the overriding necessity of investigating issues empirically. It is hoped this philosophy will pervade his future work, and equally important, will be passed on to new colleagues he encounters. Although for the most part the Research Fellowship program is supported by the National Bureau, additional financing was recently obtained under a two year grant from the Alfred P. Sloan Foundation.

Biographical sketches of the 1974–1975 NBER Research Fellows appear on pages 11 to 14.



**Michael R. Darby**

was selected as this year's Harry Scherman Research Fellow.\* His research interests cover a variety of areas in economic theory and applied econometrics, but he was drawn from the University of California at Los Angeles to the National Bureau's New York office by the opportunity to work in monetary economics with Phillip Cagan, Anna Schwartz, and others on the Bureau's staff who are pursuing inquiries in this area.

Darby has spent much of his time at the National Bureau preparing a series of papers in which he describes how he has extended and tested his earlier reformulation of the permanent income theory of consumer expenditures. He developed a model and uses it to determine which definitions of income and money best explain consumer behavior. Other macroeconomic papers by Darby deal with such issues as tax effects on nominal interest rates and a major correction of the unemployment estimates for 1933 to 1943. His articles in microeconomics examine the formulation of rational expectations, qualitative information and market structure, and a new approach to the analysis of the minimum wage laws. Currently his research focuses on the formulation and testing of dynamic macroeconomic models for eight major countries.

After receiving an A.B. from Dartmouth College in 1967, Darby went to the University of Chicago, which awarded him an M.A. in 1968 and a Ph.D. in 1970. He taught for two years at the Ohio State University before moving to the University of California at Los Angeles, where he is an associate professor. He has written a number of articles that have appeared in professional journals, including "Free Competition and the Optimal Amount of Fraud" (with Edi Karni), which appeared in the April 1973 issue of the *Journal of Law and Economics*, and "The Permanent Income Theory of Consumption—A Restatement," in the May 1974 issue of the *Quarterly Journal of Economics*. Darby anticipates that his volume *Macroeconomics: The Theory of Income, Employment, and the Price Level*, published by McGraw Hill, will be available in late 1975.

\* The Harry Scherman Research Fellowship was established to honor Mr. Scherman, founder of the Book-of-the-Month Club, for his substantial contributions to the National Bureau over his lifetime and tenure on the National Bureau's Board.



**Patricio Meller**

received the NBER Research Fellowship that is awarded under a program supported by the Rockefeller Foundation and designed to bring promising young economists from universities in Africa, Asia, and Latin America to the National Bureau. Meller is from Chile, where, since 1969, he has been a professor at the School of Economics of the Catholic University.

His principal research interests, which he has been pursuing at the National Bureau's New York office, center on industrial organization and labor economics in Latin American countries. Most recently he has been examining the employment problem in Latin America with special reference to sorting out the different explanations and policy suggestions relevant to this problem.

Initially, Meller intended becoming a civil engineer and he received his first degree from the School of Engineering of the University of Chile in 1962. Three years later the University of California at Berkeley awarded him an M.S. in engineering. When he decided to change his professional interests to economics, he returned to Berkeley and received an M.A. in economics in 1969 and his Ph.D. in January 1975.

Meller has prepared some twenty papers, many of which have been published in Chilean journals. He is a member of ECIEL, a group of economists drawn primarily from Latin America who collaborate on the examination of economic problems indigenous to their area, and his writings have also appeared as ECIEL Working Papers.



**Mark V. Pauly**

accepted his NBER Research Fellowship to gain an "opportunity to interact with persons working in the theory and measurement aspects of human capital—particularly health capital—and especially with Michael Grossman and Victor Fuchs." He desired a "chance to spend an extended period of time, free of interruptions, to assemble and analyze data." Pauly has been spending this year at the National Bureau's Palo Alto, California office,

where he has completed a fairly extensive piece of empirical work and is well along in another one. This is accompanied by "building a stock of ideas for future research and sharpening my skills in working with large-size bodies of data" he adds.

Pauly has published numerous articles on public finance issues, collective decision making, economic theory, and industrial organization. In addition, he has written extensively on medical care and medical insurance. His publications in the latter area include, among others, *Medical Care at Public Expense* (Praeger Publishers, Inc., 1971), *An Analysis of National Health Insurance Proposals* (American Enterprise Institute, 1971) and a number of articles in professional journals, which explore alternatives to the present systems of health care and insurance.

To come to the National Bureau, Pauly took a leave of absence from Northwestern University, where he is a professor of economics. His education included an A.B. from Xavier University (1963), an M.A. from the University of Delaware (1965), and a Ph.D. from the University of Virginia (1967). At various times he has been a consultant to the Office of Management and Budget; the Office of the Secretary of the Department of Health, Education, and Welfare; and the Division of Manpower Intelligence of the National Institute of Health.



**Robert Shiller**

has spent his year as an NBER Research Fellow at the National Bureau's Computer Research Center in Cambridge, Massachusetts, where he has been examining the determinants of interest rates and their relation to inflation rates. He is also the author of a theoretical study on distributed lag estimation procedures, which he describes in NBER Working Paper #89, "Alternative Prior Representations of Smoothness for Distributed Lag Estimation." This work resulted in a new procedure that is programmed and available on the National Bureau's TROLL system (an interactive computer system for quantitative research in economics and other fields).

Shiller came to the National Bureau from the University of Minnesota, where he was an assistant professor in the department of economics. He received his education at the University of Michigan (B.A., 1967) and the Massachusetts Institute of Technology (S.M., 1968 and Ph.D., 1972). This fall he will be joining the economics faculty of the University of Pennsylvania as an associate professor.

His most recent publications include "A Distributed Lag Estimator Derived from Smoothness Priors" (*Econometrica*, July 1973); "Inflation, Rational Expectations and the Term Structure of Interest Rates," coau-

thored with Franco Modigliani (*Economica*, February 1973); "Rational Expectations and the Term Structure of Interest Rates" (*Journal of Money, Credit and Banking*, 1973); and a "Comment" on a paper on "Distributed Lags" written by a former NBER Research Fellow, Christopher Sims. This "Comment" will appear in volume II of *Frontiers of Quantitative Economics*, which is being edited by Intriligator.

Commenting about his year at the National Bureau's Computer Research Center, Shiller writes, "My stay . . . has been particularly productive because of the interaction I have had with the exceptional staff of statisticians here, and the opportunity to make use of a wide variety of techniques implemented in the TROLL system. The Bureau provides the perfect environment for applied econometric research, and my work took great impetus from this opportunity."

## PROFILES

Virtually all who serve on the National Bureau's Board of Directors hold degrees in economics, although this is not a membership requirement. The ways in which they have applied their knowledge, however, are quite diverse. Some have entered government service, others are employed by unions, and some work in the banking, insurance, brokerage, or publishing industries. Still others, like the Directors whose biographies appear below, have established careers as academicians, corporate leaders, or researchers. By enlisting on its Board the participation of economists drawn from many areas of professional endeavor, the National Bureau strives to ensure, among other things, that its studies prove meaningful to a broad cross section of the interested public.



### Frank W. Fetter

was first elected a National Bureau Director in 1950 by nomination of Northwestern University. With successive reelections he continued as that university's representative Director until his retirement from Northwestern in 1967. At that time he was elected a Director at Large, and continued in that capacity until 1973, when he was named a Director Emeritus.

Fetter received his undergraduate education at Swarthmore College. After graduating in 1920, he took an A.M. at Princeton (1922), an A.M. at Harvard (1924), and completed his formal education with a Ph.D. from Princeton in 1926.

His teaching career began with his appointment to the economics department at Princeton University in 1924. He remained at Princeton for ten years, during which he also served as a member of the American Commission of Financial Advisors to Governments and as an editorial writer for the *St. Louis Post-Dispatch*. In 1934 he moved to Haverford College, where he was named a Guggenheim Fellow three years later. During World War II Fetter took a leave of absence from Haverford to work with the Office of Lend Lease Administration, and was at the State Department from 1944 to 1946. At about the same time he became a lecturer at the School of Advanced International Studies in Washington, D.C. He left Washington to spend a year at Swarthmore College, returned to Haverford for a year, and then accepted an appointment as professor of economics at Northwestern University, where he remained for nearly twenty years. After retiring from Northwestern in 1967, Fetter accepted a one-year appointment as visiting professor at Dartmouth (1967–1968). Today he continues to pursue his research and writing, often using Dartmouth's library and facilities.

Fetter's interests have focused primarily on international economic problems, and his contributions have been internationally recognized. He is a Decorated Knight of the Order of Polonia Restituta (Poland), and holds an Order of Merit First Class from Ecuador. He is also a member of Chile's Academia de Ciencias Economicas. A member of the American Economic Association and the Midwest Economics Association, he was president of the latter in 1952. His publications include *Monetary Inflation in Chile* (1931), which also appeared in Spanish in 1937; *The Irish Pound* (1955); *The Development of British Monetary Orthodoxy* (1965); and the first half of *Monetary and Financial Policy in 19th Century Britain* (1974).

During his tenure as a National Bureau Director, Fetter served as Vice Chairman (1963–1964) and Chairman of the Board (1965–1966). He was also a member of the Board's Executive Committee until 1973. In addition to his active participation in the management of National Bureau affairs and his service as a thorough and constructive critic on numerous reading committees, he has also shown strong interest in the dissemination of National Bureau publications. In this connection, he has been perhaps most active among the Directors in guiding students to use NBER publications, and has had many of the Bureau's books sent to friends and acquaintances in universities, government offices, and the financial communities of various countries he visited.

In his spare time Fetter practices amateur forestry on some six hundred acres of Vermont woodland, and also enjoys the fine ski touring the area offers. He continues his close interest in the work and affairs of the National Bureau and his association with his colleagues on both the Board and staff.





### Solomon Fabricant

has been acknowledged at various international symposia as a leading figure in the study of productivity and of economic accounting. He began his work in 1930 when he joined the National Bureau's staff as a research assistant to Frederick C. Mills, whose analysis of economic change in the United States before and after World War I emphasized the need for coupling studies of output and input. Mills encouraged him to prepare his first National Bureau publication in the area of economic accounting, "Profits, Losses, and Business Assets, 1929-1934," which appeared as *National Bureau Bulletin* #55 in 1935. (A related article, "Revaluations of Fixed Assets, 1925-34," published as *National Bureau Bulletin* #62, is being reprinted by Arno Press for inclusion in a forthcoming volume entitled *The History of Accounting*.) In 1936 Fabricant was chosen to direct a project on capital consumption, and his work on this project provided much of the material for his doctoral dissertation, "Capital Consumption and Adjustment."

During his early years at the National Bureau, Fabricant was also completing his formal education. He had already received a B.C.S. degree (accounting) in 1926 from New York University and a B.S. degree (economics) from the College of the City of New York in 1929. In 1930 Columbia University awarded him an M.A., and in 1938, a Ph.D. (both in economics).

His tenure at the National Bureau was briefly interrupted during the early 1940s by World War II. Granted a leave of absence, he became chief economist of the Office of Civilian Supply, and deputy director, nonmilitary division, of the War Production Board's Program Bureau. As the war drew to a close, he was called to London to serve as deputy director, requirements and supply coordination branch of the United Nations' Relief and Rehabilitation Administration.

Coincidentally with his return to civilian life and his position at the National Bureau, Fabricant was asked to join the faculty of New York University. In 1946 he was appointed lecturer in economics, in 1947 he was named associate professor, and by 1948 he was a full professor, a position he held until his retirement in 1974, when he was made professor emeritus.

In 1953, when Arthur Burns, who was then the National Bureau's Director of Research, was called to Washington to serve the Eisenhower administration, Fabricant was asked to assume his responsibilities at the Bureau. The following year he was appointed Director of Research and a member of the Board of Directors as a Director at Large. He continued

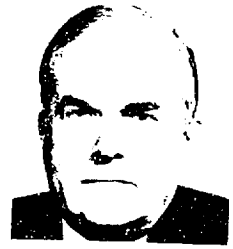
to head the organization until, after twelve years, he asked to be relieved of that responsibility. He was asked to remain on the Board, however, and his participation was extended to membership on the Board's Executive and Investment Committees.

Fabricant's numerous publications reflect his wide range of interests. *Basic Facts on Productivity Change* (published by the National Bureau in 1959), *Primer on Productivity* (1969), and his article on productivity in the *International Encyclopedia of the Social Sciences* (1968) are perhaps his best-known works in the field of productivity. These publications reflect and extend portions of his earlier National Bureau undertakings which resulted in the complementary volumes *The Output of Manufacturing Industries, 1899-1939* and *Employment in Manufacturing, 1899-1939* (published by the National Bureau in 1940 and 1942, respectively). After returning to the National Bureau at the end of World War II, Fabricant had undertaken two related investigations that focused on the service industries. In one study he examined employment trends in these industries, and in the second he made a detailed study of government employment. The latter effort led him to make a survey of government activities and their influence on the nation's economic life, which he chronicled in the 1952 National Bureau publication *The Trend of Government Activity in the United States*. In addition he has written on philanthropy, on economic growth, and on business cycles. Finally, Fabricant's early accounting training, tempered by his view of the world from the vantage point of an economist, has also led him to comment upon accounting practices and business problems.

In recognition of his expertise, his services have been sought by many government agencies. At various times he has served as an economic consultant to the Bureau of the Census, Bureau of the Budget, New York State Tax Commission, National Security Resources Board, Office of Science and Technology, Department of Health, Education, and Welfare, National Commission on Productivity, and the Asian Productivity Organization. He was a member of President Nixon's Task Force on Science Policy during 1969, and a member of the President's Commission on Federal Statistics during 1970-1971. Many professional organizations, including the Committee for Economic Development, the American Institute of Certified Public Accountants, and the Joint Council on Economic Education, have also sought his advice.

Fabricant is a Fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the American Philosophical Society, and the American Statistical Association. He is also a member of the American Economic Association (serving as vice president during 1960-61), the American Finance Association, the International Association for Research in Income and Wealth, and the Economic History Association.

Although now nominally retired from the staff, Fabricant still maintains his National Bureau office and continues his investigations, which have in recent years focused on inflation. For those of us who have had the good fortune of knowing and working with him, he is a highly valued counselor, mentor, and friend.



### **Emilio Collado**

was first appointed to the National Bureau's Board of Directors in 1968 as representative of the Committee for Economic Development. It is CED's policy to nominate the chairman of the Research Policy Committee as their representative to the National Bureau's Board. Consequently, when Collado's term as chairman of that committee expired, his representative membership on the National Bureau's Board should also have automatically terminated. His constructive and enthusiastic support of the National Bureau's programs, however, prompted the Board to reelect him as a Director at Large.

Mr. Collado has been an executive vice president and member of the executive committee of the Exxon Corporation's Board of Directors since 1966. He had joined the company in 1947 as a foreign exchange manager after a career in government and international economics and finance. At Exxon he has been primarily concerned with financial affairs and government and public relations.

A 1931 graduate of the Massachusetts Institute of Technology, he obtained his master's degree and doctorate (both in economics) from Harvard. He was an economic analyst at the U.S. Treasury Department from 1934 through 1936, and an economist at the Federal Reserve Bank of New York during 1937-1938. In 1938 Collado joined the Department of State and served there until 1946. During the first six years he was, successively, assistant chief of the division of American Republics, special assistant to the under secretary, executive secretary of the Board of Economic Operations, and associate advisor on International Economic Affairs. In 1944 he became chief of the State Department's Financial and Monetary Affairs division and a year later was named director of the Office of Financial and Development Policy and deputy to the assistant secretary for Economic Affairs. Collado was also a trustee of the Export-Import Bank of Washington during 1944-1945, and, from 1946 to 1947, served as executive director of the International Bank for Reconstruction and Development.

Many organizations benefit from Collado's experience and expertise. He is chairman of the Business and Industry Advisory Committee to the Organization for Economic Cooperation and Development, and chairman of the Business and Industry Advisory Committee of the United States. He is a director and vice chairman of the Adela Investment Company S.A., and his directorships include the Discount Corporation of New York, J. P. Morgan and Co., Morgan Guaranty Trust Company of New York, the Spanish Institute, the Academy of Political Science, and the Atlantic

Council of the United States. Further, he is also chairman of the Board of the Center for American Relations, a member of the Council of the Americas and the Council on Foreign Relations, a trustee of the Hispanic Society of America, and a member of the Board of Visitors to the Fletcher School of Law and Diplomacy. From May 1972 through May 1975 he served as chairman of the Committee for Economic Development.

The versatility Collado achieved through his participation in government, private enterprise, and numerous committees and advisory groups has proved a particularly valuable asset with respect to his National Bureau activities. He has carefully reviewed a substantial number of manuscripts, and his advice has been particularly constructive. His guidance and comments have been solicited on new projects and proposals, and he has devoted considerable time and effort to the National Bureau's Development Committee.

## RECENT PUBLICATIONS

### THE PERSONAL DISTRIBUTION OF INCOME AND WEALTH

A record of the proceedings of the 39th meeting of the Conference on Income and Wealth

James D. Smith, Editor

Price: \$17.50

Published: February 28, 1975

Are tax and transfer systems that are designed to redistribute income and wealth effective and equitable, or are they merely modern day versions of Robin Hood's rough and ready methods—to rob from the rich to give to the poor? Before such redistribution systems as welfare payments or the social security system can be evaluated, it is necessary to know how income and wealth are distributed among the population. Economists' efforts to assess these distributions accurately have been hampered by the confidentiality requirements imposed on government agencies with respect to the information they collect. Recently, however, computerization has permitted the use of data for individuals, families, and firms—without individual identification—containing the types of general information researchers need.

Access to such microdata has spurred the authors of the essays in this volume to reexamine the consequences of current and potential redistributive mechanisms. Robert Lampman starts with the basic proposition that every political economy contains mechanisms for redistributing its national product among consumers. He asks how the redistribution process can be more meaningfully monitored within the National Income Accounts framework. In answer, he suggests that the household sector be subdivided to show insurance and pensions, philanthropic organizations, and families' subsectors, and that direct interfamily transfers be identified.

Benjamin Okner shows that the combined personal income and employment tax structure tends to be essentially proportional with respect to income and that it exerts little influence on redistribution. Accordingly,

he contends, any redistributive influence of the federal government comes about primarily through transfer payments. Present transfer systems, however, appear biased, for as Harold Watts and James Peck find, families with aged or female heads receive appreciably larger transfer payments than do equally poor families headed by working males.

The data used in the studies discussed above cover the traditional one-year accounting period. Economists have also endeavored to put together microdata sets that span more than one year in the lives of individuals. Martin David and Roger Miller, for example, have developed a file of tax return information linking families between years and individuals to their parental families. In their contribution to this volume they examine the importance of capital gains on the size and distribution of income. They conclude, among other things, that capital gains play a different role in the incomes of men and women. Women taxpayers over the age of forty-six tend to take more of their capital gains in the form of income than do men, probably because the women are the recipients of income from professionally managed portfolios to a greater extent than men, who tend to manage their own investments.

The last section of the book is concerned with the distribution of wealth. Lee Soltow presents estimates of the distribution of wealth and income for various social classes of men in large northern cities in 1860. The distribution of wealth in England in 1968 is examined by A. B. Atkinson. James Smith presents a study of the distribution of wealth in Washington, D. C., with specific reference to the difference between wealth holdings of whites and blacks. He finds that during 1967, 98 per cent of the black population in Washington, D. C. had a net worth of under \$5,000, and that the average net worth of blacks was \$1,000, while the average net worth of whites was \$19,000.

The essays comprising this volume justify one of Professor Smith's opening remarks:

The social benefits of accessible microdata include an incentive to agencies to do first-rate work, many eyes to uncover elusive but often serious errors which can escape even very careful workers, and greater use of information that is usually collected at great cost.

## **INCOME INEQUALITY**

Barry R. Chiswick

Price: \$15.00

Published: November 28, 1974

In the United States equality under the law, equality of opportunity, openness to upward social mobility, and freedom of choice have traditionally been important social objectives. Economists in particular, however, have focused attention on one of the implied results of such objectives—reduction of income inequality.

The factors that contribute to inequality of earning power—years of schooling, work experience, and the labor market demand for skills, among

other things—are examined in this volume. Using human capital theory, Chiswick explores how these factors determine income or earnings within various geographical areas, both within the United States and abroad. His work sheds light on such questions as: Why is there a greater disparity among incomes in Southern states than in the North and West? Why do college graduates realize higher earnings relative to high school graduates in poorer states than in wealthier areas? Why, in the same states are the annual earnings of white males more unequal than the annual earnings of their black counterparts? Why are earnings more unequal in the United States than in Great Britain? And, why does the economic development process itself increase earnings inequality?

Chiswick begins with a nontechnical discussion of the main elements of a human capital theory, of the determinants of labor market income, and of regional differences in income inequality. The explanatory variables that he considers of greatest interest are the distribution of schooling and postschool training, their rates of return (i.e., the “payoffs” of training in the form of higher earnings), and the distribution of employment during the year.

A more technical development of the theoretical relation between investment in schooling and labor market income is then presented. Differences in years of schooling among individuals are found to be important for explaining differences in their income. In addition, such inequality in years of schooling and in the rate of return from schooling account for approximately 60 per cent of interstate differences in labor market income. These conclusions run counter to the arguments advanced by others who, using less complete models, conclude that years of schooling explain very little of the differences in income among men or the regional differences in income inequality.

Chiswick finds that greater income inequality in the South is a consequence of the higher rate of return to schooling and greater inequality of years of schooling rather than of the lower level of schooling in that region. He also finds that while the incomes of blacks and whites still differ, the incomes of blacks are rising significantly more rapidly than those of whites, thereby narrowing the gap.

The book concludes with a technical presentation of the full model that combines postschool training and employment (weeks worked in the year) with schooling. The model explains 85 per cent of interstate differences in income inequality in the United States for all males, and 92 per cent for white males. Having tested the applicability of the model to the economy of the United States and several other countries, the author uses it as an analytical tool to discuss some implications of the effects of economic growth, historical events, economic institutions, and government policies on income inequality.

## EDUCATION, INCOME, AND HUMAN BEHAVIOR

F. Thomas Juster, Editor

Price: \$17.50

Published: January 13, 1975

A joint publication of the National Bureau of Economic Research, Inc. and the Carnegie Commission on Higher Education

What influence does educational attainment have on human behavior and on individuals' income? This may well be one of the most important questions facing those who seek an education as well as those who make the decisions that shape the nation's system of education and select educational priorities. To determine the impact of education on various phases of life, it is first necessary, in the opinion of the authors of the essays comprising this volume, to measure the effects of the quantity and quality of education on a panoply of behavior characteristics.

In these wide-ranging essays, economists compare and analyze decisions made by individuals possessing different educational backgrounds. One group of essays focuses on the direct financial returns to individuals, emphasizing, in particular, the degree to which educational attainment produces higher annual lifetime earnings by increasing the value of time spent in the labor market. These essays also examine such related questions as: Does the contribution of presumably innate ability to income vary with the level of formal schooling and other factors, or is it independent of such factors? What specific types of formal schooling or ability are most significant in influencing earnings? What are the effects on lifetime earnings of both formal schooling and informal parental training and learning on the job? In seeking answers to these and other questions, F. Thomas Juster, editor of the volume, and his colleagues assess from several viewpoints how the development and investment of human skills and knowledge (human capital) determine differences in the level and time-profile of labor market earnings.

Findings reported by Paul Taubman and Terence Wales in this section may be of special interest, for they run counter to the widely held view that the increase in the number of students attending college has diluted college quality. Taubman and Wales demonstrate that, far from there being a decline since the 1920s in the average ability of entering freshmen, there has actually been a systematic tendency for average ability to increase. At the same time, their evidence indicates that the average ability of high school seniors not going to college has steadily declined over time. The ramifications of these findings with respect to the labor market are examined.

If education does enhance earnings and productivity in the job market, as this first group of essays suggests, it might be expected to influence behavior in other areas as well. Attitudes, values, and behavior, many have suggested, are significantly altered by education, but studies of the influence of educational attainment on these "noneconomic" aspects of human behavior have been largely subjective evaluations. The essays in

the second part of this book begin to replace these evaluations with empirical findings, looking at such traditionally "noneconomic" areas as fertility and family size, political attitudes, and participation in illegal activities.

This volume provides a substantial body of evidence that formal schooling repays, in the monetary as well as in the nonmonetary sense, both the individual who receives the education and society as a whole. These "payoffs" for educational attainment are not, as some have suggested, restricted to those with favorable family background or exceptionally high ability. Moreover, it appears that higher education tends to enhance decision making generally by increasing information-processing skills. Finally, considerable evidence scattered throughout these essays indicates that higher education changes behavior in that it stretches the time horizon for individual decisions and creates a relatively stronger preference for the future as against the present.

## **FORECASTS WITH QUARTERLY MACROECONOMETRIC MODELS**

Yoel Haitovsky, George Treyz, and Vincent Su

Price: \$15.00

Published: October 29, 1974

The econometric model is a formal system of equations representing a model builder's effort to simulate the workings of the economy. In recent years many businessmen and financiers have come to rely on the output of such models for forecasting business conditions, and government policymakers use these models to evaluate the economic consequences of alternative policy measures. Nevertheless, despite the growing use of econometric models and the wide publicity given to forecasts based on them, there has been little careful scientific appraisal of the accuracy of such forecasts.

The authors of this volume analyze and evaluate the econometric models and forecasts developed by the Office of Business Economics of the Department of Commerce and the Wharton School of Finance and Commerce of the University of Pennsylvania. Several measures of forecasting accuracy are developed to evaluate the forecasting performance of these models. In addition, a procedure is devised for decomposing forecasting error so that the error can be traced back either to the individual equations that are responsible or to errors in the guessed-at-values of the exogenous variables (those that are not produced by the model but must be predicted by the forecaster, such as government expenditures, transfer payments, or exports).

The actual forecasts produced by the models are not, as might be supposed, a mechanical result of turning a few dials and switches and having the models grind out a view of the future. In practice, the forecasts issued are the result of interaction between the forecaster and the models, constantly being adjusted to conform to the forecasters' own judgments. Left to themselves and run mechanically, the models would often yield unsatisfactory results, but the addition of the forecasters' information on past



forecasting errors by the model and on events not included in the model improve forecasting performance.

To determine the accuracy of the forecasts predicated on models, the authors of this National Bureau study replace guesses about future events originally made by the modelbuilders with information, available at a later date, more accurately reflecting these events. They find that this substitution of corrected values does not necessarily increase forecasting accuracy. In fact, many of the forecasts in which correct data have been substituted prove worse than those using incorrect (or educated guess) data—a result that implies that the forecasters may have made good judgments about the general direction of the economy despite errors in predicting the exact ways in which the future would unfold.

The authors also found that forecasts based on econometric models are not clearly superior to other forecasts or even always to simple extrapolations of the past, particularly for forecasting of short periods. The authors conclude that at this time “it would probably be wise for econometricians not to oversell the reliability of forecasts made with structural quarterly macroeconomic models in preference to predictions resulting from other forecasting techniques.”

## REPRINTS

The following papers by National Bureau staff members are available from the National Bureau in reprint form. Please address requests to the Publications Department.

Cagan, Phillip, and Anna J. Schwartz, “Has the Growth of Money Substitutes Hindered Monetary Policy?” *Journal of Money, Credit, and Banking*, May 1975.

Fuchs, Victor R., “A Note on Sex Segregation in Professional Occupations,” *Explorations in Economic Research*, Vol. 2, No. 1, Winter 1975.

Gronau, Reuben, “Wage Comparisons—A Selectivity Bias,” *Journal of Political Economy*, Vol. 82, No. 6, November/December 1974.

Hughes, E. F. X., Lewit, E. M., and Frederick V. Lorenzo, “Time Utilization of a Population of General Surgeons in Community Practice,” *Surgery*, Vol. 77, No. 3, March 1975.

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Moore, Geoffrey H., “The Analysis of Economic Indicators,” *Scientific American*, Vol. 232, No. 1, January 1975.

———, “Receding Inflation, Reviving Economy,” presented at a meeting sponsored by G. Tsai & Company, Inc., April 10, 1975.

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Popkin, Joel, "Commodity Prices and the U.S. Price Level," *Brookings Papers on Economic Activity*, January 1974.

Solmon, Lewis C., and Paul Wachtel, "The Effects on Income of Type of College Attended," *Sociology of Education*, Vol. 48, Winter 1975.

Toporovsky, Rinaldo H., "FDU: A Case Study of the Process of Higher Education," Social Statistics Section, *Proceedings of the American Statistical Association*, 1973.

Zarnowitz, Victor, and Charlotte Boschan, "Cyclical Indicators: An Evaluation and New Leading Indexes," *Business Conditions Digest*, May 1975.

#### MIMEOGRAPHED AND XEROXED PAPERS

The following papers by National Bureau staff members are available upon request from the authors. The National Bureau does *not* have a supply of these studies.

Cagan, Phillip, and Anna J. Schwartz, "How Feasible is a Flexible Monetary Policy?" *Capitalism and Freedom, Problems and Prospects*, Richard T. Seldon, editor, (proceedings of a conference in honor of Milton Friedman); University Press of Virginia, 1975.

Fuchs, Victor R., "Concepts of Health—An Economist's Perspective," forthcoming, fall 1975.

Moore, Geoffrey H., and Philip A. Klein, "Applying the NBER Indicator Approach to International Growth Cycles," presented at a conference sponsored by the Centre for International Research on Economic Tendency Surveys, Stockholm, June 1975.

Schwartz, Anna J., "Monetary Trends in the United States and the United Kingdom, 1878–1970: Selected Findings," *Journal of Economic History*, March 1975.

———, Review article of *The World in Depression, 1929–1939* by Charles P. Kindleberger, *Journal of Political Economy*, February 1975.

Shiller, Robert J., and Jeremy J. Siegel, "The Gibson Paradox and Historical Movements in Real Long Term Interest Rates," April 1975.

## NBER WORKING PAPER SERIES \*

Requests for copies of these papers must be sent directly to the authors. Distribution is at the author's discretion.

- 73 *The Role of Physicians in the Production of Hospital Output*, Mark Pauly, February 1975.
- 74 *Variation Across Households in the Rate of Inflation*, Robert T. Michael. March 1975.
- 75 *Implementing and Documenting Random Number Generators*, David C. Hoaglin, March 1975.
- 76 *Robust Non-Linear Regression using the Dogleg Algorithm*, Roy E. Welsch and Richard A. Becker, March 1975.
- 77 *FIML Estimation of Rational Distributed Lag Structural Form Models*, Kent D. Wall. March 1975.
- 78 *Tables of Sample Size for the F-Test in One Way Analysis of Variance Designs*, Richard W. Hill, March 1975.
- 79 *The Consumer Expenditure Function*, Michael R. Darby, March 1975.
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- 85 *On the Identification of Time Varying Structures*, Thomas F. Cooley and Kent D. Wall, May 1975.
- 86 *The Use of the Box Step Method in Discrete Optimization*, Roy Marsten, May 1975.
- 87 *Exports and Foreign Investment in the Pharmaceutical Industry*, Robert E. Lipsey and Merle Yahr Weiss, May 1975.
- 88 *Three-and-a-Half Million U.S. Employees Have Been Mislaid; Or, An Explanation of Unemployment, 1934-1941*, Michael R. Darby, May 1975.

\* A listing of NBER Working Papers 1-46 appears in the National Bureau's 54th *Annual Report* (1974), pages 151-2. A listing of NBER Working Papers 47-72 appears in *National Bureau Report 14*, pages 23-4.

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