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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

SUMMER 1980

Program Report

Capital Formation

Martin Feldstein

Although the low rate of investment in the United States has attracted widespread attention to the problem of capital formation, there has been relatively little careful empirical study of this subject. As a result, crucial issues of public policy are being debated without an adequate factual base. Government programs are adopted without understanding, or in many cases without even considering, the major impact that they will have on capital formation. Long-range corporate planning is also hampered by insufficient information on the forces that are shaping the future rate and direction of capital formation. Because of the central importance of this subject to the future of the American economy, the National Bureau of Economic Research has undertaken a special study of capital formation.

NBER has a long tradition of empirical research on this subject. Simon Kuznets's studies of capital formation, carried out under NBER sponsorship in the 1940s and 1950s, were cited when Kuznets was awarded the 1971 Nobel Prize in economics. The flow-of-funds accounts, now produced by the Federal Reserve System and widely used to study the sources and uses of financial capital, were originally developed at NBER. Many other important NBER studies of capital formation could be mentioned, but the decades since those studies were done have seen substantial changes in the American economy, a vast growth of new data sources, and important developments in the methods of empirical economic analysis. It seemed clear to us that the time had arrived for a major new program of research on capital formation.

The Special Study of Capital Formation began in mid-1978 with an initial five-year planning horizon. I am serving as general research director and coordinator for this study. The scope of the work cuts across the Bureau's basic program structure and includes research on taxation, financial markets, international issues, monetary economics, and other topics. Much of the research em-

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This issue of the *Reporter* highlights the Bureau's Special Study of Capital Formation. Next, Robert Gordon discusses his work on inflation; then, Michael Grossman's work on children's health is presented. Following the quarterly Economic Outlook Survey are a section of biographical sketches, news of NBER conferences, and other NBER news and reports. Short summaries of recent NBER Working Papers constitute the final section of the *Reporter*.

phasizes the impact on capital formation of existing public policies and tries to develop the type of information that will be useful for long-range analysis by government and the private sector. Of course, in keeping with NBER tradition, the studies do not make specific policy recommendations but focus instead on developing quantitative information that others can use.

During the first two years of the special study, NBER researchers have prepared sixty individual papers describing research on capital formation. In this report, I cannot hope to summarize the conclusions of this large number of projects on the wide variety of subjects that fall within the scope of the capital formation study. My more modest aim is to provide a brief overview of the seven major parts of the study and a list of the researchers and papers associated with each part. The interested reader can consult previous issues of the *Reporter* for summaries of the individual papers; more general discussions of some of this work may be found in the Program Report and Research Summaries articles of the *Reporter*. A list of the Working Papers prepared for each of the seven sections appears in an appendix to this article.

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Taxation

Much of the current public discussion about capital formation focuses on the role of taxation. This has been a particularly active part of the Bureau's capital formation study. Research has examined how taxes affect the supply of saving from different sources and the demand for investment of different kinds. Several studies have given particular attention to the interaction between inflation and existing tax rules. The NBER research associates and faculty research fellows who have contributed to this work are Alan Auerbach, Alan Blinder, Michael Boskin, David Bradford, Martin Feldstein, Don Fullerton, Roger Gordon, Patric Hendershott, Mervyn King, Charles McLure, John Shoven, Joel Slemrod, and Lawrence Summers.

Private Pensions and Social Security

The rapid growth of both private pensions and social security has been one of the most significant factors influencing the nature of capital formation in the past thirty years. The impact of this development on the aggregate supply of capital and on its form deserves more careful analysis. Our analysis of these issues has convinced us that this topic deserves a major study in its own right, and the Bureau has now launched a study under John Shoven's direction. The new study of public and private pensions will examine their effect on total capital formation, on capital markets, on corporate financial decisions, and on labor markets. Within the current capital formation study, research on social security and private pensions has been done by Zvi Bodie, Jeremy Bulow, Martin Feldstein, Benjamin Friedman, and Laurence Kotlikoff.

Fiscal and Monetary Policy

The dramatic government deficits and abnormally high nominal interest rates in recent years have called attention to the potential effects on capital formation of fiscal and monetary policy. Bureau research studies have been examining the effects of government deficits and analyzing the way in which high nominal interest rates influence investment and financing decisions. Robert Barro, Martin Feldstein, and Benjamin Friedman have completed studies of the impact of fiscal and monetary policies on capital formation.

International Capital Flows

We believe that it is particularly important to recognize the role of international capital flows. Overseas investment by U.S. firms and portfolio investors is of growing importance. Foreign investment in the United States is still relatively small but is growing very rapidly. The causes of these two-way flows, including the impact of tax rules, floating exchange rates, and financial regulations are subjects of this part of the capital formation study. NBER researchers who have been examining these issues include William Branson, Willem Buiter, Martin Feldstein, Jacob Frenkel, Daniel Frisch, David Hartman, and Charles McLure.

Financial Markets

Many observers feel that the current functioning of financial markets and the changing financial structure of corporations are as serious as the low overall rate of capital formation. Research on financial markets is therefore of particular importance in the Bureau's overall study of capital formation. A central part of this work is a special study of the changing roles of debt and equity finance headed by Benjamin Friedman. The research examines such issues as the recent growth of debt finance, the impact of tax rules on corporate financial structures, and the changing preferences of portfolio investment.

Residential Housing

Although investment in industrial plant and equipment is the major form of capital formation, our studies are also examining investment in residential housing. Although residential housing accounts for approximately one half of the total private capital stock, its role in the process of capital formation has received relatively little attention. The studies by Martin Feldstein, Patric Hendershott, and Sheng Cheng Hu have examined how U.S. tax rules and methods of financing home ownership have influenced the demand for housing and the division of the capital stock between residential and nonresidential uses.

Research and Development

Expenditure on research and development is not usually classified as capital formation but, like investment in plant and equipment, R and D expenditures produce long-lasting contributions to corporate productivity. Zvi Griliches is directing the Bureau's research on the determinants and effects of research and development expenditure. Other Bureau researchers who have completed studies on this subject are M. Ishaq Nadiri, Ariel Pakes, and Mark Schankerman.

In all, the completed research described above includes studies by thirty-four Bureau researchers from eighteen different universities. The Bureau is grateful for the financial support this research has received from the Andrew Mellon Foundation, the Sarah Scaife Foundation, the General Electric Foundation, the Grace Foundation, and the National Science Foundation. A major grant for the study of the changing role of debt and equity was provided by the American Council of Life Insurance. At the present time, further work in each of the areas of the capital formation study is under way.

Appendix

Taxation

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February 1978

234. Inflation and the Excess Taxation of Capital Gains on Corporate Stock
Martin Feldstein and Joel Slemrod
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241. Personal Taxation, Portfolio Choice, and the Effect of the Corporation Income Tax
Martin Feldstein and Joel Slemrod
April 1978

243. Taxation and Corporate Financial Policy
J. Gregory Ballentine and Charles E. McLure, Jr.
May 1978

250. The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains
Martin Feldstein, Joel Slemrod, and Shlomo Yitzhaki
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257. The Lock-in Effect of the Capital Gains Tax: Some Time-Series Evidence
Joel Slemrod and Martin Feldstein
July 1978

269. Tax Neutrality and the Investment Tax Credit
David F. Bradford
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283. Temporary Taxes and Consumer Spending
Alan S. Blinder
October 1978

298. A Status Report on Tax Integration in the United States
Charles E. McLure, Jr.
November 1978

302. Tax Policy in a Life Cycle Model
Lawrence H. Summers
November 1978

312. Inflation and the Taxation of Capital Income in the Corporate Sector
Martin Feldstein and Lawrence H. Summers
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324. Corporate Financial Policy, Taxes, and Uncertainty: An Integration
Alan J. Auerbach and Mervyn A. King
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337. Static and Dynamic Resource Allocation Effects of Corporate and Personal Tax Integration in the U.S.: A General Equilibrium Approach
Don Fullerton, A. Thomas King, John B. Shoven, and John Whalley
April 1979

349. The Incidence and Allocation Effects of a Tax on Corporate Distributions
David F. Bradford
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395. Adjusting Depreciation in an Inflationary Economy: Indexing versus Acceleration
Martin Feldstein
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403. Inflation, Tax Rules, and the Stock Market
Martin Feldstein
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404. The Investment Tax Credit: An Evaluation
Alan J. Auerbach and Lawrence H. Summers
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409. Taxation and the Stock Market Valuation of Capital Gains and Dividends: Theory and Empirical Results
Roger H. Gordon and David F. Bradford
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428. Savings and Taxation
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447. Mortgage Revenue Bonds: Tax Exemption with a Vengeance
Patric H. Hendershott
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- 314.** The Effect of Social Security on Private Savings: The Time-Series Evidence
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- 355.** International Differences in Social Security and Saving
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- 402.** Analysis of Pension Funding under ERISA
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- 442.** Purchasing Power Annuities: Financial Innovation for Stable Real Retirement Income in an Inflationary Environment
Zvi Bodie
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- 284.** Crowding Out or Crowding In? The Economic Consequences of Financing Government Deficits
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- 422.** Tax Rules and the Mismanagement of Monetary Policy
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Martin Feldstein
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- 253.** Inflation and the Choice of Asset Life
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- 254.** Wealth Maximization and the Cost of Capital
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- 373.** Inflation Risk and Capital Market Equilibrium
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360. Contributions and Determinants of Research and Development Expenditures in the U.S. Manufacturing Industries
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Research Summaries

The Historical Behavior of U.S. Inflation and Its Current Implications

Robert J. Gordon

An understanding of the determinants of the past behavior of the U.S. inflation rate is a prerequisite for any discussion of central policy issues in macroeconomics. Should a shock like the 1979–80 OPEC oil price increases be “accommodated” by allowing faster growth in money and aggregate spending, or should it be “extinguished” by restrictive policy? Will a policy of tight money raise unemployment without cutting the inflation rate, or will it cause inflation to decelerate rapidly? Is there any potential for reducing the inflation rate with supply-side policies, including tax cuts, investment incentives, shifts in energy policy, and reforms of government regulations?

My own recent research on inflation is designed to address these issues and has two main features that distinguish it from other research. First, my approach to the explanation of inflation places equal emphasis on demand and supply factors. Thus, it is capable of assessing the likely impact of changes in monetary policy or of major supply-side changes in tax or energy policy. Second, it attempts to explain the ups and downs of the U.S. inflation rate since 1890, an unusually long time horizon, rather than to focus solely on postwar U.S. data. One useful by-product of the project has been the creation of

a new quarterly data file on major U.S. aggregate macroeconomic variables that extends from 1890 to 1980.

The Demand Side: Competing Schools of Thought

By far the most controversial issue in the study of inflation is the nature of its responsiveness to changes in aggregate demand. At one extreme is the “new classical macroeconomics,” developed by Robert Lucas, Thomas Sargent, and Robert Barro. Their models share the basic feature that a fully anticipated change in nominal aggregate demand has no effect on real output or employment, and thus must have its full impact in the form of a contemporaneous and equiproportionate change in prices.¹ This theoretical claim, sometimes called the policy ineffectiveness proposition or Lucas–Sargent proposition (LSP), makes monetary stabilization policy both futile and unnecessary. The LSP implies optimistically that a restrictive monetary policy, once fully perceived by the public and anticipated to continue, will immediately cut the inflation rate without the need for any increase in unemployment. It also implies pessimistically that there is no role for stabilization policy in dealing with the consequences of shocks like the 1979–80 OPEC oil price increases.

At the other extreme is the traditional, Phillips curve approach that George Perry calls the “mainline” view. No distinction is made between anticipated and unanticipated demand changes. Inflation depends almost entirely on the behavior of wages, which in turn are heavily influenced by inertia (that is, the past history of wages and consumer prices). Aggregate demand enters through the presence of the *level* of the unemployment rate in equations explaining wage change. Standard results imply that inflation responds by only 10 percent of a change in nominal aggregate demand during the first year after the change, with the remaining 90 percent of the impact falling on real GNP. Thus, the mainline view implies pessimistically that a restrictive monetary policy will take a long time, perhaps decades, to cut the inflation rate, at the cost of perhaps one trillion or more dollars of lost real GNP. On the other hand, it implies optimistically that there is a role for stabilization policy in offsetting the impact of supply shocks on unemployment and output.

If this debate between LSP and the mainline view sounds familiar, it is. Stripped of its emphasis on the distinction between anticipated and unanticipated shifts in monetary policy and aggregate demand, LSP is simply the old classical macroeconomics of perfect price flexibility against which Keynes inveighed in 1936.² Arguments for stabilization policy by mainline proponents hinge on the

¹A crude measure of the change in nominal aggregate demand, used in some of my work, is the change in current-dollar (nominal) GNP minus the change in potential real GNP. This concept, which by definition is equal to inflation plus the change in the ratio of actual to potential real GNP, must be equal to the inflation rate itself in the long run. A more refined measure of aggregate demand substitutes the change in nominal final sales plus the change in unfilled orders for the change in nominal GNP.

²The distinction between anticipated and unanticipated shifts has little practical importance in the most recent empirical tests of LSP, in which estimates of anticipated monetary change are little more than a one-quarter lag on actual monetary change. In a time-series plot, actual and anticipated monetary changes appear to be almost identical when viewed over the horizon of the 132 quarters between 1947 and 1979.

importance of "wage inertia," a modern and slightly less extreme version of Keynes's "wage rigidity."

Most mainline research studies only the behavior of wages without paying any attention to the effect of aggregate demand on the ratio of prices to wages. In contrast, my own research over the past decade on U.S. inflation has always found a substantial effect of the change in aggregate demand on the change in prices relative to the change in wages. Thus, my "intermediate" view of the inflation process shares the mainline emphasis on the role of inertia but suggests that inflation is much more responsive to demand changes than is implied by mainline results.

Empirical Results in Postwar and Historical U.S. Data

Rather than estimating three different equations to test the validity of the LSP, mainline, and intermediate approaches, I have developed a single equation to test all three. In addition to supply variables, discussed below, inflation depends on the change in nominal aggregate demand, a ; the level of the ratio of actual to potential real GNP, b ; and a distributed lag of past inflation rates, c . For LSP to be valid, the coefficient on a must be unity and that on c must be zero.³ Mainline research takes the coefficient on a to be zero and c to be a fraction closer to one than zero. The intermediate approach predicts that the coefficients of both a and c will be positive and will add up to unity, implying that permanent changes in aggregate demand growth are fully reflected in the inflation rate in the long run.

Results in annual postwar data support the intermediate approach, with coefficients of about one third on a and two thirds on c . Thus, prices are not nearly as flexible as implied by LSP, but considerably more flexible than implied by the mainline view. In the first year after a change in aggregate demand, about 33 percent of the change shows up as price change and 67 percent as output change. This split contrasts with the mainline characterization of the same split as 10 percent and 90 percent, respectively.

A study of annual data going back to 1892 supports the 33 percent first-year response of prices to demand shifts, but indicates that the remaining 67 percent price inertia effect was not present before 1950. In earlier recessions, for example in 1907-08, prices responded promptly to a drop in demand and then rose promptly when demand recovered, with no inertia. These equations are quite successful in explaining why prices rose so much during the 1933-37 economic recovery, a period that has eluded explanation in most previous historical studies relying on a traditional Phillips curve framework. The development of inertia after 1950 seems to point to three-year staggered wage contracts as a unique feature of the postwar inflation process, since the first of these contracts was introduced in 1950.⁴

³In tests of LSP, variable a is split into its unanticipated and anticipated components, and only the coefficient on the latter should be unity.

⁴My historical study of annual data, "A Consistent Characterization of a Near-Century of U.S. Price Behavior," is NBER Working Paper No. 455, February 1980, and appeared in the *American Economic Review*, May 1980.

These findings are confirmed in more recent work that uses quarterly data. When past history is divided into three periods (1892-1929, 1929-53, and 1954-79), the responsiveness of inflation to demand changes seems to be almost identical in each period (about 15-20 percent in the first quarter), but the inertial role of past inflation is much more important in the postwar subperiod. It is this backward looking dependence of postwar inflation on up to twenty quarters of past inflation experience that makes inflation so difficult to eliminate by restrictive monetary policy, although my results are less pessimistic in this regard than traditional mainline studies.⁵

Influence of Supply Shifts

The 1970s have taught us that inflation depends on more than aggregate demand alone. Demand growth was relatively stable during the past decade, yet inflation exhibited sharp fluctuations, rising from 3 percent in mid-1972 to 11 percent in mid-1974, falling back to 5 percent in 1977, and then rising to 10 percent in 1979. These gyrations can be explained by adding two additional variables to the equation described above, one measuring the contribution to overall inflation of changes in the relative prices of food and energy, and another measuring the effect of the Nixon era controls. The complete equation indicates that most, but not all, of the fluctuations of the inflation rate during the 1970s were caused by supply factors. Nevertheless, the fact that inflation was higher at the end of the decade than at the beginning is partly due to the rapid growth of demand during 1977-79 relative to the slowing growth of potential real GNP.

Supply shifts were important in earlier historical periods as well. Two such cases represented the impact of government intervention. The National Recovery Act, for instance, raised prices in 1934 by about 6 percent, with a corresponding reduction of inflation by the same amount in 1935 and 1936 after the act was declared unconstitutional. World War II price controls held down the price level by about 15 percent during the war, and their termination accounts for the enormous inflation rate in mid-1946 (when prices jumped by 13 percent in a single quarter, 1946:3). In the Korean War, prices rose about 3 percent less than predicted by the demand variables in 1951-53, but almost all of this appears to represent the elimination of the 1950-51 speculative bubble in prices rather than an impact of government wage and price controls.

My inflation study also examines the behavior of wages and prices separately in order to trace the effects of changes in minimum wages and in taxes of various types. An increase in the minimum wage relative to average earnings, as occurred in the 1977-80 period, raises wage growth, and most of this feeds directly into the inflation rate. Overall, the inflation rate has been pushed up by about 0.2 percentage points per year during this period by increases in the minimum wage.

⁵The quarterly results are reported in "Price Inertia and Policy Ineffectiveness," a forthcoming NBER Working Paper. A simulation study of restrictive monetary policy was presented in "Monetary Policy and the 1979 Supply Shock," NBER Working Paper No. 418, December 1979.

Children's Health

Michael Grossman

Increases in the social security payroll tax during this period have also increased the inflation rate, but by much less than is generally assumed. My study indicates that only about one sixth of the total payroll tax burden is shifted forward into higher prices. Employees appear to bear not only the full burden of their share of the payroll tax, but also about one third of the employer's share (that is, their wages go up less after the payroll tax is increased than they otherwise would). The remaining two thirds is split, at least in the first year, between a squeeze on profits and an increase in prices.

Despite the fact that part of the payroll tax is shifted forward into higher prices, there appears to be virtually no potential for reducing inflation with a tax substitution that would finance part of the social security system through the personal income tax. This conclusion reflects the fact that a small portion of an increase in the personal income tax, also about one sixth, is shifted forward into higher prices.

Some Implications

In addition to its usefulness in the evaluation of different macroeconomic schools of thought, my research helps to identify those causes of inflation over which the government has some control. High inflation rates in 1979-80 have been caused by a combination of rapid demand growth; slow growth in potential GNP; oil and food shocks; and "self-inflicted wounds" in the form of higher minimum wages and payroll taxes. Policies to reduce inflation would include slowing the growth of nominal aggregate demand; tax incentives and other policies to stimulate growth in potential real GNP; and policies to reduce U.S. dependence on imported oil. Because so little of the payroll tax is shifted forward to higher prices, whereas most of any tax on imported oil would be shifted forward, any attempt to use energy taxes to cut the payroll tax would have a net inflationary impact. Similarly, cuts in the personal income tax have little anti-inflationary potential.

Another implication of my research relates more to debates among academic economists than to current policy issues. The validity of schools of thought, like the LSP and mainline approaches, depends on the time and place being considered. The price and wage inertia upon which the mainline view is based is a unique feature of postwar America, but not of the United States before 1950 nor of the postwar behavior of most European countries. The U.S. postwar institution of staggered and decentralized wage setting with three-year contracts appears to be the main reason for inertia in the U.S. inflation process. Those who predict that the inflation process will change drastically in response to changes in monetary policy may be overestimating the potential for rapid change in U.S. bargaining institutions. And those who base their conclusions about the validity of economic theories solely on the postwar American experience, while ignoring the pre-1950 United States and the postwar European experience, may be similarly mistaken.

An important theme in much of the NBER research in health economics is that health is the output of a multivariate production process in which medical care is simply one of many inputs. This distinction between health and medical care is highlighted in the children's health project that I organized five years ago. The project includes work by NBER Research Associates Douglas Coate, Linda Edwards, and Robert A. Shakotko and by NBER Visiting Scholar Dov Chernichovsky.

The objective of the research is to investigate empirically the determinants of children's health with particular reference to home and local environmental variables. Home environmental factors include basic family background variables, such as parents' schooling, family income, family size, and mother's labor force status. They also include mechanisms through which background variables operate, such as preventive medical care and nutrition. Local environmental factors include the availability of health care, public provision of fluoridated water, climate, and air pollution.

Whenever possible, we study children's health in the context of the nature-nurture controversy. Despite the existence of a massive (but inconclusive) body of literature on the relative importance of heredity (nature) and the home and school environment (nurture) in the determination of cognitive development, this issue has not been directly addressed by researchers in child and adolescent health. This is partly because much of the health research is limited either to poor or to minority populations and partly because researchers who use representative samples do not adopt the multivariate context necessary for distinguishing between genetic and environmental influences. Our research uses multivariate statistical techniques to provide some evidence of the degree to which nurture—that is, the family and local environment—acts in determining the health levels of representative samples of children and adolescents.

Health in Mid-Childhood

Linda Edwards and I have examined the relationship between a number of family characteristics and the health of children aged 6 through 11 years in the period 1963 through 1965.¹ The data set employed is from Cycle II of the U.S. Health Examination Survey (HES II). Our aim is to paint a complete picture of the health of this childhood cohort. Therefore, a variety of health measures from physical examinations by pediatricians and dentists and from interviews with parents and school officials are analyzed. We focus on an exploration of race and family income differences in the health of children in the Cycle II data set. We compare such differences in mid-childhood

¹L. N. Edwards and M. Grossman, "Children's Health and the Family," in *Annual Series of Research in Health Economics*, Vol. II, ed. R. M. Scheffler (Greenwich, Conn.: JAI Press, 1980), also NBER Working Paper No. 256, July 1978; L. N. Edwards and M. Grossman, "Income and Race Differences in Children's Health," NBER Working Paper No. 308, January 1979.

to race and income differences in infant mortality and birth weight.

We show that when health measures from mid-childhood are the subject of analysis, both income and race differences are much less pronounced than they are in infant mortality and birth weight data. We do find differences in the health status of black and white children from high- and low-income families, but these differences by no means overwhelmingly favor the white or high-income children. With respect to differences by race, whether or not they are adjusted for differences in associated socioeconomic factors, black children in some cases are in better health than their white counterparts. In the case of income differences in health, the high-income children do appear to be in better health according to most measures, but their advantage is greatly diminished when one controls for related socioeconomic factors like parents' educational attainment. These findings imply that policies that aim to improve the well-being of children via income transfers would have, at best, very small effects on health.

Adolescent Health, Family Background, and Preventive Medical Care

Linda Edwards and I also have investigated the health of white adolescents aged 12 through 17 years in the 1966-70 period.² The data set employed is from Cycle III of the U.S. Health Examination Survey. Our research in this study focuses on the nature-nurture controversy by examining in detail the impacts of four important components of the home and local environment: family background, preventive medical care, health manpower in the youth's county of residence (the number of pediatricians per capita and the number of dentists per capita), and information on the presence of controlled or natural fluorides in the water supply system that services the youth's community. Four health indicators are studied: oral health, obesity, anemia, and corrected distance vision. These indicators are chosen because they represent health problems that are capable of being affected by family decisions concerning diet and other forms of at-home health care, as well as by pediatric and dental care.

Two types of relationships are estimated: a health production function and a derived demand function for preventive care. The resulting estimates permit us to answer the following questions: What is the effect of the home environment on adolescents' oral and physical (obesity, anemia, corrected distance vision) health? How important is the home environment as a determinant of the demand for preventive dental and pediatric care? How large are the effects of dentists, preventive care, and fluoridation on oral health? How large are the effects of pediatricians and preventive pediatric care on physical health? In addressing the last two questions, we recognize explicitly the common-sense proposition that an

increase in a community's medical or dental manpower will not increase good health unless it encourages more utilization of medical care services. (Note that we could not study relationships among preventive medical care, health manpower, and health outcomes in Cycle II of the HES because there are no measures of preventive care in Cycle II.)

We find that nurture plays an important role in the determination of adolescent health. In particular, mother's schooling is singled out as a crucial component of the home environment. Although mother's schooling, father's schooling, family income, and family size all make significant contributions to oral health, mother's schooling dominates father's schooling. Moreover, mother's schooling tends to dominate both income and father's schooling in the physical health equations, especially in the case of obesity. The finding that the impact of mother's schooling almost always exceeds that of father's schooling is especially important because equal effects would be expected if the schooling variables were simply proxies for unmeasured genetic endowments. On the other hand, if the effect of schooling is primarily environmental, we would expect the impact of mother's schooling to be larger because she is usually the family member most concerned with the children's health care.

Two additional pieces of evidence underline the robustness of the finding that nurture matters. First, the relative magnitude of the effect of mother's schooling on the index of tooth decay is not greatly altered when the periodontal index, a proxy for genetic oral health endowment, is held constant. Second, the identification of a plausible mechanism by which mother's schooling influences adolescent health—preventive dental care—increases our confidence that this variable reflects a behavioral effect as opposed to a genetic effect or a statistical artifact.

Youths who received a preventive dental checkup within the past year and youths exposed to fluoridated water have much better oral health than other youths. Moreover, the probability of a preventive examination is positively related to the number of dentists per capita in a youth's county of residence. This implies that increased availability of dentists in medically deprived areas would improve the oral health of youths in these areas. Indeed, we estimate that the payoffs to increasing dental manpower by one per one thousand people are about the same as the payoffs to the coverage of preventive dental care under national health insurance.

The probability of obtaining a preventive checkup by a doctor is positively related to the number of pediatricians per capita in the county of residence. But we have little evidence that preventive care delivered to youths by physicians is efficacious in terms of their physical health. Therefore, the payoffs to national health insurance for physicians' services delivered to youths or programs to increase the availability of doctors who treat youths are very small. Overall, what these results suggest is that selective prenatal care, physicians' services during the first year of life, and dental care rather than general programs are most effective in improving the health of the population under 18 years of age.

²L. N. Edwards and M. Grossman, "Adolescent Health, Family Background, and Preventive Medical Care," in *Annual Series of Research in Human Capital and Development*, Vol. III, ed. I. Sirageldin and D. Salkever (Greenwich, Conn.: JAI Press, forthcoming), also NBER Working Paper No. 398, October 1979.

Dynamics of Health and Cognitive Development in Adolescence

Robert Shakotko, Linda Edwards, and I employ panel data to shed further light on the pure environmental contribution of family background in general and parents' schooling and family income in particular to the health of adolescents.³ We also investigate the direction of causation implied by the positive associations between good health and cognitive development, measured by IQ and school achievement, that Edwards and I documented in Cycle II of the HES.⁴ That is, we examine whether health causes cognitive development, cognitive development causes health, or both cause each other. The sample for this study consists of the white adolescents in Cycle III of the HES who were also examined in Cycle II when they were children. For this panel, which comprises approximately one third of the full Cycle III sample, we have measures of health and cognitive development in both periods (childhood and adolescence) and measures of family background variables taken from the initial period. The specific health indicators employed are oral health, obesity, high diastolic blood pressure, the presence of one or more significant abnormalities as reported by the examining physician, the parent's assessment of the youth's overall health, and excessive school absence for health reasons during the past six months.

To study the dynamics of health and cognitive development and to deal with the problem of simultaneity, we investigate the causal priorness of these measures. Specifically, we assume that the processes that generate them are Markov and can be estimated by a simple first-order ARMA model. We show that if the genetic impact on these variables is restricted to the determination of initial conditions, then the estimates of the time paths will be free of genetic bias and will reflect the true environmental effects of family background variables. Empirically, we estimate two multivariate equations: one relating adolescent health to childhood health, childhood cognitive development, and family background and a second relating adolescent cognitive development to childhood cognitive development, childhood health, and family background. In the health equation, the coefficient of family background gives an estimate of the environmental effect that controls for the initial or inherited level of health. The coefficient of childhood cognitive development indicates whether the latter causes adolescent health. The adolescent cognitive development equation can be interpreted in a similar manner. In particular, the coefficient of childhood health measures the significance and size of the causal relationships from health to cognitive development.

Our exploration of the dynamic relationship between health and cognitive development in adolescence gen-

erates two important results. First, there is feedback both from good health to cognitive development and from cognitive development to good health, but the latter of these relationships is stronger. Second, estimates of family background effects taken from the dynamic model—which can be assumed to be less influenced by genetic factors—are smaller than their cross-sectional counterparts, but some still remain statistically significant.

The first finding calls attention to the existence of a continuing interaction between health and cognitive development over the life cycle. Since an individual's cognitive development is an important determinant of the number of years of formal schooling that he ultimately completes, our findings may be viewed as the early forerunner of the positive impact of schooling on good health for adults in the United States reported in a number of studies.

The second finding suggests that nurture matters in cognitive development and health. Family income, father's schooling, and mother's schooling are all important contributors to cognitive development, but mother's schooling is singled out as the crucial component of the home environment in adolescent health. This is an especially strong result because in the words of the Carnegie Council on Children, "Doctors do not provide the bulk of health care for children; families do." Since the mother spends more time in household production than the father, her characteristics should be the dominant factor in outcomes that are determined to a large extent in the home. The importance of mother's schooling in obesity and poor oral health is notable because these are conditions that are neither irreversible nor self-limiting. Instead, they can be modified by inputs of dental care, medical care, proper diet, and parents' time.

The two findings interact with each other. Cognitive development in childhood has a positive effect on health in adolescence, and cognitive development in childhood is positively related to parents' schooling and family income. Both findings imply that the health of adults is heavily dependent upon their home environment as youths. They also imply that public policies aimed at children's and adolescents' health might be more effective if they tried to improve the skills of uneducated mothers in their capacity as the main provider of health care for their offspring.

Diet, Growth, and Family Background

In two related studies, Dov Chernichovsky and Douglas Coate have investigated relationships among children's growth, diet, and family background.⁵ The growth measures are height, weight, and head circumference. The diet measures are intakes of calories and proteins. The

³R. A. Shakotko, L. N. Edwards, and M. Grossman, "An Exploration of the Dynamic Relationship between Health and Cognitive Development in Adolescence," NBER Working Paper No. 454, February 1980.

⁴L. N. Edwards and M. Grossman, "The Relationship between Children's Health and Intellectual Development," in *Health: What Is It Worth?*, ed. S. Mushkin and D. Dunlop (Elmsford, N.Y.: Pergamon Press, 1979), also NBER Working Paper No. 213, November 1977.

⁵D. Chernichovsky and D. Coate, "The Choice of Diet for Young Children and Its Relationship to Children's Growth," *Journal of Human Resources*, 15, No. 2 (Spring 1980), also NBER Working Paper No. 219, December 1977; D. Chernichovsky and D. Coate, "An Economic Analysis of the Diet, Growth, and Health of Young Children in the United States," in *Annual Series of Research in Human Capital and Development*, Vol. III, ed. I. Sirageldin and D. Salkever (Greenwich, Conn.: JAI Press, forthcoming), also NBER Working Paper No. 416, December 1979.

first study is based on infants and young children between the ages of 0 and 36 months in the 1968-70 period who were members of the Ten State Nutrition Survey (TSNS). The second study is based on children aged 1 through 5 in the 1971-75 period who were members of Cycle I of the Health and Nutrition Examination Survey (HANES I). Three types of empirical results are presented. These are (1) descriptive statistics of variables in the TSNS and HANES I that are important in an analysis of children's diet and growth; (2) ordinary least-squares multiple regressions in which diet or growth are dependent variables and exogenous child and family characteristics are independent variables; and (3) two-stage least-squares estimates of a structural model in which diet and growth are determined simultaneously.

Chernichovsky and Coate find that average nutrient intakes of infants and young children are well above recommended dietary standards. Moreover, nutrient intakes for children in households of lower economic status are very similar to intakes of children in households of higher economic status. Rates of children's growth are also similar in these households.

There are substantial effects of protein intakes on children's height and head growth, even though protein is consumed in excess of dietary standards. This finding and the apparent correlation between children's growth and their cognitive development brings to question the adequacy of present protein standards. Could American mothers, who provide very high protein diets for their children in households at all levels of socioeconomic status know more about what constitutes an adequate diet for their children than the experts do?

In general, family income and parents' schooling gave statistically significant but very small positive effects on the nutrient (calories and protein) intakes of young children. Hence, there is little evidence that intakes of calories and proteins are mechanisms by which family background affects the growth of young children. Indeed, when nutrition is not held constant, the impact of family background on height, weight, and head circumference is very small.

Economic Outlook Survey

Second Quarter 1980

Victor Zarnowitz

According to the median forecast from the latest survey of professional economic forecasters taken by the American Statistical Association and NBER, the nation is in a serious recession that will continue through 1980 and be followed by a weak recovery in the first half of

1981. The reported forecasts are substantially more pessimistic than they had been three months ago but the average view is that the decline will be milder and shorter than that in 1974-75. The rates of inflation will decline, but slowly.

The Shape of Recession and Recovery

GNP in constant dollars will decline at annual rates of 5.3, 4.1, and 1.2 percent in the current and the next two quarters (1980:2, 1980:3, and 1980:4), respectively. According to these estimates, the economy's output at the end of this year will be \$1,406 billion or 2.6 percent below the peak of 1980:1. For the year 1980 as a whole, the predicted level of real GNP is approximately \$1,422 billion, only 0.7 percent less than in 1979. Increases at annual rates of 2.4 and 3.2 percent are projected for 1981:1 and 1981:2, raising total output to \$1,428 billion, still below the level of \$1,444 billion reached in 1980:1.

As in earlier recessions, production of goods, particularly durables, will account for a very large share of the decline, whereas services will be much less affected. The index of industrial production, which covers manufacturing, mining, and public utilities, is predicted to fall at an annual rate of 11.2 percent in the current quarter, 8.2 percent in 1980:3, and 4.1 percent in 1980:4. Its average level in 1980 will be about 147 (1967 = 100), 3.3 percent less than in 1979. The median prediction for 1981:2 is also 147, 2.4 percent higher than the lowest value of the index in 1980:4.

The average forecast has the unemployment rate increasing to just slightly over 8 percent of the civilian labor force in the first half of 1981. However, the individual predictions show much dispersion in the 7.5 percent to 9.5 percent range.

The reported probabilities that real GNP will decline are extremely high for 1980:2 and 1980:3; still as high as 60 percent on the average for 1980:4; and 40 and 20 percent, respectively, for 1981:1 and 1981:2.

The Outlook for Inflation and Nominal GNP

Inflation, measured by annual rates of increase in the GNP implicit price index (IPD), will run at nearly 10 percent in this quarter and the next and at about 8 percent or slightly higher in each of the three next quarters. The price level in 1980 is projected at 180.7 (1972 = 100), 9.2 percent above the level in 1979. The distribution of the estimated probabilities of change in IPD, for 1979-80, shows a high concentration in the 9-9.9 percent interval (42 percent) but it is skewed toward the lower rather than the higher figures (the range below 9 percent accounts for 36, that above 9.9 percent for 22 chances in 100).

The predicted rate of growth in total spending, in terms of GNP in current dollars, is 8.4 percent for 1979-80 (which falls short of the concurrent rate of inflation by the estimated decline in real GNP of 0.7 percent).

Business Investment and Profits

Business expenditures on plant and equipment will stay at \$192 billion annual rate through the rest of this

Projections of GNP and Other Economic Indicators, 1980-81

	Annual			Quarterly							
	1979 Actual	1980 Forecast	Percent Change 1979 to 1980	1980				1981		Percent Change	
				Q1 Actual	Q2	Q3	Q4 Forecast	Q1	Q2	Q1 80 to Q1 81	Q2 80 to Q2 81
1. Gross national product (\$ bil.)	2368.8	2568.1	+8.4	2520.3	2544	2578	2630	2710	2773	+7.5	+9.0
2. GNP implicit price deflator (1972 = 100)	165.5	180.7	+9.2	174.5	178.7	182.9	186.6	190.4	194.5	+9.1	+8.8
3. GNP in constant dollars (bil. 1972\$)	1431.6	1421.6	-0.7	1444.2	1425.2	1410.3	1406.5	1416.3	1428.1	-2.0	+0.2
4. Unemployment rate (percent)	5.8	7.3	+1.5 ¹	6.1	7.2	7.8	8.0	8.1	8.0	+2.0 ¹	+1.8 ¹
5. Corporate profits after taxes (\$ bil.)	144.1	142.9	-0.8	155.5	143	139	134	138	142	-11.3	-0.7
6. Plant and equipment expenditures (\$ bil.)	176.4	191.1	+8.3	189.5	191	192	192	194	197	+2.4	+3.1
7. New private housing units started (ann. rate mil.)	1.74	1.07	-38.5	1.26	.95	.96	1.10	1.20	1.30	-4.8	+36.8
8. Change in bus. inventories GNP accounts (\$ bil.)	18.2	3.9	-14.3 ²	4.5	5.0	4.0	2.0	5.0	6.0	+0.5 ²	+1.0 ²

SOURCE: American Statistical Association and National Bureau of Economic Research, Business Outlook Survey, May 1980. The figures on each line are medians of twenty-six to twenty-nine individual forecasts.

¹Change in rate, in percentage points.

²Change in billions of dollars.

year, then increase to \$194-197 billion in the first half of 1981. Deflating these nominal predictions with the median forecasts for the GNP price index indicates a steady decline in real fixed investment amounting to 5.2 percent in the year ahead and 6.7 percent between 1980:1 and 1981:2.

Forecasters continue to take a relatively optimistic view of inventories. Business inventory is not seen as contributing strongly to the economy's weakness, as it did in most recent recessions. Inventory fluctuations will be narrow, in the range of nonnegative figures (\$2 billion to \$6 billion annual rate).

Corporate profits after taxes will decline from about \$156 billion in 1980:1 to \$134 billion in 1980:4 (these are annual rates in current dollars). This is a reduction of some 14 percent, which will be further magnified by inflation.

Housing and Consumer Durables

Housing starts are estimated at an annual rate of 0.95 million in 1980:2, down almost 25 percent from 1980:1, but they are not expected to decline any further. The median forecasts for the four successive quarters ahead are 0.96, 1.1, 1.2, and 1.3 (all figures are in million units at an annual rate), which implies that the housing industry in 1981:2 will be on the way up but only about as high as it was in 1980:1. The downward revision of forecasts in this survey compared with the previous one is particularly pronounced in the housing area.

Consumer expenditures for durable goods will decline from \$222 billion in 1980:1 to \$212 billion in 1980:3, then rise to \$225 billion in 1981:2 (these figures are in current dollars at annual rates). Adjusted for inflation, this may mean a decline of over 9 percent in 1980 and very little change in the first half of 1981.

Assumptions

Defense spending will amount to \$126 billion in the year 1980, 16.5 percent higher than in 1979, much of it a real gain. This sector, then, like that of services, will cushion the depressing effects of declines in other sectors, notably consumer durables and business fixed investment. Moreover, most forecasters expect the increases in defense expenditures to continue.

Fifteen forecasters stated that they assumed a tax cut of \$15-\$25 billion, five that they assumed no tax cut (others did not report their assumptions on this point). As many respondents expected a continuation of tight monetary policy as expected a relaxation.

This report summarizes a quarterly survey of predictions by about fifty business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate School of Business of the University of Chicago and NBER and James Poterba of NBER were responsible for tabulating and evaluating this survey.

Robert J. Gordon

Robert J. Gordon joined NBER as a junior research associate in 1967 and has had a Bureau connection ever since. He is currently a research associate in the economic fluctuations and productivity programs. In addition, he is co-organizer of the NBER International Seminar on Macroeconomics and a member of the Business Cycle Dating Committee.

Gordon comes from a well-known family of economists. His late father (Robert A.), mother (Margaret S.), and brother (David) all received Harvard Ph.Ds in eco-



nomics. ("I was the black sheep for going downriver to MIT," says Gordon who received his Ph.D. there in 1967.) His father was president of the American Economic Association in 1975 and for many years was a member of NBER's Board of Directors. His mother has recently retired from the Carnegie Council on Higher Education, and his brother is chairman of the Economics Department at the New School for Social Research in New York.

Gordon describes himself as "worse than a schizophrenic"; he tries to juggle three types of professional responsibilities beyond his normal teaching duties at Northwestern University. At NBER, he is involved in one research project on the measurement of productivity and prices and another on current controversies in macroeconomics. He has also received a Guggenheim Fellowship for 1980-81, which will allow him to complete a

book for NBER, *The Measurement of Durable Goods Prices*.

Gordon has served as coeditor of the *Journal of Political Economy* and has been a member of the Board of Editors of the *American Economic Review*. He also has major administrative responsibilities for the Econometric Society and a textbook, *Macroeconomics*, which will appear in its second edition in November.

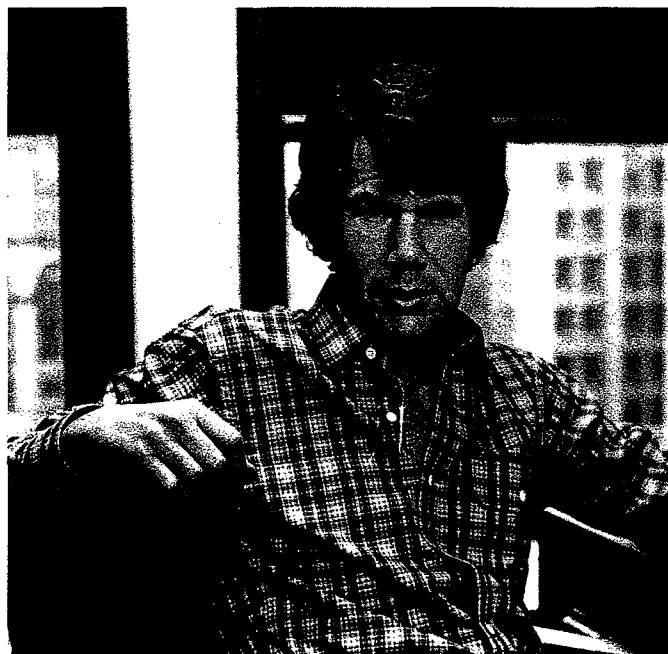
In early 1975, the Econometric Society asked Gordon and his wife, Julie, to become treasurer and secretary, respectively. "The chief attractions of the job were the opportunity to bring the society back to financial health and the chance to share a job with my wife, who is associate dean of Northwestern's Division of Continuing Education."

One of Gordon's hobbies is photography, and enlargements of his pictures decorate his offices at home and at Northwestern. He also plays the piano and memorizes airline schedules. ("I'll admit this sounds a bit esoteric, but airline scheduling decisions involve fascinating strategy and tactics, like a good military board game.") The Gordons enjoy cooking and gardening together, as well as maintaining their large Victorian house in Evanston. They have continued the family tradition of economics by naming their nine-year-old miniature poodle "Keynes," and few seem surprised when they learn that Gordon's secretary is named Joan Robinson.

Michael Grossman

Michael Grossman, codirector of NBER's Program in Health Economics, began his association with the Bureau in 1966. He was named a research associate in 1970 and codirector of the health economics program in 1972.

Grossman, a native of Brooklyn, New York, received a B.A. cum laude from Trinity College in 1964 and a Ph.D.



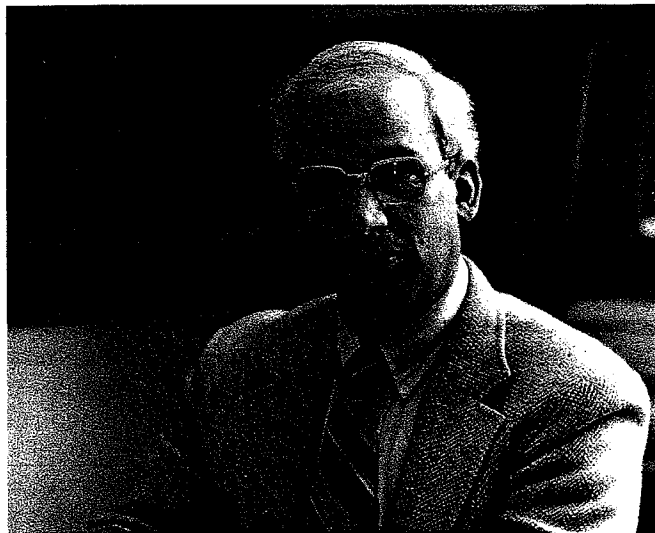
with distinction from Columbia University in 1970. Between 1969 and 1971, he was assistant professor at the Graduate School of Business, and research associate at the Center for Health Administration Studies, of the University of Chicago. He has taught at the City University of New York Graduate School since 1972 and was appointed a professor there in 1978.

Grossman's major research interest is in health economics, particularly the role of factors other than medical care in health. He has also done research in labor economics and household production and consumption.

Grossman resides in Fort Lee, New Jersey, with his wife, Ilene, a senior systems analyst for the Irving Trust Company, and their two daughters, Sandy and Barri. He specifies his "hobbies" as playing tennis and supervising Ph.D. dissertations. In fact, he has already supervised twenty completed dissertations and is currently working with seven new doctoral candidates.

Sherwin Rosen

Sherwin Rosen, chairman of the upcoming NBER Conference on the Economics of Compensation, is a research associate in NBER's Program in Labor Studies. Rosen began his association with the Bureau in 1967 when he was named a research fellow. A Chicago native,



Rosen received his B.S. in economics from Purdue University in 1960 and his Ph.D. from the University of Chicago in 1966.

He taught at the University of Rochester from 1964-77 and has been a professor of economics at the University of Chicago since 1977. Rosen has also been a visiting professor at the University of Buffalo and at Harvard, Columbia, and Stanford universities.

Rosen has written extensively in the area of labor economics. With Research Associate M. Ishaq Nadiri, he wrote the 1974 NBER monograph *A Disequilibrium Model of Demand for Factors of Production*. More recently, Rosen served as editor of an NBER conference volume

on labor economics that will be published by the University of Chicago Press this year. He has also served as a consultant to the Ford Foundation, the Social Security Administration, the U.S. Department of Labor, and the Federal Communications Commission.

Rosen's wife, Sharon, is catering manager for the University of Chicago's residence halls and commons. The Rosens live in Chicago with their two daughters, Jennifer and Adria.

Victor Zarnowitz

Victor Zarnowitz, whose association with NBER goes back to 1952, is a member of the Bureau's Program in Economic Fluctuations. He was born and raised in Poland, where he lost most of his family during the Holocaust. He studied in Cracow and received his Ph.D. in economics summa cum laude from the University of Heidelberg in 1951.

Zarnowitz came to the United States in 1952 and held a postdoctoral research fellowship from the Social Science Research Council at Harvard University from 1953-54. Thereafter, he was engaged in studies of business



cycle indicators at the Bureau while teaching at Columbia. He joined the faculty of the Graduate School of Business at the University of Chicago in 1959 as an associate professor and was named a professor of economics and finance there in 1965.

Zarnowitz's main research interests are in the areas of macroeconomic theory, business fluctuations, and forecasting. He was awarded a Ford Foundation faculty re-

search fellowship in 1963-64, participated in and directed studies of business cycles and short-term economic forecasting for the Bureau in the 1960s and 1970s, and was director of research on evaluation of cyclical indicators for the U.S. Department of Commerce in 1972-75.

Among the topics on which Zarnowitz has written books and articles are the cyclical behavior of prices, orders, production, and investments; forecasting and simulations with econometric models; and leading indicators. He is also involved in editing for several journals, consulting for government agencies and business firms, and directing the ASA-NBER Business Outlook Survey. Zarnowitz and his wife, Lena, live in Hyde Park near the University of Chicago and have two sons, Steven and Arthur. In their leisure time, they enjoy music, theater, and travel.

Conferences

Inventory Meeting Held

Inventory fluctuations are one important component of changes in economic activity over the business cycle. In fact, studies have indicated that a large fraction of the change in GNP from peak to trough of a business cycle can be accounted for by changes in the rate of accumulation of business inventories. Several research associates in the NBER Program in Economic Fluctuations are currently undertaking research on inventories. The preliminary results of some of this work, as well as inventory research by other economists, were discussed at an NBER meeting on March 20-21 at Princeton University.

The following papers were presented and discussed:

Steven Sheffrin, University of California, Davis, "Inventories, Rational Expectations, and Aggregate Supply: Some Empirical Tests"

Discussant: Bennett McCallum, University of Virginia and NBER

William Haraf, Brown University, "Tests of a Natural Rate Model with Persistent Effects of Aggregate Demand Shocks"

Discussant: Robert Gordon, Northwestern and NBER

Paul Hunt, Stanford University, "An Investigation of Finished-Goods Inventories Using Micro Data"

Discussant: Michael Lovell, Wesleyan University

Alan Auerbach and Jerry Green, Harvard and NBER, "Components of Manufacturing Inventories: A Structural Model of the Production Process"

Discussant: Thomas Sargent, University of Minnesota and NBER

Owen Irvine, Federal Reserve Board, "Retail Inventory Investment and the Cost of Capital"

Discussant: John Taylor, Yale University

Roman Frydman, New York University, "A Note on Sluggish Price Adjustments and the Effectiveness of Monetary Policy under Rational Expectations"

Discussant: Stanley Fischer, MIT and NBER

Alan Blinder, Princeton and NBER, "Inventories and the Cyclical Behavior of Real Wages: Theory and Evidence"

Discussant: Robert Hall, Stanford and NBER

Sheffrin's paper explores the role of inventories in business cycle propagation with particular attention to its effect on aggregate supply. Haraf, in his work, tests whether the lagged effects of monetary disturbances are due to inventory movements. He finds that once inventories and unfilled orders are controlled for, "the predictive power of lagged money disturbances in explaining fluctuations in output and employment is minimal." Irvine's paper shows that the target level of aggregate retail inventories depends on variations in a measure of the cost of capital, that is, on the financial carrying costs of inventories. Frydman discusses the question of the effectiveness of monetary policy in the presence of inventories and sticky prices.

Hunt's work on inventories is distinguished by the fact that he uses data on firms, rather than industry or sector data. He shows that macroeconomic variables can provide additional information for explaining the inventory behavior of individual firms. Auerbach and Green hypothesize that holders of inventories have expectations about future demand and that they respond differently to expectations of permanent versus temporary changes in that demand. Their work attempts to incorporate those distinct expectations into a structural model of inventory investment. Finally, Blinder, who directs the inventory project, describes a model where optimal employment depends on equating the marginal product of labor with the real wage deflated by the shadow price of inventories. He finds that real wages move procyclically because inventory fluctuations shift the labor demand curve.

NBER Research Associates Ray Fair, Martin Feldstein, Roger Gordon, Herschel Grossman, Robert Shiller, Christopher Sims, and Joseph Stiglitz and Research Fellows Olivier Blanchard and Carl Walsh also attended the meeting. James Brown, Gregory Chow, and Stephen Goldfield of Princeton; Alan Stockman and Edward Zabel of the University of Rochester; Steve Braun, Laura Rubin, and Gary Schinasi of the Federal Reserve Board; Martin Eichenbaum, University of Minnesota; Louis Maccini, Johns Hopkins; Robert Topel, University of Chicago; John Hinrichs, Bureau of Economic Analysis; John Bryant, Minneapolis Fed; and Robert Rosanna, Philadelphia Fed, completed the list of participants.

Import Competition

An NBER Conference on Import Competition and Adjustment: Theory and Policy, organized by Jagdish Bhagwati, Ford International Professor of Economics at MIT and research associate in the Bureau's Program in Inter-

national Studies, was held in Cambridge on May 7-11. The agenda was:

May 7

Chairman: Jagdish Bhagwati

Panel Discussion: Robert Baldwin, University of Wisconsin; Isaiah Frank, Johns Hopkins School for Advanced International Studies; and Eric Lundberg, Institute for International Economic Studies, Stockholm

May 8

Chairman: Assar Lindbeck, Institute for International Economic Studies, Stockholm

E. Verreydt and Jean Waelbroeck, Universite Libre de Bruxelles, "Adjustment and Protection of E C Manufacturing Industries and Export Prospects of Developing Countries"

Discussants: William Cline, Brookings Institution, and Alan Deardorff, University of Michigan

Chairman: John Chipman, University of Minnesota

Ronald Dore, University of Sussex, England, "Adjustment in Process: A Lancashire Town"

Discussants: J. David Richardson, University of Wisconsin and NBER, and John Williamson, MIT

Chairman: Michael Bruno, Hebrew University, Jerusalem, and NBER

Michael Mussa, University of Chicago, "Government Policy and the Adjustment Process"

Discussants: Alasdair Smith, University of Rochester, and Henry Wan, Jr., Cornell University

Chairman: Vittorio Corbo, Universidad de Chile

J. Peter Neary, University of Dublin, "Intersectoral Capital Mobility, Wage Stickiness, and the Case for Adjustment Assistance"

Discussant: Avinash Dixit, University of Warwick, England

May 9

Chairman: T. N. Srinivasan, Yale University

Peter A. Diamond, MIT, "Protection, Trade Adjustment Assistance, and Income Distribution"

Discussants: John Chipman and Robert Solow, MIT

Chairman: Wontack Hong, University of Sussex, England

J. David Richardson, "Trade Adjustment Assistance under the U.S. Trade Act of 1974: An Analytical Examination and Worker Study"

Discussants: Michael Aho, Bureau of International Labor Affairs, Washington, and Martin Wolf, World Bank

Chairman: Jacob Frenkel, University of Chicago and NBER

Koichi Hamada, University of Tokyo, "Trade Disruption in a Two-Country Context: The Role of Adjustment Rules"

Discussant: T. N. Srinivasan

Chairman: Robert Lipsey, Queens College, CUNY, and NBER

Robert Baldwin, University of Wisconsin, Madison, "The Political Economy of Protectionism"

Discussants: Steve Magee, University of Texas, Austin, and Stanislaw Wellisz, Columbia

May 10

Chairman: Robert Baldwin

Ronald Findlay, Columbia University, and Stanislaw Wellisz, "Rent-Seeking, Welfare, and the Political Economy of Trade Restrictions"

Discussants: Richard Brecher, Carleton University, Ottawa, and Leslie Young, University of Canterbury, New Zealand

Chairman: Michael Mussa

Jagdish Bhagwati, "Shifting Comparative Advantage, Protectionist Demands, and Policy Response Options"

Robert Feenstra, MIT, and Jagdish Bhagwati, "Tariff-Seeking and the Efficient Tariff"

Discussants: Robert Baldwin and Assar Lindbeck

Chairman: Narongchai Akrasanee, U.N. Asian and Pacific Development Institute, Bangkok

Paul Krugman, MIT and NBER, "Trade in Differentiated Products and the Political Economy of Trade Liberalization"

Discussants: Kelvin Lancaster, Columbia University, and Michael Mussa

May 11

Chairman: Pedro Aspe, Instituto Autonomo de Mexico, Mexico City

Michael Bruno, "Import Competition and Macroeconomic Adjustment under Wage-Price Rigidity"

Discussants: Pentti Kouri, NYU and NBER, and J. Peter Neary

Chairman: Jagdish Bhagwati

Summing Up: T. N. Srinivasan

The primary focus of the conference was to develop analytical clarity and insights on questions concerning the response of different agents in the economy (labor, entrepreneurs, towns, and the like) to growing import competition. The nature of the prevailing governmental responses to these reactions and the desirability and feasibility of alternative governmental actions were also discussed. Some empirical, background papers were presented, reviewing and assessing European and American experiences with import competition and with adjustment assistance programs. The conference made important progress at the theoretical level in defining the conceptual issues that should provide the foundations for better-designed empirical studies and policies.

In addition to the participants mentioned above, the conference was attended by Gene Grossman, MIT; Basant Kapur, University of Singapore; Vijay Pande, the Ford Foundation, New Delhi; Rolf Piekarz, National Sci-

ence Foundation; Peter Ruof, the Ford Foundation, New York; and Ernesto Tironi, CIEPLAN, Santiago.

A complete reference volume will be published in 1981. Also, certain of the individual papers presented will be part of the NBER Conference Papers series this year; notice of their availability will appear in a subsequent *NBER Reporter*.

Bureau News

Business Cycle Group Identifies Peak

The NBER Business Cycle Dating Committee met at the Bureau's headquarters in Cambridge on June 3 and identified January 1980 as the most recent peak in U.S. business activity. Unless there is an extraordinarily sharp and quick reversal of activity, this peak will mark the onset of a recession.

The committee examined a wide variety of data on the economy in reaching its judgment that the peak occurred in January. Some of the major indicators that reached their cyclical peaks in January are total industrial production, retail sales in constant dollars, and hours worked by nonfarm employees. In addition, the Commerce Department's Index of Coincident Indicators reached its peak in January.

Other indicators reached their peaks just before or just after January. Total real personal income peaked in December 1979. Employment reached its highest value in February 1980. Since February, every cyclical indicator has declined sharply.

The committee noted that industrial production reached its one-month high in March 1979, early in the year-long slowdown that preceded the business cycle peak. In addition, the unemployment rate reached its low in June and July 1979. However, the committee felt that the preponderance of evidence favored January 1980 as the cyclical peak.

The committee observed that no cyclical decline in real GNP has yet been recorded. GNP data are compiled quarterly; real GNP in the first quarter of 1980 was higher than in any earlier quarter. The committee felt that it was unnecessary to wait for publication of data on real GNP in the second quarter, in view of the widespread declines in monthly series.

The next task facing the committee will be to identify the trough of business activity that will mark the end of the recession. Committee members are William Branson, Princeton University; Martin Feldstein, Harvard University; Robert Gordon, Northwestern University; Robert Hall, Stanford University; Geoffrey Moore, Center for International Business Cycle Research; Victor Zarnowitz, University of Chicago; and Benjamin Friedman, Harvard University, who was unable to attend the meeting.

International Group Meets

Long-run structural adjustments were the focus of discussion at a Cambridge meeting of NBER's Program in International Studies on March 17. NBER Research Fellow Dennis Warner opened the morning session with a description of his continuing work on the NBER—Project Interfutures Model. (See the *NBER Reporter*, Winter 1979, p. 11, for a full description of the model.) Next Jacques Artus of the IMF discussed his research on international projections of growth of potential output. The final formal speaker was Research Associate David Hartman, who presented some ideas for future study on long-run flows of international capital as influenced by taxation.

The afternoon was devoted to an informal discussion of continuing research and possible new topics. Program Director William Branson and Research Associate J. David Richardson chaired the day-long meeting, which was also attended by NBER research associates Ray Fair, Paul Krugman, Robert Lipsey, and M. Ishaq Nadiri and by Richard Freeman of the Federal Reserve System, David Lipton of Harvard, and Mieko Nishimizu of Princeton.

Taxation Meeting

David Bradford, director of NBER's Program in Taxation, chaired the group's most recent meeting at the Bureau's Cambridge office on April 18. No formal papers were presented; rather there was a discussion of several research studies in process.

Ferdinand Schoettle, University of Minnesota Law School, began the program with a description of his work on "The Effects of Property and Income Taxes on Housing Consumption." His analysis emphasizes that not all homeowners itemize deductions, as is frequently assumed. While the results of his work are still incomplete, they seem to indicate that property taxes are a disincentive to investment in housing.

Mervyn King's work focuses on the joint decisions that households make about housing tenure and demand. He computes the effects of tax and subsidy policies on both tenure choice and expenditure decisions, and simulates the effects of alternative policy reforms.

Next, Patric Hendershott presented three views of the cause of cycles of production of single-family housing. The views suggest relationships between housing starts on the one hand and nominal mortgage rates, real after-tax mortgage rates, and the growth rate of available funds on the other hand. Hendershott presented rough empirical evidence that supported the existence of all three relationships.

Daniel Frisch then discussed his work on the taxation of multinational firms and its impact on the location of production. He finds that tax disparities affect the firm's choice of location as much as, or more than, differences in gross rates of return.

Finally, Sherwin Rosen discussed some new developments in the theory of salary determination. His particular interest was in incentive schemes and the complex structure of executive compensation.

The taxation meeting was attended by Research Associates Alan Auerbach, Roger Gordon, Jerry Green, David Hartman, Charles McLure, and Harvey Rosen; Research Fellows Joel Slemrod and Lawrence Summers; and NBER Associate Daniel Feenberg. Also participating were William Andrews and Oliver Oldman, of Harvard Law School, and Bruce Peterson, Harvard University.

Labor Studies Discussed

Members of the Bureau's Program in Labor Studies met in Cambridge on May 2 to discuss the following papers:

Charles Brown, University of Maryland and NBER, "Demand and Supply Effects and Postwar Black-White Earning Trends"

Daniel Hamermesh, Michigan State University and NBER, "Social Insurance and Consumption—an Empirical Inquiry"

Jennifer Roback, University of Chicago, "The Value of Local Amenities"

Brown's work addresses the argument that the post-1964 rise in the ratio of black to white earnings has two causes: (1) the response of labor price to labor supply, which has been reduced by the expansion of transfer programs, and (2) the "truncation effect" of low earners withdrawing from the labor force and thereby increasing the median earnings of those who remain. Brown rejects the first cause since the labor supply of blacks relative to whites did not, in fact, decline. Brown then attempts to correct the published figures on median earnings for truncation effects. He finds that truncation has modestly affected the relative improvement in earnings of black males noted in the statistics. In fact, only about one fourth of the post-1964 trend (rising black-white earnings) is removed by correcting for truncation.

Hamermesh is interested in the effectiveness of unemployment insurance (UI) in helping people to maintain their normal level of consumption. He finds that only a portion of the UI benefits paid are used by individuals to tide them over during periods of low income. About half of the UI benefits appear to be spent as if the individual had full access to credit or sufficient savings to tide him over. Thus, much of UI's intended stabilizing effect on the economy is lost because people respond to UI by changing their saving rather than their consumption behavior.

Roback's work is concerned with the implicit prices of the amenities specific to a city, such as a pleasant climate, clean air, low rate of crime, and comfortable population size. She uses wages and rents in various cities as an index to the cities' amenities. The data Roback analyzes confirm her theory that rents rise with the level of pleasant and (industry) productive amenities. Wages, on

the other hand, are influenced in two directions: pleasant amenities tend to lower wages and productive amenities are associated with higher wages.

The labor meeting was chaired by Program Director Richard Freeman and attended by NBER research associates Kim Clark, Zvi Griliches, Alan Gustman, Edward Lazear, James Medoff, Sherwin Rosen, and David Wise. John Kennan of Brown University and Ruth Klinov of New York University also participated in the session, as did NBER researchers John Bound, David Ellwood, Wayne Gray, Harry Holzer, Casey Ichniowski, Rob Meyer, and Bruno Tiphine and Research Fellow Larry Summers.

Economics of Compensation

On November 21 and 22, 1980, the National Bureau of Economic Research will hold a conference in Cambridge on the economics of compensation. The program, being organized by Professor Sherwin Rosen of the University of Chicago and NBER, will include seven papers with two formal discussants assigned to each paper. There will be no published proceedings, but the papers discussed will be included in the NBER Conference Paper series and summarized in the *NBER Reporter* and a special Conference Summary Report. The conference will cover a wide variety of issues in labor economics relating to the compensation of workers.

Inflation Meeting

On May 15 and 16, participants in the NBER project on inflation met at Northwestern University. The following research papers were presented:

Dennis Carlton, University of Chicago and NBER, "Predicting the Quality of the Good That Clears the Market"

Discussant: Robert E. Hall, Stanford University and NBER

John Taylor, Columbia University and NBER, "An Econometric Business Cycle Model with Rational Expectations: Policy Evaluation Results"

Discussant: Robert J. Gordon, Northwestern University and NBER

Robert J. Gordon, "Price Inertia and Policy Ineffectiveness"

Stanley Fischer, MIT and NBER, and John Huzinga, MIT, "Inflation, Unemployment, and Public Opinion Polls"

Douglas Hibbs, Harvard University, "On the Demand for Economic Outcomes: Macroeconomic Performance and Mass Political Support in the United States, Great Britain, and Germany"

Discussant: Alan Blinder, Princeton University and NBER

Alan Blinder, "Monetary Accommodation of Supply Shocks under Rational Expectations"

Discussant: Frederick Mishkin, University of Chicago and NBER

Robert E. Hall, "Unemployment Fluctuations and Wage Rigidity"

Discussant: Stanley Fischer

In addition, four shorter policy oriented papers were presented:

Robert Barro, University of Rochester and NBER, "U.S. Inflation and the Choice of Monetary Standard"

Dennis Carlton, "Price Flexibility"

Alan Blinder, "Double-Digit Inflation in the Seventies: A Comparison of Two Episodes"

Martin Feldstein, Harvard University and NBER, "Tax Rules and the Mismanagement of Monetary Policy"

Carlton's paper develops an equilibrium model using lags in price and delivery as endogenous variables to explain how markets respond to changes in supply and demand. Assuming that both equilibrium price and delivery length increase in response to increases in demand, it is shown that as demand curves become more price elastic, price and delivery lags fluctuate less in response to short-run shocks in supply and demand. Carlton shows that the ratio of relative price to fluctuations in delivery lag depends positively on the absolute value of price elasticity and negatively on the absolute value of the demand elasticity of delivery lag. Available data are not sufficiently rich to test these propositions adequately, but he does show that delivery lags play an important role in influencing market demand.

Taylor presented a model, incorporating both rational expectations and an explicit process for determination of wage contracts, to investigate the quantitative impact of monetary policy on business cycle fluctuations. Using the model to simulate monetary policy, Taylor finds that a more accommodative policy in the 1970s would have reduced output losses but resulted in higher inflation than a less accommodative policy. In this model, a sudden, fully perceived reduction in money growth results in a slightly speedier adjustment in the inflation rate, but a much greater loss of real output, than a gradual adjustment of money growth.

In his paper, Gordon studies the empirical nature of price responsiveness. Three competing paradigms (the Lucas-Sargent-Wallace proposition, the Phillips curve or mainline approach, and an intermediate approach) are tested in a single reduced form equation, each predicting particular values for the estimated coefficients. The central issue in dispute is the degree of instantaneous price flexibility. The regression equation is estimated for three periods: 1892:Q3-1929:Q4, 1929:Q1-1953:Q4, and 1954:Q1-1979:Q4. Gordon's analysis finds that the Lucas-Sargent-Wallace proposition is inconsistent with the data for all periods and that every aspect of the intermediate approach seems consistent with the data. Prices appear to respond partially to both the level and the change in the GNP gap throughout the past century.

Fischer and Huzinga look at public opinion polls as a means of quantifying the cost of inflation. They find a significant difference in public perceptions of the social and private costs of inflation relative to unemployment. They also find that both actual and expected inflation and unemployment affect poll responses.

Hibbs investigates for the United States, United Kingdom, and West Germany the aggregate response of political support for government to changes in macroeconomic performance variables. He theorizes that support is composed of a weighted average of the incumbent party's accumulated "political capital" and the shorter-run popularity of particular administrations. One of his findings is that, on the margin, a government's political support depends more on real income growth and employment than on inflation. He also finds that short-run considerations have been unimportant in the United Kingdom and West Germany.

Blinder asks whether an economy subject to a "supply shock" faces an exploitable trade-off between inflation and unemployment. He explores this issue in the context of two models with rational expectations, one model using a nominal OPEC pricing rule and the other using a nominal wage contract. He finds that a trade-off always exists for unanticipated supply shocks, but that conclusions are model specific with respect to anticipated shocks. However, he finds some exploitable trade-off if either money wages or the nominal price of oil is "sticky," which supports the case for accommodative monetary policy.

Hall's paper emphasizes the importance of long-term attachments between workers and firms in understanding large fluctuations in unemployment compared to modest fluctuations in wages. He presents a summary of major theories of the past decade that try to explain both unemployment fluctuations and wage stickiness.

Barro links the close association between inflation and the growth of monetary aggregates over relatively long periods to the mechanism by which higher expected inflation is reflected in higher nominal interest rates that reduce the demand for money and thereby push up the price level. He suggests that a more disciplined monetary system, which would lead to a relatively stable long-term interest rate, would in turn foster stable long-term inflationary expectations.

In his shorter paper, Carlton examines the rigidity of prices in manufacturing industries. He is particularly concerned with changes in contractual mechanisms induced by inflation and the way in which certain markets disappear due to changes in the attributes of the good being transacted.

Blinder's short paper focuses on two episodes of double-digit inflation, 1974 and 1979. He suggests that unavoidable adjustments in relative prices breed inflation. He finds that almost all of the acceleration of inflation can be traced to such shocks: rising food prices, rising energy prices, and (for the 1972-74 period) the end of the Nixon wage-price controls. The special nature of these bursts of inflation suggests that they will diffuse naturally.

Feldstein emphasizes the importance of the interaction between tax rules and the management of monetary policy. Tax rules are not neutral when there is inflation.

Present policy has reduced the demand for business investment and increased the demand for residential investment and consumer goods. His paper discusses the effects of substituting a policy of tight money and positive fiscal incentives for the traditional goals of easy money and fiscal restraint.

Measurement of Wages: A Call for Papers

The Conference on Research in Income and Wealth will meet in the fall of 1981 to discuss the measurement of wages. The focus of the conference will be the cost to employers of total labor compensation (including traditional fringes, hiring and training costs, and costs associated with nonpecuniary benefits). Papers that present empirical research on any of these subjects are invited. Authors should also be prepared to draw implications from their research about the kinds of data that should be collected or the way that labor cost data should be measured.

Proposals for papers should be submitted to Jack E. Triplett, Assistant Commissioner for Research and Evaluation, Room 2021, U.S. Bureau of Labor Statistics, 441 G Street, N.W., Washington, D.C. 20212. (Please note that this conference will take place one year after the NBER Conference on the Economics of Compensation, also announced in this issue.)

FMME Meeting

Researchers in the Program in Financial Markets and Monetary Economics, under the direction of Benjamin Friedman, met in Cambridge on May 17 to discuss their recent work. The day's agenda included the following presentations:

- David Jones, Northwestern and NBER, "Expected Inflation and Equity Prices: A Structural Econometric Approach"
- Martin Feldstein, Harvard and NBER, "Pension Funding, Share Prices, and National Saving"
- Carl Walsh, Princeton and NBER, "Measurement Error and the Estimation of Financial Models"
- John Shoven, Stanford and NBER, "The Financial Valuation of the Return to Capital"
- V. Vance Roley, Council of Economic Advisers, "The Role of Federal Debt Management Policy in Determining Corporate Bond and Equity Yields"
- Robert Shiller, University of Pennsylvania and NBER, "Rational Expectations, Consumption, and Financial Markets"

Stewart Myers, MIT and NBER, "Measuring Expected Rates of Return, Risk Premiums, and the Market Price of Risk"

Jones discussed his model of the U.S. equity markets, which is used to predict the effect of an increase in expected inflation on equity prices. He finds that, holding real interest rates constant, a 100 basis point increase in anticipated inflation would reduce equity prices by about 7.8 percent. Holding nominal interest rates constant, the same increase in anticipated inflation would reduce equity prices by 2.1 percent.

Feldstein's research asks how unfunded, vested pension liabilities affect both the firm's share prices and national savings. Using 1976 and 1977 data, he finds that a one dollar increase in the value of unfunded pension liabilities reduces the value of the firm's equity by approximately one dollar. National savings are affected in three ways: (1) employees may save less for retirement if they have a vested pension; (2) the firm should save more to offset future liabilities; and (3) if there are unfunded liabilities now, shareholders of the firm may save more because they expect their future earnings (when liabilities are paid) to be lower.

Walsh described the measurement errors that arise in both flow-of-funds and National Income Accounts data on the household sector. His research suggests that if the two measurement errors are independent, or at least not perfectly correlated, then standard statistical techniques can be used to reduce some of the bias in estimation within household sector data.

Shoven's work (with William Brainard and Laurence Weiss, both of Yale University) defines the intrinsic value of the firm as the discounted value of the earnings stream of existing plant and equipment. The authors find that the market valued firms at roughly this intrinsic level during the 1960s, but now values them at about half that amount. They consider alternative explanations for the fall of the market relative to its intrinsic value including increased risk aversion and the illusion of inflation. Their tentative conclusions indicate that the risk factor is not adequate to explain the market's fall, while there is some support for the inflation theory.

Roley has constructed a model of Treasury and private security markets and asked what effect changes in the maturity composition of the federal debt have. He finds that lengthening the average maturity of the debt increases the yields on equities and corporate bonds.

Shiller's study asks what the path of stock prices would be if individuals could predict the future. He infers the appropriate discount rate from consumption data and finds (as he has in an earlier work) that stock prices move too much to be justified as the value of discounted streams of future earnings.

Myers discussed work that he intends to do on expected rates of return and the importance of risk.

Other NBER research associates who participated in the meeting were: Zvi Bodie, David Bradford, Stanley Fischer, Roger Gordon, Jerry Green, David Hartman, Edward Kane, Charles McLure, and Anna Schwartz. Angelo Molino, a graduate student at Harvard, summarized the proceedings for the *NBER Reporter*.

Alan J. Auerbach
Marcy Avrin
Robert J. Barro
Ann P. Bartel
Gary S. Becker
John F. O. Bilson
Alan S. Blinder
Zvi Bodie
Michael J. Boskin
David F. Bradford
William H. Branson
Charles Brown
Michael Bruno
Willem H. Buiter
Phillip Cagan
Dennis W. Carlton
Gary Chamberlain
Kim B. Clark
Douglas Coate
John G. Cragg
Michael R. Darby
Lance Davis
Rudiger Dornbusch
Stanley L. Engerman
Ray C. Fair
Martin Feldstein
Stanley Fischer
Franklin Fisher
Roderick Floud
Robert W. Fogel
Richard B. Freeman
Jacob A. Frenkel
Benjamin M. Friedman
Victor R. Fuchs
Robert E. Gallman
Arthur E. Gandolfi
Claudia Goldin
Fred Goldman
Robert J. Gordon
Roger Hall Gordon
William Gould
Jerry Green
Zvi Griliches
Reuben Gronau
Herschel I. Grossman
Michael Grossman
Alan L. Gustman
Robert E. Hall
Daniel S. Hamermesh
David G. Hartman
Jerry A. Hausman
James J. Heckman
John Helliwell
Patric H. Hendershott
Michael Hurd
Edward J. Kane
Mervyn A. King

Laurence Kotlikoff
Pentti Kouri
Irving B. Kravis
Anne O. Krueger
Paul Krugman
Mordecai Kurz
William M. Landes
Edward P. Lazear
Richard M. Levich
Wilbur G. Lewellen
Gregg Lewis
Robert E. Lipsey
James Lothian
Robert E. Lucas, Jr.
Burton G. Malkiel
Richard C. Marston
Bennett T. McCallum
Thomas E. McCurdy
Charles E. McLure, Jr.
James L. Medoff
Robert C. Merton
Peter Mieszkowski
Jacob Mincer
Stewart C. Myers
M. Ishaq Nadiri
William D. Nordhaus
Anthony J. Pellechio
John Pencavel
James E. Pesando
A. Mitchell Polinsky
William Poole
Clayne L. Pope
Joel Popkin
Richard Portes
Richard A. Posner
J. David Richardson
Harvey S. Rosen
Sherwin Rosen
Michael Rothschild
Thomas J. Sargent
Gary G. Schlarbaum
Anna J. Schwartz
Robert A. Shakotko
Steven Shavell
Robert J. Shiller
John B. Shoven
William Silber
Christopher A. Sims
Joseph E. Stiglitz
Paul J. Taubman
John Taylor
Michael L. Wachter
Robert J. Willis
Larry T. Wimmer
David A. Wise
Victor Zarnowitz
Richard J. Zeckhauser

The exchange rate group of the Program in International Studies met in the NBER New York office on May 26. The group discussed current research on exchange rates and foreign exchange markets, plans for exchange rate research in the 1980 NBER Summer Institute, and long-term research plans.

John Bilson presented a paper on "The 'Speculative Efficiency' Hypothesis" (NBER Working Paper No. 474) in foreign exchange markets. He studies several U.S. foreign exchange markets jointly, on the ground that the participants are largely the same in all major exchange rate markets. Bilson's results tend to reject the joint hypotheses of risk neutrality and market efficiency. Next, Pentti Kouri presented a paper on foreign exchange risk in which the portfolio demands and supplies are derived from micro-foundations within an explicit macroeconomic model of the economy. Craig Hakkio's paper studies the relationship between unexpected movements in trade balances and unanticipated changes in spot exchange rates. His paper generated a wide-ranging discussion of the role of the current account in exchange rate determination.

Participants in the meeting were: John Bilson, University of Chicago and NBER; William Branson, Princeton University and NBER; Robert Flood, University of Virginia and NBER; Craig Hakkio, Northwestern University and NBER; Dale Henderson, Federal Reserve Board; Louka Katsela, Yale University; Pentti Kouri, New York University and NBER; Jorge de Macedo, Princeton University; Richard Marston, University of Pennsylvania and NBER; and Maurice Obstfeld, Columbia University and NBER.

Conference Papers Available

The papers presented at three recent NBER conferences are now available as part of the Bureau's Conference Paper series. (See *NBER Reporter*, Summer 1979, p. 24, for a listing of other available Conference Papers.) Some Conference Papers also include a formal discussion of the paper. In cases where a conference volume will be produced, individual Conference Papers are issued first so that research findings can be conveyed more quickly.

Individual copies are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies by sending \$1.50 per copy to: Conference Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please use the following numbers when ordering papers:

International Seminar on Macroeconomics (These papers are also being published in a special edition of the *European Economic Review*.)

10. "The Rational Expectations Approach to the Consumption Function: A Multi-Country Study," by John F. O. Bilson

11. "International Adjustment with Wage Rigidity," by William H. Branson and Julio J. Rotemberg
12. "Monetary Policies and the Exchange Rates in the E.C. Countries," by Paul de Grauwe and Paul Van Den Bergh
13. "Unemployment, Employment, and Exports in British Manufacturing: A Non-Clearing Markets Approach," by John Muellbauer and David Winter

Postwar Changes in the American Economy (These papers will also appear in *The American Economy in Transition*, edited by Martin Feldstein, to be published by the University of Chicago Press.)

14. "The Structure of Industry," by Richard E. Caves
15. "The Evolution of the American Labor Market: 1948-1980," by Richard B. Freeman
16. "The Role of Government: Taxes, Transfers, and Spending," by George F. Break
17. "American Population since 1940," by Richard A. Easterlin
18. "Technology and Productivity in the United States: Developments and Changes in the Postwar Period," by Edwin Mansfield
19. "The Level and Distribution of Economic Well-Being," by Alan S. Blinder
20. "Post-War Changes in the American Financial Markets," by Benjamin M. Friedman
21. "Trends in U.S. International Trade and Investment since WW II," by William H. Branson
22. "Postwar Macroeconomics: The Evolution of Events and Ideas," by Robert J. Gordon

Youth Joblessness and Employment (It is expected that these papers will be published by the University of Chicago Press in *The Youth Unemployment Problem: Its Nature, Causes, and Consequences*, edited by Richard Freeman and David Wise, 1980.)

23. "Why Does the Rate of Youth Labor Force Activity Differ across Surveys?" by Richard B. Freeman
24. "Economic Determinants of Geographic and Individual Variation in the Labor Market Position of Young Persons," by Richard B. Freeman
25. "Time-Series Changes in Youth Joblessness," by Michael L. Wachter and Choongsoo Kim
26. "The Dynamics of Youth Unemployment," by Kim B. Clark and Lawrence H. Summers
27. "Labor Turnover and Youth Unemployment," by Linda Leighton and Jacob Mincer
28. "High School Preparation and Early Labor Force Experience," by Robert H. Meyer and David A. Wise
29. "Teenage Unemployment: Permanent Scars or Temporary Blemishes?" by David T. Ellwood
30. "The Employment and Wage Consequences of Teenage Women's Nonemployment," by Mary Corcoran
31. "Dead-End Jobs and Youth Unemployment," by Charles C. Brown
32. "Family Effects in Youth Unemployment," by Albert Rees and Wayne Gray

33. "The Minimum Wage and Job Turnover in Markets for Young Workers," by Robert E. Hall
34. "Youth Unemployment in Britain and the United States Compared," by Richard Layard

Papers presented at the NBER Conference on Labor Markets in June 1978 and at the U-NBER Conference on the Economics of Information and Uncertainty in June 1979 will also be available soon. A complete listing of titles will appear in the Fall 1980 *NBER Reporter*.

Summary Reports

NBER's first Summary Report, *Youth Unemployment*, by Richard B. Freeman and David A. Wise, was published this spring. The twenty-four-page booklet encompasses the major findings of the Bureau's project on the nature, causes, and consequences of youth unemployment. It is written in concise, nontechnical language and is designed for a general audience. The second report in the series, *Taxation of Capital*, summarizes the eight papers presented at the NBER Conference on the Taxation of Capital held in the fall of 1979. (See *NBER Reporter*, Winter 1979, for a list of these papers.) Either of these reports may be obtained free of charge from the Publications Department, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

Reprints Available

The following NBER Reprints, intended for nonprofit educational and research purposes, are now available (see *NBER Reporter*, Summer, Fall, and Winter 1979, for titles 1-35):

36. *A Theory of the Natural Unemployment Rate and the Duration of Employment*, Robert E. Hall, 1979.
37. *Investment Performance and Investor Behavior*, Wilbur G. Lewellen, Ronald C. Lease, and Gary G. Schlarbaum, 1979.
38. *Unemployment-Inflation Trade-Offs with Rational Expectations in an Open Economy*, Willem H. Buiter, 1979.
39. *Inflation and the Taxation of Capital Income in the Corporate Sector*, Martin Feldstein and Lawrence Summers, 1979.
40. *Social Security Wealth: The Impact of Alternative Inflation Adjustments*, Martin Feldstein and Anthony Pellechio, 1979.
41. *Price Inflation, Portfolio Choice, and Nominal Interest Rates*, Benjamin M. Friedman, 1980.
42. *Efficient Wage Bargains under Uncertain Supply and Demand*, Robert E. Hall and David M. Lilien, 1979.

43. *Education and Self-Selection*, Robert J. Willis and Sherwin Rosen, 1979.
44. *Imported Inflation 1973-74 and the Accommodation Issue*, Phillip Cagan, 1980.
45. *The Two Faces of Unionism*, Richard B. Freeman and James L. Medoff, 1979.
46. *The Effect of Social Security on Private Savings: The Time-Series Evidence*, Martin Feldstein, 1979.
47. *Toward an Understanding of the Real Effects and Costs of Inflation*, Stanley Fischer and Franco Modigliani, 1978.
48. *The Optimal Taxation of Heterogeneous Capital*, Alan J. Auerbach, 1979.
49. *On the Determination of the Public Debt*, Robert J. Barro, 1979.
50. *Earnings Growth on the Job and between Jobs*, Ann P. Bartel, 1980.
51. *The Migration Decision: What Role Does Job Mobility Play?*, Ann P. Bartel, 1979.
52. *Investors' Portfolio Behavior under Alternative Models of Long-Term Interest Rate Expectations: Unitary, Rational, or Autoregressive*, Benjamin M. Friedman and V. Vance Roley, 1979.
53. *Wealth Maximization and the Cost of Capital*, Alan J. Auerbach, 1979.
54. *Expectations, Tobin's q, and Industry Investment*, Burton G. Malkiel, George M. von Furstenberg, and Harry S. Watson, 1979.
55. *Social Security Financing and Retirement Behavior*, Anthony J. Pellechio, 1979.
56. *Social Security and Household Wealth Accumulation: New Microeconomic Evidence*, Martin Feldstein and Anthony J. Pellechio, 1979.
57. *The "End-of-Expansion" Phenomenon in Short-Run Productivity Behavior*, Robert J. Gordon, 1979.

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Journal of Economic Literature (JEL) subject codes are listed after the date of the Working Paper. Abstracts of all Working Papers issued since February 1980 are presented below. For previous Working Papers, see previous issues of the *NBER Reporter*. The Working Papers abstracted here have not been reviewed by the Board of Directors of NBER.

A Consistent Characterization of Nearly a Century of Price Behavior

Robert J. Gordon

Working Paper No. 455

February 1980

JEL No. 134

This paper develops a single econometric equation that can explain most of the variation in the aggregate U.S. rate of inflation during the period between 1892 and 1978. Unlike previous studies that have omitted the Depression and World War II years, the present equation can explain the 1929-45 period as well as other years. The equation is derived from a simple aggregate supply equation. The rate of price change depends upon the rate of nominal GNP, the level of detrended real GNP, and the expected price changes; the latter, in turn, depends on the lagged values of price change and nominal GNP change. Four additional factors are identified that have had a significant impact on the price-setting process: the National Recovery Act (1933-36), World War II price controls (1943-47), the Nixon era controls (1972-75), and the relative prices of food and energy.

The most surprising result is that the contemporaneous elasticity of price change to nominal GNP change has been roughly one third for almost a century, both in a single equation fitted to the whole period and in equations fitted to three subperiods. The formation of price expectations changed completely after 1950 from regressive expectations appropriate under a gold standard to extrapolative inertia dominated expectations appropriate under a fiat money standard and postwar long-period wage contracts. The results also imply that restrictive aggregate demand policy would have a much greater immediate impact in slowing inflation than has been implied by other econometric work on postwar data.

Do Stock Prices Move Too Much To Be Justified by Subsequent Changes in Dividends?

Robert J. Shiller

Working Paper No. 456

February 1980

JEL No. 313

An ex-post, rational, real common stock price series, formed as the present value of subsequent detrended real dividends, is found to be a very stable and smooth series when compared with the actual detrended real stock price series. An efficient markets model, which makes price the optimal forecast of the ex-post rational price, is inconsistent with this data if the long-run trend of real dividends is assumed to be given. To reconcile the data with the efficient markets model, one must assume that the market's expected real dividends deviated from their long-run trend much more than they did historically.

Tax Neutrality and the Social Discount Rate: A Suggested Framework

Alan J. Auerbach

Working Paper No. 457

February 1980

JEL No. 323

There is probably no one problem in tax analysis that has generated as much study and discussion as the formulation of "neutral" tax incentives for investment. Yet no consensus has been reached concerning the proper approach to adjusting taxes in this way.

Comparing the two fundamental notions of neutrality found in the literature, referred to here as "present value" rules and "internal rate of return" rules, I argue that there is both a single appropriate neutrality criterion (the latter) and a framework that can be used to evaluate the performance of a tax system with respect to this criterion.

Postwar Changes in the American Financial Markets

Benjamin M. Friedman

Working Paper No. 458

February 1980

JEL No. 313

This essay surveys developments in the American financial markets since World War II, with particular atten-

tion to changes that have occurred either between the prewar and postwar years or within the last several decades. The primary emphasis is on the interaction among the financial markets and the nonfinancial economy, in the sense of the demands that the nonfinancial economy has placed on the financial markets and the ways in which the financial markets have responded to these demands. In addition, much of this essay focuses on the evolving role of government in the financial markets and on changes that it has brought about.

Three major trends are predominant during the postwar years. First, a sustained rate of private debt financing, including the borrowing of both businesses and individuals, has almost exactly matched the decline of outstanding federal government debt relative to nonfinancial economic activity. Second, the economy's reliance on financial intermediaries has continued to increase. Together with a series of innovations, the further advance of intermediaries has reduced barriers and frictions interfering with efficient capital allocation. Third, in contrast to the sharp relative decline of its role as a direct borrower, the federal government has widely expanded its activities in guaranteeing and intermediating the private sector's debt and in regulating private financial transactions.

Postwar Macroeconomics: The Evolution of Events and Ideas

Robert J. Gordon

Working Paper No. 459

March 1980

JEL No. 311

This paper traces the evolution of macroeconomic events and ideas from the late 1940s to the present. After a brief introduction that highlights the unique features of the main macroeconomic variables as compared to their behavior before 1947, the paper turns to an analysis of four main postwar subperiods. The analysis of each subperiod begins with a summary of the dominant conceptual framework popular at the time and reviews the most surprising features of both demand fluctuations and supply phenomena. Each analysis concludes with a retrospective evaluation of policy.

Many shifts in macroeconomic thinking can be traced to the influence of particular events. The small role that monetary changes played in explaining demand fluctuations in the first postwar decade helped to maintain intact the Keynesian multiplier framework. But the increasing

importance of autonomous monetary movements in the second decade laid the groundwork for a greater emphasis on the potency of monetary policy in the late 1960s. The widespread acceptance of monetarism owes much to the coincidence in 1968 of an unexpected acceleration in inflation together with the failure of the tax surcharge enacted in that year. Similarly, the increased degree of inertia evident in the behavior of inflation from 1954 on helped win ready acceptance for the idea of a stable Phillips curve tradeoff, while the refusal of inflation to abate in 1970 helped solidify the "victory" of the natural hypothesis.

A major theme of the paper is the gradual but profound shift in macroeconomics from the dominance of demand issues to a new emphasis on supply topics. Price controls, crop failures, and OPEC actions in the 1970s have brought supply shocks to the forefront of policy discussions, revived fiscal policy as a means of countering supply shocks, and lessened support for a monetarist reliance on simple policy rules.

Protectionist Pressures, Imports, and Employment in the United States

Anne O. Krueger

Working Paper No. 461

March 1980

This paper assesses the theoretical and empirical bases for the contention of American labor union leaders that imports have been a big source of job loss in the United States. It is shown, first, that identification of job losses "due to imports" is exceptionally difficult because the industries believed affected by imports are also affected by economic growth. Then, an accounting framework is employed to assess possible empirical orders of magnitude. The results indicate fairly conclusively that factors other than import competition have been primary in leading to structural shifts in employment.

Inventories in the Keynesian Macro Model

Alan S. Blinder

Working Paper No. 460

February 1980

JEL No. 133

An otherwise conventional Keynesian macro model is modified to include inventories of final goods by (1) drawing a distinction between production and final sales, and (2) allowing for a negative effect of the level of inventories on production. Two models are presented: one in which the labor market clears and one in which it does not. Both models are stable only if the negative effect of inventories on production is "large enough." Both models also imply that real wages move countercyclically—in direct contrast to the usual implication of Keynesian models. Detailed analysis of the market-clearing model shows that there should be a negative correlation between the *levels* of inventories and output, and between changes in inventories and changes in output, over the business cycle. However, inventory *change* should be positively correlated with the level of output.

The Mark III International Transmission Model

Michael R. Darby and Alan C. Stockman

Working Paper No. 462

March 1980

JEL No. 430

This paper presents a summary and estimates of the Mark III International Transmission Model, a quarterly macroeconomic model of the United States, United Kingdom, Canada, France, Germany, Italy, Japan, and the Netherlands, estimated for 1957 through 1976. The model is formulated to test and measure the empirical importance of alternative channels of international transmission including the effects of capital and trade flows on the money supply, of export shocks on aggregate demand, of currency substitution on money demand, and of variations in the real price of oil.

Major implications of the model estimates are: (1) Countries linked by pegged exchange rates appear to have much more national economic independence than generally supposed. (2) Substantial or complete sterilization of the effects of contemporaneous reserve flows on the money supply is a universal practice of the nonreserve central banks. (3) Quantities such as international trade flows and capital flows are not well explained by observed prices, exchange rates, and interest rates. (4) Explaining real income by innovations in aggregate demand variables works well for U.S. real income but does not transfer easily to other countries. The empirical results suggest a rich menu for further research.

Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies

A. Mitchell Polinsky
Working Paper No. 463
March 1980

In "nuisance" cases, legal commentators generally recommend, and the courts seem to increasingly use, the award of damages rather than the granting of an injunction of the harmed party. This essay compares the economic consequences of injunctive and damage remedies under a variety of circumstances. The discussion focuses on the ability of the remedies to deal with the strategic behavior of the litigants, the cost of redistributing income among the litigants (or classes of litigants), and the imperfect information of the courts. In ideal circumstances—cooperative behavior, costless redistribution, and perfect information—injunctive and damage remedies are equivalent. The presence of strategic behavior alone does not change this conclusion. However, if it is also costly to redistribute income, the remedies are no longer equivalent. When there are a small number of litigants in these circumstances, neither remedy is generally more effective than the other. When there are a large number of litigants, the damage remedy is superior. Finally, and most realistically, if the courts also have imperfect information, neither remedy dominates the other. Thus, the general presumption in favor of damage remedies is not supported.

Monetary Accommodation of Supply Shocks under Rational Expectations

Alan S. Blinder
Working Paper No. 464
March 1980
JEL Nos. 311, 131

When the economy is subject to a "supply shock," such as a rise in the price of energy, is there an exploitable trade-off between inflation and unemployment? That is, would a more inflationary monetary policy lead to a shallower recession?

Two theoretical macroeconomic models are used to address this question; both models assume rational expectations. It is found that such a trade-off always exists where supply shocks are unanticipated. With respect to anticipated supply shocks, the results tend to be more model-specific, but some exploitable trade-off emerges if either money wages or the nominal price of oil are sticky.

This paper also asks whether the parameters of the model depend on the policy rule being followed, in accord with Lucas's celebrated critique of econometric policy evaluation.

How Effective Have Fiscal Policies Been in Changing the Distribution of Income and Wealth?

Mervyn A. King
Working Paper No. 465
April 1980
JEL No. 323

This paper was written to provide some background for a session on fiscal policy and distribution at the American Economic Association meetings. It examines some of the evidence on the redistributive effects of taxes and benefits in the United States, United Kingdom, and Sweden. The difficulty of computing measures of inequality for the distribution of annual, household original factor incomes is discussed, and measures for the distribution of aftertax incomes are computed for the three countries.

Trade Policy as an Input to Development

Anne O. Krueger
Working Paper No. 466
April 1980

This paper examines the relationship between a developing country's policies with respect to its trade and payments regime and its rate of economic growth. Developing countries have generally adopted either an inward-looking set of policies, restricting imports and encouraging the growth of domestic import-substitution industries, or they have adopted vigorous export-promotion policies. The latter have been far more conducive to rapid economic growth. Several alternative hypotheses of why such large differences exist are examined.

On the Possibility of an Inverse Relationship between Tax Rates and Government Revenues

Don Fullerton

Working Paper No. 467

April 1980

JEL No. 303

When Arthur Laffer or other "supply-side advocates" plot total tax revenues as a function of a particular tax rate, they draw an upward sloping segment called the normal range, followed by a downward sloping segment called the prohibitive range. Since a given revenue can be obtained with either of two tax rates, government would minimize the total tax burden by choosing the lower rate of the normal range. A brief literature review indicates that tax rates on the prohibitive range in theoretical and empirical models have been the result of particularly high tax rates, high elasticity parameters, or both. Looking at tax rates on labor and total revenue, for example, the tax rate that maximizes revenue will depend on the assumed labor supply elasticity. This paper introduces a new curve that summarizes the tax rate and elasticity combinations that result in maximum revenues, separating the normal area from the prohibitive area. A general-purpose, empirical, U.S. general equilibrium model is used to plot the Laffer curve for several elasticities, and to plot the newly introduced curve using the labor tax example. Results indicate that the United States could conceivably be operating in the prohibitive area, but that the tax wedge and/or labor supply elasticity would have to be much higher than most estimates would suggest.

An Index of Inequality: With Applications to Horizontal Equity and Social Mobility

Mervyn A. King

Working Paper No. 468

April 1980

An index of inequality is constructed that decomposes into two components, corresponding to vertical and horizontal equity respectively. Horizontal equity is defined in terms of changes in the ordering of a distribution. The

proposed index is a function to two inequality aversion parameters. One empirical application is for comparison of a pretax distribution with a posttax distribution, and an example of this is given for the distribution of incomes in the United Kingdom in 1977. There is a trade-off between horizontal and vertical equity, and for particular combinations of the inequality aversion parameters the original distribution will be preferred to the final distribution. The paper concludes with an application of the proposed index to a model of optimal taxation.

Trends in U.S. International Trade and Investment since World War II

William H. Branson

Working Paper No. 469

April 1980

JEL Nos. 420, 430, 440

At the end of World War II the United States was by far the dominant industrial economy in the world. With industrial capacity largely destroyed in Europe and Japan, the United States produced more than 60 percent of the world's output of manufactures in the late 1940s. As a result, in the immediate postwar years, the pattern of U.S. trade was distorted by a relative strength in manufacturing that was transitory. By the 1970s, trade patterns reflecting underlying comparative advantage had been restored. The U.S. international investment position just after World War II was miniscule. While the United States was very open to trade at that point, there was little international ownership of assets. The U.S. long-term foreign asset and liability positions have both grown steadily at about 10 percent per year since 1950. This has resulted in an internationalization of investment over the same period in which the United States lost its dominant position in trade.

This paper lays out and analyzes the data on the trends in U.S. international trade and investment since World War II. It shows the shrinking U.S. fraction of manufacturing output and exports, a return to and strengthening of lines of comparative advantage, and balanced and rapid growth in long-term investment. Also seen is an increasing volatility in trade and long-term investment in the 1970s, along with a real depreciation of 25 percent in the weighted U.S. exchange rate.

The major theme of this paper is the restoration of a kind of economic balance to the world picture after the distortions of World War II. The transitory U.S. dominance of trade has disappeared, while international investment has thickened the connections of the United States to the world economy. Thus from a position of dominance, the United States has become much more one of many roughly equal centers in an interconnected world economy.

Accelerating Inflation and the Distribution of Household Saving Incentives

Edward J. Kane

Working Paper No. 470

April 1980

JEL Nos. 311, 224

This study describes how accelerating inflation has led households in different economic and demographic classes to reallocate their "transactable savings." Cross-sectional data from the 1962 and 1970 Surveys of Consumer Finances are used to estimate both the composition of accumulated household savings and prospective rates of return on this saving.

The paper shows that accelerating inflation has, in the presence of comprehensive ceilings on deposit interest rates, altered the saving incentives of different types of households. The effect has been to bias *small* savers toward leveraged investments in tangible assets (especially real estate) and *large* savers toward certificates of deposit and marketable bonds. Small savers with disadvantaged access to credit are simply victimized.

Our analysis helps to explain a number of anomalous features of the 1975-79 macroeconomic recovery, particularly the dominant role of consumer spending, the unprecedented expansion of household debt, the boom in housing, and the declining flows of household savings into deposit institutions.

These data underscore the unintended consequences of trying to reconcile deposit-rate ceilings with accelerating inflation. This combination of policies unpleasantly distorts the sectoral composition of spending and risk-bearing (crowding out some productive business investment) and aggravates inequities in the distribution of income and opportunity.

Expectations and Valuation of Shares

John G. Cragg and Burton G. Malkiel

Working Paper No. 471

April 1980

JEL No. 313

This study uses a unique body of data on expectations

collected during the 1960s. After describing the data, we first look at the extent of consensus among those financial institutions providing the forecasts; we then measure the accuracy of the forecasts. Next, we ask if the forecasts are consistent with the hypothesis that expectations are rational.

We then turn to the relationship between forecasts and the valuation of securities. We develop our own variation of the popular capital asset pricing model using a framework suggested by Ross for the arbitrage model. Alternative specifications are developed relating expected returns to risk variables and relating securities prices to expectations and risk variables. We find that the expectations data of the sort we have collected appear to influence security prices in the manner suggested by the theory.

We also find that the security returns implied by the expectations data are related to appropriately defined "systematic" risk measures. Nevertheless, even when a variety of systematic influences are used, other risk measures appear to play some role in security valuation.

Monetary Stabilization, Intervention, and Real Appreciation

Rudiger Dornbusch

Working Paper No. 472

April 1980

JEL No. 430

This paper investigates what the adjustment process to a reduction in the rate of credit creation would be in an open, flexible, exchange rate economy. The framework of analysis is one of rational expectations with respect to interest rates, inflation, and depreciation. The special feature of the model is the role of exchange market intervention and the resulting endogeneity of the money stock.

The model is empirically interesting because of the growing experience in countries such as Israel, Spain, and Argentina; there monetary disinflation rapidly leads to real appreciation, unemployment, and money creation, induced by exchange market intervention. With capital flows and induced money creation threatening attempts at stabilization, there is a need to understand the relationship between intervention and inflation.

Exchange Rate Rules and Macroeconomic Stability

Rudiger Dornbusch

Working Paper No. 473

April 1980

JEL No. 430

This paper discusses exchange rate rules in their role as macroeconomic instruments. Two quite different approaches are pursued. The traditional view is that exchange rate flexibility is a substitute for money wage flexibility, so that managed money and managed exchange rates yield the necessary instruments for internal and external balance.

An entirely different perspective is offered by the modern macroeconomics of wage contracting and the long-run trade-off between the stability of output and the stability of inflation. In this context, it is shown that exchange rate policies that seek to maintain real exchange rates or competitiveness do stabilize output, but they do so at the cost of increased inflation instability. Exchange rate rules, such as full purchasing power parity crawling pegs, are the analogue of full monetary accommodation of price disturbances.

The Speculative Efficiency Hypothesis

John F. O. Bilson

Working Paper No. 474

April 1980

JEL No. 431

The speculative efficiency hypothesis is that forward prices are the best available (minimum variance) forecasts of future spot prices. This paper extends previous tests of the hypothesis by considering a pooled, cross-section, time-series data base of nine currencies over the period from July 1974 to January 1980. The multicountry framework increases the statistical efficiency of the tests of the hypothesis by incorporating cross-equation restrictions in the alternative forecasting equation and by accounting for the strong correlation in the forecast errors for the different currencies.

The paper also extends previous tests by directly calculating the mean and variance of profits from a portfolio-based speculative strategy. The results suggest that while the expected return from a single transaction has not been significantly different from zero during the sample period, the average return from a large number of speculative transactions has been significantly greater than zero.

Interactions between Inflation and Trade Regime Objectives in Stabilization Programs

Anne O. Krueger

Working Paper No. 475

May 1980

This paper examines the relationship between the macroeconomic objectives (in policies to control inflation) and the trade regime objectives in stabilization programs of developing countries. It is seen that there need be, in principle, no close relationship between the two, as a crawling peg exchange rate policy can prevent inflation from affecting the performance of the foreign sector. In practice, trade regime objectives have been linked with inflation reducing objectives, often to the detriment of resource allocation and growth. Differences between devaluation under liberalized regimes and under exchange control are also examined.

Efficiency of Foreign Exchange Markets and Measures of Turbulence

Jacob A. Frenkel and Michael L. Mussa

Working Paper No. 476

May 1980

JEL No. 430

Since the move to generalized floating in 1973, exchange rates between major currencies have displayed large fluctuations. This turbulence of exchange rates is an important concern of government policy, and its explanation is a challenge for theories of foreign exchange market behavior. This paper documents the extent of turbulence by examining (1) the magnitude of short-run variations of exchange rates; (2) the degree of divergence between actual and expected changes in exchange rates; and (3) the degree of deviations from purchasing power parities. The empirical findings are being interpreted in terms of the modern "asset market theory" to exchange rate determination. The paper concludes with an analysis of the questions of whether turbulence in the foreign exchange market has been excessive and what policy measures can (or should) be taken to reduce it.

Social Security Benefits and the Accumulation of Preretirement Wealth

Martin Feldstein

Working Paper No. 477

May 1980

JEL Nos. 321, 915

This paper uses a new and particularly well-suited

body of data to assess the impact of social security retirement benefits on private savings. The Retirement History Survey combines survey evidence on the wealth of couples in their early sixties with detailed information from the administrative records of the Social Security Administration on the lifetime earnings of those individuals and the social security benefits to which they are entitled. The present paper uses these data to estimate a model of the determination of preretirement net worth. On balance, the estimates developed in this study favor the extended life cycle model as a theory of asset accumulation and indicate a substantial substitution of social security wealth for private wealth accumulation.

Labor Markets and Evaluations of Vocational Training Programs in the Public High Schools—Toward a Framework for Analysis

Alan L. Gustman and Thomas L. Steinmeier
Working Paper No. 478
May 1980
JEL No. 800

We construct a simplified model to analyze the role played by vocational training programs in high schools. The model assumes that there are two kinds of educational programs in high schools, vocational and general. It also assumes that there are two types of jobs for high school graduates. One job requires training that either can be obtained from a vocational program in high school or as general training on the job. The other job has no special training requirements.

The model is used first to examine how the equilibrium outcome is affected by limitations on the number of places in the vocational training program and by the minimum wage. Second, it helps to determine what can be learned from studies that take what has become a standard approach to evaluating high school vocational training programs—attempting to estimate the productivity of these programs by comparing the earnings of vocational and nonvocational program graduates.

We conclude that whether or not limitations on enrollments in vocational programs and minimum wages influence the wage difference between vocational and nonvocational program graduates, findings based on the standard approach to cost-benefit analysis of high school vocational training programs may prove to be highly misleading guides for policy.

Interrupted Work Careers

Jacob Mincer and Haim Ofek
Working Paper No. 479
May 1980
JEL No. 800

The quantitative effects and even the existence of "human capital depreciation" phenomena has been a subject of controversy in the recent literature. Prior work, however, was largely cross-sectional and the longitudinal dimension, if any, was retrospective. Using longitudinal panel data (on married women in the NLS) we have now established that real wages at reentry are, indeed, lower than at the point of labor force withdrawal, and the decline in wages is bigger the longer the interruption.

Another striking finding is a relatively rapid growth in wages after the return to work. This rapid growth appears to reflect the restoration (or "repair") of previously eroded human capital. The phenomenon of depreciation and restoration is also visible in data for immigrants to the United States. However, while immigrants eventually catch up with and often surpass natives, workers who return to the labor force never fully restore their earnings potential.

Economic Consequences of Unfunded Vested Pension Benefits

Mark Gersovitz
Working Paper No. 480
May 1980
JEL No. 521

This paper examines the relationship between unfunded vested pension liabilities and the market value of a firm's shares. The relationship has important implications for the mechanism by which private pensions influence aggregate savings. Attention is paid to modeling the institutional determinants of this relationship that are implied by ERISA legislation. These considerations require a nonlinear regression model with very special properties that are developed and discussed. Estimation results suggest that ERISA has had an important effect that previous investigations have neglected on the relationship between unfunded benefits and firm value.

An Implicit Clientele Test of the Relationship between Taxation and Capital Structure

Paul Grier and Paul Strebel

Working Paper No. 481

June 1980

This paper presents a test for the existence of debt clienteles in which they are represented by progressive personal tax brackets. The test generates some evidence consistent with the implication of debt clientele theory that, over time, firms' debt ratios should vary with the relative tax incentives that their investors have for holding debt. Changes in the relative structure of taxes, however, at best only partially account for the time-series behavior of debt ratios, especially in the case of high debt firms.

The Location of Overseas Production and Production for Export by U.S. Multinational Firms

Irving B. Kravis and Robert E. Lipsey

Working Paper No. 482

June 1980

JEL No. 441

The location of overseas manufacturing production by U.S. firms seems to have been strongly influenced by common factors that operate in all industries: notably, proximity to the United States and to other markets. Within industries, the choices made by parent firms among locations appear to tend toward opposites, with low-wage and low-capital-intensity parents choosing high-wage, high-capital-intensity countries and high-wage, high-capital-intensity parents making the opposite choice.

Production for export seems to have been most strongly attracted by large internal markets in host countries. Economies of scale in production presumably made large markets economical as export bases also. Another factor was high-trade propensities of host countries, which we interpret as representing access to imported materials at low world prices or better transport, finance, and other trade facilities.

Labor cost seems to have been a weak influence on location choices. U.S. firms tended to export from high-wage countries but the high productivity in such countries more than offset the high wages. However, labor cost, to the extent we could measure it, was not a major influence on the location of export production.

A Note on the Efficient Design of Investment Incentives

Alan J. Auerbach

Working Paper No. 483

June 1980

JEL No. 323

The importance of investment, both as a component of output and as a cause of business fluctuations, has led to government introduction in many countries of a range of tax incentives aimed at stimulating capital accumulation. Many authors have invoked the concept of "neutrality" in evaluating these different incentives schemes. One view of what constitutes a neutral tax system suggests that all projects undertaken at the margin have the same present value of gross returns, discounted at the consumption rate. This note discusses the difficulties involved in a recent attempt to apply this notion of neutrality to problems of tax design.

Fixed Costs and Labor Supply

John F. Cogan

Working Paper No. 484

June 1980

JEL No. 813

This study is a theoretical and empirical analysis of the effects of fixed costs (time and money) of labor market participation on married women's supply behavior. The existence of fixed costs implies that individuals are not willing to work less than some minimum number of hours, termed reservation hours. The theoretical analysis of the properties of the reservation hours function are derived. The empirical analysis develops and estimates labor supply functions when fixed costs are present, but cannot be observed in the data. The likelihood function developed to estimate the model is an extension of the statistical model of Heckman (1974) that allows the minimum number of hours supplied to be nonzero and differ randomly among individuals. The empirical results indicate that fixed costs of work are of prime importance in determining the labor supply behavior of married women. At the sample means, the minimum number of hours a woman is willing to work is about thirteen hundred per year. The estimated fixed costs an average woman incurs upon entry into the labor market is \$920 in 1966 dollars. This represents 28 percent of her yearly earnings. Finally, labor supply parameters estimated with the fixed cost model are compared to those estimated under the conventional assumption of no fixed costs. Large differences in estimated parameters are found, suggesting that the conventional model is seriously misspecified.

Imperfect Asset Substitutability and Monetary Policy under Fixed Exchange Rates

Maurice Obstfeld

Working Paper No. 485

June 1980

JEL Nos. 431, 432

This paper presents a long-run model of the open economy in a world of fixed exchange rates and imperfect substitutability between bonds denominated in different currencies. The model explicitly accounts for the wealth flow accompanying current-account imbalance and for the flow of interest payments associated with international lending. The model's implications are quite different from those of models based on a "flow function" description of the capital account. In particular, we find that open-market policy is not in general neutral in the long run when there exists outside government debt. We also find conditions under which the central bank is able to hold the domestic price level constant in the face of an inflationary disturbance from abroad without exhausting, in the long run, its stock of domestic assets.

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