NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. FALL 1980

Program Report

Labor Economics

Richard B. Freeman

An understanding of the operation of labor markets and the institutional and structural changes that altered employment, wages, unemployment, and productivity in past years is critically needed by those responsible for public and private policy. In recent years, significant advances have been and are being made in the quality and quantity of labor market data, in the application of economic theory to individual and market behavior, and in econometric analysis. The NBER Program in Labor Studies seeks to mobilize data, theories, and econometric tools to provide the detailed analysis needed to understand the nature of the job market and problems of the labor market. Because standard data files are often inadequate to resolve research problems, the program has made a major effort to develop new bodies of data, and to improve tools for analysis.

Since my first report on the program, several projects have been completed or developed further, and many new projects have begun.[1] The finding of the Youth Unemployment Project that the problems of joblessness are concentrated among a relatively small group of young persons, disproportionately black, has led to a major study of inner-city black youth.[2] The evidence of significant nonwage effects of unionism has led to diverse follow-up studies on productivity, seniority rules, dispersion of wages within establishments, and profits. Work on labor mobility and supply behavior and on compensation, using extensive longitudinal information on individuals, has also progressed considerably. Several Bureau researchers have begun projects on the impact of federal regulations on the labor market. Finally, work is beginning on the labor market's role in the productivity slowdown.

[1] *See "Program Report: Labor Economics,"* NBER Reporter, *Winter 1978, p. 1.*

[2] *See R. B. Freeman and David A. Wise, "Youth Unemployment,"* NBER Summary Report, *1980.*

In This Issue

Program Report: Labor Economics 1
Research Summaries
The Public Library 5
Law and Economics 7
Summer Institute 10
Economic Outlook Survey 13
NBER Profiles 14
Conferences 15
Bureau News 17
Bureau Books 23
Current Working Papers 25

This issue of the *Reporter* highlights the Bureau's Program in Labor Studies. Next, Malcolm Getz discusses his work on public libraries; then, A. Mitchell Polinsky discusses his studies of law and economics. A report on the 1980 Summer Institute follows. After the quarterly Economic Outlook Survey are a section of biographical sketches, news of NBER conferences, other NBER news and reports, and new NBER books. Short summaries of recent NBER Working Papers constitute the final section of the *Reporter.*

The Program in Labor Studies is giving considerable attention to the economics of compensation. Under Sherwin Rosen's direction, an NBER conference on the economics of compensation was organized for November 1980. The conference was particularly oriented toward issues in the determination of pay and other aspects of total compensation. In December 1981, several researchers in the labor studies program will be involved in the Conference on the Measurement of Wages, Income, and Wealth, which will focus on empirical research.

During 1978 and 1980, the labor studies program conducted summer institutes in Cambridge. The 1978 institute dealt with the economics of unionism and econometric analyses of longitudinal data sets. The 1980 institute also brought together several recent doctoral graduates from different universities, as well as the regular members of the program, to discuss the effects of pensions on labor market activity.

The National Bureau of Economic Research is a private, nonprofit research organization founded in 1920 and devoted to objective quantitative analysis of the American economy. Its officers and board of directors are:

Chairman—*Eli Shapiro*
Vice Chairman—*Franklin A. Lindsay*
Treasurer—*Charles A. Walworth*
President and Chief Executive Officer—*Martin Feldstein*
Vice President—*Charles E. McLure, Jr.*
Director of Finance and Administration—*Sam Parker*

DIRECTORS AT LARGE

Moses Abramovitz
George T. Conklin, Jr.
Morton Ehrlich
Solomon Fabricant
Martin Feldstein
Edward L. Ginzton
David L. Grove
Walter W. Heller
Walter E. Hoadley
Franklin A. Lindsay
Roy E. Moor
Geoffrey H. Moore
Michael H. Moskow
James J. O'Leary
Peter G. Peterson
Robert V. Roosa
Richard N. Rosett
Bert Seidman
Eli Shapiro
Stephen Stamas
Lazare Teper
Donald S. Wasserman
Marina v. N. Whitman

DIRECTORS BY UNIVERSITY APPOINTMENT

Charles H. Berry, *Princeton*
Otto Eckstein, *Harvard*
Walter D. Fisher, *Northwestern*
J. C. LaForce, *California, Los Angeles*
Paul McCracken, *Michigan*
Daniel McFadden, *Massachusetts Institute of Technology*
Almarin Phillips, *Pennsylvania*
James L. Pierce, *California, Berkeley*
Lloyd G. Reynolds, *Yale*
Nathan Rosenberg, *Stanford*
James Simler, *Minnesota*
William S. Vickrey, *Columbia*
Dudley Wallace, *Duke*
Burton A. Weisbrod, *Wisconsin*
Arnold Zellner, *Chicago*

DIRECTORS BY APPOINTMENT OF OTHER ORGANIZATIONS

Carl F. Christ, *American Economic Association*
Robert C. Holland, *Committee for Economic Development*
Stephan F. Kaliski, *Canadian Economics Association*
Albert G. Matamoros, *National Association of Business Economists*
Douglass C. North, *Economic History Association*
Rudolph A. Oswald, *American Federation of Labor and Congress of Industrial Organizations*
Joel Popkin, *American Statistical Association*
G. Edward Schuh, *American Agricultural Economics Association*
James C. Van Horne, *American Finance Association*
Charles A. Walworth, *American Institute of Certified Public Accountants*

Contributions to the National Bureau are tax deductible. Inquiries concerning contributions may be addressed to Lawrence B. McFaddin, Director of Development, National Bureau of Economic Research, Inc., 1050 Massachusetts Avenue, Cambridge, MA. 02138.

The *Reporter* is issued for informational purposes and has not been reviewed by the Board of Directors of NBER. It is not copyrighted and can be freely reproduced with appropriate attribution of source. Preparation of the *NBER Reporter* is under the supervision of Donna Zerwitz, National Bureau of Economic Research, Inc., 1050 Massachusetts Avenue, Cambridge, MA 02138.

Youth Unemployment

Because of the increased rate of unemployment among young workers, particularly minority youths, the NBER Program in Labor Studies initiated in 1978 a major research effort involving scholars from many institutions to analyze the nature, causes, and consequences of youth joblessness. The findings of the project have been summarized in an *NBER Summary Report* and will not be detailed here.[3]

One of the major findings of the Youth Unemployment Project—the concentration of joblessness among a small group of young persons, especially minority youths, and the inadequacy of available data to analyze the problems facing these youths—has generated a major follow-up study, focused on inner-city minority youths. A questionnaire seeking detailed information on labor market behavior, income sources, allocation of time, and social problems such as crime and alcohol and drug use was developed by Joseph Cooper and Richard B. Freeman. Mathematica Policy Research, Inc., administered the survey to roughly 2,400 inner-city youths in the worst poverty tracts in Boston, Chicago, and Philadelphia with a response rate of over 80 percent. Analysis is currently being done on these new data.

In a related piece of work, David Ellwood has been exploring the extent to which residential segregation leads to adverse labor market outcomes for young and other black workers, studying in particular the Chicago market. One interesting finding is that young blacks are found to spend more time journeying to work than young whites. In another youth labor market study, David Wise and Robert Meyer have examined the long-term effects of youth joblessness on the number of weeks worked by black youths. Consistent with their results for whites, they have found that the effects of youth joblessness on the time worked decrease rapidly as the young grow older.

While current NBER effort is focused on minority youths, issues related to other youths have not been neglected. James Medoff, Charles Brown, and Mary Corcoran are examining the impact of reservation wages and search intensity on the ability of people to escape unemployment. It appears that the time spent searching for a job has an impact on the length of unemployment spells, whereas measured reservation wages have no apparent effect on unemployment.

Vocational education is one of the ways in which youths prepare for participation in the labor market. Robert Meyer is studying the effect high school work experience has on subsequent wages and employment. In a related study, Alan Gustman and Thomas Steinmeier are investigating the vocational education system in the public schools—in particular, the meaning to be attributed to rates of return and whether enrollments are rationed or responsive to supply-side decisions young people make. Finally, as detailed below, NBER work on minimum wage, unions, and mobility has also focused in part on youths.

[3] *Ibid.*

Federal Regulations

One of the major institutional changes in the U.S. labor market in recent years has been the extensive increase in federal programs and regulations. NBER researchers at several institutions have been examining the impact of some of these regulations on market outcomes.

Unemployment Insurance. Studies of unemployment insurance have been concerned with both the adequacy of benefits and the impact of unemployment insurance on market dynamics. Daniel Hamermesh is completing work evaluating the effects of unemployment insurance on consumption in the context of the permanent income hypothesis. His work has implications for the issue of whether unemployment insurance benefits are now adequate. Kim Clark and Lawrence Summers are studying the effects of unemployment insurance on transitions in the labor market using "gross flow" data. This work will include both benefit effects and the impact of experience rating.

Minimum Wage. Research on the minimum wage seeks both to improve analyses of the employment effects of the minimum wage and to expand the analyses to other market outcomes, such as income distribution, turnover, training, and inflation. Charles Brown, with Curtis Gilroy and Andrew Kohen, is using existing data to reevaluate the impact of the minimum wage on youth employment and unemployment. Richard Freeman, Wayne Gray, and Casey Ichniowski are using data from an independently conducted survey of employers to examine the impact of regulations that permit employers to pay 85 percent of the minimum wage to full-time students.

There are several current studies of other labor market outcomes that are particularly affected by the minimum wage. Included is the study of distribution of wages by Robert Meyer and David Wise, where it has been found that for young workers there is a marked concentration at the minimum. Wage growth is being studied by Jacob Mincer and Linda Leighton; increases in wages have been found to be lower and reported job training is less for those most likely to be affected by the minimum wage. Edward Lazear and Frederick Mills are also examining whether imposition of a minimum wage retards employment growth for young persons. Finally, an investigation into how the federal minimum wage interacts with monetary policy in the determination of employment at the minimum wage, aggregate employment, and average wages is being undertaken by Herschel Grossman and John Burdon.

Equal Employment. Federal equal employment legislation and executive orders have become a fact of life for major firms in the United States. Work has begun on an evaluation of the impact of this legislation on the relative labor market position of minorities and women in general and in particular cases. An overall analysis of extant studies has been conducted by Charles Brown, who is also developing a detailed investigation of the impact of policies using time-series data from the Current Population Survey. Richard Freeman and Bruno Tiphine have also been using these and other data to examine the longitudinal progress of black workers after 1964. Casey Ichniowski has examined the terms of the 1974 Steel Industry Consent Decree, and its impact on the occupational distribution of the black work force in the industry. Susan Collins has investigated changes in the productivity of piece rate workers at an establishment obligated under a consent decree to hire workers from previously underutilized groups.

Productivity. Wayne Gray is beginning an analysis of the impact of federal regulations on productivity, using a newly available data tape for over four hundred separate manufacturing industries.

Trade Unionism

Although trade unionism remains the key labor institution in industrial societies, in recent years, careful empirical studies of unionism have not kept pace with research on other topics. The NBER labor studies program seeks to remedy this, in part with an analysis of the nonwage effects of unionization and the impact of trade unionism on different labor market settings.

Since the winter of 1978, considerable progress has been made along these lines. H. Gregg Lewis, one of the pioneers in statistical analysis of the effect of unionism on wages, is continuing his survey of studies on the effect of unions on the relative wage structure of the United States, and Harry J. Holzer is studying the impact of unions on the wages and employment of black and white youths, using Current Population Survey data from 1973 through 1978. In a more theoretical vein, ongoing work ranges from an effort by Edward Lazear to develop a market model of monopoly unionism in which individuals in an industry or occupation are assumed to maximize their own wealth levels, to an analysis by Jacob Mincer of how the minimum wage model can be used to guide studies of union wage effects.

With respect to nonwage effects of unionism, Katharine Abraham and James Medoff are studying the relative importance attached to seniority in making termination and promotion decisions in union as compared to nonunion settings, using a special survey of about one thousand firms. The effect of specific union wage policies on the dispersion of wages within establishments is being studied by Freeman, and the effect of unionization on profits is being studied by Clark, who uses a large microdata set on individual businesses.

New work has begun on one of the most important areas of growth in unionism: the public sector. Casey Ichniowski, Richard Freeman, and Harrison Lauer have analyzed the interdependencies of wage setting among police departments, and the impact of collective bargaining laws on unionization among states. In a further study of the public sector, Ichniowski is examining outcomes of bargaining by public safety employees in Massachusetts under the various bargaining laws in the state from 1960 to 1979. He is using data taken from the provisions of actual collective bargaining agreements and wage surveys for the earlier years of the period.

Some findings about unionism are: seniority has a much greater impact on termination and promotion in

the presence of a collective bargaining contract than otherwise; employment is relatively lower for black than white youths in highly organized cities; dispersion of wages is much lower with union than nonunion establishments; profits relative to capital appear lower under unionism, while profits per unit of sales do not; in the public sector, city workers' wages are affected more by overall organizational strength in the state than by unionization in the city itself; the earnings–tenure profile is flatter among union workers; and reported training is less.

Labor Mobility and Supply

In a major research endeavor, Jacob Mincer, with Linda Leighton, Boyan Jovanovic, Ann Bartel, George Borjas, and Haim Ofek, has been using longitudinal data files to analyze the role of mobility over the life time and the interpersonal structure of wages. The results of their research have been reported in NBER Working Papers and Conference Volumes. This work has highlighted the fact that markets reflect both the matching of workers to jobs and the reallocation of workers in response to dynamic shifts in demand. Among their findings are: young men are more likely than older men to experience immediate wage gains when they change jobs; wages and turnovers are a function of firm seniority in the nonunion as well as in the union sectors; and differences in unemployment rates among some groups are dominated by differences in rates of incidence of unemployment rather than duration of unemployment. Future work will involve analysis of industry differences in mobility, the effect of "advantaged wages," and the mobility of women.

In another major body of research, oriented toward econometric issues, James Heckman has developed rigorous procedures for testing the effect of tenure dependence and heterogeneity among people on turnover, unemployment, and nonemployment. In conjunction with Chris Flin, Heckman has created tests to determine whether or not unemployment is different from being out of the labor force for young people and has found evidence that behavior differs under those two conditions. Work on labor supply in a life-cycle setting has been undertaken by Thomas MaCurdy, who has developed models that provide a natural framework for interpreting estimates found both in cross-sectional and time-series work on labor supply. Reuben Gronau is seeking to explain the significant differences in labor force participation between women in the United States and Israel and the great increase in female participation in the 1970s. The effect of interruptions in female work life on earnings is also being examined by Gronau.

Several researchers are examining how labor demand affects employment and turnover. Daniel Hamermesh is engaged in a project reexamining labor demand elasticities to account for changes in the wage and nonwage components of employer compensation costs. Katharine Abraham and James Medoff have conducted a survey of approximately one thousand firms in order to examine how seniority, independent of individuals' productivity, influences promotion and termination decisions. They are also analyzing job vacancy data to see how the relation between vacancy and unemployment has changed over time and how this has affected the Phillips Curve relation between wage inflation and unemployment. Further analysis of demand factors is being undertaken, by James Heckman and G. Sedlacek, that applies to the effect of the minimum wage. Finally, Michael Wachter is examining how changes in employment by demographic groups vary among industries and contribute to the productivity slowdown.

Compensation

As noted earlier, identifying the determinants of labor compensation is one of the major activities in the program. It cuts across nearly all of the topics discussed thus far. Several projects dealing with compensation do not, however, fit into previous categories, but deserve attention here.

In a theoretical analysis of optimal labor contracts, Edward Lazear and Sherwin Rosen have investigated the circumstances under which workers' relative positions in firms, rather than their absolute level of output, is the preferred outcome of a competitive economy. Lazear has been analyzing questions of insurance in the labor market, the inducement of workers to produce at optimal effort levels, and compensation schemes that pay workers wage rates that deviate from marginal products, but result in efficient allocation of resources. Kim Clark is working with Laurence Kotlikoff on the impact of pensions on mobility and compensation. The analysis will yield evidence on the role of compensating differentials and the effect of pensions on age–earnings profiles. The 1980 Conference on the Economics of Compensation and the 1981 Conference on the Measurement of Wages will provide forums for much of the work on compensation.

Data Sets and Analyses

It will be noted that the labor program has emphasized econometric analyses of data and development of new data sets. Many researchers use the new econometric tools for analysis of longitudinal data files developed by NBER research associates James Heckman, Gary Chamberlain, Zvi Griliches, Jerry Hausman, and Thomas MaCurdy, among others. Other researchers have felt the need to develop surveys of individuals and of establishments that contain new questions to answer their research needs. We hope that the combination of new econometrics and new data will enhance our understanding of the operation of the labor market.

The Public Library

Malcolm Getz

The most fundamental question for the local public sector is what is the value of services relative to their tax cost? Questions of incidence, Tiebout effects, intergovernmental transfers, and fiscal crisis all depend on a presumption of the value of services rendered. Since prices are unavailable, either as sources of information about consumer valuations or as incentives for good management, it is more difficult to evaluate public sector functions than functions where prices are important. My study explores some important dimensions of one public sector function, the operation of public libraries.[1] The insights gained may be helpful both in understanding how governments operate and in developing a framework for evaluating library operations.

The study consists of five parts. In the first section, I examine the New York Public Library and ask what the optimal mix of branches, hours, and books is. Using information from an interview survey of thirty-one large public library systems across the country, I compare the basic operations of the systems in the second part. The libraries' participation in labor markets constitutes the third section of the study. Technical systems and the pace of innovation are the subjects of the next, and alternative policies toward public libraries are discussed in the last section.

The New York Public Library

The New York Public Library, a private research library, operates a system of branch libraries in Manhattan, the Bronx, and Staten Island under contract from the city of New York. The city's fiscal crisis has led to substantial cuts in the budget for the branch libraries, and the library board proposed closing some branches. Public opposition prevented the closings, forcing the library to cut hours instead. Now, the neighborhood branches are open an average of just under twenty hours a week, with some operating as little as twelve hours per week. Several other urban systems have faced similar problems during the last few years. These events lead one to ask: what is the optimal mix of hours of service, number of branches, and quantities of materials? These are the main ingredients in a library service; they have a substantial influence on the use of the library system and on the cost of the system.

To know how many branches should be operated, one must ask what is the value of keeping a branch? When services are given without direct charge, one cannot use revenues as an indicator of consumer valuation. I have addressed this question by asking: what is the next best alternative to a branch library? The closest alternative may be the next nearest branch. If one branch is closed, either use will transfer to the next nearest branch or the use will cease. If use transfers to the next nearest branch, then the value of the nearest branch is at least the increase in transportation costs and the inconvenience of having to travel a greater distance to get to a library. If use ceases, the value of the nearest branch must be less than the cost of traveling to the next nearest library. Therefore, on average, the cost of traveling to the next nearest library provides an estimate of the value of a unit of service at an individual branch. I do not have information about individual library users, so I cannot consider how much library use will decrease and how much use will transfer to other branches if one is closed. Moreover, this method of estimation considers each branch singly as the marginal branch, leaving the rest of the system intact. When one branch closes, activity at other branches will increase, and the value of services at those branches will increase. Nevertheless, this valuation method gives an approximation of the value of services at individual branches. Branches that are close to other branches will have services of lower value; branches that attract more users will be more valuable.

When the value of branch services, defined in the above manner, is compared with the costs of the respective branches, benefits are found to be less than costs for forty-seven of the fifty-nine neighborhood branches. The New York Public Library would therefore seem to be operating too many branches.

How many hours and how many materials should be offered? I estimate the extra cost of providing an additional hour of service or an additional material by using library budget information. First, the association between an additional unit of service and the additional use of the library is estimated; then, the average value of use is applied from the valuation of branches defined above and quasi-production-function relationships are estimated. Library use is found to be very responsive to the hours of service offered and somewhat responsive to the quantities of new materials available. The marginal value of an extra hour seems to be substantially greater than its marginal cost. Therefore, it seems that the total value of library service would increase if some marginal branches were closed and the remaining branches were kept open longer hours.

The library now operates seventy-six facilities (fifty-nine neighborhood, thirteen regional, and four centers) in the 122 square miles of the three boroughs, a relatively high density of library facilities. Total library use has been falling in New York ever since the early 1960s. Therefore, the findings for New York are not surprising, but how does New York's library system compare with other systems?

City versus Suburb

By comparing aggregate measures of library activities for large systems across the country, I hope to discover

[1] *This study, done by Professor Getz under the auspices of the National Bureau of Economic Research, is reported in M. Getz,* Public Libraries: An Economic View *(Baltimore: The Johns Hopkins University Press, 1980).*

how services differ from system to system. In examining the sources of the differences, I ask: How are services different in systems with high labor costs? Do the library systems show evidence of substituting away from labor when labor costs are higher? How does the mix of activities differ between larger and smaller systems—are there economies of scale? How do differences in the organization of the systems influence activities? Since activities can be related to measures of use across systems, are hours and materials as important on average as they seem to be in New York?

The interview survey of thirty-one large library systems reveals that there are substantial differences in library activities. To some extent, these differences reflect systematic differences between central city, metropolitan, and suburban library systems. Central city and metropolitan systems tend to have a more substantial commitment to central library services, for example, while several large suburban systems eschew central facilities altogether. Systems with higher salary levels tend to offer fewer hours of service and to have more volunteers. Thus, the library systems may well be influenced by differences in labor costs. Larger library systems tend to have fewer total volumes in stock per capita. The evidence on smaller stocks is consistent with some economies of scale in collections among these large library systems. Those library systems that are departments of city or county governments differ little from autonomous or semiautonomous systems. After corrections for size, departments tend to have somewhat smaller stocks of materials per capita, but otherwise they do not differ significantly from more autonomous organizations. The relationship between library activities and use across the systems suggests that the acquisition of new materials has an important influence on levels of use. Hours are not strongly related to use; all the surveyed systems are open an average of forty-eight hours per week. Thus, the situation in New York is not typical of large public library systems across the country.

Collective Bargaining

Given the influence of differences in labor compensation on library activities, it is appropriate to explore the variation in labor compensation across library systems. What influence has collective bargaining had on salaries, hours of work, and fringe benefits? What are other determinants of compensation levels?

White collar workers are covered by collective bargaining agreements in thirteen of the thirty-one large systems. The bargaining unit, however, typically involves many other municipal or county workers in addition to those in the library. Other things equal, recruit clerical workers have salaries about 12 percent higher, and librarians with five years of experience have salaries about 13 percent higher, than those in systems without collective bargaining. The salaries of recruit librarians, though, are not statistically different in library systems with bargaining and those without bargaining. Nor is bargaining associated with hours of work or fringe benefits. Since the number of new Masters of Library Science graduates each year may be twice the number of job openings, my impression is that all large public library systems have substantial queues for recruit librarian positions. Perhaps this explains why nothing I measured had any association with the salary levels of recruit librarians.

Compensation levels also seem to be influenced by cost-of-living differences, residency requirements, and fiscal variables. Areas where expenditures from own sources and intergovernmental revenues per capita were high tended to have lower salaries for experienced librarians. This finding is consistent with the fact that demands from other services hold down salaries among librarians, especially in cities undergoing fiscal crisis.

Computers

The investigation described above views the problem of operating public libraries as a static system: given technologies and input prices, the system must choose the set of activities that maximizes consumer welfare. This static view ignores the prospect for technological change, perhaps because of the popular myth that the scope for technological change in local government service is very limited. In fact, however, new technologies influence local government just as they do other sectors of the economy. The pace of innovation may be slow because of lack of incentives, but it is incorrect to argue that new technologies do not become available.[2] The scope and pace of technological change among public libraries are substantial.

I have identified twenty distinct innovations, about ten of which are computer based. For example, the card catalog is being replaced by Library of Congress cataloging information, integrated into a computer file that reflects local holdings. The computer file can generate microfiche copies of the local catalog at regular intervals. About half of the surveyed library systems have replaced or are replacing their card catalogs with this system.

Another example is in circulation control. At the circulation desk, a computer reads a book card and a borrower card and creates a computer-based record of the transaction. This file can then be used to generate overdue notices and sophisticated reports describing patterns of library use. Nine of the thirty-one systems surveyed are currently using such a system. Many of the systems also incorporate other innovations, including electronic theft detection systems, photoduplication services, and the rental of materials other than books.

By observing the year that these innovations are first used in each system, I can trace the time path of adoption. More than half of the innovations reach 50 percent adoption among large public libraries in fifteen years or less. I have used discriminant analysis to try to discover how early adopters differ from latecomers, but I find no systematic difference between them. Some of the innovations are replaced by others, even before reaching full diffusion. Thus some latecomers skip early techniques and go directly to the latest system. The extent and pace

[2] *M. Getz,* The Economics of the Urban Fire Department *(Baltimore: The Johns Hopkins University Press, 1979), chapter 6.*

of diffusion may be greater for technologies seen as climax techniques (that is, those unlikely to be replaced by newer systems) than for intermediate technologies, although it may be difficult to anticipate the replacement of one technology by another.

National Support

How can more library service be generated at a lower social cost? One vehicle is the creation of national support services for libraries. The Library of Congress already plays a substantial role in creating and distributing original cataloging information, now being extended to government documents and music. The advances in machine readable cataloging by the Library of Congress were financed by the Ford Foundation. Other national support services are being discussed by the National Commission on Libraries and Information Science. In particular, a lending library of last resort for all serial publications, modeled after the British Library Lending Division in Boston Spa, might be created. Such a service might reduce the cost of serial publications to individual libraries while being consistent with copyright laws.

Reorganization of library systems may be helpful in some areas. For example, larger library systems may capture economies of scale that independent local systems miss. Also, larger systems can internalize spillovers that may be important for independent systems. On the other hand, larger library systems may tend to homogenize service: an area that is willing to pay for a higher level of service may get less than it wants, while an area that wants to pay for only a low level of service may get more than it wants. Moreover, smaller, independent local libraries may be more responsive to local eccentricities.

Fiscal reversals at the hands of local budgets have led many public libraries to look for higher levels of state and federal aid. Intergovernmental aid can take a variety of forms: for example, capitation grants, matching funds for purchasing materials, and project aid. Given the great diversity of public library systems, some with too many branches, some with not enough, some with ample acquisition budgets, some with small acquisition budgets, it is difficult to see how a program of general aid can improve the efficiency of each system. An aid program that provides substantially different terms to different systems is not likely to exist.

Other issues are also relevant when considering changes in public libraries. To what extent should prices be levied for particular library services? To what extent should the use of data processing innovations be allowed to centralize library management and control? To what extent will electronic publishing or electronic mail (for example, the British Post Office's Prestel service) displace demand for traditional library services? The answers to these questions may influence the likely value of public library services relative to their cost in important ways.

Law and Economics

A. Mitchell Polinsky

Many public policies are designed to control such socially undesirable behavior as polluting the air, driving carelessly, or fixing prices. Whenever society seeks to control such behavior, two fundamental questions must be answered. First, what remedy should be used? For example, should a polluter be subject to a pollution tax or to a standard? Second, who should enforce the remedy, a private party or a public agency? For example, should antitrust laws be enforced through private treble damage actions or through administrative sanctions? My research has attempted to answer these questions by investigating the potential effects of different remedies and enforcement systems.

In my analysis of publicly enforced remedies, I examine the choice of using taxes or subsidies to regulate externalities created by firms, and the choice of fines or imprisonment to deter undesirable behavior by individuals.

Taxes versus Subsidies

Although economists have long advocated the use of taxes to force firms to internalize externalities like pollution, few governments have actually implemented such taxes. One frequently considered alternative—a subsidy for reductions in pollution—is often preferred on distributional grounds or because a property right to pollute might already exist.

There is an intuitive appeal to the proposition that the efficient amount of pollution may be achieved either by the stick (a pollution tax) or by the carrot (a pollution subsidy). Most economists who have studied this issue believe that the argument is not valid in the long run because a subsidy, in practice, will induce too many firms to enter the polluting industry in order to obtain the subsidy. However, these economists do believe that taxes and subsidies are equivalent in the short run because, by definition, no new firms can enter the industry.

My work on taxes and subsidies develops the point that this argument overlooks the effect of a subsidy on a firm's decision whether to leave the industry in the short run.[1] A pollution tax will in general drive some firms out of business in the short run, whereas a pollution subsidy may inefficiently enable those firms to remain in business. Thus, a tax would create efficient incentives in both the short run and long run, but a subsidy generally would not.

Fines versus Imprisonment

Fines are used in a variety of situations to control activities that impose external costs, such as polluting the air, speeding or double parking, and price fixing. If there were no costs involved in detecting those who create external costs, then presumably everyone would be caught

[1] *A. M. Polinsky, "Notes on the Symmetry of Taxes and Subsidies in Pollution Control,"* Canadian Journal of Economics *(February 1979).*

and fined an amount equal to the externality. An individual would then engage in the activity only if his private benefit exceeded the external cost.

However, it is usually difficult or costly to catch individuals who impose external costs. If, as a result, the probability of catching an individual is less than one, then it is often observed that the fine could be raised until (as before) an individual would engage in the activity only if his private benefit exceeded the external cost. Since this can apparently be done for any given probability of catching individuals, and since it is normally costlier to catch a larger fraction of those engaging in the activity, it is frequently argued that the probability should be set as low as possible. The only constraint on lowering the probability that has been suggested by previous researchers is the inability of individuals to pay the increased fine; thus, the optimal fine implied by their argument equals an individual's wealth.

This view of the optimal trade-off between the probability and magnitude of fines is unrealistic since individuals are rarely if ever fined an amount approximating their wealth, especially for activities that impose relatively small external costs. Together with NBER Research Associate Steven Shavell, I have developed a more realistic alternative explanation of the trade-off between the levels of the probability and the fine.[2] This explanation is based on the assumption that most individuals are averse to taking very large risks. Being averse to taking risks does not imply that individuals cannot be induced to make the appropriate decision about engaging in the activity. Rather, it implies that it may not be desirable to use low probabilities and high fines because this would impose a substantial risk on individuals who continue to engage in the activity since their private gains exceed the external costs. For example, although an individual would double park in front of a hospital in a situation he considers to be an emergency and would thereby impose congestion costs on other drivers, it clearly would not be desirable to control double parking by the use of fines equal to an individual's wealth, even if the fines are imposed with an extremely low probability. Although the use of a high fine and a low probability would save enforcement resources, the increased risk-bearing costs on those who double park in emergencies would exceed the savings.

Fines are not the only penal remedy available. Another common sanction is imprisonment. A debate currently exists over whether fines or imprisonment, or both, should be used. Economists have traditionally preferred fines over imprisonment because fines are usually said to be socially cost-free (or at least very cheap) since they involve only the redistribution of money, whereas imprisonment is usually described as imposing a large social cost, including the loss of the individual's productive activity and the cost of maintaining the jail system.

This traditional viewpoint has ignored some important differences between fines and imprisonment that Shavell and I have emphasized.[3] Since remedies are imposed with a probability of less than one, the fine must exceed the external costs. For some individuals, the fine may exceed their wealth, so that for these individuals, the deterrent effect will increase with wealth (assuming that individuals cannot be fined more than their wealth). For the remaining individuals who can pay the fine, the deterrent effect decreases with wealth because aversion to taking risks normally decreases with wealth. Thus, the use of fines may lead to overdeterrence of the middle-income group and underdeterrence of the poor and the rich (although for entirely different reasons).

If imprisonment is used, its deterrent effect will have three components—the stigma of being put in jail; the disutility of time spent in jail; and the foregone income from time spent in jail. The underdeterrence of the poor may be overcome to some extent since the first two effects of imprisonment apply regardless of income. Also, the overdeterrence of middle-income individuals and the underdeterrence of the rich may be overcome to some extent, since in contrast to a uniform fine, the burden of a uniform jail sentence increases with income due to the increased foregone income. Thus, imprisonment may be superior to fines even though jails are socially costly.

Injunctions versus Damages

In my research on privately enforced remedies, I study the choice between injunctive remedies and damage remedies in nuisance cases, and the alternative remedies of strict liability and negligence in tort (accident) law.

Nuisance law deals with the resolution of disputes related to the use of land. Examples of common nuisances are "nonconforming" uses of land and emissions from a factory that fall upon nearby property. The remedy provided to nuisance victims is either compensation for damages or an injunction to prohibit the injurer's behavior.

Three reasons have been suggested by lawyers for preferring damage remedies to injunctive remedies. First, an injunction allows the victim to "extort" the injurer since enforcement of the injunction may impose a cost on the injurer that exceeds the victim's damages. According to this distributionally oriented argument, the victim can thereby obtain compensation that may far exceed his damages. Since, under the damage remedy, damages are set by the court, this extortion presumably cannot occur.

The second traditional argument for damages over injunctions concerns the consequences for efficiency given these extortion possibilities. Even though the efficient result may require not enforcing the injunction, the victim may nonetheless hold out for more than the injurer is willing to offer in settlement because extortion is possible. In other words, strategic behavior may lead to enforcement of the injunction when it would be inefficient to enforce it. In contrast, it is argued that a damage remedy would overcome strategic behavior because the vic-

[2] *A. M. Polinsky and S. Shavell, "The Optimal Trade-Off between the Probability and Magnitude of Fines,"* American Economic Review *(December 1979).*

[3] *A. M. Polinsky and S. Shavell, "Fines versus Imprisonment as Legal Sanctions," forthcoming as an NBER Working Paper.*

tim could not hold out for a large sum; only court determined damages have to be paid.

The final argument traditionally offered for preferring damages over injunctions is that it is possible to pursue general distributional goals under a damage remedy by increasing or reducing the monetary payment relative to actual damages. This may be desirable since redistribution by other means may not be feasible or may be costlier. In contrast, distributional outcomes under the injunctive remedy are indeterminate because of extortion and bargaining possibilities.

My research on nuisance law points to a different conclusion regarding the effects and desirability of injunctions and damages: either an injunctive remedy or a damage remedy may be preferable, depending on the circumstances.[4] The problem with the first traditional argument—that under an injunctive remedy the victim may obtain compensation in excess of his actual damages—is that this is not necessarily an argument against injunctive remedies. If redistribution by other means is costlier and if it is desirable to redistribute income toward the class of victims, then this feature of the injunctive remedy may in fact be desirable.

The second traditional argument—that strategic behavior may induce an inefficient outcome under an injunctive remedy—is correct but does not imply that a damage remedy is preferable unless the court can estimate damages perfectly. If, as seems plausible, damages are frequently underestimated, then under a damage remedy the injurer can threaten to increase his level of activity and thereby impose large uncompensated damages on the victim. Strategic behavior might lead to this threat being carried out, producing an inefficient result.

The third traditional argument—that a damage remedy is generally more flexible for promoting distributional goals—is generally incorrect. Suppose the distributional goal strongly favors the victims. If the damages awarded a victim exceeded the actual damages he suffered, the injurer would have an incentive to threaten to inefficiently reduce his level of activity in order to deny the victim this excess compensation. Given strategic behavior, this threat might be carried out. Thus, the same distributional uncertainties that occur under an injunctive remedy may occur under a damage remedy.

Strict Liability versus Negligence

Two competing tort remedies exist for controlling activities like speeding or polluting. The remedy of strict liability shifts the victim's harm to the injurer regardless of the injurer's behavior. The remedy of negligence, on the other hand, shifts the burden to the injurer only if the injurer does not take some specified amount of care.

Most economic analyses of strict liability and negligence have been in a nonmarket context, for example, automobile accidents with pedestrians. These studies conclude that both remedies are efficient when the administering authority has sufficient information to set the negligence standard properly. According to these analyses, strict liability is efficient because it fully internalizes the harm, and negligence is efficient because the injurer can be induced to take exactly the specified amount of care, which can be set efficiently.

My research on this topic has extended the analysis of strict liability and negligence to a market setting, emphasizing the impact of the remedies on the market price and the number of firms in the industry.[5] In the short run, if the number of firms is fixed, both remedies are efficient and lead to the same market price. However, in the long run, the negligence remedy is inefficient because it does not fully internalize the external costs of firms. If a firm meets the negligence standard, it is free of all liability. Thus, the external costs that remain even when each firm has met the standard will not be reflected in the price of that industry's output. For example, a polluting firm that has undertaken all cost-effective pollution controls generally will not have eliminated all pollution damage. Under a negligence rule, it will not be liable for those damages. As a result, the price of the industry's output will be below the efficient price, too much output will be demanded, and an excessive number of firms will enter the industry. The strict liability remedy is not subject to these difficulties in the long run since firms are required to pay for their damages even when they have adjusted their activities appropriately.[6]

Private versus Public Enforcement

The discussion thus far has taken the enforcer of the remedy for granted. However, a particular remedy frequently can be enforced by a variety of public and private entities. For example, antitrust penalties are enforced not only by the Justice Department and the Federal Trade Commission but also by private victims of the violations. Simultaneous enforcement by public agencies and private parties also occurs in the control of air, water, and noise pollution; securities code violations; consumer product safety; and land use. With few exceptions, economists have emphasized the choice of the remedy (for example, taxes versus standards) and have taken the enforcer for granted.

The most extensive discussion of the enforcement issue occurred in an exchange between Gary Becker and George Stigler on one side, and William Landes and Richard Posner on the other side. Becker and Stigler suggested that private competitive enforcement of fines,

[4] *A. M. Polinsky, "Controlling Externalities and Protecting Entitlements: Property Right, Liability Rule, and Tax-Subsidy Approaches,"* Journal of Legal Studies *(January 1979); A. M. Polinsky, "On the Choice between Property Rules and Liability Rules," NBER Working Paper No. 268, October 1978; A. M. Polinsky, "Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies," NBER Working Paper No. 463, March 1980.*

[5] *A. M. Polinsky, "Strict Liability versus Negligence in a Market Setting," NBER Working Paper No. 420, January 1980.*

[6] *In addition to having completed this work on nuisance and tort remedies, I am examining analogous remedies for breaches of contract. A. M. Polinsky, "Risk Sharing through Breach of Contract Remedies: Specific Performance, Expectation Damages, and Liquidated Damages," forthcoming as an NBER Working Paper.*

in which the first individual or firm to discover and report the violation would receive the fine, could duplicate the outcome under optimal public enforcement. Landes and Posner, however, claimed that competitive enforcement would unambiguously produce too much enforcement relative to optimal public enforcement. Under public enforcement, if the probability of enforcement is one, the fine should be set equal to the external damage caused by the activity. By raising the fine and lowering the probability, the same level of deterrence could be achieved at less cost. Under private enforcement, however, Landes and Posner argued that raising the fine would lead to a high probability since profit-maximizing enforcers would be induced to invest more in enforcement. From this, they concluded that too much enforcement would result under private enforcement.

My analysis of this issue comes to a different conclusion about the relative effects of private and public enforcement.[7] Specifically, I conclude that private enforcement may lead to less enforcement than public enforcement, rather than more. This is because, under private enforcement, firms are willing to invest in enforcement only if they can at least break even, that is, only if their fine revenues at least equal their enforcement costs. Under public enforcement, however, the optimal solution may result in fine revenues that are less than enforcement costs. This is particularly likely to occur when the damage from the violation is large, since it is then optimal to deter many potential violators. Because the fine that can be imposed is limited (by the wealth of the potential violators), successful deterrence may require a high probability and correspondingly large enforcement costs, but successful deterrence and a limited fine may generate too little fine revenue for private enforcers to break even. Thus, they would not be willing to enforce the law to the optimal extent.[8]

[7] *A. M. Polinsky, "Private versus Public Enforcement of Fines," NBER Working Paper No. 338, April 1979.*

[8] *In related research, I am investigating the optimal mix of private and public enforcement, rather than treating these two forms of enforcement as mutually exclusive. A. M. Polinsky, "Private Rights of Action in Administrative Enforcement Systems," forthcoming as an NBER Working Paper.*

Summer Institute

From its modest beginning in 1978 when a handful of researchers met in Cambridge, NBER's Summer Institute has grown; in 1980, the institute held workshops in six program areas that were attended by 149 participants from forty-three universities and thirteen other institutions or organizations. The six programs that met this summer were: taxation, financial markets and monetary economics, pensions, labor economics, productivity and technical change, and international studies. Approximately ninety formal papers, plus a number of informal presentations, were given; those papers that are available for distribution will be issued in the new Summer Institute Papers series (a list of titles appears at the end of this issue of the *Reporter*). The purpose of this series is to give researchers, both within and outside of the Bureau, access to the work presented at the institute. While the 1980 Summer Institute program is too lengthy to appear here, the following paragraphs summarize the research that was presented and discussed by each program group.

Productivity and Technical Change

This workshop met formally in July, but continued to meet through much of August as well. About twenty economists participated in meetings that included seminars for two afternoons or more a week, lunches, dinners, and extended discussions. Several papers were completed during this period and several more were initiated.

The workshop discussions centered primarily on (1) the relationship between investments in research and development and subsequent growth in productivity; (2) methodological issues raised by attempts to answer questions about that relationship from the available data; and (3) associated topics and issues. The core of the participants were associated with the Bureau project titled, "Patents, R and D, Market Value, and Productivity," that is currently centered on the analysis of time-series data for about 150 large U.S. corporations performing R and D.

Substantively, the seminars focused on four interrelated topics: (1) Patenting as an Indicator of Technical Change: Its Determinants and Consequences; (2) R and D and Productivity: Their Determinants and Interrelationship; (3) R and D, Market Structure, and Performance; (4) Econometric Issues in Panel Data Analysis.

Participants affiliated with NBER were: John Beggs, Yale University; Gary Chamberlain, University of Wisconsin; Kim Clark and Zvi Griliches, Harvard University; Robert Gordon, Northwestern University; Bronwyn Hall, NBER; Thomas MaCurdy, Stanford University; M. Ishaq Nadiri and Mark Schankerman, New York University; Ariel Pakes, Maurice Falk Institute (Israel); Joseph Stiglitz, Princeton University; and Pankaj Tandon, Boston University.

Other participants included: Uri Ben-Zion, Ben Gurion University (Israel); John Bound, Clint Cummins, and Alan Siu, Harvard University; Phillippe Cuneo and Jacques Mairesse, INSEE (Paris); Partha Dasgupta, London School of Economics; Robert Evenson, Richard Levin, and Richard Nelson, Yale University; Terence Gorman, Oxford University; Lung Fei Lee, University of Minnesota; Edwin Mansfield, University of Pennsylvania; and F. M. Scherer, Northwestern University.

International Studies

The international studies group met August 4–22, with one week allotted to each of the program's major components: (1) long-run structural change, (2) comparative macroeconomics, and (3) exchange rates. A total of about forty-five economists attended some part of the workshops, with about twenty to twenty-five in attendance at any one time.

During the first week, spent on long-run structural adjustment, the papers of Lipton and Sachs; Hooper; and Kravis and Lipsey made significant contributions to development of the program. The paper by Lipton and Sachs provides a model and methodology for studying how growth in manufacturing capacities in less developed countries (LDCs) affects countries in the Organization for Economic Cooperation and Development (OECD), especially the United States. The Hooper and Kravis-Lipsey papers provide the components of an analysis of long-run determinants of real exchange rates, which will be a focus of the 1981 Summer Institute. In addition to the seminars, Ray Fair and Dennis Warner made substantial progress on merging and improving their multicountry models, and Warner is working on integrating Stanley Black's results on reaction functions into the system. Roughly, the Warner model (Working Papers Nos. 389 and 390) includes the supply side, trade, and real exchange rates; the Fair model (Working Paper No. 414) includes the demand side, money, and nominal exchange rates. Black has been modeling reaction functions.

The second week, spent on comparative macroeconomics, was more loosely organized. This area will be concentrated on over the next few months and will be another focus for the 1981 Summer Institute. The papers by Masanao Aoki on the methodology of doing comparative dynamics with changes in structural parameters generated quite a bit of interest; the same topic was addressed on a more applied level in the Katseli-Marion paper. They model the effects of systematic changes in "openness" parameters on the adjustment of internal variables, such as home good prices, to external disturbances.

The third week, spent discussing exchange rates, was essentially a preparatory workshop for the exchange rate conference being organized by John Bilson and Richard Marston, who chaired the seminars. Jeffrey Frankel and Jacob Frenkel presented surveys of theoretical and empirical work on exchange rates. Frankel's paper was a careful taxonomy of models and empirical evidence, while Frenkel's was an examination of models that support an "overshooting" hypothesis. Krugman's paper, "Oil and the Dollar," integrated portfolio investment and trade effects of an oil price increase, and complemented nicely the Katseli-Marion presentation.

Discussion during the 1980 workshops tended to return to two central questions: (1) What determines the movement of the equilibrium real exchange rate over time? and (2) How do differences in economic structure across countries influence their responses to external disturbances? Both questions have analytical and policy aspects, and the latter inevitably involves questions of international coordination.

Participants from NBER were: John Bilson and Jacob Frenkel, University of Chicago; William Branson, Princeton University; Willem Buiter, University of Bristol; Michael Darby, UCLA; Ray Fair and William Nordhaus, Yale University; Robert Flood, University of Virginia; Craig Hakkio, Northwestern University; David Hartman and Jeffrey Sachs, Harvard University; John Helliwell, University of British Columbia; Irving Kravis and Richard Marston, University of Pennsylvania; Paul Krugman, MIT; Richard Levich, New York University; Robert Lipsey, Queens College, New York; Nancy Marion, Dartmouth College; Maurice Obstfeld, Columbia University; J. David Richardson, University of Wisconsin; and Dennis Warner, Michigan State University.

Participants who were not from the Bureau included: Georgio Basevi, Universita de Bologna; Stanley Black, Vanderbilt University; Angus Deaton and Sweder Van Wynbergen, World Bank; Jorge de Macedo and Gene Grossman, Princeton University; Barry Eichengreen and David Lipton, Harvard University; Jeffrey Frankel, University of California, Berkeley; Francesco Giavazzi, Universita de Padova; Terence Gorman, London School of Economics; Dale Henderson and Peter Hooper, Board of Governors, Federal Reserve System; Louka Katseli, Yale University; Edward Leamer, UCLA; Paul Masson, Bank of Canada; Marcus Miller and Douglas Purvis, University of Warwick; Julio Rotemberg, MIT; Robert Stern, University of Michigan; Kazuo Ueda, University of British Columbia; and Charles Wyplosz, INSEAD.

Financial Markets and Monetary Economics

Members of the Financial Markets and Monetary Economics (FMME) program met during the month of July, the last two weeks of which were devoted to joint sessions with the taxation and pension groups. As with almost all FMME activities, the objective of the summer program was to promote scientific interchange between economists whose primary research orientation is monetary economics, most often embraced by arts-and-sciences economic departments, and whose interest is finance, in the sense most often found at business schools. Eighteen faculty researchers and seven graduate students participated in the workshops that included two special conferences: July 17–18, financial aspects of pensions and July 24, the tax effects on corporate capital structures.

The following NBER researchers were involved with the FMME summer program: Olivier Blanchard, Martin Feldstein, Benjamin Friedman, Jerry Green, and David Hartman, Harvard University; Zvi Bodie, Boston University; David Bradford, Roger Gordon, and Carl Walsh, Princeton University; Stanley Fischer and Robert Merton, MIT; Robert Gordon and David Jones, Northwestern University; Patric Hendershott and Wilbur Lewellen, Purdue University; Edward Kane, Ohio State University; James Pesando, University of Toronto; Robert Shiller, University of Pennsylvania; John Shoven, Stanford University; and William Silber, New York University.

Other participants were: John Ciccolo, Boston College; Charles Freedman, Bank of Canada; David Livesey, University of Pennsylvania; Vance Roley, Council of Economic Advisers; Gary Smith, University of Houston; Robert Taggart, Northwestern University; and Michelle White, New York University.

Taxation

The research of the tax program has expanded over the past two summers and now encompasses such top-

ics as the tax effects on labor supply and housing and the role of taxes in the determination of capital formation and financial structure. Consequently, this year's tax workshop was timed to overlap with workshops of the pension, financial markets and monetary economics, and international economics groups.

In a typical week, Monday was devoted to pensions, with two or three seminars in the afternoon. On Tuesday, Wednesday, and Thursday, there were less formal luncheon seminars involving tax, pension, and financial markets participants; and on Tuesday and Thursday afternoons, more formal seminars were held. The pension program sponsored a two-day conference that included three papers of particular interest to tax specialists; the tax and financial markets programs collaborated to sponsor a one-day conference on taxation and corporation finance organized by Roger Gordon, involving four papers delivered by invited researchers.

NBER researchers who participated were: Alan Auerbach, Martin Feldstein, Jerry Green, and David Hartman, Harvard University; David Bradford, Don Fullerton, Roger Gordon, Harvey Rosen, and Joseph Stiglitz, Princeton University; Patric Hendershott, Purdue University; Mervyn King, University of Birmingham (England); Laurence Kotlikoff, UCLA; Charles McLure, NBER; Peter Mieszkowski, University of Houston; Anthony Pellechio, University of Rochester; John Shoven, Stanford University; Joel Slemrod, University of Minnesota; Jerry Hausman and Lawrence Summers, MIT.

Other participants included: Theodore Bergstrom, University of Michigan; Angus Deaton, Princeton University; Paul Grier and Paul Strebel, State University of New York; Rudolph Penner, American Enterprise Institute; Agnar Sandmo, Norwegian School of Economics and Business Administration; Michelle White, New York University; and Shlomo Yitzhaki, Hebrew University (Israel).

Pensions

Participants in the Bureau's project to study public and private pensions and other researchers interested in pensions took part in the Summer Institute for the first time in 1980. They met from July 15 to August 15, purposely overlapping with the financial markets, taxation, and labor market programs.

The workshop began with a two-day conference at which six papers were presented. A limited number of visitors were included at this conference, including Tom Woodruff and Emily Andrews of the President's Commission on Pensions Policy and Dan Newlon of the National Science Foundation. Subsequently, Dallas Salisbury of the Employee Benefit Research Institute made a presentation on the activities of his organization. During the following four weeks, there were informal luncheons followed by two to three papers each Monday afternoon. These sessions were normally attended by participants in the finance, labor, and tax workshops, as well as by those who were mostly interested in pensions.

In addition to the research seminars, there were four dinners; experts in the pension industry spoke at each dinner. The first of these involved individuals who are familiar with pension compensation issues from the viewpoint of the corporation. The guests at the second dinner were managers of large pension funds. They discussed the management of pension funds, in general; how government regulations affect the funds; and principles of investment of pension funds, especially as they relate (or do not relate) to the financial structure of corporations. The third dinner dealt with indexing pension annuities for inflation. The guest was David Robinson of the Carnegie Corporation of New York, who is active in pension issues due, in part, to Carnegie's continuing interest in TIAA-CREF. The final dinner stressed actuarial aspects of pensions.

NBER participants in the pension meetings were: Ann Bartel, Columbia University; Zvi Bodie, Boston University; Jeremy Bulow and John Shoven, Stanford University; Kim Clark, Martin Feldstein, and Benjamin Friedman, Harvard University; Mervyn King, University of Birmingham (England); Laurence Kotlikoff, UCLA; Edward Lazear, University of Chicago; Robert Merton, MIT; Peter Mieszkowski, University of Houston; Anthony Pellechio, University of Rochester; and Joseph Stiglitz, Princeton University.

Others attending included: Rosalind Altmann, University College (London); Emily Andrews and Tom Woodruff, President's Commission on Pensions Policy; Masanao Aoki, University of California; Fischer Black, MIT; Mark Gersovitz, Princeton University; Richard Hemming and John Kay, Institute for Fiscal Studies (England); Robert Inman, University of Pennsylvania; Steve Kutner, SRI International; Alicia Munnell, Federal Reserve Bank of Boston; George Peterson, Urban Institute; Myron Scholes, University of Chicago; and Irwin Tepper, Harvard University.

Labor

The 1980 summer program in labor studies was concentrated in the two-week period from July 28 to August 8. Conferences were scheduled on three days during which seven papers were presented. The areas under consideration were specific in nature, while covering a very wide range of issues. Among the topics considered were: race and sex biases in the labor market; certain impacts of trade unionism; and the nature of labor contracts and selection of employees. A joint productivity–labor studies seminar was also held during the first week of the workshop.

NBER participants were: Ann Bartel, Columbia University; Charles Brown, University of Maryland; Gary Chamberlain, University of Wisconsin; Kim Clark, David Ellwood, Richard Freeman, Zvi Griliches, James Medoff, and David Wise, Harvard University; Reuben Gronau, Hebrew University (Israel); Alan Gustman, Dartmouth College; Bronwyn Hall, NBER; Robert Hall and Thomas MaCurdy, Stanford University; Daniel Hamermesh, Michigan State University; Edward Lazear, University of Chicago; Ariel Pakes, Maurice Falk Institute (Israel); and Robert Willis, State University of New York, Stonybrook.

Others attending were Katharine Abraham, MIT; and Uri Ben-Zion, Ben Gurion University (Israel).

Economic Outlook Survey

Third 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 decline of real GNP during the previous quarter (1980:2) was larger than generally anticipated. That is, the median forecast in the May 1980 survey put it at an annual rate of 5.3 percent, whereas the present revised estimate is a record drop of 9.6 percent. This discrepancy, however, did not cause any major revisions in the current forecasts of the near-term course of the economy. The average prediction from the new survey still consists of a moderate decrease in the nation's output in 1980:3, followed by virtually no change in 1980:4, and a slow, partial recovery in the first three quarters of 1981. The inflation rate, in terms of the GNP implicit price index, is projected at slightly above 9 percent in 1979–80 (as in the May survey) and at slightly below 9 percent in the year ahead (1980:3–1981:3).

A Shallow Trough and a Slow Recovery

According to the medians of the August survey forecasts, GNP in 1972 dollars will decline at an annual rate of 4.3 percent in 1980:3 and a miniscule 0.7 percent in 1980:4, to levels of $1,396 billion and $1,394 billion. These trough levels are about 3.5 percent below the last peak level of $1,445 billion attained in 1980:1. Next year, constant-dollar GNP is to increase at annual rates of 3.3, 3.1, and 4.2 percent in 1981:1, 1981:2, and 1981:3, respectively. At the end of the process, its level is to reach $1,430 billion, 2.6 percent above the low value of 1980:4, but still 1.0 percent below the high value of 1980:1. At this sluggish pace, then, it would take up to two years for the economy to regain its highest past rates of output and enter a new phase of growth and prosperity.

Similarly, the index of industrial production is seen as descending to its lowest levels of 139 and 138 (1967 = 100) in 1980:3 and 1980:4, then rising gradually by some 6 percent to 147 in 1981:3. The latter figure is still 3.4 percent less than the highest prerecession rates of 152.2 reached by the output in manufacturing, mining, and public utilities in both 1979:4 and 1980:1.

Little Prospect Seen for a Downswing in Inflation

The GNP implicit price deflator (1972 = 100) will rise from 165.5 in 1979 to 180.6 in 1980, that is, by 9.2 percent. The median prediction for this index in 1981:3, the last quarter covered by the August survey, is 198.8, which is 8.9 percent up from 1980:3. In each of the intervening quarters, the index is to increase by annual rates varying narrowly between 8.5 and 9.5 percent. Thus, it appears that most of the forecasters tend to expect inflation to continue at a rather steady rate in the near future.

This is clearly pesimistic in view of the fact that each of the recessions and major slowdowns since 1948 has been associated with a significant decline in the rate of

Projections of GNP and Other Economic Indicators, 1980-81

	Annual			Quarterly							
			Percent Change	1980			1981			Percent Change	
	1979 Actual	1980 Forecast	1979 to 1980	Q2 Actual	Q3	Q4	Q1 Forecast	Q2	Q3	Q2 80 to Q2 81	Q3 80 to Q3 81
1. Gross national product ($ bil.)	2368.8	2548.9	7.6	2523.4	2549.5	2602.5	2667	2743.5	2846.5	8.7	11.6
2. GNP implicit price deflator (1972 = 100)	165.5	180.6	9.1	178.9	182.5	186.7	190.55	194.65	198.75	8.8	8.9
3. GNP in constant dollars (bil. 1972$)	1431.6	1411.1	−1.4	1410.8	1395.9	1393.5	1404.8	1415.7	1430.4	0.3	2.5
4. Unemployment rate (percent)	5.8	7.48	1.68[1]	7.5	8.0	8.3	8.5	8.3	8.1	0.8[1]	0.1[1]
5. Corporate profits after taxes ($ bil.)	144.1	134.8	−6.5	129.3	125.85	128.75	134.5	144	151	11.4	20.0
6. Plant and equipment expenditures ($ bil.)	176.4	189.4	7.4	191.0	189.5	187.65	192	197	202.5	3.1	6.9
7. New private housing units started (ann. rate mil.)	1.74	1.20	−31.0	1.045	1.2	1.28	1.4	1.5	1.63	47.4	35.8
8. Change in bus. inventories GNP accounts ($ bil.)	18.2	2.3	−15.9[2]	11.7	−2.0	−5.0	4.0	8.0	10.4	−3.7[2]	12.4[2]

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

[1]Change in rate, in percentage points.
[2]Change in billions of dollars.

inflation. The average forecast from the survey would seem to imply that the cyclical component of inflation is much weaker now than it had been hitherto (even though it is also true that recently the inflation rates slipped more tardily and weakly during periods of relatively depressed business conditions and surged more intensively during expansions and at high levels of aggregate economic activity). However, it is significant that the distributions of the individual forecasts of inflation are skewed toward the lower figures, with means falling short of the medians. The distribution of the estimated probabilities of change in the implicit price deflator, 1979–80, has a high concentration in the 9–9.9 percent interval (55 percent), but the range below 9 percent accounts for 29 percent, that above 9.9 percent for 16 percent only.

Total Spending and Consumer Capital Outlays

The predicted rate of growth in total spending as measured by GNP in current dollars is 11.6 percent for the year 1980:3–1981:3, but more than three fourths of this will be due to inflation; only the remainder (less than one quarter) will be due to real growth. Still, even this will be an improvement over the recent past. According to the median forecast, current-dollar GNP in 1980 will be 7.6 percent higher than in 1979, while constant-dollar GNP will be 1.4 percent lower.

In this recession, the principal sources of weakness have been consumer capital outlays: household expenditures for durable goods and residential construction. Spending on consumer durables is expected to decline by 3 percent in 1980 compared with 1979, but this refers to the current-dollar estimates; in real terms, that is, allowing for the probable rise in prices of these goods, the implied contraction would be at least 12 percent. Housing starts are estimated to add up to 1.2 million units in 1980, which is 31 percent below the 1979 total. However, these figures reflect mainly past declines; indeed, the consensus forecast has a recovery in consumer capital outlays already under way. Housing starts, in millions of units at annual rates, are expected to rise gradually in each quarter, from 1.04 in 1980:2 to 1.3 in 1980:4 and 1.6 in 1981:3, for a total increase of 56 percent in the five quarters covered. In the same period, consumer expenditures for durable goods are predicted to rise from an annual rate of $197 billion in 1980:2 to $231 billion in 1981:3, or by about 17 percent (corresponding to a rise of perhaps 6 percent in constant dollars).

Business Investment and Profits

Business investment in plant and equipment is expected to behave true to its pattern as a lagging cyclical indicator: having weakened later than consumer capital outlays, it will also recover later and more slowly. The forecasters discount the more optimistic reports on business plans for capital spending and project declining investment expenditures in current dollars during both 1980:3 and 1980:4. The upturn next year in these outlays is seen as very sluggish. Between 1980:3 and 1981:3, plant and equipment expenditures are to rise about 7 percent, less than the expected increases in GNP and the level of capital goods prices. This suggests a decline of some 2–3 percent in real capital expenditures by business and a small reduction in the share of nonresidential fixed investment in GNP.

Investment in business inventories will not fluctuate widely, but it will stage a modest recovery next year after turning slightly negative in the second half of 1980. The implications of the forecast are that the inventory adjustment in this cycle will be much milder than in 1974–75 and that the adjustment is already behind us, for the most part.

Corporate profits after taxes in current dollars dropped sharply in 1980:2, from $158 billion to $129 billion at annual rates. They are expected to stay near that lower level for the rest of the year, then increase gradually to $151 billion in 1981:3. This would seem to be a relatively mild pattern compared with the fluctuations of profits during earlier recessions and recoveries.

Defense Spending and Policy Assumptions

National defense purchases, at $126.6 billion, will be almost 17 percent higher in 1980 than in 1979; perhaps not much less than half of it will be a real gain. Survey members generally agree that this sector will grow strongly in the foreseeable future.

In addition to increased defense spending, most forecasters assume a tax cut in early 1981. Their views on monetary policy are diffuse and uncertain: some respondents expect it to be unchanged, others anticipate some tightening, still others some loosening.

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, assisted by Steven Kaplan of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

Solomon Fabricant

The year 1980 marks the fiftieth anniversary of Solomon Fabricant's continuous association with the National Bureau of Economic Research. In 1930, while doing graduate work at Columbia (Ph.D., 1938), Fabricant joined the Bureau's research staff. He served as director of research from 1954–65. Fabricant is also one of only eight researchers associated with NBER to be named an emeritus research associate by the board of directors. He continues to serve as a member of the board of directors and its executive committee.

Since his retirement in 1973, Fabricant has been professor emeritus and lecturer at New York University where he began teaching in 1946. In addition to his teaching

and research, Fabricant has served as a consultant to numerous federal and state government agencies. He is a distinguished fellow of the American Economic Association and a fellow of the American Statistical Association and the American Association for the Advancement of Science. He is also a member of the American Philosophical Society and several other professional associations. Fabricant has also written numerous articles and

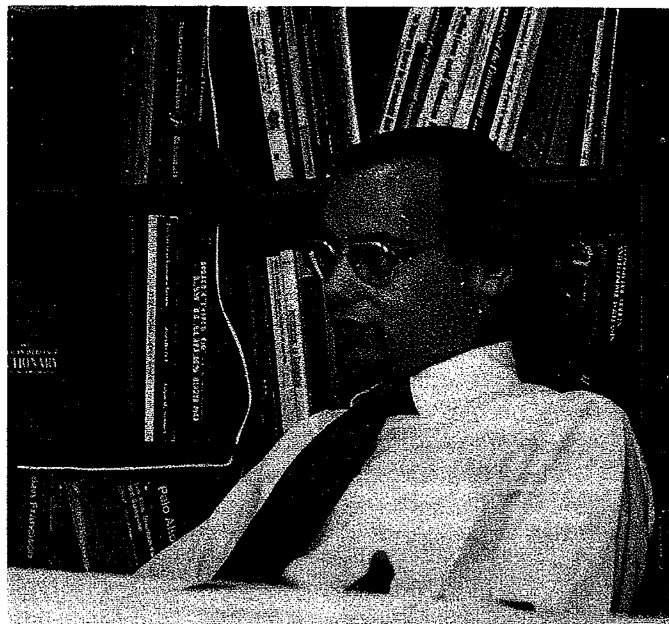
books; his first volume was *Capital Consumption and Adjustment*, published in 1938, and his most recent, published in 1979, is *The Economic Growth of the United States: Perspective and Prospective.*

"Sol" and his wife, Bessie, a painter, live in Manhattan and South Salem, New York. Their daughter Ruth is an economist; daughter Sarah is an editor and writer; and son Peter is an attorney. According to Fabricant, his hobby is "admiring (and explaining) my wife's paintings."

A. Mitchell Polinsky

Research Associate A. Mitchell Polinsky joined NBER in 1978 as a member of the Program in Law and Economics. Polinsky received his A.B. in economics from Harvard in 1970, his Ph.D. from MIT in 1973, and the Master of Studies in Law degree from Yale Law School in 1976.

From 1973 to 1975, Polinsky was an assistant professor of economics at Harvard. On leave for the next two years he was a Russell Sage Foundation resident in law and social science, first at Yale Law School, then at Harvard Law School. He returned to Harvard in 1977 as assistant professor with appointments in both the economics department and the law school. In 1979, he was appointed professor of law and economics in the law school and associate professor of economics in the economics department at Stanford University.



Polinsky has served as a consultant to a number of corporations and nonprofit and government agencies, including the Urban Institute, the State of New York, and the National Academy of Sciences. He has written numerous journal articles in urban economics, public finance, and law and economics. He and his wife, Joan, a financial industries consultant with SRI International, live in Stanford, California. In his leisure time, Polinsky enjoys flying sailplanes.

Conferences

International Macroeconomics Seminar

The International Seminar on Macroeconomics (ISOM), a joint project of NBER and the Maison des Sciences de l'Homme in Paris, had its third annual meeting on June 23 and 24 in Oxford, England. The conference brought together twenty-five economists from France, Germany, Italy, the Netherlands, the United Kingdom, and the United States. Organizers of this continuing conference series are Robert J. Gordon of NBER and Northwestern University and Georges de Menil of the Maison des Sciences de l'Homme.

The 1980 conference covered a diverse group of topics in macroeconomics, with several papers concentrating on a comparative cross-country analysis of a given topic. Papers with a comparative theme were:

Patrick Artus, INSEE, Paris; Pierre-Alain Muet, CEPREMAP, Paris; Peter Palinkas and Peter Pauly, University of Hamburg, "Economic Policy and Private Investment since the Oil Crisis: A Comparative Study of France and Germany"

Discussants: Dale W. Jorgenson, Harvard University, and Stephen Nickell, London School of Economics

Heinz Konig, Universitat Mannheim; Gilles Oudiz, Direction de la Prevision; and Mark Nerlove, Northwestern University, "An Analysis of Business Test Data by Log-Linear Probability Models"

Discussants: Laurits Christensen, University of Wisconsin, and Hugh Wills, London School of Economics

Laurits Christensen and Diane Cummings, University of Wisconsin, and Dale Jorgenson, Harvard University, "An International Comparison of Productivity Levels"

Discussants: Martin Baily, Brookings Institution, and Christian Sautter, Ecole des Hautes Etudes en Sciences Sociales and CEPII

Although each of these three papers has a comparative methodology in common, their topics are quite different. The paper by Artus, Muet, Palinkas, and Pauly on investment develops comparable investment equations for France and Germany and runs identical policy simulations for both countries for the 1970s. The main themes are that a "neutral" monetary policy would have stabilized investment more than the actual policies did. Lags in the response of investment to policy actions are the main elements that inhibit rapid stabilizing policy responses.

The Konig-Nerlove-Oudiz paper develops a methodology for the analysis of data on business expectations and plans for prices and on the relationship between such expectations and plans and subsequent realizations at the level of the individual business firm in France and Germany. Of the various models of expectation formation considered in the paper, the error-learning model seems best supported by the data. Expectations of demand by individual firms seem to play a role in the determination of both price expectations and plans.

The paper by Christensen, Cummings, and Jorgenson develops an extensive new set of data on the level of total factor productivity, relative to productivity in the United States, in eight countries (Canada, France, Germany, Italy, Japan, Korea, the Netherlands, and the United Kingdom). Among the most interesting findings are that several countries, especially Japan, have had a higher level of per capita labor input than the United States, but that all countries continue to have a lower level of per capita capital input and output relative to the United States. The time period covered by the data in the paper extends from 1970 to 1973; during the early 1970s, France and Germany (as well as Canada) exceeded three quarters of the level of the U.S. per capita capital input.

Two papers concentrated on particular aspects of macroeconomic behavior in the United Kingdom:

Stephen Nickell, London School of Economics, "What Has Happened to the Natural Rate of Unemployment in the United Kingdom?"

Discussants: Martin Feldstein, NBER and Harvard University, and Robert Salais, INSEE

James Davidson and David Hendry, London School of Economics, "Interpreting Econometric Evidence: The Behavior of Consumers' Expenditures in the United Kingdom"

Discussants: Robert E. Hall, NBER and Stanford University, and Uwe Westphal, Universitat Hamburg

Nickell's paper was a preliminary investigation that identified several demand and supply variables that might account for the dramatic jump in U.K. unemployment during the 1970s, including changes in population structure, changes in rules on unfair dismissal by employers, changes in relative unemployment benefits, and changes in world trade. Nickell plans further research to try to narrow down the variables introduced in his equations.

Davidson and Hendry take a close look at the version of the permanent income-rational expectations hypothesis developed by R. E. Hall of NBER: that, apart from trend, a time series for consumption should obey a random walk. When various models are estimated with new data from the United Kingdom, the results appear to reject a modified random walk specification of the consumption process. This paper is a sequel to the paper by Bilson on consumption behavior in Germany, the United Kingdom, and the United States, that was presented at ISOM in 1979.

One paper at the conference presented new results on the flexible exchange rate experience in the 1970s:

Jacob Frenkel, NBER and University of Chicago, "Flexible Exchange Rates, Prices, and the Role of 'News': Lessons from the 1970s"

Discussants: William Branson, NBER and Princeton University, and Roland Vaubel, Erasmus University, Rotterdam

Frenkel finds that, despite the extraordinary turbulence in the markets for foreign exchange, these markets have operated efficiently. The high volatility of the exchange rate reflects the intrinsic nature of the foreign exchange market as a financial market, not a market for a real good or service. One of the most important financial determinants of the exchange rate is "news," that is, unexpected changes in the rate of interest. A unique feature of the 1970s has been the failure of the simple version of the purchasing power doctrine that relates the values of current price deviations between countries to their current exchange rate.

The final paper presented at the conference advanced the theory of price setting in situations of nonmarket clearing, or "disequilibrium":

Jerry Green, NBER and Harvard University, and Jean-Jacques Laffont, Universite de Toulouse, "Disequilibrium Dynamics with Inventories and Anticipatory Price Setting"

Discussants: Allan Drazen, University of Chicago, and Richard Portes, Ecole des Hautes Etudes en Sciences Sociales and Birbeck College (London)

The Green–Laffont analysis concentrates on two questions. First, what is the statistical nature of the process governing the real wage, output, employment, and inventories? Second, is it possible to test this model against the alternative hypothesis that prices are continually flexible even after shocks have disturbed the system? The authors find that, although these theories are similar in their qualitative structure, tests of differences in them can be developed. They also show how the frequencies of different types of quantity constrained equilibriums vary with the stochastic specification.

Six of the seven papers presented at the conference will be published in a special issue of the *European Economic Review* in February 1981. They will also be available in the NBER Conference Papers series in late 1980.

Second Research Conference in New York

More than one hundred corporate economists and senior financial executives attended NBER's second annual research conference in New York on October 6. The one-day program was designed to communicate the results of selected recent Bureau research and new work under way to representatives of major U.S. corporations and foundations that support the Bureau's research efforts.

Four NBER research associates discussed their own research and analyses. Benjamin M. Friedman, director of NBER's Program in Financial Markets and Monetary Economics, spoke on the effects of shifting saving patterns on interest rates and economic activity. Friedman began by pointing out that while individuals in the United States consistently do four fifths of their saving through financial intermediaries, there have been and continue to be major shifts in people's reliance on various kinds of intermediary institutions. In particular, in recent years, individual savers have relied progressively more on pensions and thrift institutions, and progressively less on life insurance companies. Because these different kinds of intermediaries typically invest in different mixes of assets (concentrating, for example, more in bonds or mortgages or corporate stocks), and because the assets of each intermediary also differ from the mix of assets that individuals own in their directly held portfolios, changes in how individuals' saving is channeled can importantly affect interest rates and other asset yields. These interest rate effects in turn influence financial flows and either stimulate or retard interest-sensitive nonfinancial activities, such as business capital formation and homebuilding. Friedman's empirical results indicate that saving shifts like those either in progress or in prospect in the United States are sufficient to exert a significant impact not only on interest rates and financial flows but also on the level and composition of nonfinancial economic activity.

Mervyn King, a member of the Bureau's taxation program, discussed international comparisons of the taxation of capital income. Because higher inflation and lower rates of investment have recently focused attention on the effective marginal tax rates on income from capital, NBER is studying the taxation of income from capital in the corporate sector in four countries: the United States, the United Kingdom, Sweden, and West Germany. These four countries have experienced very different rates of growth in the postwar period and encompass a striking variety of corporate taxes and subsidies. King described NBER's plan for coordinating researchers from these countries to develop comparable effective marginal tax rates for the four.

Government policies and the causes of inflation were detailed next by Robert Gordon, a member of the economic fluctuations program. Gordon addressed the issue of the volatility and overall acceleration of inflation during the decade of the 1970s. He asked why inflation has shown such marked swings and why the basic inflation rate has speeded up from 5 percent in early 1971 to 10 percent in early 1980. He asserted that, surprisingly, only a small part of the answer can be traced to demand stimulation and the role of monetary policy. The most important factors have been the changing relative price of food and energy, the slowdown in productivity growth, and the depreciation of the dollar. Almost a full percentage point of extra inflation has been caused by boosts in the Social Security tax.

Finally, Bureau President Martin Feldstein reported on some research that he is now doing as part of NBER's major new study of pensions. Feldstein reviewed the problems involved in measuring unfunded pension liabilities and in interpreting published statistics on those unfunded liabilities. He then described his analysis of the effect of reported unfunded pension liabilities on the price of corporate stock. The evidence indicates that share prices are depressed by approximately the value of the unfunded obligation. Feldstein then discussed the implications of this finding for corporate financial policy and national savings.

Bureau News

Fabricant and Ackley Honored

At the annual meeting of the American Economic Association (AEA) in September, NBER Director and Emeritus Research Associate Solomon Fabricant (his profile appears in this *Reporter*) was named a Distinguished Fellow. Also, former NBER Director Gardner Ackley was elected AEA president. The Distinguished Fellow award was instituted in 1965 and was awarded to another Research Associate Emeritus, Moses Abramovitz, five years ago.

Ackley succeeds William J. Baumol as president of the AEA. Ackley's affiliation with the faculty of the University

of Michigan goes back to 1940. He is widely known for his 1964–68 service as chairman of the President's Council of Economic Advisers. Ackley served three terms on NBER's Board of Directors, from 1971 to 1980.

Inflation and Financial Markets: A Call For Papers

On May 15 and 16, 1981, NBER will hold a conference in Cambridge on inflation and financial markets. The program, being organized by Professor Edward J. Kane of Ohio State University and NBER, will consist of seven papers with two formal discussants assigned to each paper. There will be no published proceedings, but papers presented at the conference will be included in the NBER Conference Paper series and summarized in the *NBER Reporter* and a special Conference Report.

The conference will be broad enough to accommodate a wide variety of issues in finance and monetary economics, focusing in one way or another on the effects that inflation and inflation risk rate are having on the U.S. financial system. Appropriate for the conference are papers dealing with the effects of anticipated and unanticipated inflation on any or all of the following: interest rates, stock prices, relative currency values, metals and other commodities prices, land values, the distribution of wealth, corporate investment and financing decisions, household saving and portfolio behavior, the credit markets' role in the allocation of resources and risk bearing, housing demand and housing finance, government spending, effective tax rates, financial intermediaries, interinstitutional competition, accounting practices, the nature of financial contracts, opportunities for hedging financial risks, the direction of financial innovation, regulatory policy, and processes of monetary and fiscal policymaking. Additional topics that can be interpreted as related to the effects of inflation on financial markets will also be considered. Priority will be given to empirically oriented research, but submission of theoretical papers on these topics is welcome also.

Papers will be selected on the basis of abstracts of about five hundred words or, when possible, completed papers, with preference being given to papers by younger members of the profession. Any research that will not have been published at the time of the conference may be submitted. The deadline for submission of abstracts and papers is January 16, 1981. Authors chosen to present papers will be notified by February 14, 1981. Papers must be ready for distribution to conference participants by April 10, 1981. NBER will pay the expenses of those chosen to give papers at the conference. Abstracts and papers should be sent to: Professor Edward J. Kane, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

Conference on Econometrics and Mathematical Economics

NBER organized the Conference on Econometrics and Mathematical Economics (CEME) in 1970 in order to stimulate discussion and research on the frontiers of econometric and mathematical economic theory and methodology and their application to empirical economic studies. Support for the conference since its inception has been provided by the National Science Foundation.

The conference is organized in seminar groups that meet periodically at leading universities and research centers throughout the United States. The exact composition of the groups depends upon topics and research being conducted in the field. Most groups meet once or twice each year, with meetings organized around presentation and discussion of formal papers and others having a focus on planning and informal reports on research. Meetings of the seminars are generally planned by the seminar leaders, but sessions on subjects of special interest are frequently organized and arranged by others with the leaders' guidance.

Current seminar groups and their leaders are:

General Equilibrium Models—Kenneth Arrow and Gerard Debreu
Evaluation of Econometric Models—James Ramsey and Jan Kmenta
Comparison of Econometric Models—Lawrence Klein
Decision Rules and Uncertainty—Daniel McFadden
Distributed Lags and Time-Series Analysis—William Wecker
Optimal Economic Growth and Natural Resources—Joseph E. Stiglitz
Bayesian Inference in Econometrics—Arnold Zellner
Quantitative Studies in Industrial Organization—Edward Prescott
Analysis of Panel Microdata—James N. Morgan
Public Economics and Nonmarket Decisions—Mancur Olson and Martin McGuire
Decentralized Economic Planning and Programming—Roy Radner
Global Modeling—Bert Hickman and Michael Intriligator
Monetary and Fiscal Analysis—William C. Brainard and Franco Modigliani
Law and Economics—Steven Shavell
Economic Theory—Michael Rothschild

Since CEME's inception, seminar groups have held nearly one hundred sessions, have produced more than three hundred working papers, and have published several books and numerous articles in professional journals. These have been broadly circulated and have made results of seminars widely available. For example, several collections of CEME papers have been published in compendium volumes and in leading professional journals, such as the *International Economic Review* and the *Journal of Political Economy*. The Comparison of Economet-

ric Models seminar has published one volume of papers, the Bayesian Inference seminar has produced two volumes, and the Evaluation of Econometric Models seminar has two volumes in press. The next seminar will be held by the General Equilibrium Models group in mid-February 1981.

Scholars interested in organizing meetings or in participating in the program should contact the seminar leaders listed above or Gary Fromm (SRI International, Arlington, Virginia), who serves as chairman of the steering committee of CEME.

Meeting on Economic Fluctuations

Robert J. Barro organized and hosted a meeting on July 24 and 25 at the University of Rochester that was attended by about twenty-five members and guests of NBER's Program in Economic Fluctuations. The theme of the meeting was the role of financial markets in macroeconomic phenomena. Six papers were presented and discussed.

In "Seignorage and the Case for a National Money," Stanley Fischer (MIT) examines the economic problem faced by small countries with high inflation rates who find that the currencies of other nations partly replace their domestic currency. This phenomenon, dollarization, is important today in Israel, for example. The paper by Robert Flood and Peter Garber (University of Virginia), "Gold Monetization and Gold Discipline," examines some of the economic issues surrounding the resumption of the gold standard, an idea that is advocated by some economists as a solution to the problem of instability of the U.S. price level.

Lawrence Summers (MIT), in "Inflation and Capital Asset Prices," looks at the relation between the market's evaluation of existing capital and the flow of investment into new capital. His research pays particularly close attention to the role of taxes in this relationship. He finds that investment responds quite sluggishly to market valuations. William Schwert's (University of Rochester) paper, "Effects of Nominal Contracting on Stock Returns," written jointly with Kenneth French and Richard Ruback, looks for relations between firms' forward commitments to make money payments and changes in market valuations induced by inflation. Surprisingly, the paper finds very little evidence of higher valuation of those firms that profit from inflation.

In "Preliminary Results on the Determinants of the Variability of Stock Market Prices," Sanford Grossman and Robert Shiller (University of Pennsylvania) ask whether changes in discount rates can explain the large fluctuations in the stock market over the past century. Shiller's earlier work has shown that there is too much variation in the market to be explained purely by changing expectations of dividends with a constant discount rate. Grossman and Shiller argue that changes in discount rates associated with variations in the rate of growth of consumption can explain at least part of the ups and downs of the stock market. The paper by Robert King (University of Rochester), "Investment and Equilibrium Business Cycle Theory," investigates theories of macro fluctuations in which (1) markets clear and (2) changing incentives to invest following a shock explain persistent movements of real output.

New Directors Named

Eight new members were elected to NBER's Board of Directors at its annual meeting on September 29. The eight are: Robert C. Holland, Daniel L. McFadden, Joel Popkin, Nathan Rosenberg, N. James Simler, T. Dudley Wallace, Marina v. N. Whitman, and Arnold Zellner.

Holland has been president of the Committee for Economic Development, which he will represent on the NBER Board, since 1976. Prior to that, he was associated with the Board of Governors of the Federal Reserve System for fifteen years, serving as a member of the Board of Governors from 1973 to 1976. Holland holds a Ph.D. in economics from the University of Pennsylvania.

McFadden has recently joined the MIT faculty as a professor of economics. He had previously taught at the University of California, Berkeley, 1963–79. McFadden received a Ph.D. in economics from the University of Minnesota in 1962. In 1975, he was awarded the John Bates Clark medal (honoring outstanding economists under age 40) of the American Economic Association.

Popkin established his own economic consulting firm in Washington in 1978 after four years on NBER's senior research staff. Prior to that time, Popkin, who holds a Ph.D. in economics from the University of Pennsylvania, was a senior staff economist with the Council of Economic Advisers. Popkin also serves on the board of directors of the American Statistical Association, which he represents on NBER's board.

Rosenberg is an NBER director by appointment of Stanford University, where he is a professor of economics. He has also taught at Harvard (1967–69) and the University of Wisconsin (1969–74). Rosenberg, who received a Ph.D. from the University of Wisconsin, specializes in economic history and the economics of technological change.

Simler represents the University of Minnesota, where he is chairman of the economics department, on NBER's board. He received his Ph.D. from that institution in 1959, and has taught there since 1965. Simler also serves on AEA's Census Advisory Committee and on the Advisory Board of Editors of *The Journal of Human Resources.*

Wallace is chairman of the economics department at Duke University. He received his Ph.D. from the University of Chicago in 1963. In addition to his teaching posts at Duke (since 1974), and North Carolina State University (1960–74), Wallace has been a visiting professor at a number of U.S. and foreign universities. He spent the fall of 1980 at the University of Manchester, England.

Whitman received her Ph.D. in economics from Columbia University in 1962. During her tenure on the Uni-

versity of Pittsburgh faculty from 1962 to 1979, she served on the Council of Economic Advisers (1972–73). In 1979, she was appointed vice president and chief economist of General Motors Corporation.

Zellner is a director by appointment of the University of Chicago, where he heads the H.G.B. Alexander Research Foundation at the Graduate School of Business. He also holds an A.B. in physics from Harvard and a Ph.D. in economics from the University of California, Berkeley. Zellner's association with NBER dates back to 1970 when he became a member of the steering committee of the Conference on Econometrics and Mathematical Economics (CEME). He is also the founder and leader of CEME's seminar on Bayesian Inference in Econometrics.

Burns Retires from Board

Arthur F. Burns retired from the position of honorary chairman of NBER's board of directors in September, after devoting fifty years of distinguished service to the Bureau. Burns joined NBER as a research associate in 1930 while a graduate student at Columbia and has been continuously associated with the Bureau ever since. From 1945 to 1953, he served as NBER's director of research, and from 1957 to 1967, he was president of the Bureau. Burns assumed the board chairmanship in 1967, and was named honorary chairman in 1968.

Burns came to the United States from Austria at the age of six. His family settled in New York and he attended Columbia University, receiving a Ph.D. in economics in 1934. Burns was on the faculty of Rutgers University from 1927 to 1944, and has taught at Columbia since leaving Rutgers. Of course, Burns is also known for his varied and extensive government service, particularly his chairmanship of the Federal Reserve System's Board of Governors, 1970–78. In 1978, Burns was named Distinguished Scholar in Residence of the American Enterprise Institute, Washington, D.C., a position he still holds.

Faculty Research Fellows

NBER faculty research fellows are relatively recent recipients of doctoral degrees, who participate in Bureau research programs. Like research associates, fellows are appointed for one-year renewable terms.

Andrew Abel
John Beggs
Ben Bernanke
Olivier J. Blanchard
James Brown
Jeremy I. Bulow
Hope Corman
Marie-Paule Donsimoni
David Ellwood
Robert P. Flood, Jr.
Daniel Frisch
Don Fullerton
Craig Hakkio
Peter Hartley
Patrick Hess
David Jones
Robert Litterman
Shelly Lundburg
Nancy Marion
Maurice Obstfeld
Ariel Pakes
Jeffrey Sachs
Mark Schankerman
Joel Slemrod
Alan Stockman
Lawrence Summers
Pankaj Tandon
Carl Walsh
Dennis Warner
Lawrence Weiss

Reprints Available

The following NBER Reprints, intended for nonprofit educational and research purposes, are now available (see *NBER Reporter*, Summer, Fall, and Winter 1979 and Summer 1980 for titles 1–57):

58. *Coupon and Tax Effects on New and Seasoned Bond Yields and the Measurement of the Cost of Debt Capital*, by Robert J. Shiller and Franco Modigliani, 1979.
59. *The Welfare Cost of Permanent Inflation and Optimal Short-Run Economic Policy*, by Martin Feldstein, 1979.
60. *Taxation and Corporate Financial Policy*, by J. Gregory Ballentine and Charles E. McLure, Jr., 1980 (NBER Working Paper No. 243).
61. *Federal Taxes and Homeownership: Evidence from Time Series*, by Harvey S. Rosen and Kenneth T. Rosen, 1980.
62. *The Information Value of Observing Monetary Policy Deliberations*, by Benjamin M. Friedman, 1979.
63. *Financial Leverage Clienteles: Theory and Evidence*, by E. Han Kim, Wilbur G. Lewellen, and John J. McConnell, 1979.
64. *Changes in the Propensity to Live Alone: 1950-76*, by Robert T. Michael, Victor R. Fuchs, and Sharon R. Scott, 1980 (NBER Working Paper No. 262).
65. *Cross-Country Effects of Sterilization, Reserve Currencies, and Foreign Exchange Intervention*, by Richard C. Marston, 1980 (NBER Working Paper No. 391).
66. *Labor Supply and Aggregate Fluctuations*, by Robert E. Hall, 1980 (NBER Working Paper No. 385).
67. *A Consistent Characterization of a Near-Century of Price Behavior*, by Robert J. Gordon, 1980 (NBER Working Paper No. 455).
68. *The Efficiency of Foreign Exchange Markets and Measures of Turbulence*, by Jacob A. Frenkel and Michael L. Mussa, 1980 (NBER Working Paper No. 476).
69. *Exchange Rates, Prices, and Money: Lessons from the 1920s*, by Jacob A. Frenkel, 1980 (NBER Working Paper No. 452).
70. *How Effective Have Fiscal Policies Been in Changing the Distribution of Income and Wealth?*, by Mervyn A. King, 1980 (NBER Working Paper No. 465).
71. *The Choice of Diet for Young Children and Its Relation to Children's Growth*, by Dov Chernichovsky and Douglas Coate, 1980 (NBER Working Paper No. 219).
72. *A Contribution to the Theory of Tax Expenditures: The Case of Charitable Giving*, by Martin Feldstein, 1980.
73. *The Effect of Unionism on Worker Attachment to Firms*, by Richard B. Freeman, 1980 (NBER Working Paper No. 400).
74. *Wages, Profits, and Macroeconomic Adjustment: A Comparative Study*, by Jeffrey D. Sachs, 1980.
75. *International Aspects of Dividend Relief*, by Charles E. McLure, Jr., 1980 (NBER Working Paper No. 317).

76. *Intergenerational Transfers and Inequality*, by D. L. Bevan and Joseph E. Stiglitz, 1979.
77. *A Neoclassical Analysis of the Economics of Natural Resources*, by Joseph E. Stiglitz, 1979.
78. *Some Further Remarks on Cost-Benefit Analysis*, by Joseph E. Stiglitz, 1977.
79. *Monetary Policy under Exchange Rate Flexibility*, by Rudiger Dornbusch, 1978 (NBER Working Paper No. 311).
80. *The Relationship between Children's Health and Intellectual Development*, by Linda N. Edwards and Michael Grossman, 1979 (NBER Working Paper No. 213).
81. *Analysis of the Impact of Capital-Specific Policies on Legislation*, by Patric H. Hendershott, 1980.
82. *How Important Is Disaggregation in Structural Models of Interest Rate Determination?*, by Benjamin M. Friedman, 1980 (NBER Working Paper No. 294).
83. *Money in the United Kingdom, 1833-80*, by Wallace E. Huffman and James R. Lothian, 1980.
84. *Strict Liability versus Negligence*, by Steven Shavell, 1980.
85. *Domestic Saving and International Capital Flows*, by Martin Feldstein and Charles Horioka, 1980 (NBER Working Paper No. 310).
86. *Portfolio Design and Portfolio Performance: The Individual Investor*, by Wilbur G. Lewellen, Ronald C. Lease, and Gary G. Schlarbaum, 1980.
87. *Exchange Rates, Money, and Relative Prices: The Dollar-Pound in the 1920s*, by Kenneth W. Clements and Jacob A. Frenkel, 1980 (NBER Working Paper No. 429).
88. *Le Syndicalisme a Deux Visages*, by Richard B. Freeman and James L. Medoff, 1980. (This is the French version of "The Two Faces of Unionism," NBER Working Paper No. 364 and NBER Reprint No 45.)
89. *Inflation, Tax Rules, and the Stock Market*, by Martin Feldstein, 1980 (NBER Working Paper No. 403).
90. *Exchange Rate Economics: Where Do We Stand?*, by Rudiger Dornbusch, 1980.
91. *R and D and the Productivity Slowdown*, by Zvi Griliches, 1980 (NBER Working Paper No. 434).
92. *Employment Fluctuations and Wage Rigidity*, by Robert E. Hall, 1980.
93. *Stabilization Policy and Capital Formation*, by Robert E. Hall, 1980.

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others, there is a charge of $1.00 per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than $10.00. Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, Inc., 1050 Massachusetts Avenue, Cambridge, MA 02138.

Conference Papers Available

The papers presented at two recent NBER conferences are now available as part of the Bureau's Conference Paper series. (See *NBER Reporter*, Summer 1979, p. 24, and Summer 1980, p. 21, 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. Prepayment is required on orders totaling less than $10.00. Please use the following numbers when ordering papers:

Labor Markets (These papers will appear in a volume tentatively titled *Studies in Labor Markets*, edited by Sherwin Rosen and published by the University of Chicago Press.)

35. "Labor Mobility and Wages," by Jacob Mincer and Boyan Jovanovic (NBER Working Paper No. 357)
36. "Wage Growth and Job Turnover: An Empirical Analysis," by Ann P. Bartel and George J. Borjas, with comments by Gilbert Ghez (NBER Working Paper No. 285)
37. "Anticipated Unemployment, Temporary Layoffs, and Compensating Wage Differentials," by John M. Abowd and Orley Ashenfelter
38. "Structural and Reduced Form Approaches to Simulating the Outcome of the Job Search Process," by Nicholas M. Kiefer and George R. Neumann
39. "Layoffs and Unemployment Insurance," by Frank Brechling, with comments by Daniel S. Hamermesh
40. "Employment in Construction on Distribution Industries: The Impact of the New Jobs Tax Credit," by John Bishop
41. "Risk Shifting, Statistical Discrimination, and the Stability of Earnings," by Herschel I. Grossman and Warren T. Trepeta, with comments by Dennis W. Carlton
42. "Black Economic Progress after 1964: Who Has Gained and Why?" by Richard B. Freeman (NBER Working Paper No. 282)
43. "Signaling, Screening, and Information," by Michael Spence, with comments by Charles Wilson
44. "Learning by Observing and the Distribution of Wages," by Stephen Ross, Paul Taubman, and Michael Wachter, with comments by John G. Riley and Charles Wilson

The Economics of Information and Uncertainty (These papers will appear in a volume by the same title, edited by John McCall and submitted to the University of Chicago Press.)

45. "Asset Prices in a Production Economy," by William A. Brock, with comments by Edward C. Prescott

46. "Planning and Market Structure," by Dennis W. Carlton, with comments by Jean-Jacques Laffont and Joseph M. Ostroy
47. "Statistical Decision Theory Requiring Incentives for Information Transfer," by Jerry Green, with comments by Andrew Postlewaite and John G. Riley
48. "Corporate Financial Structure and Managerial Incentives," by Sanford J. Grossman and Oliver D. Hart, with comments by Hayne E. Leland
49. "A Competitive Entrepreneurial Model of a Stock Market," by Richard Kihlstrom and Jean-Jacques Laffont, with comments by David Levhari
50. "Multiperiod Securities and the Efficient Allocation of Risk: A Comment on the Black-Scholes Option Pricing Model," by David M. Kreps
51. "The Matching Process as a Noncooperative Bargaining Game," by Dale T. Mortensen, with comments by Peter Diamond and Steven A. Lippman
52. "The Capacity Expansion Process in a Growing Oligopoly: The Case of Corn Wet Milling," by A. Michael Spence and Michael E. Porter, with comments by Sidney Winter

Summer Institute Papers

NBER has recently established a new series of publications, Summer Institute Papers. These are papers presented and discussed at NBER's Summer Institute by visitors to the Bureau. It is anticipated that those papers written by NBER faculty research fellows and research associates and presented at the Summer Institute will be published in the NBER Working Papers series.

The following Summer Institute papers are listed by programs. The notation (WP) indicates that the paper is or will be an NBER Working Paper.

Finance

David Jones
"Consistent Simple Sum Aggregation over Assets" (WP 573)

Edward Kane
"External Pressure and the Operations of the Fed" (WP)

Angelo Melino
"Estimation of a Rational Expectations Model of the Term Structure"

James Pesando
"On Expectations, Term Premiums, and the Volatility of Long-Term Interest Rates" (WP)

Vance Roley
"Symmetry Restrictions in a System of Financial Asset Demands: A Theoretical and Empirical Analysis"

Robert Shiller
"The Use of Volatility Measures in Assessing Market Efficiency" (WP)

Robert Shiller and Sanford Grossman
"The Determinants of the Variability of Stock Prices" (WP)

Robert Taggart
"Taxes and Corporate Capital Structure in an Incomplete Market"

Carl Walsh
"Asset Prices, Substitution Effects, and the Impact of Changes in Asset Stocks" (WP)

Finance and Pensions

Benjamin Friedman
"Effects of Shifting Saving Patterns on Interest Rates and Economic Activity" (WP)

Richard Hemming
"Actuarial Aspects of Private Pension Scheme Financing"

Finance, Pensions, and Taxation

Fischer Black
"Pension Funds and Capital Structure"

Myron Scholes and Merton Miller
"Executive Compensation, Taxes, and Incentives"

Irwin Tepper
"Taxation and Corporate Pension Policy"

Pensions

Rosalind Altmann
"An Analysis of Occupational Pensions in Britain"

Gary Burtless and Jerry Hausman
"Individual Retirement Decisions under the Civil Service Retirement System and Social Security" (WP)

Robert Inman
"Public Pensions, Public Employee Unions, and the Local Labor Budget"

Taxation and Finance

Alan Auerbach and Mervyn King
"Taxation Portfolio Choice and Debt-Equity Ratios: A General Equilibrium Model" (WP)

George M. Constantinides
"Capital Market Equilibrium with Personal Tax"

Harry DeAngelo and Roland W. Masulis
"Optimal Capital Structure under Corporate and Personal Taxation"

Roger Gordon
"Inflation, Taxation, and Corporate Behavior" (WP)

Patrick J. Hess
"Dividend Yields and Stock Returns: A Test for Tax Effects"

E. Han Kim
"Miller's Equilibrium and the Theory of Optimal Capital Structure"

Agnar Sandmo
"Income Tax Evasion, Labor Supply, and the Equity-Efficiency Tradeoff"

Paul Strebel and Paul Grier
"An Implicit Clientele Test of the Relationship between Taxation and Capital Structure" (WP 481)

Paul Strebel
"Systematically Risky Debt, Taxes, and Optimal Capital Structure"

Lawrence Summers
"Inflation and the Valuation of Corporate Equities" (WP)

Michelle White
"Bankruptcy and Reorganization: Economic and Public Policy Considerations"

Taxation

Andrew Abel
"Accelerated Depreciation and the Efficacy of Temporary Fiscal Policy: Implications for an Inflationary Economy"

Theodore Bergstrom
"On Capturing Oil Rents with a National Excise Tax"

Don Fullerton
"Transition Losses of Partially Mobile Industry-Specific Capital" (WP 520)

Jerry Green
"Taxation and the Ex-Dividend Day Behavior of Common Stock Prices" (WP 496)

David Hartman
"International Effects on the U.S. Capital Market" (WP)

Shlomo Yitzhaki
"A Tax Programming Model"

International Studies

Masanao Aoki
"A Method for Evaluation Consequences of Structural Differences"

William H. Branson and Jorge Braga de Macedo
"The Optimal Weighting of Indicators for a Crawling Peg" (WP 527)

Michael Darby
"International Transmission under Pegged and Floating Exchange Rates: An Empirical Comparison" (WP)

Jeffrey Frankel
"Monetary and Portfolio-Balance Models of Exchange Rate Determination"

Jeffrey Frankel
"The Mystery of the Multiplying Marks: A Modification of the Monetary Model"

Jacob Frenkel
"The Collapse of Purchasing Power Parities during the 1970s" (WP)

Jacob Frenkel and Carlos Rodriquez
"Exchange Rate Dynamics and the Overshooting Hypothesis" (WP)

Peter Hooper and John Morton
"Fluctuations in the Dollar: A Model of Nominal and Real Exchange Rate Determination"

Louka Katseli-Papaefstratiou and Nancy P. Marion
"Adjustment to Variations in Imported Input Prices: The Role of Economic Structure" (WP 501)

Paul Krugman
"Oil and the Dollar" (WP 554)

Robert Lipsey, Irving Kravis, and Dennis Bushe
"Prices and Market Shares in the International Machinery Trade" (WP 521)

David Lipton and Jeffrey Sachs
"Accumulation and Growth in a Two-Country Model" (WP 572)

Nancy P. Marion and Robert P. Flood
"The Transmission of Disturbances under Alternative Exchange Rate Regimes with Optimal Indexing" (WP 500)

William Nordhaus
"Policy Responses to the Productivity Slowdown"

Maurice Obstfeld
"Macroeconomic Policy Exchange Rate Dynamics and Optimal Asset Accumulation" (WP)

Charles Wyplosz
"The Exchange and Interest Rate Term Structure under Risk Aversion and Rational Expectations"

Labor Studies

James Brown
"How Close to an Auction Is the Labor Market? Employee Risk Aversion, Income Uncertainty, and Optimal Labor Contracts" (WP)

Robert Willis
"On the Social and Private Benefits of Population Growth"

Productivity

Gary Chamberlain
"Multivariate Regression Models for Panel Data"

Richard Levin
"Toward an Empirical Model of Schumpeterian Competition"

Ariel Pakes and Zvi Griliches
"Patents and R and D at the Firm Level: A First Look" (WP)

Ariel Pakes and Zvi Griliches
"The Estimation of Distributed Lags in Short Panels" (WP)

Summer Institute Papers are available at a cost of $1.00 each; advance payment is required on any order totaling $10.00 or less. Orders should be addressed to: Summer Institute Papers, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138.

New Bureau Books

Three new NBER volumes are now available through the University of Chicago Press:

1. *Modeling the Distribution and Intergenerational Transmission of Wealth*, edited by James D. Smith
2. *Doctors and Their Workshops: Economic Models of Physician Behavior*, by Mark V. Pauly
3. *The American Economy in Transition*, edited by Martin Feldstein (See this page for table of contents.)

The Smith volume, part of NBER's Studies in Income and Wealth series, includes papers from a conference on past and present distribution of wealth in the United States. It is concerned with how wealth is accumulated and transmitted from generation to generation. Among the questions addressed are: What factors influence saving? How

are assets distributed by divorce? What are the patterns of behavior in making gifts and bequests?

Doctors and Their Workshops: Economic Models of Physician Behavior uses economic analysis to understand how physicians affect the use and cost of nonphysician health care resources and services. Pauly investigates the relationship between physicians and hospital productivity, the ways in which physicians can affect demand for their own services, and the link between the supply of physicians and the use of medical services.

The Feldstein volume explores the transition in the U.S. economy from tremendous growth in the 1950s and 1960s to the spiraling inflation and low productivity growth that marked the 1970s. Twenty-nine distinguished contributors from academia, business, and government provide background material and personal statements on industry, labor, the role of government, population, technology and productivity, the distribution of welfare, financial markets, international trade, and macroeconomic developments.

All three volumes should be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628. The cost of the Smith volume is $28.00; the Pauly volume is $17.00; and the Feldstein volume is $20.00. An academic discount of 10 percent for individual volumes and a 20 percent discount for standing orders for *all* NBER books published by the University of Chicago Press are available to university faculty. Orders must be sent on university stationery.

A fourth NBER volume, *Business Cycles, Inflation, and Forecasting* by Geoffrey H. Moore, is now available from Ballinger Publishing Company. The Moore book, one of NBER's Studies in Business Cycles, includes essays on the following topics: (1) the conditions that determine when a recession begins and ends; (2) inflation and its relation to the business cycle; (3) leading and lagging indicators; and (4) an appraisal of the accuracy of economic forecasts. Moore's book is priced at $40.00 and should be ordered directly from Ballinger Publishing Company, 17 Dunster Street, Cambridge, MA 02138.

NBER corporate associates will automatically receive all volumes, and other contributors to the National Bureau may order books at a discount from the Bureau's publications department.

The American Economy in Transition

Contents

Preface

The American Economy in Transition: Introduction
Martin Feldstein

Postwar Changes in the American Financial Markets
1. Benjamin M. Friedman
2. Milton Friedman
3. A. W. Clausen

Postwar Macroeconomics: The Evolution of Events and Ideas
1. Robert J. Gordon
2. Arthur M. Okun
3. Herbert Stein

Trends in United States International Trade and Investment since World War II
1. William H. Branson
2. Herbert Giersch
3. Peter G. Peterson

American Population since 1940
1. Richard A. Easterlin
2. Victor R. Fuchs
3. Simon Kuznets

The Evolution of the American Labor Market, 1948–80
1. Richard B. Freeman
2. John T. Dunlop
3. R. F. Schubert

The Level and Distribution of Economic Well-Being
1. Alan S. Blinder
2. Irving Kristol
3. Wilbur J. Cohen

The Structure of Industry
1. Richard E. Caves
2. Walter B. Wriston
3. James R. Schlesinger

Technology and Productivity in the United States
1. Edwin Mansfield
2. Ruben F. Mettler
3. David Packard

The Role of Government: Taxes, Transfers, and Spending
1. George F. Break
2. George P. Shultz
3. Paul A. Samuelson

Concluding Comments
Arthur F. Burns

Technical Papers Series

Three more studies in the NBER Technical Working Papers series are now available (see the Fall 1979 *NBER Reporter*, p. 17, for other titles). Like NBER Working Papers, these studies may be obtained by sending $1.00 per paper to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Prepayment is required for all orders under $10.00.

Multiple Shooting in Rational Expectations Models

David Lipton, James Poterba, Jeffrey Sachs, and **Lawrence H. Summers**
Technical Working Paper No. 3
August 1980

This paper describes an algorithm for the solution of rational expectations models with saddlepoint stability properties. The algorithm is based on the method of multiple shooting, which is widely used to solve mathematically similar problems in the physical sciences. Potential applications to economics include models of capital accumulation and valuation, of money and growth, of exchange rate determination, and of macroeconomic activity. In general, whenever an asset price incorporates information about the future path of key variables, solution algorithms of the type we consider are applicable.

The Estimation of Distributed Lags in Short Panels

Zvi Griliches and **Ariel Pakes**
Technical Working Paper No. 4
October 1980

In this paper, we investigate the problem of estimating distributed lags in short panels. Estimates of the parameter of distributed lag relationships based on a single time series of observations have usually been rather imprecise. The promise of panel data in this context is in the N repetitions of the time that it contains, which should allow one to estimate the identified lag parameters with greater precision. On the other hand, panels tend to track their observations only over a relatively short time interval. Thus, some assumptions will have to be made on the contributions of the unobserved presample x's to the current value of y before any lag parameters can be identified from such data. In this paper we suggest two such assumptions, both of which are, at least in part, testable. We also outline appropriate estimation techniques. The first assumption places reasonable restrictions on the relationship between the presample and insample x's, while the second imposes conventional functional form constraints on the lag coefficients associated with the presample x's.

Solution and Maximum Likelihood Estimation of Dynamic Nonlinear Rational Expectations Models

John B. Taylor and **Ray Fair**
Technical Working Paper No. 5
October 1980

A solution method and an estimation method for nonlinear rational expectations models are presented in this paper. The solution method can be used in forecasting and policy applications and can handle models with serial correlation and multiple viewpoint dates. When applied to linear models, the solution method yields the same results as those obtained from currently available methods that are designed specifically for linear models. It is, however, more flexible and general than these methods. For large nonlinear models, the results in this paper indicate that the method works quite well.

The estimation method is based on the maximum likelihood principle. It is, as far as we know, the only method available for obtaining maximum likelihood estimates for nonlinear rational expectations models. The method has the advantage of being applicable to a wide range of models, including, as a special case, linear models. The method can also handle different assumptions about the expectations of the exogenous variables, something that is not true of currently available approaches to linear models.

Current Working Papers

Individual copies of NBER Working Papers are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies of the Working Papers by sending $1.00 per copy to Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please make checks payable to the National Bureau of Economic Research, Inc.

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

Economic Growth and the Rise of Service Employment

Victor R. Fuchs
Working Paper No. 486
May 1980
JEL Nos. 123, 226

The distribution of employment among the agriculture, industry, and service sectors within countries is closely related to the level of the country's real gross domestic product (GDP) per capita. As real income rises, agriculture's share of GDP falls, service employment rises, and industry's share of GDP rises to a peak at about $3,300 (1970 dollars) per capita and then declines. U.S. time series and OECD cross sections follow almost identical patterns of employment change. The decline of agriculture is attributable primarily to differences in income elasticity of demand, but the shift of employment from industry to service is attributable primarily to differential rates of growth of output per worker. Economic growth also contributes to the rise of service employment through an increase in female labor force participation. Families with working wives tend to spend a higher proportion of their income on services. Productivity tends to grow less rapidly in the service sector than in the rest of the economy, but the shift of employment to services was not a major factor in the slowing of aggregate productivity in the United States in the 1970s.

Income Tax Incentives to Promote Saving

Charles Becker and **Don Fullerton**
Working Paper No. 487
June 1980
JEL No. 323

This paper examines six possible reforms of the U.S. personal income tax system. We evaluate proposals by estimating the dynamic analogue to compensating variations, using a medium-scale general equilibrium model designed to allow a broad range of tax policies. We find that proposals to index the tax system for inflation tend to provide large welfare gains. Other measures designed to raise the net-of-tax return to capital are successful to the extent that they serve as ad hoc offsets for inflation or to the extent that they partially integrate the corporate and personal income taxes. Results also indicate that intertemporal and interindustry efficiency gains are of comparable importance. Finally, results suggest that additional intertemporal welfare gains can be achieved at the cost of a more regressive tax structure overall.

The Level and Distribution of Economic Well-Being

Alan S. Blinder
Working Paper No. 488
June 1980
JEL No. 921

This paper summarizes and critically evaluates what is known about postwar trends in both the level and distribution of economic well-being. Although certain nonincome aspects of well-being are considered, the primary focus is on the level and inequality of income. Considerable attention is paid to recent controversies over the effects of transfers in kind and changing life cycle income patterns on the overall trend in income inequality.

Martingale-Like Behavior of Prices

Christopher A. Sims
Working Paper No. 489
June 1980

Asset prices set in a competitive market need not be martingales; that is, it need not be true that the best predictor of future prices is the current price. Nonetheless, statistical tests for this property are sometimes treated as tests for the proper functioning of an asset market. To a close approximation, asset prices often seem to have this property, and it is sometimes supposed that the martingale ought to be imposed on econometric models of asset markets and the forecasts made from them. This paper shows that under general conditions, which allow among other things for risk aversion among market participants, competitive asset prices ought to be locally—over small units of time— martingale-like. This implies that tests of proper functioning of the market ought to be conducted with data at fine time intervals; results of such tests should not be used to justify imposing the martingale property on a model's long-term projections of asset prices.

Intertemporal Substitution and the Business Cycle

Robert J. Barro
Working Paper No. 490
June 1980

This paper summarizes the theoretical role of intertemporal substitution variables in the "new classical macroeconomics." An important implication is that positive monetary shocks tend to raise expected real returns that are calculated from the usual partial information set, but tend to lower realized real returns. After reviewing the previous empirical findings in the area, the study re-

ports new results on the behavior of returns on the New York Stock Exchange and of returns on Treasury bills. The analysis isolates realized real rate of return effects that are significantly positive for a temporary government purchases variable and significantly negative for monetary movements. However, the results do not support the theoretical distinction between money shocks and anticipated changes in money. Since the study focuses on realized real returns, which can be measured in a straightforward manner, there is no evidence on the hypothesis that expected real returns, which are calculated on the basis of incomplete information, rise with monetary disturbances. Because this proposition is sensitive to the specification of information sets, it may be infeasible to test it directly.

Components of Manufacturing Inventories

Alan J. Auerbach and **Jerry Green**
Working Paper No. 491
June 1980
JEL No. 131

This paper presents a structural model of production and inventory accumulation based on the hypothesis of cost minimization. It differs from previous attempts in several respects. First, it integrates the analysis of input inventories with output inventories, treating the two stocks separately. Second, it distinguishes between temporary and permanent fluctuations in sales as they are anticipated by the industry. Third, it allows for a more general structure of adjustment costs. In particular, the production level can be changed by costs, rather than only deviating from a fixed target.

Empirically, there are three principal conclusions. This model performs much better than those with cost-of-production adjustment allowed. Disaggregation of inventories provides significant insights into the dynamics of the adjustment process. However, the restrictions on our model implied by the continuous-time, stochastic control theory that we utilize are rejected by the data. We believe that a more disaggregated specification or a more detailed econometric treatment of the discrete-time nature of the observations would avoid this difficulty.

Exchange Rate Unions and the Volatility of the Dollar

Richard C. Marston
Working Paper No. 492
June 1980
JEL Nos. 430, 423

This study analyzes why formation of an exchange rate union, such as the newly established European Monetary System, can be harmful to the interests of some member countries. The framework provided for analyzing behavior in the union is a three-country model that combines an asset market determination of exchange rates with a price sector emphasizing wage indexation behavior and price competitiveness between countries. The three countries consist of two members of the union as well as a nonmember country (the United States), allowing the study to investigate trade and financial relationships within and outside the union.

The study examines how each country's exchange rates and prices respond to stochastic disturbances of several types, of which the most important is a capital account disturbance directly affecting one member's financial market (originating, for example, in shifts between U.S. securities and those of one member country). The analysis shows that the effects of the union on each member country depends upon (1) the source of those economic disturbances that give rise to fluctuations in exchange rates, (2) the share of trade between members of the union, (3) the degree of integration between the financial markets of the member countries, and (4) the responsiveness of domestic wages and prices to changes in exchange rates.

The exchange rate union fixes the cross-exchange rate between member currencies, thereby preventing disturbances from affecting this key exchange rate. In doing so, however, the union may actually increase the variability of prices in the economy of one member country. The outcome depends critically upon the degree of financial integration between the two member countries in the absence of the union. The importance of another factor, domestic price responsiveness, is brought out clearly by comparing the alternative extremes of no price adjustment and full price adjustment to exchange rate changes. Price behavior interacts in an interesting way with financial integration to determine the potential gains or losses of each country joining the union.

Exchange Risk and the Macroeconomics of Exchange Rate Determination

Rudiger Dornbusch
Working Paper No. 493
June 1980

This paper discusses the link between portfolio diversification models of exchange risk and the macroeconomics of exchange rate determination. The first part sets out the mean-variance model of portfolio choice for the case of two nominal assets with random real returns. From there the model is made "international" by a specification of the world inflation process. The concept of exchange risk is discussed in terms of the variability of the real exchange rate.

This paper shows that when all randomness in real returns derives from variability of the real exchange rate, rather than from inflation variability, full hedging is possible. Even for the case of no real exchange rate variabili-

ty, it is shown that variability of the nominal rate of depreciation is a determinant of the portfolio composition.

The risk premium is derived and discussed in terms of the deviation of the anticipated rate of depreciation from the interest differential. The actual rate of depreciation may exceed the interest differential either because of news or because of a risk premium that depends on the relative asset supplies compared to their shares in a minimum variance portfolio. An appendix investigates the implications of tastes and differences and shows that there is an additional component of the premium due to differences in consumption patterns.

The portfolio model is integrated in a macro model to show how the relative supplies of nonmonetary assets, through yield and valuation effects, determine the impact and long-run consequences of real and nominal monetary disturbances. The integration of the portfolio and macro models relies crucially on the properties of the demand for money. A demand for money that depends on the average return on securities, rather than on the domestic interest rate, implies that portfolio considerations do not affect exchange rates.

Sterilization and Offsetting Capital Movements: Evidence from West Germany, 1960-70

Maurice Obstfeld
Working Paper No. 494
June 1980
JEL Nos. 431, 432

The purpose of this paper is twofold. The first is to estimate, using structural methods, the extent to which capital flows undermined West German monetary policy during the Bretton Woods years, 1960 to 1970. The second is to show that earlier reduced-form estimates of the capital-account offset coefficient are tainted by simultaneity bias because of the Deutsche Bundesbank's systematic policy of sterilization, and so overestimate the true coefficient. This paper distinguishes between the short-run or one-quarter offset coefficient and the long-run coefficient implied by the full adjustment of all asset markets. An aggregative structural model of German financial markets yields long-run coefficients between .50 and .65 implying substantial Bundesbank control over the monetary base, at least in the short run. A formal test for simultaneous-equations bias provides evidence that variations in domestic credit cannot be regarded as exogenous and that equations regressing capital flows on changes in domestic credit and other variables exaggerate the extent of the offset.

Will the Real Excess Burden Please Stand Up? (or Seven Measures in Search of a Concept)

Harvey S. Rosen and **Alan J. Auerbach**
Working Paper No. 495
June 1980
JEL No. 024

It is well understood that a tax which distorts relative prices generates a welfare cost or "excess burden" in addition to any associated transfer of resources, but there remains considerable controversy and confusion with respect to procedures for measuring this excess burden.

The purpose of this paper is to clarify matters concerning what is one of the most basic concepts in welfare economics. We describe and evaluate a number of alternative conceptual experiments that might lie behind an excess burden calculation, showing how these notions can be represented graphically and algebraically and how they can be approximated numerically.

Taxation and the Ex-Dividend Day Behavior of Common Stock Prices

Jerry Green
Working Paper No. 496
July 1980
JEL No. 521

The behavior of stock prices around ex-dividend days has been suggested as evidence for tax induced clientele effects and as a means of estimating the average effective tax rate faced by investors. In this paper, these possibilities are examined theoretically and empirically. Theoretically, it is shown that the measured drop in prices per dollar of dividends may provide a biased estimate of the effective tax rate. Looking at the volume of trade around ex-dividend days, we show that the conditions under which it would be unbiased are unlikely to hold. Strong evidence, based on a broader data base than that used by previous investigators, is presented for the presence of the clientele effect.

Alternative Tax Treatments of the Family: Simulation Methodology and Results

Daniel Feenberg and **Harvey S. Rosen**
Working Paper No. 497
July 1980
JEL No. 320

A number of suggestions have been made for reforming the tax treatment of the family. None of these proposals has been accompanied by careful estimates of their effects on income distribution, revenue collections, and

labor supply. The purpose of this paper is to provide such information.

Our analysis is based upon a series of simulations using the TAXSIM file of the National Bureau of Economic Research, which contains information from a sample of tax returns filed in 1974. Substantial attention is devoted to the problem of including data that are absent from TAXSIM. The simulations assume that wives' labor supply behavior depends upon the tax system.

The tax reforms simulated include various exemptions and credits for secondary workers, as well as changes in the rules governing filing status. In a number of cases, we find that allowing for even a modest behavioral response leads to substantial changes in the revenue implications of the proposals.

Monetary Information and Macroeconomic Fluctuations

John Boschen and **Herschel I. Grossman**
Working Paper No. 498
July 1980
JEL No. 023

This paper introduces contemporaneously available monetary data into an equilibrium model that combines rational expectations, market clearing, and incomplete information about monetary disturbances. Data on the current money stock involve a preliminary estimate that is subject to a subsequent process of gradual revision. The model implies the testable hypothesis that aggregate output and employment are uncorrelated with the contemporaneous measure of money growth implied by the difference between the currently available estimates of current and past money shocks. Rejection of this hypothesis provides strong evidence against the equilibrium approach to modeling the relation between monetary disturbances and macroeconomic fluctuations.

On the Neutrality of Inflation: Notes on Taxation and the Welfare Costs of Inflation

Joseph E. Stiglitz
Working Paper No. 499
July 1980
JEL No. 300

This paper analyzes the nature of the distortions and welfare losses associated with inflation. If inflation were fully anticipated, it would be almost neutral, provided the tax system were fully indexed and provided interest were paid on bank deposits (as, to an increasing extent, it is in the United States). When there is uncertainty about the rate of inflation, the distinction between anticipated and unanticipated inflation may no longer be meaningful. I show that under plausible assumptions, inflation with proper indexing is still almost neutral.

Part II of the paper analyzes what is perhaps the major source of distortions associated with inflation, the failure of the tax system to be fully indexed. Appropriate indexing would not eliminate the distortions associated with the present tax structure; it would eliminate the dependence of the magnitude of these distortions on the inflation rate. Three categories of effects are analyzed: (a) direct distributive effects; (b) direct allocative effects; and (c) indirect general equilibrium effects, arising out of the first two. The direct distributive and allocative effects influence the prices of different assets and the beforetax rate of interest. Without full indexation, when the rate of inflation changes, either government expenditures, the real value of the deficit, or taxation rates have to adjust. The precise nature of the equilibrium that emerges will depend on the nature of these adjustments.

The analysis of the allocative effects of inflation focuses in particular on the provisions for depreciation and the treatment of capital gains and interest.

The Transmission of Disturbances under Alternative Exchange Rate Regimes with Optimal Indexing

Robert P. Flood and **Nancy P. Marion**
Working Paper No. 500
July 1980
JEL No. 431

This paper develops a general, stochastic macroeconomic model that can be used to study the international transmission of disturbances under alternative exchange rate systems.

Four types of exchange rate systems are considered: (1) uniform flexible exchange rates, (2) uniform fixed exchange rates, (3) two-tier exchange rates in which the current-account exchange rate is flexible, and (4) two-tier exchange rates with separate, floating rates for current- and capital-account transactions. It is assumed that expectations are rational, so only the unexpected portion of macro policy alters the level of output. In addition, private contracts form the underpinning of the aggregate supply function, and they can be adjusted optimally in response to the country's choice of exchange rate regime.

It is shown that when the home country takes all prices as exogenous and wages are optimally indexed, the country is fully insulated from foreign disturbances under the two fixed-rate regimes but not under the two flexible-rate regimes. Even so, the fixed-rate regimes are inferior to the flexible-rate regimes in terms of their ability to minimize output variance. When the home country is large in the market for its own produced good, these results must be modified.

The analysis makes two general points. First, one cannot assume stability of structure when assessing the

consequences of alternative exchange rate regimes. For example, the slope of the aggregate supply curve and the rationally formed expectations in the asset markets can respond dramatically to the government's choice of exchange rate regime. Second, exchange rate regimes that provide full insulation from foreign disturbances may nevertheless be inferior to other regimes in terms of their ability to maximize social welfare.

Adjustment to Variations in Imported Input Prices: The Role of Economic Structure

Louka Katseli-Papaefstratiou and **Nancy P. Marion**
Working Paper No. 501
July 1980
JEL No. 431

This paper introduces an imported input into a model of an open economy with developed financial markets, a flexible exchange rate, and some degree of market power on the export side. The model is designed to investigate the impact of an increase in imported input prices on the exchange rate, domestic interest rates, income, and nontraded goods prices. The analysis reveals that changes in various structural parameters, such as the degree of market power or the extent of demand-side openness or financial openness, alter the transmission of foreign price disturbances to the domestic economy.

Irreversibility, Uncertainty, and Cyclical Investment

Ben S. Bernanke
Working Paper No. 502
July 1980
JEL No. 131

The optimal timing of real investment is studied under the assumptions that investment is irreversible and that new information about returns is arriving over time. Investment should be undertaken in this case only when the costs of deferring the project exceed the expected value of information gained by waiting. Uncertainty, because it increases the value of waiting for new information, retards the current rate of investment. The nature of investors' optimal reactions to events whose implications are resolved over time is a possible explanation of the instability of aggregate investment over the business cycle.

Modeling Price Rigidity or Predicting the Quality of the Good That Clears the Market

Dennis W. Carlton
Working Paper No. 503
July 1980

To say that the price of some good is inflexible over time has little meaning if the characteristics of the good are changing over time. In this paper, I concentrate on delivery lags as being the only dimension other than price that varies. I show how one can predict the relative importance of price and delivery lag fluctuations as equilibrating mechanisms. The complications of the theory as well as the surprising results underscore the complexity of predicting price behavior when the characteristics of the good are endogenous. The empirical results provide strong support for the theory that delivery lags are an important influence on market behavior and therefore that an understanding of their influence is crucial in predicting how markets will respond to supply and demand shocks.

Taxes, Saving, and Welfare: Theory and Evidence

Charles E. McLure, Jr.
Working Paper No. 504
July 1980
JEL No. 320

This paper reviews theoretical analyses and results of empirical research on the effects of taxation on private saving. The theoretical section describes income and substitution effects, distinguishes between compensated and uncompensated elasticities, notes that saving is expenditure on future consumption, and discusses how the optimal taxation of capital depends on the response of labor supply to taxation, as well as that of saving. The review of empirical literature is devoted primarily to an examination of recent papers by Michael Boskin and by Philip Howrey and Saul Hymans. Determining the effect interest rates have on saving involves considerable conceptual and econometric difficulties and has not been accomplished satisfactorily.

The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households

Robert E. Hall and **Frederic S. Mishkin**
Working Paper No. 505
July 1980
JEL Nos. 131, 212

We investigate the stochastic relation between income and consumption (specifically, consumption of

food) within a panel of about 2,000 households. Our major findings are:

1. Consumption responds much more strongly to permanent than to transitory movements of income.
2. The response to transitory income is nonetheless clearly positive.
3. A simple test, independent of our model of consumption, rejects a central implication of the pure life cycle–permanent income hypothesis.
4. The observed covariation of income and consumption is compatible with pure life cycle–permanent income behavior on the part of 80 percent of the families and with simple proportionality of consumption and income among the remaining 20 percent.

As a general matter, our findings support the view that families respond differently to different sources of income variations. In particular, temporary income tax policies have smaller effects on consumption than do other, more permanent changes in income of the same magnitude.

Does Anticipated Monetary Policy Matter?

Frederic S. Mishkin
Working Paper No. 506
July 1980
JEL Nos. 131, 133, 311, 211

Recent analyses using business cycle models that incorporate features of the Friedman–Phelps natural rate model along with rational expectations lead to the following policy conclusions. Anticipated changes in aggregate demand policy will have already been taken into account in economic agents' behavior and will thus evoke no further output or employment response. Therefore, deterministic feedback policy rules will have no impact on output fluctuations in the economy. These policy implications of what Modigliani has dubbed the Macro Rational Expectations (MRE) hypothesis are of such importance that a wide range of empirical research is needed for the verification or refutation of the MRE hypothesis.

Recent empirical work has tested the neutrality implication of the MRE hypothesis that anticipated monetary policy does not affect output or unemployment. Although this empirical work has frequently been favorable to the MRE hypothesis, it suffers from several deficiencies that create suspicion about the robustness of the results. This paper is an attempt to conduct an econometric investigation of the implications of the MRE hypothesis that does not suffer from these deficiencies. The results here strongly reject the neutrality implication of the MRE hypothesis: unanticipated movements in monetary policy are not found to have a larger impact on output and unemployment than anticipated movements. This evidence casts doubt on previous evidence that is cited as supporting the view that only unanticipated monetary policy is relevant to the business cycle.

Are Market Forecasts Rational?

Frederic S. Mishkin
Working Paper No. 507
July 1980
JEL Nos. 310, 311, 313, 130

Recent work with survey data indicates that survey forecasts of inflation and interest rates are not rational. However, because the behavior of a market is not necessarily the same as the behavior of an average individual, this survey evidence does not demonstrate a lack of rationality in market forecasts. This paper develops and conducts tests of rationality in the bond market, using security price data, similar to the tests conducted on survey data. The results provide no evidence that bond market forecasts of interest rates are irrational, and this casts doubt on the accuracy of survey measures of interest rate forecasts as a description of bond market behavior. Results on inflation forecasts in the bond market are more mixed. This paper also argues that empirical tests in Modigliani and Shiller's seminal paper are incomplete. New evidence using the test procedures developed here confirms Modigliani and Shiller's conclusion that the term structure of interest rates is rational.

State and Local Taxes and the Rate of Return on Nonfinancial Corporate Capital

Martin Feldstein and **James Poterba**
Working Paper No. 508
October 1980

Although states and localities collect a substantial amount of revenue from taxes on corporate profits and property taxes on corporate capital, these taxes have been inadequately reflected in previous calculations of the effective corporate tax rate and the pretax rate of return to corporate capital. The present study focuses on nonfinancial corporations and begins by estimating the taxes on profits and property that these corporations pay to state and local governments. These estimates are then used to calculate the pretax rate of return on nonfinancial corporate capital; the results suggest that the conventional omission of state and local property taxes leads to an understatement of this rate of return by about one percentage point. The effective tax rate on nonfinancial corporate profits is also computed, taking account of state and local taxes. These taxes amount to approximately 16 percent of the pretax profits of nonfinancial corporations. The total effective tax rate on these corporations is shown to have risen substantially during the past two decades; it averaged more than 70 percent in the most recent five-year period.

The series for the rate of return and effective tax rate

are used to compute the real aftertax rate of return on nonfinancial corporate capital. The calculations show that this number has declined recently, reaching 2.3 percent in 1979. This is to be contrasted with aftertax returns of over 5 percent that prevailed during the mid-1960s.

Pension Funding, Share Prices, and National Saving

Martin Feldstein and **Stephanie Seligman**
Working Paper No. 509
August 1980
JEL No. 521

This paper examines empirically the effect that unfunded pension obligations have on corporate share prices and discusses the implication of these estimates for national saving, the decline of the stock market in recent years, and the rationality of corporate financial behavior. The analysis uses the information on inflation-adjusted income and assets that large firms were required to provide for 1976 and subsequent years.

The evidence for a sample of nearly two hundred manufacturing firms is consistent with the conclusion that share prices fully reflect the value of unfunded pension obligations. Since the conventional accounting measure of the unfunded pension liability has a number of problems (which we examine in the paper), it would be more accurate to say that the data are consistent with the conclusion that shareholders accept the conventional measure as the best available information and reduce share prices by a corresponding amount.

The most important implication of the share price response is that the existence of unfunded private pension liabilities does not necessarily entail a reduction in total private saving. Because the pension liability reduces the equity value of the firm, shareholders are given notice of its existence and an incentive to save more themselves. For this reason, unfunded private pensions differ fundamentally from the unfunded Social Security pension and the other unfunded federal government civilian and military pensions.

Distributions of Family Hospital and Physician Expenses

Bernard Friedman
Working Paper No. 510
July 1980
JEL Nos. 913, 229

This paper develops a frequency distribution of annual health expenses for a variety of family compositions. The basic data come from a sample of claims for a large group of federal employees in 1977. The primary data were compared in several aspects against three other sources of reference data on expenses for the population, excluding the elderly. The comparisons were reassuring.

The method of convolution is used to obtain family frequency distributions from the distribution for individual adults and children. This technique is necessary when the claims data do not record family composition. As a consequence, the results may not be nationally representative of households that are relatively large or affected by unemployment. Aside from this special reservation, the experience of the non-elderly families of employees seems to be a useful resource for policy analysis.

A Model of Firms' Decisions to Export or Produce Abroad

Jimmy Weinblatt and **Robert E. Lipsey**
Working Paper No. 511
July 1980
JEL No. 441

This paper presents a theoretical analysis of the factors influencing a multinational corporation's decisions on the location of production. We start with a simple model of optimization for a firm facing the choice of exporting a single differentiated final product or producing it abroad. Then we develop the model to take account of production of intermediate as well as final products, the existence of scale economies, and finally, the effects of transport cost and of factors affecting the cost of production.

The share of foreign output is shown to be related to the level of transport cost, to the size of host-country markets, and to host-country wage levels relative to those of the home country, in combination with labor intensities of production. All of these relationships in turn are shown to interact in various ways with economies of scale in affecting the choice of production locations.

Analyzing the Relation of Unemployment Insurance to Unemployment

Alan L. Gustman
Working Paper No. 512
July 1980
JEL No. 820

This paper presents a framework for analyzing the relation of unemployment insurance to unemployment and uses this framework to evaluate recent developments in the literature on unemployment insurance (UI) and future research needs. Unemployment is broken down into more basic elements related to the labor market flows that determine unemployment incidence and duration. It is also disaggregated by reason for unemployment—for example, entering the labor force or quitting the last job. A matrix containing those definitional elements of

unemployment that are potentially affected by the UI system forms the basis for organizing the discussion. Each component of unemployment that may be affected by variations in characteristics of the UI system is considered in turn. The discussion of each of these elements focuses on recent theoretical and empirical studies that analyze how they are influenced by features of the UI system. By proceeding systematically through the elements that comprise unemployment and by considering the major behavioral explanations linking the unemployment insurance system to unemployment, it is possible to determine where the analysis has proceeded satisfactorily and where major gaps remain.

Market Wages, Reservation Wages, and Retirement Decisions

Roger H. Gordon and **Alan S. Blinder**
Working Paper No. 513
July 1980
JEL Nos. 821, 915

This paper is an empirical cross-sectional study of the retirement decisions of American white men between the ages of 58 and 67, predicated on the theoretical notion that an individual retires when his reservation wage exceeds his market wage. Reservation wages are derived from an explicit utility function in which the most critical taste parameter is assumed to vary both systematically and randomly across individuals. Market wages are derived from a standard wage equation adjusted to the special circumstances of older workers.

The two equations are estimated jointly by maximum likelihood, which takes into account the potential selectivity bias inherent in the model (low-wage individuals tend to retire and cease reporting their market wage). The model is reasonably successful in predicting retirement decisions and casts serious doubt on previous claims that the social security system induces many workers to retire earlier than they otherwise would. The normal effects of aging (on both market and reservation wages) and the incentives set up by private pension plans are estimated to be major causes of retirement.

Demographic Differences in Cyclical Employment Variation

Kim B. Clark and **Lawrence H. Summers**
Working Paper No. 514
July 1980
JEL No. 826

This paper examines the demographic patterns of cyclical swings in the labor market by decomposing movements in employment into changes in unemployment and changes in participation. Differences in labor market experience by age, sex, race, and enrollment in school are considered and implications for aggregate demand policy are assessed. The results confirm the importance of the participation rate in affecting the cyclical behavior of both employment and unemployment. A key finding is that young workers bear a disproportionate share of cyclical fluctuations. Moreover, the evidence suggests that the employment experience of demographic groups with high unemployment appears to be insensitive to aggregate demand conditions because of the surge in participation that accompanies increased employment opportunities. Without fluctuations in participation, expansionary aggregate demand could reduce the unemployment rate of almost every demographic group to a very low level.

Inventories and the Structure of Macro Models

Alan S. Blinder
Working Paper No. 515
July 1980
JEL.No. 130

This short paper briefly documents the empirical importance of inventory movements in business cycles and then reviews some of the implications of inventories and storable output for theoretical models. Attention is paid, first, to the effects of inventories on the micro foundations of macroeconomics, and then to the implications of inventories for the workings of macro models. Models of the old-fashioned Keynesian, disequilibrium, and new classical schools are considered, and it is shown that adding inventories changes each in important ways.

Implications for the Adjustment Process of International Asset Risks: Exchange Controls, Intervention and Policy Risks, and Sovereign Risk

Willem H. Buiter
Working Paper No. 516
July 1980
JEL No. 431

This paper analyzes the implications of international asset risks for the operation of the international adjustment process, with special emphasis on the scope of monetary policy. After a brief review of actual practice in the evaluation of country risk, the paper discusses a number of modifications in the standard theory of efficient international financial markets that are necessitated by the existence of country risk. For macroeconomic policy, the major implications are that domestic and foreign assets become imperfect substitutes and that world demand for domestic assets is likely to be less than perfectly elastic, even in the case of a small country. Even under a fixed exchange rate, a measure of domestic control over domestic interest rates therefore exists.

Monetary Policy and Long-Term Interest Rates: An Efficient Markets Approach

Frederic S. Mishkin
Working Paper No. 517
July 1980
JEL Nos. 311, 313, 134

The impact of a money stock increase on nominal long-term interest rates has been a hotly debated issue in the literature of monetary economics. The most commonly held view—also a feature of most structural macro models—has an increase in the money stock leading, at least in the short run, to a decline in long-term interest rates. Monetarists dispute this view because they believe that it ignores the dynamic effects of a money stock increase.

This paper is an application of efficient markets theory to an empirical analysis of the relationship between money supply growth and long-term interest rates. This approach has an advantage over earlier research on the subject in that it imposes a theoretical structure on the relationship that allows for easier interpretation of the empirical results and for more powerful statistical tests. In the interest of ascertaining the robustness of the results, many different empirical tests are carried out in this paper. They uniformly *do not support* the proposition that increases in the money supply are correlated with declines in long-term rates.

Anticipated Inflation, the Frequency of Transactions, and the Slope of the Phillips Curve

Zvi Hercowitz
Working Paper No. 518
July 1980

This paper examines the effects of expected inflation on the responsiveness of output to nominal disturbances in the framework of a localized markets model. The mechanism described in the theoretical part of the paper is that expected inflation has a positive effect on the transaction frequency, which in turn increases the flow of price information across markets. More information implies less misperception of monetary shocks as relative shifts in excess demand, resulting in lower sensitivity of real output to these shocks.

The empirical implication of this proposition—namely, that expected inflation reduces the coefficient of nominal shocks in an output equation—is tested, first using data across countries and then with time-series data from the United States. The first test uses Lucas's and Alberro's estimates of Phillips Curve coefficients from different countries and the corresponding average inflation rates. The second test involves data from the post-World War II period. It uses nominal rates of return on Treasury bills and corporate bonds as measures of anticipated inflation and Barro's estimates of unanticipated money. In general, results in both tests provide support (stronger than expected) for the implication of the theory.

Labor Market Competition among Youths, White Women, and Others

James H. Grant and **Daniel S. Hamermesh**
Working Paper No. 519
July 1980
JEL Nos. 824, 022

This paper examines the effects on the labor market of increased labor force participation of youths and women. Using 1969 cross-sectional data for manufacturing, we estimate substitution elasticities for pairs of inputs from age-race-sex aggregates of labor and capital. Findings include: (1) strong substitution between youths and white females and (2) complementarity among many of the remaining factors. Then, allowing either rigid or flexible wages for youths, we simulated a 10 percent increase in labor force participation for white females. Findings are respectively: either a large decrease in youth employment and moderate wage decreases for other workers or moderate decreases in wages of youths and white women.

Transition Losses of Partially Mobile Industry-Specific Capital

Don Fullerton
Working Paper No. 520
July 1980
JEL No. 323

Comparative static models typically assume homogeneous and mobile factors in estimating the economic effects of a tax policy change. Even dynamic models employ a given homogeneous capital stock in two different allocations for the first period of two equilibrium sequences. This assumption of malleable capital overstates early efficiency gains from policies designed to improve factor allocation. On the other hand, immobile factor models would understate such gains by assuming that no capital ever relocates.

The model in this paper attempts to bridge the gap by restricting each industry's capital reduction to its rate of depreciation. The stock of depreciated capital from the previous period represents an industry-specific type of capital that may earn a lower equilibrium return. The use of mobile capital above this minimum constraint is limited by the total gross saving of the economy, including all industries' depreciation and consumers' net saving.

The industry-specific capital model suggests, for example, that previous estimates of the dynamic efficiency gain from full integration of personal and corporate taxes in the United States are overstated by about $5 billion. The model could also be used to estimate distributional impacts on individuals with more than proportionate ownership of capital in particular industries.

Prices and Market Shares in the International Machinery Trade

Irving B. Kravis, Robert E. Lipsey, and **Dennis M. Bushe**
Working Paper No. 521
July 1980
JEL Nos. 420, 430

We use new international price measures, developed for machinery and transport equipment, to explain changes in exports and export shares of the United States, Germany, and Japan.

The effects of relative price changes on export shares are fairly large, producing relative quantity changes that are 50 to 100 percent, and at times as much as 200 percent, greater than the price changes. The effects of price changes seem to stretch out over three to five years and possibly longer. We also find that delays between order and delivery may affect measures of export quantity and its response to price.

Equations for individual countries suggest that exports by the United States are most responsive to relative price changes and those of Germany are least responsive. The income elasticities are very sensitive to the inclusion or exclusion of a time variable to measure unexplained trends in exports.

A system of supply and demand equations is developed in which the supply of exports depends on a country's export and domestic prices for the same goods, as well as on its real income. The supply elasticities range from about two and a half for Germany to over seven for the United States, implying that firms switch easily between domestic sales and exports.

Import Competition and Macroeconomic Adjustment under Wage-Price Rigidity

Michael Bruno
Working Paper No. 522
July 1980

This paper analyzes the problem of short-term adjustment to a fall in the price of competing imports when there is wage and price rigidity. This is done in terms of a two-sector model that incorporates a domestically producible import good and a semitradeable home good. The effect of a fall in import prices on domestic employment, prices, and the balance of payments under nominal or real wage rigidity is analyzed in the various market disequilibrium regimes. The possible responses are analyzed in terms of demand management, supply management, and exchange rate (or tariff) policy. The theory is then applied to the stagflationary environment of the 1970s within a modified framework in which the price of imported raw materials has risen simultaneously. This helps to show how the adjustment depends crucially on the nature of the underlying macroeconomic environment.

Aggregate Land Rents and Transport Costs

Richard J. Arnott and **Joseph E. Stiglitz**
Working Paper No. 523
July 1980

This paper explores the relationship between aggregate land rents and aggregate transport costs in a city. On the negative side, we show that there is no simple relationship between the aggregate benefits from a transport improvement and the induced change in aggregate land rents. On the positive side, we demonstrate that there is nonetheless a very simple relationship between aggregate land rents and aggregate transport costs. For a city that is not geographically constrained, aggregate transportation costs are equal (are greater than, are less than) twice differential land rents when the elasticity of transport costs with respect to distance traveled is equal to (less than, greater than) one. Moreover, this relationship holds with remarkable generality; individuals may differ in tastes, incomes, and transport cost functions, and the results will still be valid.

The Role of Money Supply Shocks in the Short-Run Demand for Money

Jack Carr and **Michael R. Darby**
Working Paper No. 524
July 1980
JEL No. 311

Previous models of the demand for money are either inconsistent with contemporaneous adjustment of the price level to expected changes in the nominal money supply or imply implausible fluctuations in interest rates in response to unexpected changes in the nominal money supply. This paper proposes a shock-absorber model of money demand in which money supply shocks affect the synchronization of purchases and sales of assets and

so engender a temporary desire to hold more or less money than would otherwise be the case. Expected changes in nominal money do not cause fluctuations in real money inventories. The model is simultaneously estimated for the United States, United Kingdom, Canada, France, Germany, Italy, Japan, and the Netherlands, using the postwar quarterly data set and instruments used in the Mark III International Transmission Model. The shock-absorber variables significantly improve the estimated short-run money demand functions in every case.

The Relation of Stock Prices to Corporate Earnings Adjusted for Inflation

Phillip Cagan
Working Paper No. 525
August 1980
JEL Nos. 134, 313

The effects of inflation adjustments of corporate earnings on market prices were tested by cross-sectional regressions of 485 manufacturing companies for the 1966-76 period and subperiods. The basic data were company reports and stock prices.

For the full period, market prices reflected the inventory valuation adjustment and the decline in real value of net financial liabilities fairly completely, but they reflected the adjustment for the understatement of depreciation only to a small extent. The surprisingly low effect of the depreciation adjustment could only be partly attributed to measurement error. The estimated effect of capital gains on stock prices was either in the wrong direction or negligible.

The implication of the results is that market investors use a range of adjustments for the effects of inflation that differ from the estimates used in this study. How and why they differ, though, is not clear. The adjustments were much lower in the later period, 1972-76, than in the earlier period, 1966-71. This seemed inconsistent with the higher inflation rates in the later period. The explanation for the difference is not clear, but it may reflect the difficulties of judging the size of the adjustments in a period of rapid inflation.

Inflation, Portfolio Choice, and the Prices of Land and Corporate Stock

Martin Feldstein
Working Paper No. 526
August 1980

This paper presents an explicit model of portfolio demand, using it to show how the rate of inflation and its variances affect the real prices of land and common stock. The analysis is thus an extension of two of the author's earlier papers that studied how the interaction of inflation and tax rules alters the real prices of land and stock. This analysis shows the importance of going beyond the traditional assumption that net-of-tax yields are equated for all assets.

The Optimal Weighting of Indicators for a Crawling Peg

William H. Branson and **Jorge Braga de Macedo**
Working Paper No. 527
August 1980
JEL No. 430

This paper derives optimal weights for current-account and reserve indicators used to adjust the exchange rate (a "crawling peg"). Keven (1975) showed that use of a current-account indicator alone would not stabilize reserves, while a reserve indicator results in unstable fluctuations in the exchange rate. This paper begins by analyzing the problem in the framework of Phillips (1954), in which the current-account indicator is proportional and the reserve indicator is integral. We then analyze the problem in a deterministic optimal control framework, and finally as a problem in stochastic control. In all cases, the optimal combination is a weighted average, which we call the Keven-Phillips formula. With a fairly low variance of the current account, its weight falls in the range of 0.47-0.65. Rising variance reduces its weight in the optimal formula.

The Capitalization of Income Streams and the Effects of Open Market Policy under Fixed Exchange Rates

Maurice Obstfeld
Working Paper No. 528
August 1980
JEL No. 431

This paper investigates the long- and short-run neutrality of open market monetary policy in a world of fixed exchange rates and imperfect substitutability between bonds denominated in different currencies. Using an illustrative portfolio balance model, I show that when the public discounts the future tax liabilities associated with the national debt, and the central bank supports the exchange rate by trading noninterest-bearing foreign assets, open market policy has a short-run effect, but no long-run effect, on the domestic price level and interest rate. When the foreign exchange intervention assets earn interest that is rebated to and capitalized by the public, open market policy loses even its short-run efficacy—the capital-account offset to monetary policy is complete.

The Historical Evolution of Female Earning Functions and Occupations

Claudia Goldin
Working Paper No. 529
August 1980

Of all the changes in the history of women's market work, few have been more impressive than the rapid emergence and feminization of the clerical sector and the related decline in manufacturing employment for women. Although a century ago few women were clerical workers, by as early as 1920, 22 percent of all employed nonfarm women were clerical workers, and about 50 percent of all clerical workers were women. Employment for women in the clerical sector expanded at five times the annual rate in manufacturing from 1890 to 1930, and during the same period of time, wages for female clerical workers fell relative to those in manufacturing. This paper explores the underlying causes of these dramatic sectoral shifts by estimating the relationship between earnings and experience for manufacturing and clerical workers from 1888 to 1940. It is seen that earning profiles for employment in manufacturing rose steeply with experience and peaked early, while those in the clerical sector were much flatter and did not peak within the relevant range. Returns to off-job training and depreciation with age and with time away from the labor force also differed between these occupations. A model of sectoral shift is developed in which workers choose occupations and therefore the time path of training on the basis of their life cycle labor force participation and their consumption value of education. The coefficients from the earning function estimations are used to demonstrate that the decline in the relative wage of clerical to manufacturing workers from 1890 to 1930 can be explained by such a model. Finally, it is shown that a sizable percentage of the difference in the growth of female employment in the manufacturing and clerical sectors can be explained by various labor supply factors.

Does the Investment Interest Limitation Explain the Existence of Dividends?

Daniel Feenberg
Working Paper No. 530
August 1980

Miller and Scholes show that under certain conditions the federal income tax rate on dividend income is no higher than the rate on capital gains. Tabulations of actual 1977 tax returns show that the special circumstances under which this can occur apply to less than 3 percent of all dividend income. No significant role can be ascribed to this result in the determination of corporate dividend policy.

Policy Decentralization and Exchange Rate Management in Interdependent Economies

Willem H. Buiter and **Jonathan Eaton**
Working Paper No. 531
August 1980
JEL No. 431

This paper provides a theoretical framework for analyzing policy formation among independent authorities operating in an interdependent environment. This framework is then applied to the analysis of optimal monetary policy in a stochastic two-country model with rational expectations. The main conclusions follow. (1) Optimal monetary policy requires a finite response of the money supply to the exchange rate (which is the only contemporaneously observed variable). Neither a fixed nor a freely floating exchange rate is likely to be optimal. (2) Output-stabilizing monetary policy may well require "leaning with the wind" in the foreign exchange market—expanding the money supply when the home currency depreciates, thus increasing the volatility of the exchange rate. (3) The ability of the monetary authorities to influence real variables is due to the assumption that the private sector does not make forward contracts that are contingent on exchange rates. (4) There are likely to be gains from policy coordination.

Microeconomic Aspects of Productivity Growth under Import Substitution: Turkey

Anne O. Krueger and **Baran Tuncer**
Working Paper No. 532
August 1980

This paper assesses the empirical relevance of "dynamic" factors in industrialization in developing countries. Using data from a sample of ninety-one firms, rates of growth of output per unit of input are calculated. It is shown that there is little basis, at least with regard to the Turkish experience, to the notion that nontraditional industries are in some sense more dynamic than traditional industries.

The Tax Advantages of Pension Fund Investments in Bonds

Fischer Black
Working Paper No. 533
August 1980

I believe that every tax-paying firm's defined benefit pension fund portfolio should be invested entirely in bonds (or insurance contracts). Although the firm's pension funds are legally distinct from the firm, there is a

close tie between the performance of the pension fund investments and the firm's cash flows. Sooner or later, gains or losses in pension fund portfolios will mean changes in the firm's pension contributions.

Shifting from stocks to bonds in the pension funds will increase the firm's debt capacity because it will reduce the volatility of the firm's future cash flows. Shifting from stocks to bonds in the pension funds will give an indirect tax benefit equal to the firm's marginal tax rate times the interest on the bonds. There is no indirect tax benefit if the pension funds are invested in stocks.

Fully implementing the plan will mean shifting all of the stocks in the pension fund to fixed income investments, and putting all new contributions into fixed income investments. Shifting $2 million from stocks to bonds has a present value for the firm's stockholders of about $1 million. Shifting from stocks to bonds in the pension funds will reduce the firm's leverage. To offset this, the firm can issue more debt than it otherwise would have issued. The money raised can be invested in the firm or used to buy back the firm's stock.

This version of the plan, with more bonds in the pension fund and more debt on the firm's balance sheet, is equivalent to the following transactions: (1) sell a portfolio of stock on which no taxes are paid, and buy the firm's stock on which no taxes are paid; and (2) issue the firm's bonds at an aftertax interest rate, and buy other firms' bonds at a beforetax interest rate.

Incomplete Information, Risk Shifting, and Employment Fluctuations

Herschel I. Grossman
Working Paper No. 534
August 1980
JEL No. 023

This paper explores one way in which accepting the hypothesis that labor market transactions involve arrangements for shifting risk from workers to employers strengthens the case for accepting the hypothesis that incomplete information is the critical factor in producing the positive effect of aggregate demand for output on aggregate employment. The analysis shows that the introduction of risk-shifting arrangements into models of incomplete information eliminates the dependence of the relation between aggregate demand and aggregate employment on the relative strengths of the usual substitution and income effects on labor supply of perceived real wage rates or perceived real interest rates. In addition, the analysis shows that the apparent fact that workers choose an amount of risk shifting that gives them constant nominal wage rates implies that incomplete information would produce a positive effect of aggregate demand on aggregate employment. The key to these results is that risk shifting allows workers to use the value of product associated with high levels of demand to supplement the income associated with low levels of demand. Consequently, they can choose high employment in states of high demand without causing a corresponding reduction in their expected marginal utility of consumption.

Some Aspects of the Canadian Experience with Flexible Exchange Rates in the 1970s

Charles Freedman and **David Longworth**
Working Paper No. 535
August 1980

In this study, the authors examine three aspects of the Canadian experience with flexible exchange rates in the 1970s: the movements in the Canadian dollar/U.S. dollar exchange rate; the sharp growth of external borrowing by Canadians in the 1974–76 period; and the real effects of relative price movements.

Several theoretical and empirical exchange rate models are found to have done poorly in explaining the movements of the value of the Canadian dollar over the decade.

In the examination of external borrowing in the mid-1970s, it is concluded that there was some response in borrower and lender behavior to movements in nominal long-term interest rate differentials. Four sources of explanation for such behavior are examined.

A three-sector model comprising nontradable goods, resource-based tradable goods, and nonresource-based tradable goods, is used to study the effects of changes in raw material prices, domestic unit labor costs, and the exchange rate on various real variables in the Canadian economy.

Further Evidence on the Value of Professional Investment Research

Wilbur G. Lewellen
Working Paper No. 536
August 1980

Recommendations of the professional research staffs of retail brokerage houses represent a potentially important source of information and advice to the individual investor. Since individual investors are paying for large quantities of this research, it appears as though the product is in demand. This study provides a unique perspective on the value of professional research to the individual investor. Specifically, in addition to examining the *potential* for individual investors to exploit brokerage house recommendations to earn superior portfolio returns, the study also focuses on the *actual* return experiences of a representative sample of investors who were in fact observed to trade on such advice. Data for the in-

vestigation consisted of a file of all common stock transactions for a random sample of individual customers of a large national brokerage house; a complete record of the purchase-and-sale recommendations made for securities by that firm; and the per share prices and cash dividends of the recommended securities. Examination of the data indicates that there were opportunities for investors to realize superior returns. The research reports on securities, then, must have contained at least some new information or analytical insights of value.

Exchange Rate Expectations and Nominal Interest Differentials: A Test of the Fisher Hypothesis

Robert E. Cumby and **Maurice Obstfeld**
Working Paper No. 537
August 1980

This note tests the hypothesis that nominal interest differentials between similar assets, denominated in different currencies, can be explained entirely by the expected change in the exchange rate over the holding period. This proposition, often called the "Fisher open" hypothesis or the hypothesis of perfect asset substitutability, has been a major component of recent theories of exchange rate determination, and has important implications for monetary policy. Tests on six major currencies allow rejection, at standard significance levels, of the joint hypothesis of perfect asset substitutability and foreign-exchange market informational efficiency.

Estimated Effects of the October 1979 Change in Monetary Policy on the 1980 Economy

Ray C. Fair
Working Paper No. 538
August 1980

The effects of the October 1979 change in monetary policy on the economy in 1980–81 are estimated from simulations with my model of the U.S. economy. Standard errors of the estimated effects are also presented. The results indicate that the change reduced real growth, but had little effect on the rate of inflation.

Time Preference and Health: An Exploratory Study

Victor R. Fuchs
Working Paper No. 539
August 1980
JEL No. 913

This paper reports the results of an exploratory survey designed to measure differences in time preference across individuals and to test for relationships between time preference and schooling, health behaviors, and health status. Approximately five hundred adults age 25–64 were surveyed by telephone. Time preference was measured by a series of six questions asking the respondent to choose between a sum of money now and a larger sum at a specific point in the future. Approximately two thirds gave consistent replies to the six questions. The implicit interest rate revealed in their replies is weakly correlated with years of schooling (negative), cigarette smoking (positive), and health status (negative). Family background, especially religion, appears to be an important determinant of time preference.

Intermediate Imports, the Terms of Trade, and the Dynamics of the Exchange Rate and Current Account

Maurice Obstfeld
Working Paper No. 540
August 1980
JEL Nos. 411, 431

This paper studies the macroeconomic effects of an increase in the price of an imported intermediate production input. The framework of the analysis is a small open economy with a floating exchange rate and endogenous terms of trade, in which saving depends on residents' (variable) rate of time preference. In this setting, an intermediate price shock may lead to an appreciation of the exchange rate in both the short run and the long run, and is likely to occasion a current-account surplus. The terms of trade between foreign and domestic finished goods always improve in the long run.

Three Papers on Brazilian Trade and Payments

Eliana A. Cardoso and **Rudiger Dornbusch**
Working Paper No. 541
September 1980

This report brings together three short papers on problems of Brazilian trade and payments. The following topics are addressed: the determinants of export behavior in the manufactured goods sector, measures of the real ex-

change rate, and the monetary approach applied to the external balance.

In the paper on export behavior of manufactured goods, we report estimates of an export supply equation. We show that for the period 1959–77, exports of manufactured goods were determined by productive capacity, the relative price (inclusive of subsidies) facing exporters, and the domestic output gap. The equation describes the behavior of exports well and documents an export price elasticity of unity and a significant responsiveness of exports to the level of domestic demand relative to capacity.

The study of real exchange rates examines a number of different empirical measures of external competitiveness. Specifically, we look at the terms of trade on manufactured goods, the relative wholesale prices in Brazil and abroad, export prices relative to home prices, and export prices relative to prices in world trade. The comparison of these real exchange rate measures points out the important role that composition effects played in Brazilian export growth. A large fraction of Brazilian exports is in the area of processed foods that experienced a particularly sharp increase in their relative price in world trade in 1968–74.

The paper dealing with the monetary approach explains reserve and exchange rate behavior in terms of domestic credit and the determinants of nominal money demand. It corrects earlier estimates in the literature and, while sustaining the success of a monetary approach, it qualifies that approach by drawing attention to the role of monetary liabilities of the consolidated banking system.

Expected Inflation and Equity Prices: A Structural Econometric Approach

David S. Jones
Working Paper No. 542
September 1980
JEL No. 313

The purpose of this paper is to investigate the effects of expected inflation on the general level of common stock prices using a structural rather than a reduced-form approach. To this end, an aggregative, partial-equilibrium, structural econometric model of the U.S. equity market is constructed using quarterly flow-of-funds data. The primary endogenous variable in this model is the Standard & Poor's Index of 500 Common Stock Prices, *P*. After passing several standard validation exercises, the model is used to perform a number of simulation experiments designed to assess the impact of expected inflation on *P*. To anticipate, we find that increases in expected inflation depress current equity prices by about the same amount as found in a related study of Modigliani and Cohn: a 100 basis point increase in expected inflation, holding real interest rates constant, is predicted to lower the general level of equity prices by 7.8 percent.

In the course of constructing the structural equity market model, equity demand equations are estimated for households, life insurance companies, open-end investment companies, property and casualty insurance companies, and state and local government retirement systems. Equations are also estimated for the demand for mutual fund shares by households and equity issues by U.S. nonfinancial corporations.

The Economics of Tenure Choice, 1955–79

Patric H. Hendershott and **James D. Shilling**
Working Paper No. 543
September 1980
JEL Nos. 323, 932

The aggregate homeownership rate in the United States has continued to rise throughout the 1970s despite rising inflation and the rapid growth of young and primary individual households with relatively low homeownership rates. This appears to be a result of a decline in the cost of homeownership relative to renting. The post-1965 decline in the real aftertax interest rate has acted to reduce the costs of both types of housing. However, inflation and legislation induced increases in the taxation of rental housing have largely offset the decline in the net real financing rate. Depreciation is based on historic cost, and nominal capital gains are taxed. Moreover, this taxation was increased in 1969 and 1976 with the introduction and expansion of the minimum tax, the increased recapture of accelerated depreciation, and the amortization, rather than expensing, of construction period interest and property taxes.

The decline in the cost of owner occupied housing relative to rental housing is estimated to have sharply increased homeownership. In the absence of this decline, 4.5 to 5 million fewer households would have been homeowners at the end of 1978. That is, the homeownership rate would have been 60 percent, rather than 65 percent.

Gold Monetization and Gold Discipline

Robert P. Flood and **Peter M. Garber**
Working Paper No. 544
September 1980

This paper is a study of the price level and relative price effects resulting from a policy to monetize gold and to fix its price at the prevailing nominal price at a given future time. Price movements are analyzed both during the transition to the gold standard and during the postmonetization period. The paper also explores the adjustments to fiat money that are necessary to ensure that this type of gold monetization is noninflationary. Finally, some conditions that produce a run on the government's gold stock, leading to the collapse of the gold standard, and influence the timing of such a run are examined.

Staggered Wage Setting without Money Illusion: Variations on a Theme of Taylor

Willem H. Buiter and **Ian Jewett**
Working Paper No. 545
September 1980
JEL No. 430

Taylor's model of staggered wage setting is reformulated in terms of anticipated relative real wages rather than relative money wages. The relative real wage (RRW) model exhibits more nominal inertia than the relative money wage (RMW) model in the following sense: with N-period contracts, the RRW model yields a $2N$-2 order stochastic difference equation in the contract wage, while Taylor's RMW model yields an N-1 equation. Unlike the RMW model's specifications, this model's lag coefficients need not all have a common sign. It is also shown that Taylor's money wage model with relative wage effects is observationally equivalent to a real wage model without relative wage effects. Taylor's conclusion that rational expectations combined with nominal inertia (due, for example, to overlapping, staggered, noncontingent money wage contracts) leaves scope for known contingent monetary policy rules to influence such real variables, since the variance of real output is not affected.

Taxation, Portfolio Choice, and Debt-Equity Ratios: A General Equilibrium Model

Alan J. Auerbach and **Mervyn A. King**
Working Paper No. 546
September 1980
JEL Nos. 323, 521

This paper explores the portfolio behavior of investors who differ with respect to both tax rates and risk aversion; it emphasizes the role that constraints on individual and firm behavior play in ensuring the existence and characterization of portfolio equilibrium.

Under certain conditions governing the securities available in the market (the same conditions that are required for shareholders to unanimously support maximization of firm value), investors will fall into two groups, by tax rate: one group specializing in equity and the other in debt. Although the relative wealths of the two groups determine the aggregate debt-equity ratio, each firm issuing debt and equity is indifferent in its financial policy.

Inflation and the Tax Treatment of Firm Behavior

Alan J. Auerbach
Working Paper No. 547
September 1980
JEL Nos. 323, 520

Because the tax system in the United States is not indexed to the price level, the tax treatment of the corporation depends on the inflation rate. The effects of inflation in this regard are particularly complicated because: (1) corporate and personal income are taxed independently and (2) there are several different ways that the corporation transfers income to the individual.

This paper analyzes the influence of inflation on the corporation's choice of asset durability, asset-holding period, debt-equity ratio, and investment scale, under a simplified version of the current U.S. tax law.

Transfers, Taxes, and the NAIRU

Daniel S. Hamermesh
Working Paper No. 548
September 1980

Much existing research has examined how transfer programs, and the taxes that finance them, may have affected the nonaccelerating inflation rate of unemployment (NAIRU) over the past fifteen years. My study initially postulates a supply-side explanation of the secular variations in unemployment. The estimates show that both higher replacement rates in transfer programs and higher tax rates raised the unemployment rate (adjusted for changes in the demographic composition of the labor force).

The paper then examines the mechanisms by which changes in various transfer programs could have affected the measured unemployment rate. Some programs, unemployment insurance in particular, have induced an increase in measured unemployment because of the incentives they provide for firms to make layoffs and for workers to remain unemployed rather than to take jobs as they are offered. Other programs, especially Social Security retirement benefits and disability insurance, have reduced labor force participation, especially among those workers with a high incidence of unemployment. Thus, the effects of transfer programs are both increasing and decreasing measured unemployment rates. Overall, though, the programs reduce the effective supply of labor, and with it measured employment. While the magnitudes of these effects are impossible to specify, a reasonable conclusion is that the net effect of transfer programs on the measured unemployment rates is zero.

The Timing of Monetary and Price Changes and the International Transmission of Inflation

Anthony Cassese and **James R. Lothian**
Working Paper No. 549
September 1980
JEL Nos. 134, 431, 311

This paper presents a theoretical and empirical investigation into the timing relationships among variables within and across industrialized countries. In the analysis, we highlight the two polar cases of completely closed and open economies and draw some implications for timing between monetary expansion and inflation, for intercountry comparisons of inflation rates and interest rates, and for comparisons of central banks' behavior. The Granger causality test is applied in a bivariate fashion to these groups of variables.

The main empirical results of our analysis follow. (1) Domestic monetary expansion appears to lead inflation in the sense that money "Granger-causes" prices without feedback, contradicting an implication of the monetary approach to the balance of payments. (2) Hardly any significant timing relationship exists between domestic and foreign rates of inflation during the fixed exchange rate period, providing no evidence for a generalized "law of one price." (3) Some sterilization of official reserve inflows was successfully performed by the nonreserve central banks, except for Canada's. (4) U.S. interest rates "Granger-cause" foreign rates, providing evidence of some international transmission via asset markets.

Government Intervention in the Inflation Process: The Econometrics of "Self-Inflicted Wounds"

Jon Frye and **Robert J. Gordon**
Working Paper No. 550
September 1980
JEL No. 134

This paper presents a single reduced form inflation equation that can explain both the variance and the acceleration of inflation during the 1970s. Inflation is explained by four sets of factors. First, aggregate demand enters the equation in two ways, through the lagged output ratio and through the growth rate of nominal GNP. The adjustment of inflation to changes in aggregate demand is limited by the role of inertia in the inflation process, expressed as the dependence of the rate of change of prices on its own past values.

Then, two types of supply-side elements enter. First, government intervention, which altered the price level directly during the time of Nixon's controls, has further aggravated the inflation problem by what have been called "self-inflicted wounds," including increases in the effective Social Security tax rate and in the effective minimum wage. Second, there have been external supply shocks, outside of the immediate control of the government, including changes in the relative prices of food and energy, changes in the growth rate of productivity, and changes in the foreign exchange value of the dollar.

Considerable attention is given to alternative methods of estimating the impact of direct episodes of government intervention in the price-setting process, particularly during the Nixon controls. We find that such episodes have been futile. Because of their futility, these intervention episodes can be regarded as "self-inflicted wounds," like the payroll tax and the minimum wage changes that normally are described by this term.

The Variance and Acceleration of Inflation in the 1970s: Alternative Explanatory Models and Methods

Jon Frye and **Robert J. Gordon**
Working Paper No. 551
September 1980
JEL No. 134

This paper attributes the behavior of U.S. inflation to four sets of factors: (1) aggregate demand shifts; (2) government intervention in the form of the Nixon price controls and changes in the Social Security tax rate and the effective minimum wage; (3) external supply shocks that include the impact of the changing relative prices of food and energy, the depreciation of the dollar, and the aggregate productivity slowdown; and (4) inertia that makes the inflation rate depend partly on its own lagged values.

Considerable attention is given to alternative methods of measuring the impact of government intervention, such as the Nixon controls, the Kennedy-Johnson guideposts, and the Carter pay standards. The results imply that direct intervention has been futile, since the guidelines and pay standards had no effect at all upon inflation, and the Nixon era controls had only a temporary impact that stabilized both the inflation rate and the level of real output.

Some previous studies have had a problem in explaining why inflation was so rapid in 1974. They have been forced to conclude that the termination of the Nixon controls raised prices more than the imposition of controls had lowered them. We find that much of the explanation for rapid inflation in 1974 is the same as that in 1979-80: the shortfall of productivity growth below its ever-slowing trend rate of growth raised business costs and forced extra price increases, and the depreciation of the dollar in 1971-73 and 1978 boosted the prices of exports and import substitutes. Rapid demand growth, the 1979-80 oil shock, the depreciation of the dollar, the productivity slowdown, and payroll tax increases all help to explain why the inflation rate accelerated between 1976 and 1980 by much more than was generally expected two or three years ago.

Wages, Nonwage Job Characteristics, and Labor Mobility

Ann Bartel
Working Paper No. 552
September 1980
JEL Nos. 823, 824

This paper examines the impact of a set of nonwage job characteristics on the decisions of young and middle-aged men to quit. The empirical analysis shows that young men are less likely to quit "physical" jobs or jobs with bad working conditions but are more likely to quit repetitive jobs. Older men, on the other hand, are more likely to quit jobs with physical requirements or bad physical conditions but are less likely to quit repetitious jobs. After they quit, young men experience an increase in the physical components of the job and a decline in repetitiveness; exactly the opposite holds for the older men. It is shown that nonwage attributes have different impacts depending upon age. Young men place greater weight on opportunities for wage growth in the job. In physically demanding jobs, there are good opportunities for wage growth, while in the repetitive jobs, wage growth is slow. The finding that young workers want to move into jobs that are simultaneously perceived by older workers to be undesirable indicates how opportunities for mobility can improve an economy's productivity.

Inflation, Income Taxes, and Owner Occupied Housing

James M. Poterba
Working Paper No. 553
September 1980
JEL Nos. 932, 323

Owner occupied housing receives favorable treatment under current tax law for several reasons. A homeowner's imputed rent is not taxed, and mortgage interest payments are tax deductible. Many past studies have analyzed the effects of these provisions. Inflation's importance in determining the implicit subsidy to owner occupied housing has received less attention. Since homeowners can deduct their nominal mortgage payments, they do not bear the full cost of higher interest rates. They also receive essentially untaxed capital gains on their homes during periods of high inflation. The aftertax capital gains outweigh the higher aftertax interest payments, so inflation reduces the effective cost of homeownership.

This paper develops a simple model to estimate the effect of higher expected inflation rates on the real price of houses and the equilibrium housing stock. Simulation results suggest that the inflation-tax interactions can have a substantial impact on the housing market. The increases in expected inflation during the 1970s could have accounted for as much as a 30 percent increase in real house prices. Over time, builders should respond to higher home prices and increase the amount of new construction. The persistence of current inflation rates could lead ultimately to a 20 percent increase in the housing stock.

Oil and the Dollar

Paul Krugman
Working Paper No. 554
September 1980
JEL No. 431

This paper develops a simple theoretical model of the effect of an increase in oil prices on exchange rates. The model shows that the direction of this effect depends on a comparison of the direct burden on the balance of payments of the higher oil price with the indirect benefits to the balance of payments of OPEC spending and investment. In the short run, what matters is whether the U.S. share of world oil imports is more or less than its share of OPEC asset holdings; in the long run, what matters is whether the U.S. share of oil imports is more or less than its share of OPEC imports. Casual empiricism suggests that the initial effect and the long-run effect will run in opposite directions: that is, an increase in oil prices will initially lead to appreciation of the dollar, but will eventually lead to depreciation of the dollar.

Inflation Stabilization and Capital Mobility

Rudiger Dornbusch
Working Paper No. 555
September 1980

This paper investigates the process of stabilizing inflation under conditions of international capital mobility. The first part looks at the traditional view of inflation and payments problems as a reflection of fiscal problems and deficit finance. From there, the analysis proceeds to the macrodynamics of inflation stabilization under alternative policy regimes.

Inflation stabilization is studied in an open economy model of inflation and output determination with high but imperfect capital mobility. The policy regimes considered range from a monetary growth rule combined with constant real exchange rates to a prefixed path for the nominal exchange rate combined with active money for external balance.

The analysis identifies three main problems in the stabilization effort. First and foremost, there are the problems of stubborn inflation. Because inflation does not collapse in the face of good intentions, inflation stabili-

zation requires a protracted reduction in the level of demand. The inflation process is modeled along two different lines, each emphasizing inertia. Second, there is the velocity problem that arises from the fact that a reduction in inflation and nominal interest rates raises real demand. This implies that in the adjustment process, inflation has to average less than money growth and, indeed, has to fall transitorily below the new rate of money creation. Third, there is the problem of real exchange rates. This arises from the fact that inflation stabilization reduces output and raises real interest rates, thus improving the balance of payments, creating a sterilization problem, and putting upward pressure on the exchange rate. An initial real appreciation might be welcome as it provides help in the disinflation process, but it must be recognized that its benefit is transitory and must ultimately be repaid when the real exchange rate, with adverse inflation effects, returns to its equilibrium level.

Trade Adjustment Assistance under the U.S. Trade Act of 1974: An Analytical Examination and Worker Survey

J. David Richardson
Working Paper No. 556
September 1980
JEL Nos. 400, 420, 800, 810

The goals of trade adjustment assistance (TAA) are to ease transition, compensate injury, and bleed political pressure for protectionism. Section I of this paper outlines the economic principles underlying these goals, and their shifting historical importance in the United States. Sections II and III discuss the personal characteristics of a representative sample of worker recipients of TAA in 1976, and their labor market success in several subsequent years. Their experience is compared to that of a matched sample of workers receiving standard unemployment insurance (UI). Comparisons in Section II focus on differences in mean characteristics and experience between the TAA and UI samples, controlling only for whether workers returned eventually to the firm from which they were initially separated. Comparisons in Section III focus on differences between the TAA and UI samples in their ability to recover lost employment and income, using a regression approach that in principle controls for all relevant variables, and not for just one.

The most important conclusions of the research are the following. (1) The majority of TAA recipients in 1976 were not permanently displaced, but returned eventually to their former employers. A far greater proportion of UI recipients suffered permanent displacement. (2) Workers receiving TAA had higher incomes on average than their counterparts who received only UI. Their incomes furthermore fell less frequently below the poverty line. (3) TAA recipients nevertheless experienced more frequent and enduring transitional unemployment than did UI recipients, and did not return to their former income level as rapidly. (4) The reasons for the preceding conclusion were unclear. It could not readily be explained by differences between the TAA and UI samples in permanence of layoff, generosity of program benefits, age, experience, industry, affluence, economic environment, socioeconomic status, or behavioral responses to any of these variables.

The first two conclusions are at variance with most previous work on TAA. Conclusion three is not, but the traditional explanations for it are those that conclusion four rules out.

Capital Mobility and Devaluation in an Optimizing Model with Rational Expectations

Maurice Obstfeld
Working Paper No. 557
September 1980
JEL Nos. 431, 432

This paper examines the effects of exchange rate policies when individuals maximize their lifetime utility on the basis of rational expectations about the future. The institutional framework is a small economy in which the central bank holds the exchange rate fixed at each moment in time, but allows it to depreciate over time according to a previously announced schedule. In this setting, an unanticipated, discrete devaluation of the currency has no real effects. It occasions only a transfer of interest-bearing foreign assets from the public to the central bank. An unanticipated, permanent increase in the *rate* of devaluation, in contrast, causes a sharp fall in consumption, a current-account surplus, and a long-run decline in the reserves of the central bank.

Tests of Equilibrium Macroeconomics Using Contemporaneous Monetary Data

John F. Boschen and **Herschel I. Grossman**
Working Paper No. 558
September 1980
JEL Nos. 023, 131

This paper uses contemporaneous monetary data to carry out econometric tests of the "equilibrium" approach to modeling the relationship between monetary disturbances and macroeconomic fluctuations. The theoretical analysis introduces into an equilibrium macroeconomic model the availability of preliminary data on current monetary aggregates and the process of accumulation of revised monetary data. The econometric analysis tests two hypotheses derived from this extended model. One hypothesis concerns the neutrality of perceived monetary policy. The other hypothesis concerns the nonneutrality of errors in preliminary monetary data. The econometric results imply rejection of both of these hypotheses. These tests provide strong evidence against the reality of the equilibrium approach.

Price Level Determinacy with an Interest Rate Policy Rule and Rational Expectations

Bennett T. McCallum
Working Paper No. 559
September 1980
JEL Nos. 131, 023, 134

This paper reconsiders a result of work by Sargent and Wallace, namely, that price level indeterminacy obtains in their well-known model if the monetary authorities adopt a policy feedback rule for the interest rate rather than for the money stock. Since the Federal Reserve seems often to have used the federal funds rate as its operating instrument, with the money stock determined simply by the quantity of money demanded, then the Sargent-Wallace model—as well as others incorporating rational expectations—may be inconsistent with U.S. experience. It is shown here, however, that the indeterminacy result vanishes if the interest rate is chosen so as to have some desired effect on the expected quantity of money demanded. This revised conclusion holds even if considerable weight is given, in the choice of a rule, to the aim of smoothing interest rate fluctuations.

The Importance of Lifetime Jobs in the U.S. Economy

Robert E. Hall
Working Paper No. 560
September 1980
JEL No. 823

Although the U.S. labor market is justly notorious for high turnover and consequent high unemployment, it also provides stable, near-lifetime employment to an important fraction of the labor force. This paper investigates patterns of job duration by age, race, and sex, with the following major conclusions. (1) The typical worker today is holding a job that has lasted or will last about eight years. Over a quarter of all workers are holding jobs that will last twenty years or more. Sixty percent hold jobs that will last five years or more. (2) The jobs held by middle-aged workers with more than ten years of tenure are extremely stable. Over the span of a decade, only 20 to 30 percent of these jobs come to an end. (3) Among workers aged 30 and above, about 40 percent are currently working in jobs that eventually will last twenty years or more. Three quarters are in jobs that will last five years or more. (4) The duration of employment among blacks is just as long as among whites. Even though the jobs held by blacks are worse in almost every other dimension, they are no more unstable than those held by whites. (5) Women's jobs are substantially shorter than men's, on the average. Only about a quarter of all women over the age of 30 are employed in jobs that will last over twenty years, whereas over half of men over 30 are holding these near-lifetime jobs.

Patents and R and D at the Firm Level: A First Look

Ariel Pakes and **Zvi Griliches**
Working Paper No. 561
October 1980

This is a first report from a larger study of U.S. firms' inventive activity and some of its consequences. It examines the relationship between patents applied for and R and D expenditures based on data for 121 large corporations covering the 1968–75 period. The main conclusion is that there is a statistically significant relationship between a firm's R and D expenditures and the number of patents it applies for and receives. This relationship is very strong in the cross-sectional dimension (squared partial correlations of 0.8 or higher). It is weaker in the within-firm time-series dimension (squared partial correlations of 0.2 to 0.3). Attempts to fit an unconstrained distributed lag relationship yield significant coefficients only for the first and last terms in the lag structure, indicating both a quick response of patenting to changes in R and D and a small but persistent effect of past R and D. The truncation of the long lag is reflected in a significant coefficient for R and D lagged five years. In spite of the difficulties, patent counts do measure something systematic and hence are worthy of further study.

Reconsidering the Work Disincentive Effects of Social Security

Alan S. Blinder, Roger H. Gordon, and **Donald E. Wise**
Working Paper No. 562
October 1980
JEL No. 900

This paper shows that, contrary to commonly held views, the provisions of the Social Security law actually provide strong work incentives for older men. The reason is that, for most workers, higher current earnings lead to higher future Social Security benefits. These incentives have been particularly strong for workers under 65 years of age and, although they will be reduced somewhat when the 1977 amendments to the Social Security laws become fully effective, they will remain substantial. The findings raise serious questions about recent econometric work attributing the decline in labor force participation rates of older men to the Social Security system.

Alternative Tests of Rational Expectations Models: The Case of the Term Structure

Robert J. Shiller
Working Paper No. 563
October 1980
JEL Nos. 311, 313

A linearized version of the rational expectations models of the term structure is put forth in terms of a complete vector of equally spaced observations along the yield curve. A data series on intermediate maturity yields that meets the specifications of the model is presented. The model is tested against a specific and easily interpreted alternative. Earlier studies of rational expectations models, which used "volatility tests" or "likelihood ratio tests," are discussed.

The Determinants of the Variability of Stock Market Prices

Robert J. Shiller and **Sanford Grossman**
Working Paper No. 564
October 1980
JEL Nos. 311, 023

Historical movements in stock price indexes may be attributed to new information either about future real dividends or about real interest rates used to discount these dividends to today's price. Earlier work suggests that real dividends do not move enough to justify the price index movements. This paper provides evidence that the stock price movements over the last century can be better justified in terms of real interest rate movements. Movements in real interest rates can be inferred from the marginal rate of substitution evidenced by consumption data.

The Use of Volatility Measures in Assessing Market Efficiency

Robert J. Shiller
Working Paper No. 565
October 1980
JEL Nos. 311, 313

A number of recent papers have claimed that security prices are too volatile to accord with simple efficient market models. This paper discusses the theoretical foundations of the volatility tests used in these papers. The basic structure common to these models and its implications for volatility measures are discussed. Alternative hypotheses are explicitly considered that might justify the volatility. The volatility tests are compared with the more standard regression tests.

NBER Reporter

Nonprofit Org.
U.S. Postage
Paid
Boston, MA
Permit No. 55932

National Bureau of Economic Research, Inc.
1050 Massachusetts Avenue
Cambridge, Massachusetts 02138

Address Correction Requested