

National Bureau of Economic Research (NBER) (Ed.)

**Periodical Part**

## NBER Reporter Online, Volume 1982

NBER Reporter Online

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*Suggested Citation:* National Bureau of Economic Research (NBER) (Ed.) (1982) : NBER Reporter Online, Volume 1982, NBER Reporter Online, National Bureau of Economic Research (NBER), Cambridge, MA

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# NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

WINTER 1982/3

## Program Report

### International Studies

During the past two years, researchers in the Bureau's Program in International Studies have worked on such diverse topics as the development of theory and empirical evidence on exchange-rate fluctuations, the role of exchange rates in macroeconomic stabilization, long-run trends in U.S. trade and foreign investment, the application of new industrial organization theory to the analysis of the effects of trade policies, the implications for the U.S. economy of the rise in investment and manufacturing capacity in the "newly industrializing developing countries" (NICs), and the quantification and analysis of existing instruments of U.S. trade policy. The emphasis throughout has been on improving our understanding of the interaction of the U.S. economy with its international environment. Currently, the research projects within the international studies program can be grouped into two general areas—exchange rates and international macroeconomics, and international trade and structural adjustment.

#### Exchange Rates

Since the beginning of the program in 1978, one major focal point has been analysis of the international monetary system, especially of exchange-rate fluctuations. During the past two years, completed NBER research has consolidated the "asset market" theory of exchange-rate determination and empirically tested alternative models within this approach. The effects of exchange-market intervention and of exchange-rate fluctuations on domestic economies have also been analyzed, and alternative exchange-rate arrangements compared.

As one part of this focus, Research Associates John F. Bilson and Richard C. Marston organized a series of program meetings culminating in a four-day Conference on Exchange Rate Theory and Practice in Bellagio, Italy, in January 1982. This conference surveyed research on exchange rates since the early 1970s and

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This issue of the *Reporter* highlights the Bureau's Program in International Studies. Next, Frederic Mishkin discusses his work on a rational expectations approach to macroeconomics. After the quarterly Economic Outlook Survey are a biographical sketch, news of NBER conferences, the Conference Calendar, and other NBER news and reports. The *Reporter* concludes with short summaries of recent NBER Working Papers.

was attended by both European and North American participants.<sup>1</sup>

Following the Bellagio conference, the Bureau and the International Monetary Fund (IMF) jointly organized a seminar at the IMF on August 31, 1982, on the topic of "Exchange Rate Regimes and Policy Interdependence." Participants were NBER researchers and other economists and analysts invited by the IMF. The discussion there focused on the implications of recent research for the analysis of macroeconomic interde-

<sup>1</sup>A conference volume, published by the University of Chicago Press, is anticipated in 1983.

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pendence.<sup>2</sup> NBER Research Associate Jacob A. Frenkel organized a third conference, on "Exchange Rates and International Macroeconomics," held in Cambridge in November 1981.<sup>3</sup>

Other work on exchange rates and international macroeconomics is continuing. Individual research projects are being conducted by Research Associates Michael Bruno and Jeffrey Sachs, on macroeconomic and structural change in open economies; by Richard Marston, on analysis of exchange-rate unions, particularly the European Monetary System (EMS); and by John Bilson and Maurice Obstfeld, on aspects of capital movements and exchange rates.

In addition, Richard Marston is organizing a group research project on the international coordination of macroeconomic policy. The effects of policy actions taken for domestic reasons often spill over in important ways onto economic variables in other countries. An obvious case is the effect of high U.S. interest rates in 1981-82 on the recessions in Europe and Japan. Marston's project will study specifically the international effects of domestic policies and the effects of alternative ways of coordinating these policies. There will be a meeting of project members this spring (1983), and a portion of the international studies' Summer Institute will focus on this area.

## Trade and Adjustment

Several major research efforts are under way within the international studies program in the general area of U.S. trade and structural adjustment. In August 1982, a group of research associates, organized by J. David Richardson and William H. Branson, were awarded a multiyear grant by the Division of Policy Research and Analysis of the National Science Foundation (NSF), to study "U.S. Trade Policy, Competitiveness, and Capital Mobility in the World Economy." The project will proceed along two main lines of research: (1) analysis of the trends in U.S. trade and investment that form the environment for trade policy, and (2) positive analysis of the consequences of alternative policy choices. The objective is to provide the empirical and analytical basis for improved decisionmaking in trade policy, not to make policy recommendations.

Within this project, Branson is continuing his work in trends in the composition of U.S. trade. Several others, including Research Associate Paul R. Krugman and Research Economists Gene M. Grossman and Jonathan Eaton, are studying the interactions of technol-

<sup>2</sup>The papers will be published by the IMF in 1983.

<sup>3</sup>An NBER Summary Report of the conference is now available; a conference volume published by the University of Chicago Press is forthcoming.

ogy, imperfect information, and trade, with particular emphasis on U.S. trade with Japan. Grossman and Eaton, and Research Associates Robert E. Lipsey and Irving B. Kravis, are continuing their empirical studies of U.S. foreign direct investment. Also, Grossman, Richardson, and Branson are organizing a research group to study the application of game-theoretic approaches from industrial organization to trade problems; an initial program meeting on that topic was held during the 1982 Summer Institute, and a second program meeting is scheduled for March 1983.

The interaction of investment and trade, one focus of much of Research Associate Jeffrey Sachs's work over the past two years, will continue to be studied under the NSF grant. In a series of papers, Sachs has designed moderate-scale simulation models of multisector, multicountry growth with efficient financial markets and optimizing behavior by firms and households. This framework has been applied to problems such as economic growth following the OPEC oil shocks, convergence of the Japanese and European economies with the U.S. economy, and the effects of technological developments on the U.S. terms of trade. Richardson is doing complementary research on the effects of commercial policy on rates of return, investment, and shifting comparative advantage. One of the major efforts in the NSF project will be to integrate trade, investment, and technology into a cohesive picture of the dynamics of U.S. comparative advantage.

Each year, about three meetings of program members are scheduled as part of the NSF project on trade. In 1982, in addition to the meetings on the industrial organization approach to trade problems mentioned above, there was a meeting in Cambridge on technology and trade; approximately half of the participants were NBER researchers, and half were from the Washington policy community. Within this NSF project, there will also be a large research conference each year; the "American Trade Relations Project" met in December in Cambridge.

Independent of the aforescribed NSF project, in 1981 Research Associate Anne O. Krueger began an NBER project on American trade relations. Her project is designed to encourage and facilitate research on American performance in international markets and to analyze the effects of trade policies on the U.S. economy and its international competitive position.

During the summer of 1982, Professor Krueger moved to the position of Vice-President, Economics and Research, at the World Bank. The direction of the trade relations project she had begun was taken over by Professor Robert E. Baldwin of the University of Wisconsin, also a research associate in the international studies program. Under the joint direction of Baldwin and Krueger, the project held its first meeting in the spring of 1982 to plan for a December conference where nine empirical papers were presented. The papers involve an overview of U.S. trade relations, export incentives, import restrictions, and the impact of U.S. trade policy on developing countries.

## Other Projects

In addition to participating in the two trade-related projects, several researchers in the international studies program are conducting work along similar lines. As part of the project on Productivity and Industrial Change in the World Economy, Jeffrey Sachs and Faculty Research Fellow Barry Eichengreen are conducting studies of structural adjustment in the world steel industry. Gene Grossman and Jonathan Eaton are working on microeconomic aspects of direct foreign investment; Paul Krugman, on leave as a senior staff economist at the Council of Economic Advisers in 1982-83, is continuing his research on the role of scale economies and product differentiation; and Robert Lipsey and Irving Kravis are continuing their studies of prices and quantities in international trade. All studies will result in an improved understanding of the international environment for U.S. trade policy and the prospects for U.S. international competitiveness.

Each year since 1979, the international studies program has held an intensive series of workshops and seminars in Cambridge as part of the NBER's Summer Institute. This provides an especially important opportunity for the international studies group, because its members are quite dispersed geographically, many in Europe or Israel. In 1981 and 1982, the macroeconomic portion of the program's Summer Institute was organized by Richard Marston, and the trade portion by Gene Grossman and J. David Richardson. The 1983 institute will focus on the macroeconomic aspect of international coordination and perhaps on the problems posed for the U.S. economy by economic liberalization in Latin America. The trade seminars will enable participants to discuss the research results of the NSF project.

With support from IBM Asia and the Asian Development Bank, NBER Research Economist Colin Bradford is also organizing a conference on "Global Implications of Growth in Trade of the Asian NICs," to be held in the ASEAN area, probably in Malaysia, in January 1984. The conference will bring together North American researchers, mainly from the Bureau, and researchers from the area, to study the effect of the growth of the Asian NICs on the trade of the industrialized countries, and the responses of industrialized nations to these new pressures and opportunities.

The International Seminar on Macroeconomics (ISOM), a joint venture of the Bureau and the École des Hautes Études en Sciences Sociales (EHESS) in Paris, is organized by NBER Research Associate Robert H. Gordon and Professor Georges de Menil of EHESS. Meeting each June in Europe, the ISOM brings together roughly equal numbers of American and European researchers to study common macroeconomic problems. Each year, the resultant papers are published in the May issue of the *European Economic Review*.

## A Rational Expectations Approach to Macroeconometrics

Frederic S. Mishkin

The recognition in recent years that expectations are extremely important to economic decisionmaking has led to a major revolution in macroeconomic analysis. The rational expectations hypothesis, developed initially by Muth, has played a critical role in this revolution. Simply put, it states that expectations reflected in market behavior will be optimal forecasts using all available information. When this hypothesis is employed to describe the formation of expectations, serious doubts arise about the use of existing large-scale macroeconomic models for policy analysis. With additional assumptions about labor market behavior, the effectiveness of any deterministic policy rule to promote macroeconomic stabilization is even called into question.

The rational expectations hypothesis also has significant implications for the way macroeconomic models should be estimated. It leads to serious doubts about the traditional criteria for identifying and estimating these models—the exclusion of variables from some behavioral equations and not from others. Yet we are not left helpless, because it does provide restrictions of a different sort that do allow identification and estimation.

This report summarizes research using a particular class of rational expectations models to provide evidence on some of the more important macro issues being debated today. The resulting analysis has the advantage of imposing a theoretical structure on the issues studied that allows easier interpretation of the empirical results and also more powerful statistical tests.

### Econometric Methodology

Use of the rational expectations hypothesis leads to a class of models that distinguish the effects of unanticipated movements in variables from effects of anticipated movements. A unified econometric treatment of these models is discussed and developed in a series of

articles.<sup>1</sup> This treatment is described in more detail in my forthcoming NBER monograph, *A Rational Expectations Approach to Macroeconometrics: Testing Policy Ineffectiveness and Efficient Markets Models*.<sup>2</sup>

Because the models analyzed in this research make the distinction between unanticipated and anticipated movements in variables, they require measures of expectations in order to be estimated. The problem of measuring expectations is overcome first by specifying forecasting equations. Then the assumptions of rational expectations are used to generate the required measures of expectations in the other equations of the model. In those equations, the effects of unanticipated movements in variables are distinguished from anticipated movements. This results in the appearance of cross-equation rationality restrictions that can be tested in this class of models.

There are many questions about the econometric methodology needed to implement these models empirically. How should models with cross-equation restrictions be estimated? What criteria should be used in specifying the forecasting equation used to generate expectations? What other specification and identification issues are important in the econometric analysis of these models? What are the properties with regard to consistency and efficiency of alternative estimation procedures? How sensitive are tests of the cross-equation restrictions to misspecification of information relevant to the forecasting equations? How do these tests of cross-equation restrictions relate to more common, single-equation tests of rationality, market efficiency, and Granger-causality in macroeconomic models?

The research reported here does provide a general treatment of these issues.<sup>3</sup> One reason why this meth-

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<sup>1</sup>F. S. Mishkin, "Monetary Policy and Long-Term Interest Rates: An Efficient Markets Approach," *Journal of Monetary Economics* 7, January 1981, pp. 29-55, and NBER Reprint No. 157, April 1981; "Are Market Forecasts Rational?" *American Economic Review* 7, June 1981, pp. 295-306, and NBER Reprint No. 209, September 1981; "Does Anticipated Monetary Policy Matter? An Econometric Investigation," *Journal of Political Economy* 90, February 1982, pp. 22-51, and NBER Reprint No. 294, August 1982; "Monetary Policy and Short-Term Interest Rates: An Efficient Markets-Rational Expectations Approach," *Journal of Finance* 67, March 1982, pp. 63-72, and NBER Reprint No. 293, August 1982; "Does Anticipated Aggregate Demand Policy Matter? Further Econometric Results," *American Economic Review* 72, September 1982, and NBER Reprint No. 338, December 1982; A. B. Abel and F. S. Mishkin, "An Integrated View of Tests of Rationality, Market Efficiency, and the Short-Run Neutrality of Monetary Policy," *Journal of Monetary Economics* 9, forthcoming 1983, and NBER Working Paper No. 726, August 1981; "On the Econometric Testing of Rationality-Market Efficiency," *Review of Economics and Statistics*, forthcoming.

<sup>2</sup>F. S. Mishkin, *A Rational Expectations Approach to Macroeconometrics: Testing Policy Ineffectiveness and Efficient Markets Models*, Chicago: University of Chicago Press for the NBER, forthcoming spring 1983.

<sup>3</sup>See especially Chapters Two and Three of *A Rational Expectations Approach*. . . .

odology is valuable is because it is applicable to a wide range of research problems. With the increasing prominence of rational expectations in the last few years, there has been a veritable explosion in the number of empirical studies that either use or can use this methodology. These include studies of: (1) consumption behavior; (2) the question of whether government bonds are net wealth; (3) the behavior of foreign exchange markets; (4) the demand for money; (5) money and interest rates; (6) money and stock prices; (7) the rationality of forecasts of inflation and interest rates; (8) asset returns and inflation; (9) relative price variability and inflation; (10) the effects of nominal contracting on stock returns; (11) stock exchange seats as capital assets; (12) regulatory effects of the Securities and Exchange Commission; (13) costs of financial intermediation and the Great Depression; and (14) the policy ineffectiveness proposition.<sup>4</sup> In addition, an important advantage of the methodology is that it is simple to execute with readily available computer packages and should thus be easily accessible to most researchers.

Three illustrations of the usefulness of this econometric methodology for analyzing important macroeconomic questions now follow.

### Are Market Forecasts Rational?

A closer look at whether market forecasts of inflation rates and interest are rational seems necessary in light of recent work that evaluates the inflation and interest rate forecasts from the Livingston and Goldsmith-Nagan surveys. A frequent finding is that the survey forecasts are inconsistent with the cross-equation reflections implied by the theory of rational expectations. What conclusions about the behavior of market expectations should we draw from these results?

One view that associates survey forecasts with market forecasts takes these empirical results to be evidence that the market is not exploiting all information in generating its forecasts. An alternative view holds that markets probably do display rationality of expectations. Irrationality in the Livingston and Goldsmith-Nagan survey data would then indicate that these data cannot be used in empirical work to describe market expectations.

The latter view receives support for two reasons. Survey data are frequently believed to be inaccurate reflections of the beliefs of market participants and are considered unreliable. More important is a point that is often ignored in discussing the properties of expectations. *Not all market participants need to be rational for a market to display rational expectations.* The behavior of a market is not necessarily the same as the behavior of the average individual. As long as unexploited profit opportunities are eliminated by some partici-

pants in a market, then the market will behave as though expectations are rational despite irrational participants in that market. Therefore, survey forecasts do not necessarily describe the forecasts inherent in market behavior, and the irrationality of survey forecasts does not in itself imply that market forecasts are also irrational.

In contrast to results with the Goldsmith-Nagan survey, using the econometric methodology discussed above with actual bond price data yields no evidence that bond market forecasts of interest rates are irrational.<sup>5</sup> Since the cross-equation tests are similar to those finding irrationality in the Goldsmith-Nagan survey of interest rate expectations, they can be interpreted as casting doubt on the accuracy of this survey measure for describing market expectations. The accuracy of the Livingston price expectation data, however, is still an open question since irrationality has been found in both the bond market and survey data for the 1959-69 period. This issue cannot be resolved without further empirical research on the rationality of this survey data over longer sample periods.

### The Relationship of Monetary Policy and Interest Rates

The impact of an increase in the money stock on nominal interest rates is an important issue. The most commonly held view—also a feature of most structural macro models—has an increase in the money stock leading to a decline in interest rates, at least in the short and medium runs. In these macro models, the interest rate decline not only directly stimulates investment but also has a further expansionary impact on investment and consumer expenditure through its effect on the valuation of capital. The decline in interest rates is thus a critical element in the transmission mechanism of monetary policy. In addition, the view that increases in the money stock lead to an immediate decline in interest rates has important implications for the Federal Reserve System's conduct of monetary policy when a decline in interest rates is desired. This view is the basis for demands by government officials that the Fed not keep the rate of money growth too low and so induce an objectionable increase in interest rates.

Milton Friedman has criticized this view on the grounds that it ignores the dynamic effects of an increase in the money stock. Friedman concedes that a so-called liquidity effect—where an excess supply of money will create increased demand for securities, a rise in their price, and a resulting fall in interest rates—does work in the direction of a decline in interest rates when the money stock is increased. However, two other effects can counter this liquidity effect. Over time, the increase in the money stock will have an expansionary

<sup>4</sup>To conserve space, references to these studies are not listed here. See A Rational Expectations Approach . . . for a list of these references and many others omitted from this report.

<sup>5</sup>F. S. Mishkin, "Are Market Forecasts Rational?" or Chapter Four of A Rational Expectations Approach. . . .

effect on both real income and the price level. This “income-and-price-level effect” will, through the usual arguments in the money demand function, tend to reverse the decline in interest rates. More important for short-run effects on interest rates, increases in the money stock can also influence anticipations of inflation. Higher expected inflation as a result of increases in the money stock would, through a Fisher relation, increase nominal interest rates. This “price-anticipations effect” can thus not only mitigate the decline in interest rates stemming from the liquidity effect but could also overpower it. That interest rates are highest in countries experiencing rapid rates of monetary growth is casual evidence for this proposition.

Two lines of empirical work bear on the issue of whether increases in the money stock lead to a decline or to a rise in long-term interest rates. Keynesian macroeconomic models impose a fair amount of structure in their estimates of financial market and income-expenditure relationships. In these models, increases in the money stock do lead to a substantial decline in interest rates in the short and medium run. This evidence is suspect, however, because these models ignore constraints that should be imposed if financial markets are efficient. Financial market efficiency cannot be ignored because evidence supporting it is quite strong. Furthermore, recent work indicates that a failure to impose financial market efficiency on macroeconomic models can yield highly misleading results.

An alternative empirical approach to this issue is to estimate reduced-form relationships where changes in interest rates are regressed on past changes in the money stock. Evidence from this approach does not support the view that increases in the money stock result in a fall in interest rates. Unfortunately, this evidence suffers from a problem endemic to reduced-form empirical work: it is difficult to interpret the empirical results because the theoretical framework is obscure. Also, the absence of structure when changes in interest rates are regressed on changes in the money stock leads to a large number of parameters being estimated, and this results in statistical tests with low power.

Neither approach discussed above distinguishes between the effects from unanticipated versus anticipated monetary policy. Yet the theory of efficient capital markets and rational expectations does make this distinction, and this suggests an alternative approach to analyzing the relationship of increases in the money stock and interest rate movements. Efficient markets (or equivalently, rational expectations) models for both long- and short-term interest rates have been estimated with the previously discussed econometric methodology, and they yield the following conclusion: there is no empirical support for the view that an unanticipated increase in the money stock is associated with a decline in interest rates.<sup>6</sup>

<sup>6</sup>F. S. Mishkin, “Monetary Policy and Long-Term Interest Rates,” and “Monetary Policy and Short-Term Interest Rates,” or Chapter Five of A Rational Expectations Approach. . . .

How should we interpret this conclusion? If we are willing to accept exogeneity of the money supply process in the postwar period and the efficient-markets model as true reduced forms, then the interpretation is clear-cut. The evidence here would cast doubt on the commonly held view that an unanticipated increase in the money stock will lead to a decline in interest rates. Not only does this suggest that the Federal Reserve cannot lower interest rates by increasing the rate of money growth, but also it requires some modification of the monetary transmission mechanism embodied in structural macroeconomic models. It is plausible that an unanticipated increase in money growth will not induce a decline in interest rates because it leads to an immediate upward revision in expected inflation. Thus, there is still a potential effect on real interest rates from unanticipated money growth, and the evidence in no way denies that there are potent effects of increases in the money supply on aggregate demand.

If, on the other hand, unanticipated money growth is not exogenous, then coefficient estimates can be inconsistent and we cannot rule out the common view in structural macroeconomic models that an exogenous increase in money growth leads to a decline in interest rates. Note, however, that if we are not to reject the common view, research of a fairly subtle sort is needed to demonstrate that unanticipated money growth responds positively to surprise increases in interest rates.

## **Does Anticipated Aggregate Demand Policy Matter?**

Recent equilibrium business cycle models, which incorporate features of the natural-rate model with the assumption that expectations are rational, lead to an important neutrality result: anticipated changes in the aggregate demand policy will have been taken into account already in the behavior of economic agents and will evoke no further output or employment response. Therefore, deterministic, feedback policy rules will have no effect on output fluctuations in the economy. This policy ineffectiveness proposition runs counter to much previous macroeconomic theorizing (and to views prevailing in policymaking circles). This proposition is of such importance that it demands a wide range of empirical research for verification or refutation.

The econometric methodology discussed above generates tests of the proposition that anticipated policy does matter.<sup>7</sup> The empirical results reject this proposition and hence the ineffectiveness of policy because anticipated policy does seem to matter.

<sup>7</sup>F. S. Mishkin, “Does Anticipated Monetary Policy Matter?” and “Does Anticipated Aggregate Demand Policy Matter?” or Chapter Six of A Rational Expectations Approach. . . .

The results strongly reject the neutrality hypothesis. Furthermore, in direct conflict with the policy ineffectiveness proposition is the finding that unanticipated movements in policy do not have a larger impact on output and unemployment than do anticipated movements. The other hypothesis, central to the policy ineffectiveness proposition, that expectations are rational, fares better in the empirical tests here, although the evidence is somewhat mixed. The crucial factor in the unfavorable findings on the policy ineffectiveness proposition appears to be the inclusion of long lags in the output and unemployment equations. The results here thus give further impetus to theoretical research that is currently exploring why long lags may exist in rational expectations models of the business cycle.

Models with longer lags are less restrictive. The rejections in these models are therefore very damaging to earlier evidence in support of the policy ineffectiveness proposition obtained from models with shorter lags. The only cost to estimating the models with longer lags is a potential decrease in the power of the test statistics. Rejections in this case are thus even more telling. The failure to reject the policy ineffectiveness proposition in shorter lag models appears to be the result of an overly restrictive specification that leads to inconsistent parameter estimates and incorrect test statistics.

### **An Overview of the Approach**

Although the empirical studies above analyze quite different issues, certain patterns of results recur in all of them. These patterns say something important about the line of research pursued here, and they deserve to be emphasized.

The models discussed here that stress the distinction between effects from unanticipated and anticipated movements in variables require measures of expectations in order to be estimated. Life is hard for the econometrician because unfortunately the real world rarely supplies him with the data he needs, in this case measures of expectations. The solution to the problem here is first to specify forecasting equations and then to use the assumption of rational expectations to generate the required expectations measures. The danger in this approach is that misspecification of the expectations measures can lead to seriously biased results, which lead in turn to inappropriate conclusions.

A surprising finding—at least at first—arises in all the empirical studies described here: the specification of equations describing expectations does not seem to matter very much. The robustness of the results in these studies to changes in the specification of expectations is too consistent to be mere coincidence. It appears that in models of the type discussed here, where the effects of unanticipated movements in variables are emphasized, the danger from misspecification of expectations is not very severe. Paradoxically, the explanation for

this good news might be simply that macro variables are extremely hard to forecast. Thus forecast errors may be so large relative to the error in specifying expectations that any resulting errors-in-variables bias is quite small.

Another potential problem in the empirical analysis here is the failure of theory to indicate whether economic agents focus on seasonally adjusted or unadjusted data. All the empirical studies indicate that this problem, too, is not severe. Results from either adjusted or unadjusted data are similar, except that results from unadjusted data do appear to be somewhat stronger. Possibly the unadjusted data are “cleaner”: that is, they are not filtered as occurs with seasonal adjustment using such programs as Census X-11.

On balance, the results in the above empirical studies justify using the assumption of rational expectations to analyze important macroeconomic issues, especially when financial markets are studied. The research described here is only a start in this direction.

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## **Economic Outlook Survey**

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### **Fourth Quarter 1982**

Victor Zarnowitz

According to the median forecast from the November survey of professional economic forecasters taken by NBER and the American Statistical Association, a sluggish recovery in national output is under way but the unemployment rate will dip under 10 percent only in the second half of 1983. The annual growth rates in real GNP will rise slowly to exceed 2 percent in the first, 3 percent in the second, and 4 percent in the third and fourth quarters of 1983. Meanwhile, the outlook for inflation and, particularly, interest rates has improved significantly compared with the previous (September) forecasts.

#### **Real GNP Gradually Rising, Unemployment High**

According to the median of the survey forecasts, total output will increase only 3/10 of 1 percent, or 1.2 percent at an annual rate, in the current quarter. For the first half of 1983, the average projected rate of growth is 2.8 percent; for the second half it is 4.3 percent. In 1981-82, real GNP is expected to decline 1.6 percent; in 1982-83, to rise 2.4 percent. The forecasters attach rather low probabilities to the “worst scenario” of further

declines in real GNP during 1983 (on the average about 27, 19, 17, and 10 percent for 1983:1, 1983:2, 1983:3, and the year 1983 as a whole, respectively). But they also see only a small chance (12 percent) that output would increase in 1982-83 by more than 4 percent.

There is substantial consensus that unemployment will decline, but slowly. The average for the jobless rate in 1983:4 is 9.6 percent of the civilian labor force, with half of the individual predictions clustered narrowly between 9.2 percent and 9.8 percent (the range is 8-11.5 percent).

### **No Revival of Inflationary Pressures Seen in 1983**

While the outlook on real growth remains relatively pessimistic, there is some optimism on inflation, which is at least believed unlikely to reaccelerate in the near future. However, it is also true that few forecasters see much further progress on *reducing* inflation. The consumer price index (CPI) is estimated to increase 6.2 percent in 1982, 5.2 percent in 1983. The group (median) forecast is that CPI will rise 3.9 percent in 1982:4, 5 percent in 1983:1, 5.5 percent in each of the next two quarters, and 5.9 percent in 1983:4. The corresponding predictions of inflation in terms of the GNP implicit price deflator (IPD) are as follows: for the two years 1982 and 1983, 6 percent and 5.3 percent; for 1982:4, 4.5 percent; and for 1983:1-1983:4, 5.3 percent-5.7 percent. About 3/4 of the distribution of the probable changes in IPD for 1982-83 are concentrated in the range below 6 percent.

### **Interest Rates Steady or Lower**

The three-month Treasury bill rate is expected to average slightly below 8 percent in 1982:4-1983:1, then rise to 8 percent and 8.25 percent in 1983:2-1983:4. The yield on new high-grade corporate bonds will continue to decline but much more slowly than it did recently. The median figures here are 12.2 percent in 1982:4, 12 percent in 1983:1, 11.7 percent in 1983:2, and 11.5 percent in the second half of 1983. The dispersion of the individual forecasts rises with the predictive horizon but remains moderate (for example, the standard deviations are 1.1 and 1.5 percentage points for the T-bill rate and the bond yield, respectively, in 1983:4).

### **Improved Prospects for Corporate Profits**

Corporate profits after taxes will show a decline of about 22 percent in 1981-82 but a partial recovery with a gain of 10 percent in 1982-83. The quarterly increases during 1983 are predicted to grow steadily larger, so that the profits in 1983:4, at \$142 billion at an annual rate, would be 19.3 percent above their level in 1982:4. These figures are consistent with a gradual recovery, but the forecasts of profits vary significantly among the econo-

mists in the survey, even apart from a few outliers of extreme optimism and pessimism.

### **Upturns in Industrial Production and Inventory Investment**

The output of manufacturing, mining, and utilities, as measured by the FRB index of industrial production, is perceived to beat its cyclical trough of 137 (1967 = 100) in the current quarter. By 1983:4 it should rise to 146 or 6.6 percent. For an initial recovery phase, this would be a comparatively slow increase in this highly cyclical variable, but most individuals agree well with this average forecast. The 1982 decline in the production index is set at approximately 8 percent, the 1982-83 rise at 3 percent.

The change in business inventories will be negative in the current quarter and in 1982 as a whole, then positive but low during most of 1983, according to the average and most individual predictions. Inventory investment will decline \$14 billion in 1981-82 and rise \$8 billion in 1982-83 (1972 dollars, median forecasts).

### **Gains in Consumption and Housing**

Total consumption expenditures in constant dollars will show an anemic increase of 1 percent in 1981-82 and a still low but steady rise averaging 2.6 percent in 1982-83. These projections are about 0.3 percent lower than those made in the September 1982 survey.

New private housing starts are expected to be 30 percent higher in 1983 than in 1982, and a similar rate of growth is predicted for the period 1982:4-1983:4 (but recent news has raised the level of this variable well above the figures used in these forecasts). Residential fixed investment in constant dollars is to increase 18 percent in 1982-83, and 25 percent in 1982:4-1983:4.

### **Continuing Weakness in Business Investment and Exports**

Nonresidential fixed investment will decline to 156 billions of 1972 dollars in 1983:3, down more than 10 percent from its peak in 1981:4. By the end of 1983 it will be about 2 percent higher, but 1982-83 will mark the second consecutive annual decline in this important indicator of gross capital formation in the business sector.

Net exports of goods and services will continue to be another source of weakness, with declines estimated at 9 and 2 billions of 1972 dollars in 1981-82 and 1982-83, respectively. However, like inventory investment, this variable is notoriously difficult to predict and subject to a large dispersion of the individual forecasts. The quarter-to-quarter changes in the median predictions of net exports for 1983 are all quite small.

## Projections of GNP and Other Economic Indicators, 1982-83

	Annual						Percent Change	
	1981	1982	1983			1981	1982	
	Actual	Forecast	Forecast	to	to	1982	1983	
1. Gross National Product (\$ billions)	2937.7	3065.0	3307.0			4.3	7.9	
2. GNP Implicit Price Deflator (1972 = 100)	195.5	207.3	218.2			6.0	5.3	
3. GNP in Constant Dollars (billions of 1972 dollars)	1502.6	1478.0	1514.0			-1.6	2.4	
4. Unemployment Rate (percent)	7.6	9.7	9.7			2.1 <sup>1</sup>	0.2 <sup>1</sup>	
5. Corporate Profits After Taxes (\$ billions)	150.9	118.0	130.3			-21.8	10.4	
6. Nonresidential Fixed Investment (billions of 1972 dollars)	166.1	164.0	158.0			-1.3	-3.7	
7. New Private Housing Units Started (annual rate million)	1.09	1.03	1.34			-5.5	30.1	
8. Change in Business Inventories (billions of 1972 dollars)	9.0	-5.1	2.7			-16.1 <sup>2</sup>	7.8 <sup>2</sup>	
9. Treasury Bill Rate (3-month, percent)	14.08	10.61	8.10			-3.47 <sup>1</sup>	-2.51 <sup>1</sup>	
10. Consumer Price Index (annual rate)	10.4	6.2	5.2			-4.2 <sup>1</sup>	-1.0 <sup>1</sup>	

	Quarterly						Percent Change	
	1982	1982		1983				Percent
	Q3	Q4	Q1	Q2	Q3	Q4	Q3 82 to	Q4 82 to
	Actual	Forecast					Q3 83	Q4 83
1. Gross National Product (\$ billions)	3091.4	3134.0	3193.5	3263.0	3343.0	3430.0	8.1	9.4
2. GNP Implicit Price Deflator (1972 = 100)	208.7	211.1	214.0	216.7	219.7	222.9	5.3	5.6
3. GNP in Constant Dollars (billions of 1972 dollars)	1481.2	1485.0	1494.0	1506.0	1522.0	1537.0	2.8	3.5
4. Unemployment Rate (percent)	9.9	10.4	10.3	10.1	9.8	9.6	-0.1 <sup>1</sup>	-0.8 <sup>1</sup>
5. Corporate Profits After Taxes (\$ billions)	119.1	120.0	123.0	127.0	133.0	142.1	11.7	18.4
6. Nonresidential Fixed Investment (billions of 1972 dollars)	161.0	158.0	156.0	156.0	158.0	161.0	-1.9	1.9
7. New Private Housing Units Started (annual rate million)	1.11	1.15	1.21	1.30	1.40	1.46	26.1	27.0
8. Change in Business Inventories (billions of 1972 dollars)	0.7	-3.0	0.0	2.0	3.1	5.0	6.1 <sup>2</sup>	5.1 <sup>2</sup>
9. Treasury Bill Rate (3-month, percent)	9.71	7.89	7.85	8.00	8.00	8.25	-1.71 <sup>1</sup>	0.36 <sup>1</sup>
10. Consumer Price Index (annual rate)	7.6	3.9	5.0	5.5	5.5	5.9	2.6 <sup>1</sup>	0.9 <sup>1</sup>

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, December 1982. The figures on each line are medians of thirty-eight individual forecasts.

<sup>1</sup>Change in rate, in percentage points.

<sup>2</sup>Change in billions of dollars.

### Government Purchases of Goods and Services

Federal government purchases will rise 5.3 percent in 1982-83 but only 2.5 percent in 1982:4-1983:4 (to an annual rate of 121 billions of 1972 dollars at the end of 1983). State and local government purchases will decline 6/10 of 1 percent in 1983, having fallen 1 percent in 1982, so this continues to be another weak sector (but these expenditures should level off at the annual rate of about 175 billions of constant dollars during 1983).

### Assumptions

The majority of respondents assumed that the recently enacted tax laws will be implemented; many also state that they expect additional taxes to be legislated in 1983. The most frequently quoted range for the build-

up of defense outlays is 7-11 percent, but some forecasters assumed a 4-6 percent buildup and others a "reduction of buildup."

The assumptions about monetary policy are expressed in growth rates of 4-6 percent (less frequently 7-8 percent) for M1 and 8-10 percent for M2. The demand for, and prices of, energy are predominantly taken to be stable or decreasing, but a very few forecasters assume the opposite.

Finally, on international influences, the views seem to be about evenly divided between those who expect a strengthening of the dollar and a decrease in real exports and those who expect the opposite.

*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 Douglas Phillips of NBER, was responsible for tabulating and evaluating this survey.*

### Frederic S. Mishkin

NBER Research Associate Frederic S. Mishkin has been a member of the Bureau's Program in Economic Fluctuations since 1979. Mishkin, who pursued an Approved Course in Economics at Balliol College, Oxford, in 1971-72, received his B.S. in Economics from MIT in 1973 and his Ph.D. from the same institution in 1976.

Mishkin joined the economics department at the University of Chicago in 1976 as an assistant professor and was promoted to associate professor in 1981. This current academic year, he is a visiting associate professor with joint appointments in the economics and finance departments of the Kellogg Graduate School of Management at Northwestern University.



In addition to having written numerous articles in the field of monetary economics and applied macroeconomics, Mishkin currently serves on the editorial board of the *American Economic Review*. His NBER monograph, *A Rational Expectations Approach to Macroeconomics: Testing Policy Ineffectiveness and Efficient Markets Models*, is forthcoming from the University of Chicago Press this spring.

Mishkin, his wife Sally, who is a dentist, and their five-month-old son, Matthew, reside in Chicago. His hobbies include long-distance bicycling, cross-country skiing, and "the consumption of good food."

### Fourth Annual Research Conference in New York

NBER's Fourth Annual Research Conference was held in New York City on October 4, 1982. Over one hundred representatives of business, nonprofit organizations, government, and the press were briefed on the results of four current research projects.

The first speaker, Jeffrey Sachs of Harvard University, is a research associate in NBER's Programs in International Studies and Economic Fluctuations. He discussed his work on stagflation in the United States, Europe, and Japan. Sachs pointed out certain common elements, such as the oil and food price shocks of the 1970s, which combined with policy responses of the various governments to create the "stagflation muddle" faced by most of the industrialized economies in recent years.

The second speaker, Patric H. Hendershott of Ohio State University, a research associate in NBER's Programs in Financial Markets and Taxation, described his work on government policies and the allocation of residential and industrial capital. His primary focus was on the tax advantages of owner-occupied housing and the changes in those tax rules over the last two decades.

Zvi Bodie of Boston University, a research associate in the Bureau's Programs in Financial Markets and Pensions, was the third speaker. He discussed some of the work completed by various members of the pension project on "the financial aspects of the U.S. pension system." He also enumerated certain areas of future pension research at NBER: the impact of private pensions on the labor market; funding and asset allocation of public plans; and financial constraints on both public and private systems.

James L. Medoff of Harvard University and the Bureau's Program in Labor Studies closed the program. He presented some of his work on imbalance in the labor market (between jobs and available workers). Medoff concluded that both job creation and employee training are essential if unemployment is to be reduced without a worsening of productivity growth and inflation.

An NBER Summary Report on the conference, consisting of condensed versions of these four presentations and the discussions that followed, is now available free of charge from the Bureau's Publications Department.

# Incentive Effects of Government Spending

About 70 economists from the United States and abroad met in Cambridge on November 5 and 6 for an NBER Conference on the Incentive Effects of Government Spending. The conference was organized by David F. Bradford, director of NBER's Program in Taxation, also of Princeton University. The following papers were discussed:

Paul Gertler, State University of New York at Stony Brook, "Subsidies, Quality, and Regulation in the Nursing Home Market"

Discussants: Harvey S. Rosen, Princeton University and NBER; Amy Taylor, National Center for Health Services Research

Lawrence H. Goulder, Harvard University, and Marc Robinson, University of California, Los Angeles, "Synfuels: Justifications for and Consequences of Government Intervention"

Discussants: Joel Slemrod, University of Minnesota and NBER; Robert Pindyck, Massachusetts Institute of Technology

Gary Solon, Princeton University, "Work Incentive Effects of Taxing Unemployment Benefits"

Discussants: Ronald G. Ehrenberg, Cornell University and NBER; Eleanor Brown, University of Florida

Robert H. Haveman and Barbara Wolfe, University of Wisconsin, "The Work Effort Response of Older Workers to Disability-Related Transfers: Estimation and Policy Simulation"

Discussants: Dabiel S. Hamermesh, Michigan State University and NBER; David A. Wise, Harvard University and NBER

Dan Feaster and George Jakubson, University of Wisconsin, "The Labor Supply-Welfare Participation Decision"

Discussants: Jerry A. Hausman, Massachusetts Institute of Technology and NBER; Charles Manski, Hebrew University and NBER

Bruce Hamilton, Johns Hopkins University, "The Flypaper Effect and Other Anomalies"

Discussants: George Zodrow, Rice University; John Wilson, Columbia University

Krishna Ladha and Thomas Romer, Carnegie-Mellon University, and Howard Rosenthal, Carnegie-Mellon University and California Institute of Technology, "If at First You Don't Succeed: Budgeting by a Sequence of Referenda"

Discussants: Michael Rothschild, University of Wisconsin and NBER; William Wheaton, Massachusetts Institute of Technology

Robert Moffitt, Rutgers University and University of Wisconsin, "The Effects of Grants-in-Aid on State on State and Local Expenditures"

Discussants: Daniel Rubinfeld, University of Michigan; Thomas Pogue, University of Iowa

Gertler's paper analyzes the influence of government intervention in the nursing home market on nursing home behavior and general welfare. He focuses on governmental patient subsidy programs and cost containment efforts, specifically Medicaid and the Certificate of Need (CON) program.

Gertler finds that when the government tries to buy more nursing home services by increasing the Medicaid reimbursement rate, the welfare of Medicaid patients rises at the expense of private-pay patients. (Nursing homes admit fewer private-pay patients and charge them a higher price.) He finds that CON capacity constraints reduce both Medicaid and private expenditures. They also induce nursing homes to maintain higher quality of care than without CON restraints. But CON entry barriers seem to reduce the quality and welfare of private-pay patients and have an ambiguous effect on the welfare of Medicaid patients.

The Goulder/Robinson paper investigates the gains that might be obtained from government synfuels policies. They begin by examining the optimal level of synfuels production for an importing country with monopsony power. They also consider the case in which the imported resource is supplied by a cartel behaving as a profit-maximizing monopolist, and where suppliers are perfectly competitive. A central result of the paper is that flexibility with respect to synfuels, in the absence of uncertainty, will often hurt, and almost never help, the importing government.

Solon's paper investigates whether the introduction of taxation of unemployment insurance (UI) benefits has had the predicted effect of reducing the duration of unemployment spells. The study uses data on a sample of persons who filed for UI in 1978 and 1979. Solon's analysis repeatedly rejects the hypothesis of "no tax effect"; that is, the 1979 policy change is estimated to have reduced the duration of average compensated unemployment among the sampled high-income claimants by almost a week and a half.

The Haveman/Wolfe paper first discusses the unique nature of the disability system. The authors identify price, income, and other system characteristics that influence efforts to model and estimate the labor supply choice of covered individuals. A second section identifies standards needed in any effort to measure the behavioral response to program incentives. The third section of the paper describes primary studies of the labor supply response to disability-related transfers and the extent to which they meet the standards identified. Finally, the authors attempt to reconcile the disparate results of empirical estimates in two polar studies.

The paper by Feaster and Jakubson examines the effect of income maintenance on the labor market behavior of female heads of household. Their specific focus is the nonparticipation in a welfare program by those eligible for it. Using a reduced-form approach to the labor supply decision, the authors test whether the reduced forms are the same for welfare participants and nonparticipants. They reject this equality. However, there is support for the prediction that work incen-

tives, in the form of lower tax rates on earnings, decrease hours of work. They further find that the lower tax rate does increase the probability of working, albeit for fewer hours. They argue that simply looking at single-period hours of work is not an appropriate way to judge the effectiveness of work incentives, for the increase in employment rates can have an effect on the probability of future dependence.

Hamilton develops a model in which income, in its own right and as a proxy for other socioeconomic characteristics, is an input in the production function for local public services (the most obvious example is education). His model yields the following results: (1) the observed flypaper effect (the tendency for local governments to spend a higher fraction of unrestricted grants than income received from residents) may be the result, at least in part, of the fact that own income (but not grants) is a substitute for purchased inputs in the technology; hence, the propensity to spend on purchased inputs out of own income is lower than out of grants; (2) the income elasticity of demand may be higher for public sector output than for purchased inputs; and (3) equalization of educational opportunity via wealth neutrality may require major changes in education finance once the distinction between purchased inputs and output is recognized.

Ladha, Romer, and Rosenthal use an econometric model, based on the Romer-Rosenthal model of agenda control by budget-maximizing bureaucracies, to analyze the budgetary and voting outcomes of referendums in a cross-section of Oregon school districts. In addition to providing estimates of the effects of agenda control, their model permits estimation of the spending effects of voters' failure to perceive correctly the availability of lump-sum intergovernmental grants. Budgets are set through referendums. In the event of a failed referendum, a limited number of additional votes may be taken in a given year. The model permits the authors to estimate the degree to which the setter of the agenda (for example, the school superintendent) learns about voter preferences from the outcomes of failed referendums. Their results: (1) support the theoretical model of agenda control and its predictions about the effect of the setter's proposals on voting behavior; (2) indicate that voter failure to perceive state grants correctly leads to significant increases in spending; and (3) fail to indicate any learning by the setter of the agenda.

Moffitt's paper addresses the issue of "piecewise linear" budget constraints created by federal and state grant formulas. Such constraints are created whenever the federal subsidy rate is not constant. Moffitt develops econometric methods to estimate the effect of such formulas on state expenditures and applies the method to the case of federal subsidies to states for the AFDC program. He finds that the present federal grant formula actually increases cross-state inequality in AFDC benefits as a result of the linked nature of the grant formula. He also finds that several subsidy rates in the present formula actually reduce benefits in the country as a whole. Benefits would increase if such subsidy rates

were eliminated, again because of the nonlinearity of the grant formula. Finally, Moffitt examines the so-called "flypaper effect," representing the hypothesis that grants to states have larger effects on expenditures than do increases in the state's own income. When the proper econometric methods are applied, Moffitt finds that no such effect exists.

## U.S. Trade Policy

Members and guests of NBER's Program in International Studies met in Cambridge on December 3 and 4 for a conference on "The Structure and Evolution of Recent U.S. Trade Policy." After an introduction by conference organizers Robert E. Baldwin, University of Wisconsin and NBER, and Anne O. Krueger, World Bank and NBER, the following papers were discussed.

### SESSION B: GENERAL OVERVIEWS OF U.S. TRADE RELATIONS

Chair: Anne Krueger

Robert Baldwin, "The Changing Nature of U.S. Trade Policy since World War II"

Alan Deardorff and Robert Stern, University of Michigan, "The Effects of the Tokyo Round on the Structure of Protection"

Discussants: Richard Cooper, Harvard University, and Alfred Reifman, Library of Congress

### SESSION C: IMPORT POLICIES

Chair: Anne Krueger

Barry Eichengreen, Harvard University and NBER, and Hans van der Ven, Harvard University, "U.S. Antidumping Policies: The Case of Steel"

Discussants: Wilfred Ehler, University of Pennsylvania, and Gary M. Horlick, U.S. Department of Commerce

### SESSION C CONTINUED

Chair: William Diebold, Jr., Council on Foreign Relations

Robert Feenstra, Columbia University, "Voluntary Export Agreements: The Auto Case"

Discussants: Ronald Jones, University of Rochester, and Mordechai Kreinen, Michigan State University

Joseph Pelzman, George Washington University, "The Impact of the Multifiber Arrangement on the U.S. Textile Industry"

Discussants: David Tarr, Federal Trade Commission, and Martin Wolf, Trade Policy Research Centre, London

Jonathan Eaton, Yale University and NBER, and Zvi Eckstein, Yale University, "The U.S. Strategic Petroleum Reserve: An Analytic Framework"  
Discussants: John Whalley, University of Western Ontario, and Kent Hughes, Joint Economic Committee

#### SESSION C CONTINUED

Chair: Jagdish Bhagwati, Columbia University  
C. Michael Aho and Thomas O. Bayard, U.S. Department of Labor, "Costs and Benefits of Trade Adjustment Assistance"  
Discussants: J. David Richardson, University of Wisconsin and NBER, and Brian Turner, AFL-CIO

#### SESSION D: EXPORT PROMOTING POLICIES

Chair: Jagdish Bhagwati  
Harry Grubert, U.S. Department of the Treasury, and John Mutti, University of Wyoming, "DISC and Its Effects"  
Discussants: Stephen Magee, University of Texas, and William Cline, Institute for International Economics  
Helen Hughes, World Bank, and Anne Krueger, "Trends in Industrial Country Protection against Developing Countries"  
Discussants: Ronald Findlay, Columbia University, and Irving B. Kravis, University of Pennsylvania and NBER

#### SESSION E: DEVELOPING COUNTRY IMPACTS

Chair: Richard Caves, Harvard University  
Heywood Fleisig and Catharine Hill, World Bank, "The Benefit and Costs of Official Export Credit Programs"  
Discussants: Rachel McCulloch, University of Wisconsin, and Robert Lawrence, Brookings Institution  
Andre Sapir and Lars Lundberg, University of Wisconsin, "The U.S. Generalized System of Preferences and Its Impact"  
Discussants: Tracy Murray, University of Arkansas, and Gordon Streeb, U.S. Department of State

#### SESSION F: OVERVIEW

Chairs: Robert Baldwin and Anne Krueger  
General Discussion

Baldwin's paper provides a survey of U.S. trade policy since World War II. He focuses on six closely related trends or factors in that policy: (1) a shift from the use of trade policy in the immediate postwar period to promote broad international political and national security goals to its use in recent years as a means of advancing economic objectives and responding to domestic pressures based on economic interests; (2) congressional efforts to modify presidential powers so that U.S. international commercial policy will be more responsive to

the president's wishes; (3) changes in party positions on trade liberalization versus increased protectionism; (4) shifts in business, labor, and farmers' attitudes toward liberalization versus protectionism; (5) increased use of nontariff measures to regulate trade while tariffs are being significantly reduced; (6) uneven liberalization of trade among industries throughout the entire period.

Deardorff and Stern use the Michigan Model of World Production and Trade to analyze the structure of protection in the United States and abroad as altered by reductions in barriers and tariffs negotiated in the Tokyo Round (which ended in April 1979). They highlight several notable findings: (1) their calculation of change in per unit value added provides quite different information about the structure of protection than is available from nominal or effective tariffs; (2) the Tokyo Round did not change the pattern of protection overall; (3) the greatest benefits of the Tokyo Round were felt in sectors with the greatest export interests; and (4) there is no evidence that levels of protection have become more uniform, or more or less cascaded against imports of final goods, or that the Tokyo Round was biased against exports of major developing countries.

The Eichengreen/van der Ven paper analyzes dumping from both a theoretical and an empirical viewpoint. The first sections analyze the evolution of U.S. anti-dumping policy and the design of the Trigger Price mechanism. Latter sections of the paper use theoretical models to explain sources of dumping and to illustrate the magnitude of its effects. One finding is that the incidence of dumping will depend on the number of firms producing for each national market, the market share of each firm, and the extent to which firms exploit their mutual dependence.

Feenstra examines the effect of the Japanese voluntary export restraint (VER) on automobiles agreed to in May 1981. He concludes that "about two-thirds of the import price rise following the VER is due to quality improvement, with the remaining one-third a de facto price increase." He estimates that between 1980 and 1981 the welfare loss resulting from VER was about 3 percent of the revenue spent on imports.

Pelzman's paper sets out to determine the impact of the multifiber arrangement (MFA) on the U.S. textile and apparel industries. He finds that MFA had a positive and significant impact on the performance of those two industries. But that impact is caused in part by controlling the growth of imports and in part by the inherently competitive nature of the industries.

Eaton and Eckstein investigate the desirability of U.S. government oil inventories in a two-period, two-country model in which the world oil stock is exhaustible. In competitive markets, public inventories have no role in improving welfare. Only under a limited set of strategic games between the United States and OPEC can one justify public strategic petroleum reserves. The authors conclude that "a credible precommitment by the U.S. government to impose the optimal tariff would benefit the United States much more [than reserves]."

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# Conference Calendar

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The Aho/Bayard paper reexamines the rationale for Trade Adjustment Assistance (TAA), a categorical assistance program for trade-displaced workers. Any such program involves inherent trade-offs among equity, efficiency, and political viability. They summarize that "if the alternative to TAA is increased protectionism, the fundamental issue is whether TAA's political contribution to American trade policy will be sufficient to justify its existence."

The Grubert/Mutti paper analyzes the effects of Domestic International Sales Corporations (DISCs) on U.S. exports, output, international capital flows, terms of trade, and factor rewards. The projected increase in net exports with DISCs is only 2 percent. Further, changes in income distribution with DISCs are unpredictable, since unskilled labor clearly loses, while skilled labor may either gain or lose depending upon the extent of mobility of capital. Finally, the authors' projections indicate a net loss in economic efficiency to the United States as a result of DISC.

Hughes and Krueger find that, despite all the public discussion of protection, the effects of protectionist measures against exports of manufactures from developing countries were relatively small. In fact, the rate of increase in LDC market shares was sufficiently great that it is difficult to imagine that rates would have been significantly higher in the absence of protectionist measures. However, Hughes and Krueger find that there were greater welfare losses to the protecting countries because of these measures.

The Fleisig/Hill paper looks at the distribution of costs and benefits arising from the U.S. government's subsidy program. The government supports export credits through direct loan and subsidy programs as well as insurance and guarantee programs. The estimated value of the subsidy was between \$1.5 and \$3.5 billion in 1980; developing countries received \$1-2.4 billion.

Sapir and Lundberg study the actual effects of a Generalized System of Preferences (GSP) on developing country exports to the United States from 1975-79. They find a gross trade creation effect of nearly \$1 billion. But so far only a limited number of products and countries have actually gained from the GSP because of the shortness and limited scope of its operation.

In addition to those mentioned above, the following participants attended the two-day conference: Asim Erdilek and Rolf R. Piekartz, National Science Foundation; J. Michael Finger, World Bank; Lawrence A. Fox, National Association of Manufacturers; David G. Hartman and Eli Shapiro, NBER; Elhanan Helpman, Harvard University; Paul R. Krugman, Council of Economic Advisers; Robert E. Lipsey, Queens College and NBER; Alan Mendelowitz, U.S. General Accounting Office; Lorenzo Perez, International Monetary Fund; Jeffrey Sachs, Harvard University and NBER; John Suomela, International Trade Commission; Lars E. O. Svensson, University of Stockholm; and Stephen Thurman, Congressional Budget Office.

Each *Reporter* will include a calendar of upcoming conferences and other meetings that are of interest to large numbers of economists (especially in academia) or to smaller groups of economists concentrated in certain fields (such as labor, taxation, finance). The calendar is primarily intended to assist those who plan conferences and meetings, to avoid conflicts. **All activities listed should be considered to be "by invitation only," except where indicated otherwise in footnotes.**

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also provide a short (fewer than fifty words) description of the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Spring 1983 issue of the *Reporter* is March 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss at (617) 868-3974.

**March 3-4, 1983**

Minority Youth Unemployment (Preconference Meeting), NBER

**March 17-18, 1983**

Program Meeting: International Studies, NBER

**March 17-18, 1983**

Program Meeting: Economic Fluctuations, NBER

**March 24-25, 1983**

Panel on Economic Activity, Brookings Institution

**March 24-26, 1983**

Pensions, Labor, and Individual Choice, NBER

**April 15-16, 1983**

Conference on Public Policy, Carnegie-Rochester

**May 5-6, 1983**

Program Meeting: Financial Markets and Monetary Economics, NBER

**May 6-7, 1983**

Economics of Trade Unions, NBER

**May 17-18, 1983**

Spring Symposium, National Tax Association\*

**May 23-27, 1983**

Interlaken Seminar on Analysis and Ideology, University of Rochester

**May 31-June 3, 1983**

Konstanz Conference on Monetary Theory and Monetary Policy, University of Rochester

**June 9-10, 1983**

Annual Meeting, International Association of Energy Economists

**June 10-11, 1983**  
Conference on Political Economy, Carnegie-Mellon University

**June 27-28, 1983**  
International Seminar on Macroeconomics, NBER

**July 6-8, 1983**  
Conference on Macroeconomics, NBER

**July 20-24, 1983**  
Annual Conference, Western Economic Association

**August 11-12, 1983**  
Minority Youth Unemployment, NBER

**August 15-18, 1983**  
Annual Meeting, American Statistical Association\*

**August 18-20, 1983**  
Conference on Productivity in Health, NBER

**September 1983**  
First Quarter Century of Cliometrics, NBER

**September 15-16, 1983**  
Panel on Economic Activity, Brookings Institution

**September 27-30, 1983**  
Annual Conference, National Association of Business Economists\*

**October 2-6, 1983**  
Annual Conference, National Tax Association\*

**October 14-15, 1983**  
Business Cycle Conference, NBER

**December 28-30, 1983**  
Annual Conference, American Economic Association\*

**January 4-7, 1984**  
Global Implications of Trade Patterns of Asia, NBER

**March 16-17, 1984**  
Public Pensions, NBER

**March 22-24, 1984**  
Income and Wealth: Long-Term Factors in American Economic Growth, NBER

**March 22-25, 1984**  
Business Cycle Conference, NBER

**June 24-28, 1984**  
Annual Meeting, Western Economic Association

**August 13-16, 1984**  
Annual Meeting, American Statistical Association\*

**October 25-29, 1984**  
Annual Conference, National Tax Association\*

**December 28-30, 1984**  
Annual Conference, American Economic Association\*

**August 12-15, 1985**  
Annual Meeting, American Statistical Association\*

**December 28-30, 1985**  
Annual Conference, American Economic Association\*

\*Open conference, subject to rules of the sponsoring organization.

## Bureau News

### Financial Economists Meet

Members and guests of NBER's Program in Financial Markets and Monetary Economics met in Cambridge on October 28 and 29 to discuss current research. The two-day meeting, organized by Program Director Benjamin M. Friedman, included the following presentations:

Roger H. Gordon, Bell Laboratories and NBER, "Interest Rates, Inflation, and Corporate Financial Policy"  
Discussant: Zvi Bodie, Boston University and NBER

Allan Meltzer, Carnegie-Mellon University, and Angelo Mascaro, U.S. Department of the Treasury, "Long- and Short-Term Interest Rates in a Risky World"  
Discussant: John H. Makin, International Monetary Fund and NBER

Sanford J. Grossman, University of Chicago and NBER, "A Transactions-Based Model of the Monetary Transmission Mechanism" (Working Paper Nos. 973 and 974)  
Discussant: Andrew B. Abel, Harvard University and NBER

Michael Rothschild, University of Wisconsin and NBER, "Arbitrage and Mean-Variance Analysis in Large Asset Markets" (Working Paper No. 996, with Gary Chamberlain)  
Discussant: Robert McDonald, Boston University and NBER

Robert A. Taggart, Jr., Harvard University and NBER, "Secular Patterns in Corporate Finance" (Working Paper No. 810)  
Discussant: Stewart C. Myers, MIT and NBER

Gordon's paper explores both theoretically and empirically the relation among interest rates, inflation, and corporate financial policy. In it he compares the implications for corporate capital structure of the tax advantage-bankruptcy cost model, the DeAngelo-Masulis model, the Miller model, and the Modigliani-Cohn hypothesis. Gordon's main finding is that the debt-value ratios seem to depend strongly on nominal interest rates, as would be implied by the tax advantage-bankruptcy cost model.

The paper by Meltzer and Mascaro develops a general equilibrium, static macro model in which risk caused by variability affects portfolio choices. Debt, money, and capital are treated as distinct assets. The demand for each asset responds to risk, return, output, and prices, and to monetary and fiscal policy. Risk is not constant; it changes with the variability of unanticipated rates of change in monetary and real variables. Estimates of the parameters for the period before and after the 1979 change in Federal Reserve policy procedures are used to compute the effect of the change on long- and short-term market interest rates.

Grossman proposes a new explanation of how open-market operations can change real and nominal interest rates. His model emphasizes how a change in the money supply affects the spending decision of those agents making withdrawals at the time of an open-market operation. Considerations of intertemporal substitution imply that the real rate must decline to induce these agents to consume more. An extension of the original model confirms the basic result that an increase in money causes a sluggish response of the price level and a fall in interest rates.

Rothschild examines the implications of arbitrage in a market with many assets. He resolves the question of when such a market permits enough diversification for risk-free investment opportunities to be available. Rothschild defines an "approximate factor structure," finds that the corresponding  $K$  eigenvectors converge and play the role of factor loadings, and he concludes that only a principal component analysis is needed in empirical work.

Taggart's paper uses corporate finance theory, with some new extensions, to develop a framework for interpreting aggregate corporate financing patterns over the twentieth century. Taggart finds that corporations' use of debt has undeniably increased in the post-World War II period. Nevertheless, the relative corporate debt level was unusually low in the 1940s, and current debt levels are not unprecedented when viewed in the context of the entire century. He argues that supplies of competing securities, such as federal government bonds, as well as the development of the financial intermediary system, may be among the important determinants of long-run corporate financing patterns.

Other NBER associates who participated in the meeting are: Olivier J. Blanchard and Benjamin M. Friedman, Harvard University; Stanley Fischer, MIT; Patric H. Hendershott, Ohio State University; Angelo Melino, University of Toronto; Robert H. Rasche, Michigan State University; William L. Silber, New York University; David G. Hartman, and Anna J. Schwartz.

## International Economists Gather in Cambridge

The general theme for the program meeting in international studies on November 5, 1982, was "Trade Policy, Technology, and Industrial Organization." The meeting brought together not only twelve NBER research associates and faculty research fellows but also fourteen representatives of the federal executive, congressional staffs, and the national policy community. All of these policy participants had a particular interest in the interaction of trade, technology, and noncompetitive market structure. Their participation was one aspect of a recent NBER grant from the National Science Foundation to explore issues in international policy research.

Two papers were presented and discussed in the morning:

- Paul R. Krugman, MIT and NBER, "Import Protection as Export Promotion: International Competition in the Presence of Oligopoly and Economies of Scale"  
James A. Brander, Queen's University and NBER, and Barbara J. Spencer, Boston College and NBER, "Export Subsidies and International Market Share Rivalry"

In the afternoon, William F. Finan, special assistant to the undersecretary for international trade in the U.S. Department of Commerce, led a general discussion of issues, research priorities, data needs, and policy options arising from a 1982 study entitled "An Assessment of U.S. Competitiveness in High-Technology Industries." The study had been prepared for the Working Group on High-Technology Industries of the Cabinet Council on Commerce and Trade.

Both the Krugman and the Brander/Spencer papers analyze the market responses of imperfectly competitive firms to trade policy. Krugman adds economies of scale of several different kinds. With such scale economies, there is at least a potential for trade policy to give a domestic firm a privileged position in some one market and thereby an advantage in scale over foreign rivals. This scale advantage might translate into lower marginal costs and higher market share even in unprotected markets. Scale advantages could be the result either of "static" economies of scale (that is, a declining marginal cost curve), or of "dynamic" economies of scale of the "learning-curve" type, or perhaps from competition in R and D.

Brander and Spencer add strategic behavior, instead of scale economies, to imperfect competition. Both firms and governments act strategically, with governments able to announce credible policies that influence the rational competitive conflict of firms. In such a world, export subsidies have some potential to appear as policy tools because they improve the relative position of a domestic firm in noncooperative rivalries with foreign firms, enabling it to expand its market share and earn greater profits. In effect, subsidies change the initial conditions of the games that firms play. The terms of trade move against the subsidizing country, but its welfare might potentially increase because, with imperfect competition, price exceeds the marginal cost of exports. International noncooperative equilibrium may involve such subsidies by producing nations, even though they are jointly suboptimal.

Many of these observations were fleshed out during the lively afternoon session chaired by Program Director William H. Branson of Princeton University and NBER. The more successful examples of foreign industrial protection and promotion were described and their implications for U.S. competitiveness and industrial structure were discussed. Many participants contributed to an attempt to describe what is meant by an "ideal" U.S. industrial structure and what weaknesses (if any) competitive markets might display in attaining it. National defense, vulnerability, ambition to innovate and dominate, and policy toward agriculture and services were all considered. Also considered was the degree to which profit and comparative advantage often turned out to be the most compelling measure of a desirable industrial structure after all.

The meeting ended with a general interchange on research priorities that arose out of the provocative discussion of the papers, and with an attempt to draw together the numerous abstract and illustrative insights.

In addition to those mentioned above, the following NBER program members participated in the meeting: Rudiger Dornbusch, MIT; Barry Eichengreen, Harvard University; John F. Helliwell, University of British Columbia; David A. Hsieh, University of Chicago; Robert E. Lipsey, Queens College; Richard C. Marston, University of Pennsylvania; Maurice Obstfeld, Columbia University; and J. David Richardson, University of Wisconsin. Also attending were: Frank D. Downing, Warren E. Farb, and Gary M. Horlick, U.S. Department of Commerce; Carole Kittl and Rolf R. Piekartz, National Science Foundation; Steven Falken and David A. Walters, Office of the U.S. Trade Representative; Paul G. Ericson and Timothy L. Stone, Central Intelligence Agency; C. Michael Aho, U.S. Department of Labor; Robert A. Feldman, Federal Reserve Bank of New York; Howard Rosen, Institute for International Economics; Robert W. Russell, Senate Banking Committee; and Lars E. O. Svensson, University of Stockholm.

## Labor Studies Meeting Held

Members of NBER's Program in Labor Studies met in Cambridge on November 12 and discussed the following papers:

Robert H. Meyer, Council of Economic Advisers, "Sequential Education and Training Decisions under Uncertainty"

Alan L. Gustman, Dartmouth College and NBER, and Thomas L. Steinmeier, Texas Technical University and NBER, "Structural Estimates of Retirement Models" (NBER Working Paper Nos. 940 and 1000)

John Abowd, University of Chicago and NBER, "Estimating Gross Labor Flows from the CPS"

William Dickens, University of California, Berkeley, and NBER, "The Value of Saving a Life: Problems with Using Labor Market Evidence"

Meyer's paper considers the relationship between lifetime earnings, educational attainment, and high school curriculum. The sequential nature of these events is explicitly incorporated into his analysis. At the beginning of high school, individuals are assumed to select a program of academic and vocational course work that maximizes their expected utility of lifetime income. The relative value of academic and vocational education is presumed to depend on ultimate school attainment. In particular, vocational education is presumed to be complementary with work after high school graduation, and academic education is presumed to be complementary with a college career. Thus, the optimal high school curriculum for an individual depends on his or her anticipated post-secondary plans and the degree of uncertainty associated with those plans. Meyer's analysis indicates that as uncertainty decreases, individuals are more likely to specialize in academic or vocational education. Data from the National Longitudinal Study of the high school class of 1972 are used to estimate his model that consists of equations for lifetime earnings, individual discount rates, school attainment, and high school curriculum. The theoretical model implies strong cross-equation restrictions on the parameters. Preliminary results suggest that the model is broadly consistent with the data.

Gustman and Steinmeier's paper discusses the findings of an NBER project funded by the Department of Labor. It encompasses two Bureau working papers and some as yet unpublished work. They first present evidence to support two unique behavioral features of their model, which in part differentiate their work from previous analyses. Evidence is presented to document

the importance of a lower-limit constraint on hours of work that prevents most people from retiring partially on their main job. Further evidence is then used to demonstrate that older individuals face significantly different wage offers for work when partially retired than when not retired, and that the wage offer for work when not retired will vary considerably among those who can partially retire on their main job and those who cannot.

Third, they present some basic information on direct and reverse flows among the states of retirement, partial retirement, and nonretirement, as well as information on the duration of these states. Finally, they discuss preliminary estimates of parameters of a CES utility function that is estimated in the context of a life-cycle retirement model. The model treats both the coefficient on the leisure term and the within-period elasticity of substitution as stochastic. It explains the simultaneous existence of frequent partial retirement outside the main job together with relatively short duration for that partial retirement.

Abowd (in this paper with A. Zellner) considers the problem of estimating month-to-month movements of the labor force between employment, unemployment, nonparticipation, and entry/exit from the labor population. He uses data from 60 months of matched Current Population Surveys (January 1977 to December 1981). These data are unpublished Gross Labor Flow statistics that the Bureau of the Census has collected for many years.

Major criticisms of these data are: (1) the implied levels of employment, unemployment, and nonparticipation in the previous and current months are not consistent with the published levels; (2) employment status is not provided for substantial percentages of the relevant population in either the previous or current month; and (3) no measurements of population inflow and outflow are available to complete the monthly tables.

Abowd's procedure provides a statistical adjustment to the Gross Flow tables that addresses these criticisms of the data. The adjustment procedure sets the average employment status margins at the published levels. Individuals with missing employment status are assigned in a manner that maximizes reconciliation of the Gross Flow margins with published labor force counts. A measure of inflows to the population to various employment states (and vice-versa) is also provided.

The adjusted Gross Flow tables agree quite closely with the published margins. Agreement with unpublished Census inflow and outflow estimates requires very small estimates of transitions into and out of the population. The individuals with missing status are more likely to be in unemployed and nonparticipation states than in the employed state for the missing month. Consequently, the adjusted table shows greater adjustment for transitions involving these states than the employed state.

Dickens's paper presents models of the effects of Occupational Safety and Health policy in the presence of monopsony (or monopoly unions) and when workers have imperfect information about job safety. Conditions

under which safety standards or tax-incentive schemes improve welfare are described. Dickens shows that if workers have imperfect information about job safety, providing information may either improve or worsen welfare, and that conditions may exist when prescribed standards are preferable to tax-incentive regulation.

In addition to the authors, the following NBER program members participated: Katharine G. Abraham, Henry S. Farber, and Casey Ichniowski, MIT; Joseph Altonji, Columbia University; Charles Brown, University of Maryland; James N. Brown, Princeton University; David Ellwood, Richard B. Freeman, Zvi Griliches, Harry J. Holzer, James L. Medoff, and David A. Wise, Harvard University; Edward P. Lazear and Robert Topel, University of Chicago; Gregg Lewis, Duke University; Olivia S. Mitchell, Cornell University; and Ariel Pakes, Hebrew University.

## New Board Members Named

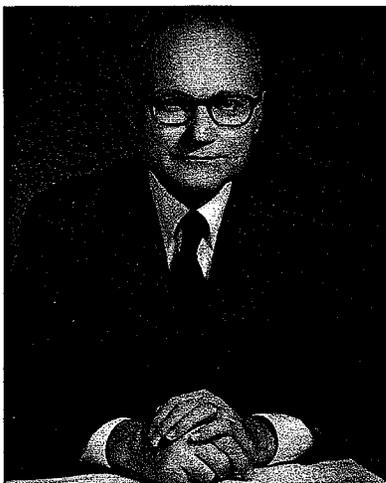
Three new members were named to NBER's Board of Directors at its October 25 meeting in New York. Effective November 1, 1982, Jean A. Crockett and Saul B. Klamman are directors at large, and A. Gilbert Heebner is a director by appointment of the National Association of Business Economists.



Dr. Crockett is a professor of finance at the Wharton School, where she has been on the faculty since 1954. She became a full professor at Wharton in 1966 and was chairman of the finance department from 1977 to 1982. Dr. Crockett has also taught at the University of Illinois and has written extensively on interest rates, consumption, saving, and investment. Formerly chairman of the board of directors of the Federal Reserve Bank of Philadelphia, Dr. Crockett is currently a director of the American Finance Association and the Pennwalt Corporation; she is also a member of the Federal Reserve Board's Consumer Council.



Dr. Klamman is president of the National Association of Mutual Savings Banks, a post he has held since 1977. He joined the savings bank group in 1958 and has served them as economist, director of research, vice president and chief economist, deputy executive vice president, and executive vice president prior to his appointment as president. Dr. Klamman also has a long history with NBER: he was senior staff member on the Postwar Capital Market Project in 1956, served on the Advisory Committee on Urban Economic Studies from 1968-76, and has written on the mortgage market for the Bureau in the late 1950s and early 1960s.



Dr. Heebner is executive vice president and economist of the Philadelphia National Bank. He joined the bank's staff in 1952 as a commercial lending officer, was named an economist there in 1960, was made head of the Investment, Funding, and Economics group in 1974, and was promoted to his current position in 1981. Dr. Heebner has taught and lectured at the College of Wooster (Ohio), Wharton School of Finance, Swarthmore College, and other institutions. Dr. Heebner also served on President-elect Reagan's Inflation Policy Task Force in 1980.

## Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-325 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others there is a charge of \$1.50 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, 1050 Massachusetts Avenue, Cambridge, MA 02138.

326. "Compliance with the Overtime Pay Provisions of the Fair Labor Standards Act," by Ronald G. Ehrenberg and Paul L. Schumann, 1982 (NBER Working Paper No. 815)
327. "Real Exchange Rate Overshooting and the Output Cost of Bringing Down Inflation," by Willem H. Buiter and Marcus M. Miller, 1982 (NBER Working Paper No. 749)
328. "Interest Rate Implications for Fiscal and Monetary Policies: A Postscript on the Government Budget Constraint," by Benjamin M. Friedman, 1982 (NBER Working Paper No. 886)
329. "Relative Prices, Employment, and the Exchange Rate in an Economy with Foresight," by Maurice Obstfeld, 1982 (NBER Working Paper No. 685)
330. "The Effect of the Minimum Wage on Employment and Unemployment," by Charles Brown, Curtis Gilroy, and Andrew Kohen, 1982 (NBER Working Paper No. 846)
331. "Inflation, Tax Rates, and the Accumulation of Residential and Nonresidential Capital," by Martin Feldstein, 1982 (NBER Working Paper No. 753)
332. "Corporate Financial Policy with Personal and Institutional Investors," by Alan J. Auerbach and Mervyn A. King, 1982 (NBER Working Paper No. 324)
333. "Utilitarianism and Horizontal Equity: The Case for Random Taxation," by Joseph E. Stiglitz, 1982 (NBER Working Paper No. 694)
334. "Consumption Correlatedness and Risk Measurement in Economies with Nontraded Assets and Heterogeneous Information," by Sanford J. Grossman and Robert J. Shiller, 1982 (NBER Working Paper No. 690)
335. "Trade Adjustment under the U.S. Trade Act of 1974: An Analytical Examination and Worker Survey," by J. David Richardson, 1982 (NBER Working Paper No. 556)

336. "Income and Race Differences in Children's Health in the Mid-1960s," by Linda N. Edwards and Michael Grossman, 1982 (NBER Working Paper No. 308)
337. "The Price of Oil and World Inflation and Recession," by Michael R. Darby, 1982 (NBER Working Paper No. 629)
338. "Does Anticipated Aggregate Demand Policy Matter? Further Econometric Results," by Frederic S. Mishkin, 1982 (NBER Working Paper No. 789)
339. "Information and Capital Markets," by Joseph E. Stiglitz, 1982 (NBER Working Paper No. 678)
340. "Trade and Protection with Multistage Production," by Avinash K. Dixit and Gene M. Grossman, 1982 (NBER Working Paper No. 794)
341. "Transferability of Tax Incentives and the Fiction of Safe Harbor Leasing," by Alvin C. Warren, Jr., and Alan J. Auerbach, 1982
342. "The Output Cost of Disinflation in Traditional and Vector Autoregressive Models," by Robert J. Gordon and Stephen R. King, 1982
343. "Inflation, Flexible Exchange Rates, and the Natural Rate of Unemployment," by Robert J. Gordon, 1982 (NBER Working Paper No. 708)

## New Summary Reports Published

Two additional NBER Summary Reports are now available from the Bureau's Publications Department: "Exchange Rates and International Macroeconomics" and "1982 Research Conference: A Summary." The former reports on a conference on exchange rates organized by Jacob A. Frenkel and held in Cambridge in 1981. (See *NBER Reporter*, Winter 1981/2, page 20, for a description and list of papers.) The report summarizes nine papers in fairly nontechnical language; those papers and their discussions will be reprinted in full in a conference volume published by the University of Chicago Press later this year.

"1982 Research Conference: A Summary" provides a brief, nontechnical synopsis of the presentations and discussions held in New York last October at the Bureau's Fourth Annual Research Conference. The four papers delivered at the conference are briefly described elsewhere in this issue of the *NBER Reporter*. (The papers are not available individually.)

NBER Summary Reports are available free of charge from the Publications Department, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

## Bureau Books

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628. Academic discounts of 10 percent for individual volumes and 20 percent 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.

## Mishkin Work Published

*A Rational Expectations Approach to Macroeconomics: Testing Policy Ineffectiveness and Efficient Markets Models* by Frederic S. Mishkin will be available in April from the University of Chicago Press at a cost of \$20.00. Mishkin's book first theoretically develops and discusses a unified econometric treatment of a class of models that emphasize the effects of unanticipated movements in variables. Empirical studies then follow, providing evidence on some of the more important macroeconomic issues being debated today, such as the rationality of expectations or market efficiency in financial markets. This book should be of interest to researchers and advanced students of econometrics, finance, and areas of monetary macroeconomics, both for the evidence presented and for the methodology that Mishkin has developed.

## Final Krueger Volume Available

*Trade and Employment in Developing Countries, 3: Synthesis and Conclusions* by Anne O. Krueger is now available from the University of Chicago Press at a price of \$25.00. This theoretical summary, the third volume in a trilogy analyzing the effect of trade policies (interacting with domestic markets) on the employment and income distribution of developing countries, should be of interest to both teachers and researchers in these fields. Drawing on the empirical studies of volumes 1 and 2, Dr. Krueger emphasizes the comparative advantage to developing countries in concentrating on the export of labor-intensive rather than capital-intensive goods.

*The U.S. National Income and Product Accounts*, edited by Murray F. Foss (see *NBER Reporter*, Fall 1982, page 26), is available from the University of Chicago Press. The volume is priced at \$43.00.

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## Feldstein Monograph Printed

*Inflation, Tax Rules, and Capital Formation* by Martin Feldstein is now available from the University of Chicago Press at a cost of \$31.00. This monograph is a collection of fourteen papers written between 1975 and 1981 as part of NBER's Special Study of Capital Formation. Representing the results of both theoretical and empirical research, Feldstein's volume demonstrates the importance of the interaction between tax rules and monetary policy and emphasizes the need to include explicit specifications of the tax system in studies on capital formation. This volume should represent a major contribution to the study of public finance.

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## Current Working Papers

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### Technical Papers Series

An additional study in the NBER Technical Working Papers series is now available (see previous issues of the *NBER Reporter* for other titles). Like NBER Working Papers, these studies may be obtained by sending \$1.50 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.

#### Formulation and Estimation of Dynamic Factor Demand Equations under Nonstatic Expectations: A Finite Horizon Model

**Ingmar R. Prucha and M. Ishaq Nadiri**  
Technical Working Paper No. 26  
October 1982

This paper proposes a discrete model of investment behavior that incorporates general nonstatic expectations with a general cost-of-living adjustment technology. The combination of these two features usually leads to a set of highly nonlinear first-order conditions for the optimal input plan; in addition, the expectational variables work as shift parameters. Consequently, an explicit analytic solution for derived factor demand, in general, is difficult if not impossible to obtain. Therefore, simplifying assumptions on the technology and/or the form of the expectational process typically are made in the literature.

In this paper we develop an algorithm for the estimation of flexible forms of derived factor demand equations within the above general setting. By solving the first-order conditions numerically at each step in the iteration, this algorithm avoids the need for an explicit analytic solution. In particular we consider a model with a finite planning horizon and explore the relationship between the optimal input plans of the finite and infinite planning horizon model. Because of the discrete setting of the model, the forward-looking behavior of investment is brought out very clearly. As a by-product, we develop a consistent framework for the use of anticipation data on planned investment.

## Working Papers Series

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 \$1.50 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 October 1982 are presented below. For previous Working Papers, see past issues of the *NBER Reporter*. The Working Papers are intended to make results of NBER research available to other economists in preliminary form, to encourage discussion and suggestions for revision before final publication. Working Papers are not reviewed by the Board of Directors of NBER.

#### Arbitrage, Factor Structure, and Mean-Variance Analysis on Large Asset Markets

**Gary Chamberlain and Michael Rothschild**  
Working Paper No. 996  
October 1982

This paper examines the implications of arbitrage in a market with many assets. The absence of arbitrage opportunities implies that the linear functionals that give the mean and cost of a portfolio are continuous; hence there exist unique portfolios that represent these functionals. These unique portfolios span the mean-variance efficient set. Further, we resolve the question of when a market with many assets permits so much diversification that risk-free investment opportunities are available.

Ross [12, 14] showed that if there is a factor structure, then the mean returns are approximately linear functions of factor loadings. We define an *approximate*

*factor structure* and show that this weaker restriction is sufficient for Ross's result. If the covariance matrix of the asset returns has only  $K$  unbounded eigenvalues, then there is an approximate factor structure and it is unique. The corresponding  $K$  eigenvectors converge and play the role of factor loadings. Hence only a principal component analysis is needed in empirical work.

### **Adjustment to Expected and Unexpected Oil Price Increases**

**Nancy P. Marion and Lars E. O. Svensson**  
Working Paper No. 997  
October 1982  
JEL No. 431

For importers of oil, differences in economic performance after the 1973-74 and the 1979-80 oil price increases can be attributed to a number of factors, including the fact that the first oil price increase was unexpected whereas the second was, largely, expected.

In this paper, we analyze how an economy's adjustment to expected oil price increases might differ from its adjustment to unexpected increases. By expected oil price increases, we shall mean ones that were anticipated in the past; by unexpected oil price increases, we shall mean ones that were not anticipated in the past but rather occur unexpectedly in the present. We model this distinction using a three-period model, where the periods are called the past, present, and future.

### **Cost-of-Living Adjustment Clauses in Union Contracts**

**Ronald G. Ehrenberg, Lelf Danziger, and Gee San**  
Working Paper No. 998  
October 1982  
JEL Nos. 800, 832

Our paper seeks to provide an explanation of why the prevalence of COLA provisions and their characteristics varies widely across U.S. industries. We develop models of optimal risk sharing between firms and unions that allow us to investigate the determinants of a number of characteristics of union contracts. These include the presence and degree of wage indexation; the magnitude of deferred, noncontingent (on the price level) wage increases; the duration of labor contracts; and the trade-off between temporary layoffs and wage indexation. We conduct preliminary empirical tests of some of the implications of the model using industry data on the prevalence of COLA provisions and layoff rates, and contract level data on the characteristics of COLA provisions and contract duration. One key finding is that the level of unemployment insurance benefits appears to simultaneously influence the level of layoffs and the extent of COLA coverage.

### **Factor Trade and Goods Trade**

**Lars E. O. Svensson**  
Working Paper No. 999  
September 1982  
JEL Nos. 411, 441

This paper extends previous work by Dixit and Woodland on the effect of intercountry differences in factor endowment on goods trade to include simultaneous factor and goods trade. The pattern of goods trade with factor trade is compared to that without factor trade. It is shown, for instance, that goods trade and factor trade may be substitutes or complements, depending upon whether traded and nontraded factors are "cooperative" or "noncooperative." This study emphasizes the asymmetry between the effects of differences in endowments of traded and nontraded factors.

### **Partial Retirement and Wage Profiles of Older Workers**

**Alan L. Gustman and Thomas L. Steinmeier**  
Working Paper No. 1000  
October 1982  
JEL Nos. 820, 850

Older workers are likely to face different wage offers for their work depending upon whether they have not retired or they are partially retired. However, conventional analyses of wage profiles tend to pool all wage observations without distinguishing among individuals according to their retirement status.

Our empirical analysis suggests the following conclusions: (1) Wages for work done while not retired and for work done while partially retired are significantly different from one another. (2) Wage offers facing older workers may vary considerably according to whether they face lower-limit constraints requiring full-time work or no constraints at all on their main job. (3) Failing to distinguish between wages paid to the partially retired and those paid to the nonretired considerably exaggerates the decline in the wage offer (with experience) for work done while not retired.

### **The Response of Short-Term Interest Rates to Weekly Money Announcements**

**V. Vance Roley**  
Working Paper No. 1001  
October 1982  
JEL Nos. 313, 311

This paper examines the response of short-term interest rates to weekly money announcements since the

Federal Reserve's change in operating procedures on October 6, 1979. The results indicate that the response has increased significantly since October 1979, and that it varies nonlinearly according to the relation of money growth to the Federal Reserve's long-run targets. The results also suggest that the increase in the response and the rise in the volatility of unanticipated money have contributed about equally to the large rise in interest rate volatility during this period.

### **Sex-Related Wage Differentials and Women's Interrupted Labor Careers—The Chicken or the Egg**

**Reuben Gronau**  
Working Paper No. 1002  
October 1982  
JEL No. 824

Wage differentials related to sex are almost universal. Economists traditionally tend to attribute a major fraction of these differentials to the differences in on-the-job training. These differences in turn are often explained by the lower profitability of investments for women who plan to interrupt their careers for family reasons. An alternative explanation has been given little attention in the literature: that women do not invest because of a lack of opportunities due to employers' expectations that they will drop out of the market. This paper tries to ascertain, both theoretically and empirically, the validity of this argument.

Employers have little stake in their employees' investment in general human capital. Thus, if employers' decisions affect investment at all, they affect investment only in firm-specific human capital. This paper explores the way employers and employees share in such investments and how employers' conceptions about women's labor force attachment can affect the size of the investment, women's wages, and their labor force separation rate.

To test the hypothesis that employers' expectations affect women's wages, I examine the effect of plans for labor force separation on wages. Assuming that employers are not aware of individual plans, the absence of a plan's effect can serve as *prima facie* evidence for the hypothesis. In a simultaneous equation system, I observe that wages affect plans but plans do not affect wages. Further investigation indicates that the skill intensity of jobs that men and women occupy is a major determinant of the wage gap. This variable is very sensitive to past performance (as measured by labor force experience and tenure) and future plans in the case of men, but is hardly affected at all by these variables in the case of women.

### **Money and the Terms of Trade**

**Julio J. Rotemberg**  
Working Paper No. 1003  
October 1982  
JEL No. 431

This paper examines the connection between money and the terms of trade in the context of a simple, monetary equilibrium model with flexible prices. Money is held for purposes of transactions, but since these are costly, households visit their financial intermediaries only occasionally. One important feature of the model is that different households visit financial intermediaries at different times. This is sufficient to ensure that even though the model features perfect foresight and competitive markets, monetary policies will affect output under both fixed and flexible exchange rates. Moreover, in the latter regime, expansionary monetary policies tend to worsen the terms of trade; this is not the case under fixed exchange rates.

### **An Optimal Taxation Approach to Fiscal Federalism**

**Roger H. Gordon**  
Working Paper No. 1004  
October 1982  
JEL Nos. 325, 324

In a federal system of government, each unit of government independently decides how much of each type of public good to provide, and what types of taxes, and which tax rates, to use in funding the public goods. In this paper I explore the types of problems that can arise from this decentralized form of decisionmaking. In particular, I describe systematically the types of externalities that one unit of government can create for nonresidents, through both its public goods decisions and its taxation decisions. The paper also explores briefly what the central government might do to lessen the costs of decentralized decisionmaking.

### **Profitability, Employment, and Structural Adjustment in France**

**Pentti Kouri, Albert Viscio, and Jorge de Macedo**  
Working Paper No. 1005  
October 1982  
JEL Nos. 023, 631

In this paper, we present a dynamic model that explains output, employment, and energy consumption in the French manufacturing sector in terms of the actual and expected path of wage rates and energy prices in units of output. The model has two distinguishing

features: First, the rate of capacity utilization is determined explicitly from profit-maximizing behavior and it is viewed as the crucial adjusting variable in the short run. Second, we assume complete lack of substitutability between capital, labor, and energy inputs *ex post*.

The model is motivated by a brief discussion of Frerich growth, focusing on the decline of profitability and employment in manufacturing, and simulated with annual data from 1950 to 1979. The wage explosion and the energy shock of the early 1970s are interpreted (in a model allowing for labor overhead) in terms of changes in expected real factor prices. Their effects on the utilization and profitability of each vintage are then quantified. Aggregating over vintages, the model generates the observed decline in profitability and utilization of existing capacity.

The results of the simulation are very encouraging. A simultaneous estimation of the model under static expectations is rejected by the data. There are two limitations of the analysis that will be relaxed in further work. Investment is exogenous and open-economy aspects appear only indirectly: for example, via constraints on the energy price and the price of output.

## **The Determination of the Union Status of Workers**

**Henry S. Farber**

Working Paper No. 1006

October 1982

This paper develops a model of the determination of the union status of workers, incorporating the separate decisions of workers and potential union employers in a framework that recognizes the possibility of an excess supply of workers for existing union jobs. This theoretical framework results in an empirical problem of partial observability: information on union status is insufficient for determining whether nonunion workers have that status because they do not desire union representation or because they do not work for union employers (despite their preference for union representation). The problem is solved by using data from the Quality of Employment Survey that have a unique piece of information on worker preferences that allows identification and estimation of the model.

The empirical results yield some interesting insights into the process of determination of union status that cannot be gained from a simple logit or probit analysis of unionization: The well-known fact that nonwhites are more likely to be unionized than otherwise equivalent whites is found largely to be the result of a greater demand for union representation on the part of nonwhite workers. The equally well-known lower propensity to be unionized among southern workers is found to be caused by a combination of a lower demand for union representation on the part of these workers and a supply of union jobs that is more constrained relative to demand for them than in the North.

## **The Transition from School to Work: The Experiences of Blacks and Whites**

**Robert H. Meyer and David A. Wise**

Working Paper No. 1007

October 1982

JEL Nos. 212, 824

Because much of the concern about youth unemployment is motivated by the large differences between the rates for blacks and whites, we have pursued our earlier work by analyzing separately for black and white youth the relationship between high school preparation and early labor force experience. We find no striking difference between the determinants of weeks worked by whites and nonwhites upon graduation from high school. Although vocational training in high school bears little relationship to weeks worked upon graduation, hours worked while in high school bear a strong relationship to later employment for students and nonstudents, white and nonwhite. Academic performance as measured by standardized test scores and high school class rank is also positively related to later weeks worked by nonstudents, both white and nonwhite. Young persons find jobs in large part through friends and relatives or through direct application to employers or possibly a combination of the two. Persons who are not looking for work—and would then be classified as out of the labor force, according to standard definitions—are apparently quite distinct from persons who are looking for work. Those out of the labor force seem not to be “discouraged workers” for the most part. Controlling for other individual attributes, nonwhites are much more likely than whites to be in a post-secondary school full time (although without controlling for those attributes the reverse is true). A large proportion of young men in school are also working part time and a significant number are working full time. A sizable proportion of persons in post-secondary schools would be classified as unemployed based on official definitions. Indeed the unemployment rate among these full-time students is generally more than twice the rate among young men not in school. Few high school graduates are chronically unemployed.

## **The Diffusion of Innovations: A Methodological Reappraisal**

**Manuel Trajtenberg and Shlomo Yitzhaki**

Working Paper No. 1008

October 1982

JEL Nos. 211, 621

Studies of diffusion have traditionally relied on specific distributions—primarily logistic—to characterize and estimate those processes. We argue here that such an approach gives rise to serious problems of comparability and interpretation and may result in large biases

in the estimates of the parameters of interest. We propose instead the Gini's expected mean difference as a measure of diffusion speed; we discuss its advantages over the traditional approach and tackle the problems of truncated processes and intergroup comparisons with it, as well as related issues. We also elaborate on the use of the hazard rate and suggest some possible extensions. The diffusion of CT scanners is presented as an illustration.

## **Recent Trends in U.S. Trade and Investment**

**Robert E. Lipsey**

Working Paper No. 1009

October 1982

JEL No. 400

This paper reviews some of the major recent developments in U.S. trade and overseas investment against the background of long-term trends. The United States, and particularly the agricultural sector, has become more linked with the rest of the world. The commodity distribution of trade has moved toward being in large part an exchange of U.S. manufactured goods for other countries' manufactures even though the share of developed countries in U.S. trade has declined. The fall in the U.S. share of the world trade that began around 1950 has slowed down or even stopped, as has the fall in the terms of trade of the United States and other developed countries.

The U.S. share of new direct investment outflows has fallen while that of Japan and Germany have increased, but the United States has become one of the major recipients of direct investment from other countries. U.S. firms have increasingly accepted less than 100 percent or even majority ownership, but majority ownership is still the usual form, by a large margin, in industries in which technology is important. U.S.-owned affiliates in foreign countries, particularly those in the smaller Asian countries, have shifted their activities toward exporting. In most areas, U.S. affiliates increased their exports more in recent years than did other firms in their host countries, thus increasing their share of exports from these countries.

## **The Natural-Rate Hypothesis, the Rational-Expectations Hypothesis, and the Remarkable Survival of Nonmarket-Clearing Assumptions**

**Herschel I. Grossman**

Working Paper No. 1010

October 1982

JEL No. 023

Nonmarket-clearing models continue to dominate analysis of macroeconomic fluctuations and discus-

sions of macroeconomic policy. This situation is remarkable because nonmarket-clearing assumptions seem to be inconsistent with the essential presumption of neoclassical economic analysis: that market outcomes exhaust opportunities for mutually advantageous exchange. Nonmarket-clearing models apparently have survived because they have evolved to incorporate both the natural-rate hypothesis and the rational-expectations hypothesis and because the alternative "equilibrium" approach has failed empirically. This paper expands on these ideas and briefly discusses some of the problems that we face in attempting to evaluate empirically the recent vintage of nonmarket-clearing models. The main difficulties seem to involve accounting for shifts in the natural levels of real aggregates and specifying the timing of the past anticipations that determine the effects of current monetary policy.

## **Unemployment Insurance and Reservation Wages**

**Martin Feldstein and James M. Poterba**

Working Paper No. 1011

November 1982

This paper examines the reservation wages reported by a large sample of unemployed individuals in the United States in May 1976. The majority of unemployed individuals report reservation wages that are at least as high as the wage they were paid on their last job. Approximately one-fourth of all job seekers require a wage that is at least 10 percent higher than the wage on their previous job.

Our econometric evidence shows that the level of unemployment benefits relative to previous wages has a powerful effect on the individual's reservation wage. A 10 percent increase in the unemployment insurance (U.I.) replacement ratio increases the reservation wage by about 4 percent for job losers who are not on layoff and by somewhat less for other unemployed groups. Separate regressions to analyze the high reservation wage per se show that a 10 percent increase in the U.I. replacement ratio also increases by about four percentage points the probability that an unemployed individual will require a wage increase of 10 percent or more.

These estimates imply that reducing net U.I. benefits (by lowering gross benefits or by taxing unemployment benefits) could significantly lower the average duration of unemployment and the relative number of spells of unemployment of long duration. Because of the nonlinear response of the unemployment duration to the reservation wage, reducing a high U.I. ratio by ten percentage points is likely to have a greater impact on unemployment than reducing a low U.I. ratio by ten percentage points.

## **Moving and Housing Expenditure: Transaction Costs and Disequilibrium**

**Steven F. Venti and David A. Wise**

Working Paper No. 1012

November 1982

JEL Nos. 211, 323

This paper initially emphasizes the effects of the transaction costs of moving on the potential effect of government rent subsidy programs. As a concomitant to this analysis, the paper reaffirms the low income elasticities of housing expenditure among low-income renters that have been found by others. Moving transaction costs are high on average among renters in our sample, but vary widely between geographic regions, and evidently vary a great deal among families as well. By our measure, transaction costs reflect monetary and especially nonmonetary gains and losses associated with moving. Moving transaction costs, in conjunction with low income elasticities, make government lump-sum transfers very ineffective in increasing housing expenditure among low-income renters.

A dollar of unconstrained transfer payment would increase housing expenditure by only 2 to 7 cents in the two cities in our data set. Minimum rent plans, which make the transfer payment conditional on spending at least a minimum amount on rent, have larger effects on average than unconstrained transfers. Typical programs might increase rent by 10 to 30 cents per dollar of transfer payment. But families who spend the least on rent are also those least likely to benefit from the minimum rent programs. To obtain payments under these plans, families who would otherwise spend less than the minimum must surmount the transaction costs associated with moving and must also reallocate income to favor housing in proportions that may be far from their preferred allocations. Thus only a small proportion of families with initial market rents below the minimum will ultimately participate in the programs. Of the total payments to these families, 15 to 32 percent is deadweight loss, according to our estimates. In addition, we find that because moving transaction costs and income elasticities vary widely among regions, the effects of any given government program are also likely to vary greatly from one region to the other.

As a fortuitous benefit of the housing allowance demand experiment data that we used, we were also able to check our model's results against experimental results. The model's predictions and the experimental results correspond quite closely. The differences that are found can apparently be explained in large part by the impact of self-selection on the estimated experimental treatment effects. The self-determination of enrollment and the attrition inherent in the estimated experimental effects seriously detract from the potential benefits of experimental randomization. Therefore our model estimates may be more reliable than the experimental ones in this instance. Of course this judg-

ment depends in large part on the experiment having been done so that we could check our predictions against the experimental outcomes.

## **The Proper Measurement of Government Budget Deficits: Comprehensive Wealth Accounting or Permanent Income Accounting for the Public Sector; Implications for Policy Evaluation and Design**

**Willem H. Buiter**

Working Paper No. 1013

November 1982

JEL Nos. 310, 320, 430, 223, 224

This paper studies budgetary, financial, and monetary policy evaluation and design using a comprehensive wealth or permanent income accounting framework. A set of stylized balance sheets and permanent income accounts is constructed for the public, private, and overseas sectors. These are then contrasted with the conventionally measured balance sheet and flow-of-funds accounts. This permits a new look at the issues of "crowding out" and the "eventual monetization of fiscal deficits."

The conventionally measured public sector financial surplus, even when evaluated at constant prices or as a proportion of GNP, presents a potentially very misleading picture of the change in the real net worth of the public sector. One reason is that capital gains and losses on outstanding stocks of marketable financial assets and liabilities are not included in the flow of funds. This includes changes in the real value of nominally denominated public sector debt due to inflation. A second reason is the omission of revaluations in nonmarketable (and often merely implicit) assets and liabilities such as the future stream of tax receipts and the future stream of benefit payments.

The paper then proposes some general rules for the design of stabilization policy—policies to facilitate expenditure smoothing by avoiding or minimizing the incidence of capital market imperfections. Both national governments and international agencies should design fiscal, financial, and budgetary policies so as to induce an evolution of the conventionally measured balance sheet and flow-of-funds accounts that permits private agents and national economies, respectively, to approximate the behavior that would be adopted if comprehensive wealth or permanent income were the only binding constraint on economic behavior. This can be achieved by keeping disposable income in line with permanent income and by ensuring an adequate share of disposable financial wealth in total wealth.

## **Optimal Financial Aid Policies for a Selective University**

**Ronald G. Ehrenberg and Daniel R. Sherman**  
Working Paper No. 1014  
November 1982  
JEL No. 912

Recent federal cutbacks of financial support for undergraduates have worsened the financial position of colleges and universities and have required them to debate how they will allocate their scarce financial aid resources. Our paper contributes to the debate by providing a model of optimal financial aid policies for a selective university—one that has a sufficient number of qualified applicants so that it can select which ones to accept and the type of financial aid package to offer each admitted applicant.

The university is assumed to derive utility from “quality units” of different categories (race, sex, ethnic status, income class, alumni relatives, and so forth) of enrolled students. Average quality in a category declines with the number of applicants admitted. The fraction of admitted applicants who enroll increases with the financial aid package offered the category. The university maximizes utility subject to the constraint that its total subsidy of students (net tuition revenue, less costs, including financial aid) is just offset by a predetermined income flow from nonstudent sources (for example, endowment). The model implies that the financial aid package to be offered to each category of admitted applicants depends on the elasticity of the fraction who accept offers of admission with respect to the financial aid package offered them, the propensity of the category to enroll, the elasticity of the category's average quality with respect to the number admitted, and the relative weight the university assigns in the utility function to applicants in the category.

While the latter must be subjectively determined by university administrators, the former parameters are subject to empirical estimation. Our paper concludes with a case study of one selective institution's data and illustrates how they may be estimated. Based upon data from the university's admissions and financial aid files, as well as questionnaire data that ascertained what alternative college most admitted freshman applicants were considering and the financial aid packages at the alternative, probit probability of enrollment equations are estimated as are equations that determine how average quality varies with the number admitted for each category. These estimates are then applied to illustrate what the “optimal” financial aid policy would be for the university.

## **Dynamic Factor Demands under Rational Expectations**

**Robert S. Pindyck and Julio J. Rotemberg**  
Working Paper No. 1015  
November 1982

This paper presents a dynamic model of the industrial demands for structures, equipment, and blue- and white-collar labor. Our approach is consistent with producers holding rational expectations and optimizing dynamically in the presence of adjustment costs, yet it permits generality of functional form regarding the technology. We represent the technology by a translog input requirement function that specifies the amount of blue-collar labor (a flexible factor) the firm must hire to produce a level of output given its quantities of three quasi-fixed factors that are subject to adjustment costs: nonproduction (white-collar) workers, equipment, and structures. A complete description of the production structure is obtained by simultaneously estimating the input requirement function and three stochastic Euler equations. We apply an instrumental variable technique to estimate these equations using aggregate data for U.S. manufacturing. We find that as a fraction of total expenditures, adjustment costs are small in total but large on the margin, and that they differ considerably across quasi-fixed factors. We also present short- and long-run elasticities of factor demands.

## **Research and Development, Utilization, and Labor Requirements: A Dynamic Analysis**

**Jeffrey I. Bernstein and M. Ishaq Nadiri**  
Working Paper No. 1016  
November 1982

In this study we have developed a dynamic analysis of a firm undertaking plant and equipment (P and E) and research and development (R and D) investment, along with labor requirement and P and E utilization decisions. We show that, in the short run, increases in R and D cause the utilization rate of P and E to rise and to decrease the demand for labor per unit of R and D. We distinguish between the effects of the stock of R and D and the investment flow. The short-run effect of changes in the stock of R and D on labor demand is quite distinct from the behavior observed along the intertemporal path. Along the path, increases in the R and D investment rate must be accompanied by an increase in the labor requirement per unit of R and D. Contrary to a viewpoint held by many, the R and D investment flow does not displace labor. Finally, our model provides a framework to justify the empirically observed positive relationship between the utilization and the P and E investment rates.

## **Financing and Investment in Plant and Equipment and Research and Development**

**Jeffrey I. Bernstein and M. Ishaq Nadiri**  
Working Paper No. 1017  
November 1982

In this study we develop a model of firm behavior that integrates real and financial decisions. The model combines the effects of capital structure and input adjustment costs on the process of capital accumulation. We explore the existence, uniqueness, and stability conditions of the long-run equilibrium and the dynamic properties of the factor demand. The equations derived from the theoretical model are estimated using firm cross-section time-series data. The results indicate that for both plant and equipment (P and E) and research and development (R and D), the debt-equity ratio significantly affects the investment demands, and the elasticities are highly inelastic. The effect is stronger for P and E than for R and D capital in the long run, while the effects on P and E and R and D investment are quite similar in the short run.

## **The U.S. Productivity Slowdown: A Case of Statistical Myopia**

**Michael R. Darby**  
Working Paper No. 1018  
November 1982  
JEL No. 226

This paper analyzes three major periods in U.S. economic history: 1900-29, 1929-65, and 1965-78. In contrast to the middle period, the earlier and later periods are characterized by rapid growth in private employment and hours worked but, because growth in private productivity increased by less, measured labor productivity growth was lower than in the middle period. However, this fall reflects a substantial substitution of quantity for quality in labor force growth: after private employment and hours are adjusted for age, sex, immigration, and education, *no* difference is observed among the average quality-adjusted labor productivity-growth rates. Substantial variation in these growth rates remains *within* the 1929-65 and 1965-78 periods. Slow quality-adjusted labor productivity growth during 1929-48 is just offset by unusually rapid growth during 1948-65; these variations are attributed to the near cessation of investment during the Depression and World War II and subsequent recovery of the capital-labor ratio. Thus no substantial variations in total factor productivity growth or technical progress are found. Variations in productivity growth within 1965-78 are explained by price control in reported *deflated* output. Correction of these biases results in equal quality-adjusted labor productivity growth in 1965-73 and

1973-78. This paper also proposes a substantial program of future research and includes a data appendix.

## **The Value of Waiting to Invest**

**Robert L. McDonald and Daniel Siegel**  
Working Paper No. 1019  
November 1982  
JEL No. 522

This paper studies the optimal timing of investment in an irreversible project where the benefits from the project and the investment cost follow continuous-time stochastic processes. We derive both the optimal time to invest and an explicit formula for the value of the option to invest. The rule "invest if benefits exceed costs" does not properly account for the option value of waiting. Simulations show that this option value can be significant, and that for surprisingly reasonable parameter values it may be optimal to wait until benefits are twice the investment cost. Finally, we perform comparative static analysis on the valuation formula and on the rule for when to invest.

## **The Impact of Public Health Policy: The Case of Community Health Centers**

**Fred Goldman and Michael Grossman**  
Working Paper No. 1020  
November 1982  
JEL No. 913

The aim of this paper is to assess the impact of the community health center (CHC) on health levels in the United States. Using infant mortality as the underlying health indicator, a time series of large counties as the data set, and multivariate regression techniques, we investigate the extent to which the presence of a program in a county affects future mortality. We find that CHCs have negative and statistically significant impacts on white and black infant mortality rates. The centers have larger effects on black infant mortality than on white infant mortality. The reduction in black infant mortality rate between 1970 and 1978 resulting from the CHC system amounts to one death per thousand live births or approximately 12 percent of the observed decline. This result is particularly striking in light of the well-known higher infant mortality rate of blacks. A reduction in the excess mortality rate of black babies has been identified as a goal of public health policy for a number of years. Our results suggest that community health centers have the potential to make a substantial contribution to the achievement of this goal.

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## **Empirical Studies of Macroeconomic Interdependence**

**John F. Helliwell and Tim Padmore**  
Working Paper No. 1021  
November 1982  
JEL No. 423

In this paper, we examine the structure and empirical results from several groups of linked econometric models. The main focus is on international transmission of fiscal policies, monetary policies, and oil price shocks, under both fixed and flexible exchange rates. The linkage models are divided into four groups: (1) projects based on available national models; (2) projects using structural models designed with monetary and exchange-rate linkages in mind; (3) projects focused mainly on trade linkages; and (4) projects using very small national models with common structure. Each group comprises from two to four projects. Comparable results on the transmission of fiscal policy under fixed exchange rates are available for eight projects, while four projects provide evidence on the domestic and international effects of monetary policy and oil price shocks.

## **Swedish Firms Acquired by Foreigners: A Comparison of Before and After Takeover**

**Robert E. Lipsey and Linda O'Connor**  
Working Paper No. 1022  
November 1982  
JEL Nos. 441, 442

Swedish firms acquired by foreigners were considerably larger than the average firms in their industries. They were relatively low in value added per employee, both at the time of takeover and before, a characteristic we take to indicate relatively low profitability, capital intensity, or efficiency, or some combination of the three. However, they had been growing at least as fast as their industries over the longest periods we can measure.

The takeovers tended to take place in years when the acquired firms did poorly with respect to the growth of employment, value of production, and value added, relative to their industries and also relative to their own past performance. Thus, the acquired firms seem to have been weak relative to others in their industries and had particularly suffered during the year in which the takeovers occurred.

There were both short-term recoveries from the misfortunes of the takeover year and a return to higher growth rates of employment and output, particularly the former, after the takeover. Over the longer run, the acquired firms did not show the same relative employment gains as in the first year or two after takeover, but

they seem to have increased their profitability or efficiency relative to their industries. The industries in which takeovers took place grew more rapidly after the takeovers than did the total manufacturing sector, although they had grown less rapidly in the years before takeover.

## **Observations on the Indexation of Old Age Pensions**

**Lawrence H. Summers**  
Working Paper No. 1023  
November 1982

This paper explains some positive and normative aspects of the inflation indexation of public and private pensions. The analysis shows that alternative indexing arrangements may have far less impact on actual patterns of risk bearing than is usually thought to be the case. Insofar as inflation indexing has real effects, one cannot presume that they are beneficial. In particular, the precommitment aspects of public indexing may not be efficient.

There are sound reasons to believe that voluntarily agreed-on, nonindexed private pensions may well be efficient. Nonindexed pensions may result in an efficient allocation of risks given the other assets and liabilities of pension issuers and beneficiaries. In this case, indexation would impede the efficient allocation of risks.

In this paper I also develop an ICOLI (intertemporal cost-of-living index) which is superior to conventional price indexes for evaluating the changes in real well-being associated with changes in wealth. The use of this measure has significant implications for the indexation of pensions and for the question of what assets should be held in pension portfolios.

## **Issues in the Measurement of and Determinants of Business Saving**

**Alan J. Auerbach**  
Working Paper No. 1024  
November 1982  
JEL No. 323

This paper begins with a discussion of the measurement of business saving, with the conclusion that even "corrected" measures of business saving are quite inaccurate in the presence of inflation and lead to an overstatement of the recent decline in business saving. The remainder of the paper focuses on the more fundamental issue of why it should matter who saves. Beginning from the irrelevance proposition associated with the Modigliani-Miller theorem, I consider the channels through which taxation causes the identity of the saver to have real effects. Finally, I consider the relative efficiency incentives for business versus personal savings in light of the results.

## **The Theory of Excess Burden and Optimal Taxation**

**Alan J. Auerbach**  
Working Paper No. 1025  
November 1982  
JEL No. 323

The purpose of this paper is to present the chronological development of the concept of excess burden and the related study of optimal tax theory. A main objective of this exercise is to uncover the interrelationships among various apparently distinct results, so as to bring out the basic structure of the entire problem.

The paper includes a discussion of various measures of excess burden, focusing on issues of approximation, informational requirements, aggregation over individuals, and the effects of technology. Included in the presentation of optimal tax theory is a section on tax reform, as well as an application of the theory to the case where uncertainty is present.

## **Taxation, Corporate Financial Policy, and the Cost of Capital**

**Alan J. Auerbach**  
Working Paper No. 1026  
November 1982  
JEL Nos. 323, 520

The cost of capital plays an important role in the allocation of resources among competing uses in a decentralized market system. The purpose of this paper is to organize and present what is known and what is hypothesized about the effects of taxation on the incentive to invest, via the cost of capital, taking full account of important issues that arise independently from the question of taxation. Included in the analysis is a discussion of empirical findings about the interaction of inflation and taxation in influencing the incentive to invest, and a treatment of taxation and uncertainty.

## **Investment versus Savings Incentives: The Size of the Bang-for-the-Buck and the Potential for Self-Financing Business Tax Cuts**

**Alan J. Auerbach and Laurence J. Kotlikoff**  
Working Paper No. 1027  
November 1982  
JEL No. 323

This paper examines the closed-economy effects of government policies that vary with respect to whether they treat newly produced capital differently from old capital. Policies that do make this distinction are denoted *investment* policies, while those that do not are labeled *savings* policies. While both types of policies alter marginal incentives to accumulate new capital,

investment incentives can generate significant inframarginal redistribution from current holders of wealth to those with small or zero claims on the existing capital stock. Among the principal findings, based on simulations of a general-equilibrium, perfect-foresight, overlapping-generations, life-cycle model are:

1. Investment incentives, even if financed by short-run increases in the stock of debt, significantly increase capital formation.
2. Deficit-financed savings incentives, in contrast, typically reduce the economy's long-run capital stock.
3. Deficit-financed investment incentives can actually be self-financing in that they may lead to a long-run surplus without any increase in other tax rates.

## **On Choosing a Flat-Rate Income Tax Schedule**

**Joel Slemrod and Shlomo Yitzhaki**  
Working Paper No. 1028  
November 1982  
JEL No. 323

Using microunit tax data, this paper applies a numerical optimization technique to the problem of choosing the parameters of a flat-rate tax system, should one be desired. Our approach is first to formulate explicit objectives that a flat-rate tax might reasonably be designed to meet, such as minimizing the extent of changes in households' tax burdens and minimizing the efficiency cost of the tax system. The next step uses an optimization algorithm to calculate the flat-rate schedule that comes closest to meeting the objectives, subject to the constraint that it raise the same revenue as the current income tax system. The calculations are carried out using a sample of 947 tax returns, randomly drawn from the Treasury Tax File for 1977, which are updated to reproduce the pattern of tax returns that would be filed in 1982.

The analysis shows that the flat-rate system that minimizes the sum of the absolute deviations in tax liabilities features a marginal tax rate between 0.204 and 0.254, although a different definition of tax burden changes that puts more emphasis on reproducing the tax burdens of high-income households has an optimal marginal tax rate of 0.382. We also derive the optimal flat-rate schedules when another objective is to minimize the efficiency cost of the tax system.

## **Labor Force Entry and Exit of Older Men: A Longitudinal Study**

**Frederic P. Slade**  
Working Paper No. 1029  
November 1982  
JEL No. 913

The labor force participation rate of older men under age 65 has shown a significant decline recently. Cross-

sectional studies linking early retirement to increased Social Security income have also made explicit or implicit temporal projections of changes in participation in response to changes in benefits. However, use of cross-sectional estimates for projection purposes may run into several problems, including temporal dependence of the participation decision. This paper uses two-year longitudinal data for men age 58-62 in 1969 in order to trace changes in labor force behavior near retirement age. Results indicate significant effects of poor health, initial assets, and initial pension eligibility on the probabilities of entry into and exit from the labor force. Social Security benefits are found to have insignificant or unexpected effects. The results also indicate evidence of temporal dependence of participation, suggesting caution in interpreting projections of cross-section estimates.

### **The Effects of Government Regulation on Teenage Motor Vehicle Mortality**

**Dennis C. McCornac**  
Working Paper No. 1030  
November 1982  
JEL No. 913

This paper investigates the impact of a number of policy variables on the motor vehicle mortality rate of white males between the ages of 15 and 24. There is particular emphasis on the role of alcohol. Utilizing data for 1970-75, I estimate multivariate equations for three time periods in order to examine the before, immediate, and longer-run (one-year) impact of the changes in these relevant variables on mortality rates. The results reveal that lowering the minimum legal purchasing age of alcohol has contributed significantly to a higher mortality rate not only in the state instituting the change but in the adjacent states as well.

### **Crime and the Labor Market**

**Richard B. Freeman**  
Working Paper No. 1031  
November 1982  
JEL No. 821

Much work on crime has focused on the effect of criminal sanctions as deterrents, ignoring (except as a control variable) the effect of labor market conditions on crime. This paper reviews analyses of time-series, cross-area, and individual evidence about the effect of unemployment and other labor market variables on crime. It then compares the "strength" of the labor market-crime and of the sanctions-crime relationships. It concludes that there is a link between the labor market and crime, but it is not well estimated by existing studies and is weaker than the link between sanctions

and crime. Thus, the rise in crime in recent years does not appear to be the result of the performance of the labor market to any great extent.

### **On the Adequacy of Keynesian Balance-of-Payments Theory: A Rejoinder**

**Willem H. Buiter and Jonathan Eaton**  
Working Paper No. 1032  
November 1982  
JEL No. 431

This paper again refutes Kuska's proposition that equality between the demand for and supply of money (money market equilibrium) implies equilibrium in the balance of payments. Indeed, under a regime of fixed exchange rates it is precisely the balance-of-payments deficit or surplus that equilibrates the money market. The refutation of Kuska's proposition does not require any special assumptions about sterilization policies.

We also establish, again contrary to Kuska, that in a two-country world with a fixed exchange rate, internationally mobile capital, and endogenous interest rates, only one country can achieve a money supply target independently. Failure to distinguish between the change in the money stock and domestic credit expansion appears to be the source of Kuska's erroneous indictment of Keynesian balance-of-payments theory. Finally, we establish the conditions under which alternative (ex ante) balance-of-payments definitions can be substituted for an asset market equilibrium condition.

### **Money, Credit, and Nonfinancial Activity: An Empirical Study of Five Countries**

**Benjamin M. Friedman**  
Working Paper No. 1033  
November 1982  
JEL No. 311

Data for five major industrialized economies show that the relationship between credit and nonfinancial economic activity exhibits stability comparable to that of the relationship between money and economic activity. Specific orderings among a narrow monetary aggregate, a broad monetary aggregate, and a credit aggregate differ depending upon the stability criterion being applied and the country under study. On balance, credit exhibits the most stable contemporaneous relationship among the three aggregates, while the narrow money stock exhibits the most stable dynamic relationship, with credit in second place and the broad money stock third.

Further tests for the same five economies also show that, within the total of nonfinancial debt comprising the aggregate, the respective public and private debt components exhibit movements over time that offset

one another and hence act to maintain the stability of total credit in relation to economic activity.

Finally, additional tests for these five economies do not support the notion that the comparability of the respective relationships of credit and money to nonfinancial economic activity is due to any straightforward process whereby "money causes income and income causes credit." The interrelationships among money, credit, real income, and prices in each economy are too complex to admit of any such simple interpretation.

## **Toward an Explanation of National Price Levels**

**Irving B. Kravis and Robert E. Lipsey**

Working Paper No. 1034

November 1982

JEL Nos. 227, 410, 420

The purpose of this paper is to call attention to the need for a theory of comparative national price levels and to explore some of the elements that seem to belong to such a theory. Most theoretical discussions have maintained that national price levels tend toward equality and focus on presumably temporary divergences from equality. Yet strong evidence has been accumulating that there are large and long-standing differences in price levels, the highest of which are more than twice those of countries with the lowest prices.

Long-run price level differences are most clearly related to levels of real per capita output, with richer countries having higher price levels. These differences have been explained as resulting from greater advantages in productivity for the wealthier countries in goods production, mostly tradable, than in services production, mostly nontradable. The differences in relative productivity may be in total factor productivity or only in labor productivity, reflecting the greater capital intensity of goods production and possibly a higher elasticity of substitution between capital and labor in goods production.

We find in the empirical analysis that a large part of the differences in price levels can be explained by structural factors such as real GDP per capita, the degree of openness of the economy, and the share of nontradable goods in output. The only nonstructural factor emerging from a preliminary analysis of several of these was the rate of growth of the quantity of money.

## **Flexible Exchange Rates and Interdependence**

**Rudiger Dornbusch**

Working Paper No. 1035

November 1982

JEL No. 430

This paper reviews the experience with flexible exchange rates and the main policy alternatives that have

been suggested. The theoretical section develops a modern, open-economy macro model with an emphasis on capital mobility, real and nominal wage stickiness, and expectations. The impact of disturbances is discussed in terms of the underlying structure—in particular the relative role of real and nominal inflexibility.

Among the main policy alternatives reviewed are the McKinnon proposal for world monetarism and the band proposal. Both of these schemes are found unsatisfactory in coping with the chief problem of the current system, namely how to cope with the transition to low inflation. The alternative of capital controls, likewise, would not avoid the adverse consequences of monetary stabilization; it would only influence the particular details of the international transmission.

## **Government Policies and the Allocation of Capital between Residential and Industrial Uses**

**Patric H. Hendershott**

Working Paper No. 1036

December 1982

JEL No. 323

This paper has three sections. First there is a discussion of the tax advantages of household capital (owner-occupied housing and consumer durables) relative to business capital (structures and producers' durables). Next I analyze alternative mechanisms for reducing these advantages (including the use of such mechanisms since 1965). Finally, there is a brief enumeration of various attempts to lower the residential mortgage rate relative to other debt yields that have been employed during the past two decades or are currently being advocated.

## **U.S.-Owned Affiliates and Host-Country Exports**

**Irving B. Kravis and Robert E. Lipsey**

Working Paper No. 1037

December 1982

JEL Nos. 420, 440

U.S.-owned manufacturing affiliates in foreign countries tended to become more export-oriented between 1966 and 1977. The shift toward exporting characterized affiliates in most industries and most countries. The bulk of U.S.-owned production abroad continues to be for local sale in most industries and areas. Exporting to the United States remains a small part of affiliate activities in almost all cases. Subsidiaries in machinery industries in Southeast Asia were the most export-oriented and were also the only ones outside Canada that sold a substantial part of their production in the United States.

In most industries and most countries, U.S.-owned companies led the rise in exports and increased their

shares in the exports of their host countries. The role of U.S. subsidiaries was particularly notable in Southeast Asia and in the machinery industry. The increasing share of U.S. affiliates in host-country exports was quite a general phenomenon, however, and high rates of affiliate export growth were associated with rapid growth of host-country GDP and exports.

### **Adjustment Costs, Durables, and Aggregate Consumption**

**Ben Bernanke**

Working Paper No. 1038

December 1982

JEL No. 130

Previous tests of the permanent income hypothesis (PIH) have focused on expenditures for either nondurables or durables in isolation. This paper studies consumer purchases of nondurables and durables as the outcome of a single optimization problem. I show that the presence of adjustment costs of changing stocks of durables may substantially affect the time-series properties of both components of expenditure under the PIH. However, econometric tests based on this model do not contradict earlier rejections of the PIH in aggregate quarterly data.

### **The Gold Standard and the Bank of England in the Crisis of 1847**

**Rudiger Dornbusch and Jacob A. Frenkel**

Working Paper No. 1039

December 1982

This paper examines the operation of the gold standard and the performance of the Bank of England during the crisis of 1847. The key feature of that crisis was its origin: a massive real shock rather than a monetary disorder. A harvest failure gave rise both to commercial distress and to financial panic.

After briefly outlining the main events of the 1847 crisis, we present a simple model of the financial sector that captures the central characteristics of the crisis. The model, which highlights the role of confidence in both external and internal convertibility, is then used to interpret the detailed characteristics of the financial crisis.

Faced with a crisis of lack of confidence that led to international and external monetary drains, the Bank of England suspended Peel's act and thereby was allowed to issue fiat money without the constraint of full gold backing. Our analysis shows that suspension of Peel's act was the proper policy for a restoration of confidence. We also shed light on the role of a lender of last resort in cases of banking panic.

Vis-à-vis the gold standard, the 1847 crisis further demonstrates that international capital flows have played a key role in the adjustment mechanism. Fur-

ther, in contrast with the traditional representation, the 1847 scenario illustrates that the gold standard *has not* been characterized by automatic, nondiscretionary adjustment. On the contrary, banking policies and changes in the reserve-deposits and currency-deposits ratios have affected the money stock independently of gold flows.

### **Life Insurance Savings and the Aftertax Life Insurance Rate of Return**

**Mark Warshawsky**

Working Paper No. 1040

December 1982

JEL No. 314

This paper presents the estimated time series of the aftertax rate of return to whole life insurancy. It appears that more than 60 percent of the decline in life insurance savings (suitably defined) in the past two decades can be attributed to a widening aftertax rate of return differential between those returns and the aftertax return on an alternative portfolio of similar risk.

Both the existence and the importance of this result depend on the characteristics of life insurance savings. These savings are intimately connected to life insurance coverage and therefore are long-term and quasi-contractual in nature. Furthermore (and in part because of the above characteristics), the interest earned on the fixed-income portfolio of life insurance intermediaries has been taxed under a special set of rules. From 1958 to 1981, these rules have taken the rather complicated form of the Menge formula. This formula is very sensitive to changes in nominal interest rate levels and, in particular, during inflationary periods it dramatically increases the tax burden of life insurance savings. Life insurance savings are, therefore, one example of the nonneutrality of monetary policy.

### **The Employment and Wage Effects of Import Competition in the United States**

**Gene Grossman**

Working Paper No. 1041

December 1982

JEL No. 420

This paper presents a new methodology for determining the extent to which import competition has been responsible for labor displacement and wage movements in specific, allegedly trade-impacted sectors. The procedure involves the estimation of reduced-form and employment equations by sector. These equations are first derived from a more comprehensive structural model of general equilibrium resource allocation.

The proposed methodology is then applied to nine manufacturing sectors in the United States. The sensitivity of employment to the domestic price of imports varies significantly across these nine sectors, whereas

industry wages are relatively unaffected by movements in the price of the foreign good. Counterfactual simulations are performed under the hypothetical assumption of no intensification or abatement of import competition from 1967-79. The differences between the paths of unemployment and wages so generated and the actual, historical paths are attributed to the effects of import competition. Imports have been responsible for the loss of a large number of jobs in only one industry and for a significant loss in wages in two industries, among the nine studied.

### **Elasticities of Demand for and Supply of Educated Labor**

**Richard B. Freeman**  
Working Paper No. 1042  
December 1982  
JEL No. 912

This paper reviews a variety of estimates of the demand and supply elasticities of educated labor. It finds that elasticities of substitution between more- and less-educated labor range from 1.0 to 2.0; elasticities of the supply of students to colleges are also on the order of 1.0 to 2.0, while elasticities of supply to specific professions are on the order of 2.0 to 3.0. With elasticities of this magnitude, wages and employment depend on both supply and demand factors, with shifts of either schedule influencing both market outcome variables.

### **The Welfare Cost of Distortions in the U.S. Tax System: A General Equilibrium Approach**

**John B. Shoven, John Whalley and Charles Ballard**  
Working Paper No. 1043  
December 1982

Using a general equilibrium model of the U.S. economy, we examine the combined welfare cost of all taxes in the U.S. revenue system. We find that the welfare losses caused by distortionary taxation can be very large, both on average and at the margin.

The marginal welfare loss to consumers from raising an additional dollar of revenue is in the range of 34 to 48 cents, depending on certain elasticities. This has very important implications for cost-benefit analysis. If a public project must be financed by distortionary taxes that cause deadweight loss, then this excess burden must be taken into account when we decide whether to undertake the project. Our calculations indicate that the marginal deadweight loss is between one-third and one-half of marginal revenues. This large wedge could cause us to approve many fewer projects than we would approve using the simple condition that the sum of the marginal rates of substitution should equal the marginal rate of transformation.

The average deadweight loss per dollar of revenue is smaller than the marginal deadweight loss but is still substantial. We estimate that the present value of the gain from replacing the distortionary tax system with certain lump-sum taxes would be in the range of \$1.8 to \$3.1 trillion, or 13 to 22 cents per dollar of revenue. The gains would be about 60 percent as great if the existing system were replaced with a proportional income tax. Replacing the existing system with a consumption-type value added tax would yield even greater gains than switching to a proportional income tax.

### **The Role of Expectations in the Choice of Monetary Policy**

**John B. Taylor**  
Working Paper No. 1044  
December 1982  
JEL Nos. 310, 210

This paper reviews and contrasts different views of the role of expectations in policy research and practice. Recently, two widely different views seem to have dominated the analysis of policy questions. One view, referred to as the "new classical macroeconomic" view, is that expectations overwhelm the influence of monetary policy. The other view, referred to as the "Keynesian" macroeconomic view, is that expectations are unimportant, because people do not adjust to expectations of policy change. The paper argues that both these views are misleading. It advances a new view of the role of expectations that is still emerging from current macroeconomic research. The new view recognizes the importance of contractual arrangements that prevent a modern economy from adjusting instantaneously to policy changes, even if they are expected. But it also emphasizes that forward-looking expectations influence how these arrangements are set up and how they evolve over time. Recent criticisms of this new view are

reviewed, and examples are given to illustrate how quantitative methods that incorporate this view can be used in practice.

## **Malfesance in Long-Term Employment Contracts: A New General Model with an Application to Unionism**

**Peter Kuhn**

Working Paper No. 1045

December 1982

JEL No. 833

This paper argues that the structure of long-term employment contracts is influenced by the possibility that at least four different kinds of opportunistic behavior, or "malfesance," may occur. While the consequences of some of these problems have been examined in other papers, no single model has yet treated all four and thus brought out their essential symmetry.

In particular, a certain kind of malfesance by firms has apparently been universally overlooked—an oversight I try to remedy by developing a simple model here. Other advantages of the present model are that it makes endogenous the path of *both* sides of the contract—wages and effort—and has fairly intuitive first-order conditions. It also shows how earlier conclusions, such as the notion that wages are unlikely to rise faster than marginal products in equilibrium, are the results of less-than-general model specification. Further, the model has some interesting implications when applied to unionism: by proposing that unions act like workers vis-à-vis certain contract enforcement policies (such as the disciplinary dismissals used by firms), it provides perhaps the only consistent theoretical explanation of the quite commonly observed U-shaped pattern of the union wage effect by age. Finally, the model shows how unions might play a positive role on efficiency in this regard.

## **Real Wages and the Terms of Trade: Alternative Indexation Rules for an Open Economy**

**Richard C. Marston**

Working Paper No. 1046

December 1982

This paper examines the desirability of wage indexation in an open economy that is subject to economic

disturbances that change the terms of trade and raise the prices of imported goods. Two indexation rules are considered: the traditional form of indexation to the consumer price index, and indexation to the price of domestic goods alone. The latter is proposed as a means of limiting the influence of import prices on the economy. The effects of the rules are shown to depend upon how the terms of trade, rather than import prices alone, respond to disturbances, since changes in the terms of trade determine what adjustments are required in the two real wages faced by firms and labor.

## **The Real Interest Rate: A Multicountry Empirical Study**

**Frederic S. Mishkin**

Working Paper No. 1047

December 1982

JEL Nos. 400, 313, 134

The behavior of real interest rates over time is critical to our understanding of many macroeconomic issues, and thus much recent research has pursued this question. Very little of the research, however, has focused on real interest rates outside of the United States. This paper presents an empirical exploration of real interest rate movements in seven OECD countries from 1967:2 to 1979:2.

Further research is needed on real rates in other countries for several reasons. Measures of foreign real rates are not only interesting in their own right, but also extending an analysis of real rates to other countries can generate more powerful statistical tests of propositions previously tested on U.S. data and can yield information on whether results found for the United States hold up in other countries.

This study pursues several questions that have arisen naturally from earlier work. Is the hypothesis that the real rate is constant rejected when the analysis is extended to other countries? Does the real rate decline with increased inflation and money growth in other countries besides the United States? How reliable is the Fisher effect, in which nominal interest rates reflect changes in expected inflation? Are movements in nominal interest rates a reliable indicator of movements in real rates? What kind of variations in real interest rates are there in different countries? Have real rates declined from the 1960s to the 1970s for other countries besides the United States?

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