NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. SPRING 1984

Program Report

Economic Fluctuations

Robert E. Hall

NBER's Program of Research in Economic Fluctuations primarily studies movements in employment, inflation, and output within the U.S. economy. In recent years, declining inflation, continued high unemployment, large deficits, and (in the past year or two) significantly expanding employment and output have provided a number of interesting issues for study by this program.

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This issue of the *Reporter* highlights the Bureau's Program in Economic Fluctuations. Daniel Feenberg discusses TAXSIM, NBER's tax simulation model. Then, Laurence J. Kotlikoff describes his research on determinants of saving. After the quarterly Economic Outlook Survey are biographical sketches, news of NBER conferences, the Conference Calendar, and other NBER news and reports. The *Reporter* concludes with short summaries of recent NBER Working Papers.

Research Programs

While the work of the program is too extensive and diverse to summarize completely in this report, I will describe here some studies not mentioned in my previous program report in the Fall 1981 issue of the *NBER Reporter*.

Ray C. Fair is studying the influence of expected future government deficits on economic decisions, especially the decisions of the Federal Reserve System. He is also carrying out empirical work that combines micro and macro data on hoarding labor over the business cycle.

Herschel I. Grossman is analyzing the volatility of asset prices within a framework of rational economic behavior. He has demonstrated that asset prices have not shown the type of behavior predicted by models of speculative bubbles. He has also developed a framework for studying monetary policy as purposeful behavior of optimizing policymakers. His preliminary empirical work on this topic with William Haraf, using Japanese data, was presented to the International Seminar on Macroeconomics (ISOM) and the Conference on Macroeconomics in 1983.

Stephen R. King, a newly selected faculty research fellow, is working on the topic of monetary transmission with emphasis on bank credit. His work challenges earlier findings that made the liabilities of banks uniquely important in cyclical fluctuations.

Robert Chirinko, another new faculty research fellow, has been engaged in estimating investment models with a particular focus on tax policy. He is also studying recent puzzles relating to the demand for money and is carrying out an investigation of the seemingly paradoxical response of nominal interest rates to inflation.

Bennett T. McCallum has been carrying out a critical study of a body of research on long-run macroeconomic hypotheses. One conclusion of his work concerns the finding that little of the variation in postwar U.S. output can be attributed to money stock movements when interest rates are included. However, this finding does *not* establish that erratic behavior of the monetary authority has been an unimportant contributor to overall fluctuations.

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Andrew B. Abel is studying the implications of uncertainty about one's date of death for individual consumption and portfolio behavior and for aggregate consumption and capital accumulation.

Robert G. King is examining a range of topics unified by an equilibrium approach to problems in macroeconomics and monetary theory. He has studied identification problems in research on the rate of change of key macro variables such as consumption. He has also studied the origins and roles of banking institutions in economies with limited information.

Business Cycles

NBER's Business Cycle Dating Committee, an important ingredient in the Program in Economic Fluctuations, maintains a chronology of business cycles used by the federal government and by private analysts of the U.S. economy. The committee identified July 1981 as a peak and November 1982 as a trough in economic activity; as of this report, no future meeting of the group is scheduled. Only when there are unambiguous signs of a cyclical turning point does the committee meet and update the chronology.

A major NBER conference on the changing nature of the business cycle, organized by Robert J. Gordon, was held on March 23 and 24 in Puerto Rico. A detailed report on that gathering will appear in the Summer 1984 issue of the *NBER Reporter*.

Meetings and Conferences

At regular intervals, members exchange the results of their research at program meetings (later described in detail in the "Bureau News" section of the *NBER Reporter*). Since my previous report, one such meeting was held in Chicago in October 1981, organized by Robert E. Lucas, Jr. The next, in March 1982 at Princeton University, was organized by John B. Taylor. Thomas J. Sargent organized the third of these meetings held in Cambridge in July 1982; the topic was "Intertemporal Puzzles in Macroeconomics."

"Wage, Price, and Employment Issues" was the topic at a March 1983 program meeting held at Princeton University and organized by Alan S. Blinder. A general meeting of the program was held at Stanford University in December 1983, and the most recent meeting, at MIT in February, was organized by Julio J. Rotemberg, Andrew B. Abel, and Ben S. Bernanke.

Last July, the Program in Economic Fluctuations held its first annual Conference on Macroeconomics in Cambridge. The organizing committee included: Robert J. Gordon, Robert J. Barro, Thomas J. Sargent, and Robert E. Lucas, Jr. The conference was open, by invitation, to macroeconomists outside of NBER; selected papers from it will be published in the *Journal of Political Economy*. The July 1984 conference is now being planned by Olivier J. Blanchard, Frederic S. Mishkin, and Kenneth Singleton.

Another of the program's major activities is the cosponsorship, with the Maison des Sciences de l'Homme (Paris), of the International Seminar on Macroeconomics. Robert J. Gordon is the NBER coordinator for ISOM, which was held at the University of Mannheim (West Germany) in June 1982 and in Paris in June 1983. ISOM brings together macroeconomists from many countries and emphasizes papers by scholars from outside the United States and commentaries by American researchers. ISOM papers are published each year in a special edition of the *European Economic Review*.

Summer Institute

Each summer the economics fluctuations program meets in Cambridge as part of NBER's Summer Institute. Small groups (of three to seven economists) with a single leader form around a specific, narrow topic for the purpose of carrying out joint research. In 1982, Robert G. King led a group on real business cycles; Kenneth Singleton oversaw the workshop on intertemporal substitution; and Olivier J. Blanchard organized the group on investment.

In 1983, the topics were investment, led by Fumio Hayashi, and aggregate supply in open economies, headed by Robert G. King and Alan C. Stockman.

Topics planned for this summer include consumption and monetary issues.

Dissemination

The program's work is largely distributed as part of the NBER's Working Papers series and functions as a major channel for the dissemination of new work in macroeconomics. Since my previous report, the program has produced 87 working papers on diverse topics. Most working papers go on to publication in major journals, notably the *American Economic Review*, the *Journal of Political Economy*, and the *Journal of Monetary Economics*. The NBER then distributes reprints of these published papers.

The NBER volume, *Inflation: Causes and Effects*, the result of this program's project on inflation, was published by the University of Chicago Press in late 1982. Recently it has been reissued as a paperback and has enjoyed strong sales. These and all other published works of the program are announced in the *NBER Reporter* as they become available.

Research Summaries

NBER's Tax Simulation Model

Daniel R. Feenberg

TAXSIM, NBER's tax simulation model, is a collection of computer programs and data that may be used to calculate income tax liabilities. The model encompasses federal income tax laws for 1972 through 1983 and state income tax laws from 1977 through 1981; large samples of actual tax returns for each year from 1972 through 1979 are available, and several data bases from other surveys (such as the Consumer Expenditure Survey and the Current Population Survey) are included in the model.

While the main thrust of the Bureau's effort with TAXSIM has been behavioral simulations of alternative tax policies, the data base and the program for calculating tax rates have been used in many other studies by Bureau associates. Indeed, the computer programs themselves originated from a study of the effects of the deductibility of charitable giving from the income tax, done by former Bureau President Martin Feldstein in 1972.

Using TAXSIM, Bureau researchers have investigated such topics as charitable giving, choice of housing tenure, personal taxation of corporate profits, taxation of dividends, the maximum tax on earned income, tax-free savings accounts, capital gains deductions, and taxation of the family. Three of my studies can serve as examples of the many uses of the TAXSIM model.

Dividends and Section 163(d)

In 1978, Merton Miller and Myron Scholes proposed an explanation for one of the great unanswered questions of finance: "Why do companies pay dividends?" Given that capital gains are taxed at a lower rate than dividends and that the taxation of such gains is deferred until their realization, why should a firm distribute its profits as dividends rather than gains?

Miller and Scholes provided a clever explanation for this seemingly irrational behavior. They suggested that a more careful reading of the tax code implies that the rational, wealth-maximizing taxpayer/shareholder would actually pay a lower rate of tax on dividends than on capital gains. This surprising outcome is the result of the interaction of a common tax-saving device—borrowing to finance tax-favored investment—and a little-known section of the current tax law that regulates that practice. In essence, Miller and Scholes indicated that for each dollar of dividend income that shareholders

receive they could borrow a a sufficient sum of money to produce a one dollar deduction of interest expense. If the loan proceeds were invested in a single-payment annuity or some other tax-favored security, then a net reduction in taxable income would be achieved.

The hypothesized preference for dividends is a consequence of Section 163(d) of the Internal Revenue Code: the investment interest limitation. That regulation effectively limits the deduction of interest paid to: mortgage payments, plus dividends and interest, plus $10,000. For the taxpayer constrained by this section, marginal capital gains are taxed at the regular capital gains rate. But each additional dollar of dividend income would allow the taxpayer to increase his borrowing sufficiently to wipe out the additional tax liability. Such taxpayers would likely prefer firms to pay out their profits as dividends rather than to convert those profits to capital gains. If this situation were widespread, and the reasoning in Miller and Scholes's paper suggests that it might be, Section 163(d) would provide an explanation for the observed dividend policy of public corporations. Miller and Scholes's thesis has the strong empirical implication that if the tax rate on dividends were to be correctly measured (that is, including the effect on the tax deductibility of interest), it would be found to be quite low. Fortunately, quite conclusive evidence on who receives dividends is available from TAXSIM. I report this evidence in NBER Reprint No. 246, "Does the Investment Limitation Explain the Existence of Dividends?" In fact, for 1977, fewer than 35,000 taxpayers were constrained by 163(d).

Miller and Scholes do suggest that the number of constrained shareholders may not be very relevant to the dividend payout decision—they may be few in number but important to corporate decisionmaking. Unfortunately for this hypothesis, we find that these taxpayers receive only 2.5 percent of all reported dividends. Because the constraint implicit in Section 163(d) is not binding for a significant fraction of taxpayers, nor for taxpayers receiving a significant fraction of dividend income, it is difficult to ascribe to that section of the tax code a crucial role in the determination of corporate dividend policy.

Identification in Tax-Price Regressions

Many TAXSIM studies include regressions in the demand for some commodity on an aftertax price. But when most or all of the variance in prices across observations comes from differences in marginal tax rates, questions can arise about the appropriate identification of structural parameters in such models. The variables that determine marginal tax rates, chiefly income and marital status, are quite plausible determinants of the behavior being modeled; these variables may also have an indirect effect on behavior through the tax price.

In NBER Working Paper No. 988, "Identification in Tax-Price Regression Models: The Case of Charitable Giving," I propose an estimator designed to exploit sources of independent variation and to allow unbiased estimation of the tax-price elasticity of charitable giving (the response of charitable contributions to a change in their aftertax value) under quite general conditions. I then apply the estimator to the demand for charitable giving. (A charitable giving equation is an appropriate test for this procedure because it represents the purest case of a tax-price coefficient. That is, taxes are the sole source of variance in the price of charity.) The charitable deduction is also of significant policy interest: in 1977, 1.4 percent of gross income was deducted for charity, about as much as the deduction for capital gains.

In my paper, the variation in tax law across states is one source of variance in the tax price independent of personal characteristics. My proposal is an approach to estimating tax rates using as an instrument for the tax price the mean subsidy rate in the taxpayer's state of residence evaluated at a fixed distribution of income and deductions. The reported empirical work confirms previous work by Clotfelter, Feldstein, and others, which finds a significant tax-price effect on charitable giving.

Taxation of Married Couples

Since the personal income tax was introduced in the United States in 1913, the selection of the taxable unit has been a source of controversy. The tax schedule has been applied at various times to the individual, the couple, and the couple with income splitting.

The income tax law of 1913 specified separate filing on a single rate schedule. Separate filing has the advantage of marriage neutrality—that is, tax liabilities are not affected by the mere fact of marital status. In states with community property laws, however, the wife had a strong legal claim to one-half of her husband's income (and vice-versa), and couples in such states began to file two identical tax returns, with each showing one-half of the couple's income and deductions. Under a progressive tax, this tactic resulted in a lower tax liability. In 1930, the Supreme Court endorsed this procedure, and the geographic discrimination persisted until 1948.

By 1948, the tax was much heavier and much more progressive. States had begun to adopt community property legislation merely to secure for their residents the favorable treatment of income splitting on the federal tax return. In that year, Congress provided that married couples would continue to be taxed on the single schedule, but that they would pay "twice the tax on one-half the combined income." This rule persists today in several state income tax laws, and it is equivalent to the income splitting practiced by residents of community property states.

Income splitting was a substantial subsidy to marriage for one-earner couples and was so regarded. By 1969, the differential seemed excessive to Congress, which enacted a new schedule for single taxpayers that limited their tax to 120 percent of that for a married couple with the same taxable income. Of course, this meant that two individuals with similar incomes paid more

taxes if they married than if they remained single, and the 1981 tax law responded to that undesirable effect.

The bill provided that 10 percent of the secondary worker's earnings (up to $30,000) shall be exempt from taxation. The child care credit is expanded to 20 percent of the first $2400 in child or dependent care expenses for each of the taxpayer's first two dependents. The credit is increased by one point for each $2000 that the taxpayer's income falls short of $30,000, with a maximum credit of 30 percent of expenses. Together with the general rate reduction of 23 percent, these charges enhance marriage neutrality at the expense of both horizontal equity and progressivity.

NBER Reprint No. 423, "The Tax Treatment of Married Couples and the 1981 Tax Law," contains both simulations of the effects of these changes with no change in behavior and a behavioral simulation showing the likely effect on labor supply, revenue, and welfare. Because the tax return data usually used with TAXSIM contain little information about labor supply or demographic characteristics, much of this analysis was done using data from the Current Population Survey. Without the special treatment of secondary workers there would have been a predicted reduction in the marriage bonus from $14.5 billion in 1979 to $13.0 billion in 1983. The gross marriage penalty, however, would have increased slightly from $9.0 billion to $9.3 billion. The predicted overall reduction in absolute deviations is $1.2 billion. The introduction of the secondary earner's deduction (SED) reduces the marriage penalty by $2 billion to $7.3 billion, but it increases the marriage bonus by $1.7 billion to $14.7 billion. The net improvement in absolute deviations of $0.3 billion seems small compared to the improvement associated with the general reduction in rates in the 1981 law.

This generally poor result occurs in spite of the fact that $3.2 billion in reductions goes to couples who would otherwise be paying a penalty, and only $0.4 billion to those receiving a bonus. The greatest effect of the SED is to move couples from the penalty category to the bonus category. It does not succeed in reducing the extent of nonneutrality induced by joint filing.

The SED also leads to a slight increase in labor supplied by married women—perhaps an average of fifteen hours per woman per year. The behavioral response has a significant effect on the estimated revenue cost of the deduction, reducing that estimate by about one-third, to $72 per joint return. The reduction in deadweight loss (relative to a nondistorting distribution of the same reduction in revenue) is about twice the revenue loss. Although popular literature has emphasized the equity argument for a special treatment of secondary earners, we have seen that the deduction can be recommended only for its positive efficiency effect.

Examination of the liberalized child care credit leads to the conclusion that it acts as a tax reduction that lowers aftertax wage rates. The average recipient of the credit gains about $29 in tax reductions but works about four hours less. There is a net increase in deadweight loss of $4–5.

Determinants of Saving

Laurence J. Kotlikoff

Economists have long sought to understand the central determinants of saving. There has been particularly keen interest in this question over the past decade reflecting the puzzle of historically low U.S. saving rates side by side with persistent differences in saving behavior across developed countries. Since 1980 the U.S. net national saving rate (the ratio of net national saving to net national product) has averaged less than 7 percent per year. This figure, which is adjusted for government capital and for consumer durables, contrasts average net national saving rates of 12 and 15 percent for 1970–79 and 1950–69, respectively. According to OECD data, the U.S. net national saving rate since 1960 has averaged roughly one-half the OECD European rate and only one-third the Japanese rate. Despite certain expectations, international differences in saving rates between the United States and the rest of the OECD have been increasing through time.

The explanation for this and other saving statistics is not likely to be found in a single factor; a variety of elements influence saving, including household preferences, the pattern of human capital formation, demographics, institutional structure, credit relations, risk and risk sharing in the economy, fiscal policy, and, of course, cyclical fluctuations. Each of these factors can have quite complex effects on the accumulation of wealth; understandably, to date they have been studied primarily in isolation. The recent set of case-by-case studies of saving determinants has provided insights into the relative importance of the various factors and the way they influence savings. While filling in major pieces of the puzzle over the key determinants of the saving puzzle, these studies also suggest that the puzzle is much bigger and more difficult to solve than previously imagined.

One important new insight into U.S. saving is the major if not predominant role played by intergenerational transfers.[1] In contrast to the conventional life-cycle view of saving that ascribes most of it to accumulation for retirement consumption, over half of U.S. (nonhuman) wealth appears to have been inherited from previous generations. This inheritance was conveyed in the form of gifts, trusts, bequests, and other mechanisms. While aggregate intergenerational transfers are much larger than previously believed, little is known about the distribution of such transfers across families in different socioeconomic groups. The principal motivation for such transfers is also unclear, with explanations ranging from altruism toward one's progeny to the inability to avoid bequests because of imper-

[1] *L. J. Kotlikoff and L. H. Summers, "The Role of Intergenerational Transfers in Aggregate Capital Accumulation,"* Journal of Political Economy, *August 1981, and NBER Reprint No. 215, October 1981.*

fections in annuity markets. Unfortunately, very little is known about either the fundamental nature of household preferences or the exact extent to which annuity arrangements differ from those that would arise with perfect annuity insurance.

Understanding the nature of household preferences toward intergenerational transfers is also critical in evaluating the impact on saving of a variety of fiscal policies. For example, at the heart of the current concern about deficits and "crowding out" lies the assumption that most households are selfish about sharing resources with their adult children and other descendants. As a consequence, they will make no private intergenerational transfers to offset the debt burden bequeathed by the government to future generations. In models positing these selfish preferences, policies that produce significant intergenerational transfers (redistribution from younger to older generations) can produce very sizable reductions over time in savings. Distinguishing selfish from altruistic behavior appears to require different kinds of data than are currently available.[2] In particular, data on the consumption and resources of extended family members could be used to test the altruistic proposition that family members' consumption depends, in part, on resources of other family members.

In thinking about deficit policy, it is critical to distinguish economic from accounting definitions of deficits. Most economists' concern with deficit finance is that it can involve intergenerational transfers that reduce saving and investment. Unfortunately, the officially reported deficit, based on conventional accounting, is unaffected by many fiscal policies involving major redistribution across generations. In addition, the accounting deficit can be very sizable even though there is no intergenerational redistribution underway. In short, the officially reported deficit provides a very poor measure of intergenerational redistribution. To distinguish the economic concern from the standard accounting measure, I define "economic deficits" to be any policies that redistribute resources from younger to older generations.

One of the more important findings in recent studies of fiscal policy is the variety of unofficial channels through which the government can run huge economic deficits without reporting such intergenerational transfers to the public. "Pay as you go" Social Security and other unfunded government retirement programs are increasingly well-understood forms of implicit deficit finance. Less familiar are the economic deficits (or surpluses) underlying changes in the tax structure and changes in investment incentives. The intergenerational transfers associated with investment incentives are particularly subtle. New investment incentives induce a decline in the value of equity claims on "old" capital—capital that has been fully or partially written off for tax purposes. Since new incentives are targeted toward new capital (that is, toward newly constructed plants and newly produced equipment that have not yet received tax write-offs), the value of old capital must fall to provide an equivalent aftertax return. Since the middle-aged and elderly are primary owners of old capital, these age groups suffer most of the capital losses in stock values and in the net resale value of old capital held by unincorporated business. The loss to these older age groups is offset by a gain to young and future generations who can now purchase these capital assets at lower prices.[3]

For many countries, including the United States, unofficial and unreported postwar economic deficit policies appear to swamp policies that directly change the size of officially reported deficits when measured by the ability to crowd out savings and capital formation. The excessive public focus on accounting deficits and the virtual public inattention to underlying economic deficits suggest endemic misreading of fiscal policy. Thus, one implication of recent research on fiscal policy and savings has little to do with saving per se, namely the need to avoid fiscal illusion by developing new measures of fiscal policy that are free of accounting conventions.[4]

In addition to studying issues of deficit finance, Alan Auerbach and I have used a general equilibrium, intertemporal life-cycle simulation model to study the dynamic saving effects of a variety of other fiscal policies, including changes in the tax base, in the degree of tax progressivity, in investment incentives, and in unfunded Social Security programs.[5] Since the model incorporates the assumption of perfect foresight, it can be used to explore the impact on current saving of anticipated future policy. Some of the more surprising findings in this research are that: (1) economic deficits that eventually crowd out saving may involve short-term "crowding in," making the evaluation of policy based on short-term outcomes highly misleading; (2) announcements today of future policies aimed at stimulating saving can sharply reduce short-term savings; (3) business tax cuts may be self-financing over the long run, requiring no long-term increase in tax rates; and (4) the process of crowding out through deficits is generally quite slow, with much of the potentially severe reductions in wealth accumulation occurring 15 to 30 years after a major

[2] *A. J. Auerbach and L. J. Kotlikoff, "An Examination of Empirical Tests of Social Security and Savings," in E. Helpman, et al., eds.,* Social Policy Evaluation: An Economic Perspective, *New York: Academic Press, 1983.*

[3] *A. J. Auerbach and L. J. Kotlikoff, "Savings versus Investment Incentives—The Size of the Bang for the Buck and the Potential for Self-Financing Tax Cuts," in L. H. Meyer, ed.,* The Economic Consequences of Government Deficits, *Hingham, MA: Kluwer-Nijhoff, 1983, and NBER Reprint No. 427, December 1983.*

[4] *L. J. Kotlikoff, "Taxation and Savings—A Neoclassical Perspective,"* Journal of Economic Literature, *forthcoming, and NBER Working Paper No. 1302, March 1984.*

[5] *A. J. Auerbach and L. J. Kotlikoff, "National Savings, Economic Welfare, and the Structure of Taxation," in M. Feldstein, ed.,* Behavioral Simulation Methods in Tax Policy Analysis, *Chicago: University of Chicago Press, 1983, and NBER Reprint No. 424, November 1983.*

economic deficit policy is enacted. Another implication of this research is that there is no single statistic that conveniently summarizes the effectiveness of fiscal policy in stimulating saving. While a variety of economists have attempted to provide such a summary statistic by measuring "the" elasticity of saving, such numbers provide no general insight into long-run, let alone short-run, policy effects. Indeed, as suggested by the reference to crowding in, interest elasticities may be positive or negative, depending on the period and policy in question.[6]

Other research on fiscal policy and saving has emphasized the role of policy in providing implicit insurance markets among households and thereby reducing the precautionary demand for savings. Social Security's provision of insurance against uncertain longevity through annuities is an important example. This risk appears to be very substantial. The precautions taken to avoid running out of resources because of greater-than-average longevity can potentially explain more than 30 percent of national savings.[7]

The analysis of savings and annuity insurance suggests that changes in arrangements for sharing other types of risks, such as earnings uncertainty, could also have dramatic impacts on the economy's accumulation of wealth. In addition to the private insurance industry and the government, there are two major institutions that represent potential providers of insurance; these are families and firms. Insurance provision by these institutions involves risk pooling among a small set of individuals compared, for example, to the risk-sharing pool of a major insurance company. However, small numbers of individuals, in some cases fewer than five, appear capable of capturing a significant fraction of the maximum possible insurance benefits.[8]

Employers represent natural potential insurers of employee risk concerning future work productivity. While there is no solid evidence that firms implicitly provide this form of insurance in determining wage payments to their workers, there is certainly a variety of evidence that annual wage payments are not solely determined by annual job productivity. Some of the most striking evidence in this regard comes from the provision of private pension plans.[9] A number of seemingly minor features of pension plans produce very substantial discontinuities in the profile by age of vested pension benefit accrual. Since workers do not experience sharp offsetting wage changes at particular ages when their vested accrued pension benefits abruptly rise or fall, it is apparent that total annual compensation does not precisely cover the worker's total annual marginal product. Since wages are clearly set by reasons other than simple remuneration for current work effort, it is probable that intrafirm risk sharing is one of the reasons. Indeed, given the potential value to workers of such insurance, one would expect risk sharing to be an important component of the firm's wage-setting behavior. Additional research is needed to calibrate the possible major effects on savings of this form of earnings insurance.

In addition to their role as insurance providers, private and government employers may significantly alter saving patterns of their workers by restructuring the timing of wage and nonwage compensation. Holding the present value of total compensation constant, raising future and lowering current compensation appears to reduce the consumption of lower- and middle-class households and, ceteris paribus, raises national saving.[10] The standard explanation for this is liquidity constraints, but there may be other reasons as well. In addition to Social Security, private, state, and local pension plans are playing an increasingly important role in tilting the age profile of total compensation over the work span. As Daniel Smith and I document in a large compendium of pension statistics, *Pensions in the American Economy,* private, state, and local pension plans now cover over 40 percent of the work force.[11] Pension funds currently own close to 15 percent of all corporate stock, 26 percent of corporate bonds, and 5 percent of government bonds, making them a primary repository of savings.

Another important determinant of saving that has received relatively little attention is changes in demographics, particularly changes in fertility rates. Auerbach and I recently investigated fertility swings using our life-cycle simulation model and found sizable effects of baby "busts" and baby "booms" on a variety of economic variables.[12] A major baby bust, or cycle of baby booms and busts, would seem to have a potential for producing sharp changes in saving rates over very brief intervals during a demographic transition. The findings of this study suggest substantial increases in the U.S. saving rate over the next decade as the baby-

[6] *A. J. Auerbach, L. J. Kotlikoff, and J. Skinner, "The Efficiency Gains from Dynamic Tax Reform,"* American Economic Review, *May 1983, and NBER Reprint No. 403, September 1983.*

[7] *L. J. Kotlikoff, "Elasticities of Labor Supply and Savings—Answers in Search of Questions,"* Proceedings of the 73rd Annual Conference on Taxation, *National Tax Association, 1980.*

[8] *L. J. Kotlikoff, J. B. Shoven, and A. Spivak, "Annuity Markets, Savings, and the Capital Stock," NBER Working Paper No. 1250, December 1983.*

[9] *L. J. Kotlikoff and A. Spivak, "The Family as an Incomplete Annuities Market,"* Journal of Political Economy, *June 1981.*

[10] *L. J. Kotlikoff and D. A. Wise, "Labor Compensation and the Structure of Private Pension Plans: Evidence for Contractual versus Spot Labor Markets," in* Pensions, Labor, and Individual Choice, *Chicago: University of Chicago Press, forthcoming 1984, and NBER Working Paper No. 1290, March 1984.*

[11] *L. J. Kotlikoff, A. Spivak, and L. H. Summers, "The Adequacy of Savings,"* American Economic Review *72, 5, December 1982, and NBER Reprint No. 363, May 1983.*

[12] *A. J. Auerbach and L. J. Kotlikoff, "Simulating Alternative Social Security Responses to the Demographic Transition," NBER Working Paper No. 1308, March 1984.*

boom generation fully enters the work force. Our analysis also includes the effect of demographic change on unfunded Social Security. While a sustained baby bust of the type underway in the United States requires major adjustments in Social Security tax rates, average benefit levels, or the retirement age, the rest of the long-run economic picture is quite sanguine; there is a considerable long-run increase in savings per person, and surprisingly, a decline in dependents per worker, where dependents are counted as including children and teenagers under 20 as well as adults over 65.

To summarize, the past decade of research has identified a variety of key factors in saving. The precise quantitative effect of each of those factors and their interactions remains to be determined empirically. Analysis of these factors within stylized models permits one to gauge their potential relative importance, but several fundamental questions need to be resolved before one can ascribe particular changes in saving to particular factors. These fundamental questions include: (1) the nature of household preferences toward saving and intergenerational transfers; (2) the extent to which the institutional structure reflects household choice as opposed to bureaucratic fiat; (3) the types and sizes of risks facing households; (4) the degree of implicit risk sharing among extended family members and within firms; and (5) the applicability of optimizing, market-clearing models to real world economies.

Economic Outlook Survey

First Quarter 1984

Victor Zarnowitz

According to the February survey taken by the NBER and the American Statistical Association, 31 professional forecasters predict that the expansion will continue not only in 1983-84 but also in 1984-85. Most expect real growth to be moderate and considerably lower than in the first year of the recovery, but sizable minorities anticipate either near-boom conditions or a serious slowdown. The average forecasts imply gradual reductions in the pace of expansion, but the risk of a recession in the near future is rated low. Inflation in terms of the consumer price index (CPI) is to rise from 3.5 percent in 1983:4 to 4.6 percent in 1984:4 and 5.4 percent in 1984-85 (all at annual rates). The 3-month Treasury bill rate is to rise above 9 percent and the yield on new high-grade corporate bonds above 13 percent in 1985.

Expansion to Endure but Its Vigor Uncertain

Real GNP will increase 5.2 percent in 1983-84 and 3.8 percent between 1984:1 and 1985:1, according to the median point forecasts from the survey. At annual rates, the changes in each successive quarter 1984:1-1985:1 will be 4.9 percent, 4.1 percent, 4.1 percent, 3.2 percent, and 3.6 percent. The average prediction of the year-to-year change 1984-85 is 3.2 percent. Thus a gradual slowing down in real growth is anticipated. It should be noted, however, that the forecasts for 1984:1 may turn out to err generally on the low side. (The most recent signs are that GNP in constant dollars may rise as much as 6 percent annual rate in this quarter.)

There is a considerable division of views among the individuals, as shown by the following percentage distribution of forecasts of real growth for the year ahead (1984:1-1985:1):

Percentage of Growth of Real GNP	*Percentage of Responses*
4.5-6.4	29.1
3.5-4.4	35.5
2.5-3.4	25.9
Less than 2.5	9.7

Although most respondents expect the expansion to moderate, few worry that a downturn may occur this year. The chances of a decline in output in any quarter of 1984 are assessed as less than 20 in 100 by a large majority of the forecasters. They rise to an average 23 percent in 1985:1.

Unemployment is to decline into the 7.2-7.7 percent range in 1985:1 according to most forecasts (the average is 7.5 percent).

However, the median forecast of an 8 percent unemployment rate for 1984:1 is likely to prove too high in the light of the most recent reports (perhaps by 0.2 or 0.3 of a percentage point). The average predictions of joblessness in 1984 and 1985 are 7.8 percent and 7.5 percent, respectively, with total ranges of 7.0-8.8 percent and 6.5-8.6 percent.

Inflation Rates Creeping Upward

The CPI will rise at annual percentage rates of 4.2, 4.4, 4.8, 4.6, and 5.2 in the current and the four following quarters through 1985:1. Inflation so measured will amount to 4.5 percent in 1984 and 5.4 percent in 1985, according to the median survey forecasts.

The GNP implicit price deflator (IPD) is projected to rise 4.5 percent (annual rate) in each of the three quarters 1984:4-1984:3, then 5.3 percent in 1984:4 and 1985:1. The distribution of individual forecasts for 1984:1-1985:1 has a mean of 5.0 percent and is strongly skewed toward the higher rates:

Percentage of Rise in IPD	*Percentage of Responses*
5.5-6.5	29.0
4.5-5.4	58.1
3.5-4.4	9.7
Less than 3.5	3.2

Projections of GNP and Other Economic Indicators, 1984-85

	Annual				
				Percent Change	
	1983 Actual	1984 Forecast	1985 Forecast	1983 to 1984	1984 to 1985
1. Gross National Product ($ billions)	3309.5	3635.0	3961.0	9.8	9.0
2. GNP Implicit Price Deflator (1972 = 100)	215.6	225.0	236.5	4.4	5.1
3. GNP in Constant Dollars (billions of 1972 dollars)	1534.8	1614.0	1666.0	5.2	3.2
4. Unemployment Rate (percent)	9.6	7.8	7.5	-1.8[1]	-0.3[1]
5. Corporate Profits After Taxes ($ billions)	129.6	154.2	167.7	19.0	8.8
6. Nonresidential Fixed Investment (billions of 1972 dollars)	168.0	186.0	197.9	10.7	6.4
7. New Private Housing Units Started (annual rate, millions)	1.7	1.7	1.6	2.6	-7.7
8. Change in Business Inventories (billions of 1972 dollars)	-2.4	11.6	13.3	14.0[2]	1.7[2]
9. Treasury Bill Rate (3-month, percent)	8.6	8.9	9.0	0.3[1]	0.1[1]
10. Consumer Price Index (annual rate)	3.2	4.5	5.1	1.3[1]	0.6[1]

	Quarterly							
		1984				1985	Percent Change	
	1983 Q4 Actual	Q1	Q2	Q3	Q4	Q1	Q4 83 to Q4 84	Q1 84 to Q1 85
		Forecast						
1. Gross National Product ($ billions)	3432.0	3519.0	3594.7	3673.0	3753.0	3833.9	9.4	8.9
2. GNP Implicit Price Deflator (1972 = 100)	218.5	221.0	223.5	226.0	229.0	232.0	4.8	5.0
3. GNP in Constant Dollars (billions of 1972 dollars)	1570.5	1590.0	1606.6	1623.0	1636.5	1651.1	4.2	3.8
4. Unemployment Rate (percent)	8.5	8.0	7.8	7.7	7.5	7.5	-1.0[1]	-0.5[1]
5. Corporate Profits After Taxes ($ billions)	141.2	148.0	152.5	157.1	162.4	165.0	15.0	11.5
6. Nonresidential Fixed Investment (billions of 1972 dollars)	178.9	182.0	184.2	187.4	191.0	194.0	6.8	6.6
7. New Private Housing Units Started (annual rate, millions)	1.7	1.7	1.7	1.8	1.7	1.7	1.8	-2.3
8. Change in Business Inventories (billions of 1972 dollars)	7.5	10.0	10.0	11.7	13.0	13.5	5.5[2]	3.5[2]
9. Treasury Bill Rate (3-month, percent)	8.8	8.9	8.9	8.9	9.0	9.1	0.2[1]	0.2[1]
10. Consumer Price Index (annual rate)	3.5	4.2	4.3	4.5	4.6	4.9	1.1[1]	0.7[1]

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, March 1984. The figures on each line are medians of thirty-one individual forecasts.

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

Probabilities Attached to Possible Changes in Real GNP and IPD

Each forecaster was asked what probabilities he or she would attach to alternative outcomes for real growth and inflation this year and the next. The means of the reported probabilities for changes in real GNP (see the percentage distributions below) show a definite shift to lower growth categories between 1984-85.

Percentage of Change in Real GNP	*Percentage of Responses 1983-84*	*1984-85*
6.0 and higher	18.9	4.0
4.0-5.9	56.4	28.0
2.0-3.9	16.5	42.8
0.0-1.9	5.9	16.4
Less than 0.0	2.3	8.8
	100.0	100.0

The corresponding tabulation of the probabilities for changes in IPD reflects increases in the higher inflation intervals and reductions on the lower intervals:

Percentage of Change in IPD	*Percentage of Responses 1983-84*	*1984-85*
10.0 and higher	0.8	1.4
8.0-9.9	5.4	7.4
6.0-7.9	15.1	26.2
4.0-5.9	64.1	52.2
Less than 4.0	14.5	12.8
	100.0	100.0

More Forecasters Predict Rises than Declines in Interest Rates

The median forecasts of the 3-month Treasury bill rate are remarkably stable at or very near 8.9 percent

throughout this year, then rise to 9.1 percent in 1985:1. The individual forecasts, however, range from 8.6 percent to 9.3 percent for 1984:1 and from 7.0 to 11.8 percent for 1985:1, reflecting much uncertainty about the prospects for the money market. The annual means and standard deviations (in parentheses) are, in percentages, 8.9 (0.5) for 1984 and 9.5 (1.2) for 1985.

New high-grade corporate bond yields are expected to fluctuate narrowly between 12.6 percent and 12.8 percent in the five quarters 1984:1-1985:1 and to average 13.9 percent in 1985, according to the median forecasts. Again, there is considerable variation in the individual predictions, with ranges of 11.0-13.5 percent for 1984 and 10.0-14.5 percent for 1985.

While the predicted changes are often small, a simple and instructive way to sum up the anticipated trends is to count the individuals who expect interest rates to rise and those who expect them to fall. The former represent about 73 percent of the sample for 1984:1-1985:1 and 60 percent for 1984-85: the latter, about 20 percent and 36 percent, respectively. (The remainder forecast no change.)

Corporate Profits Strong in 1984, Slowing in 1985

Aftertax profits will increase 19 percent in 1984 compared with 1983; 11.5 percent between 1984:1 and 1985:1; and 8.8 percent in 1985 relative to 1984. The estimates of quarter-to-quarter rises at annual rates decline from 20.7 percent in 1984:1 to 6.6 percent in 1985:1. As a proportion of GNP, however, net profits of corporations should be about the same in 1984 and 1985 (4.2 percent, up from 3.9 percent in 1983). The distributions of the individual forecasts for corporate profits show relatively high dispersion, particularly for the more distant target periods, but they are skewed positively, that is, toward the larger figures.

Positive Changes in Inventories and Industrial Production

At annual rates, the change in business inventories in billions of 1972 dollars will increase from 7.5 in 1983:4 to 10.0 in both 1984:1 and 1984:2, and 11.7 and 13.0 in the last two quarters of this year. For 1984 as a whole, the median forecast is 11.6, marking a reversal from the actual value of -2.4 for 1983. In 1985, inventory investment is expected to level off: the average forecasts are 13.5 for 1985:1, 13.3 for 1985 as a whole. But, as usual, individual predictions for this volatile series vary greatly and are surrounded by much uncertainty.

Industrial production should gain 9.7 percent in 1983-84, nearly twice the 5.2 percent rise in real GNP, according to the median forecast, which in this case represents well most responses to the survey. But here too a definite slowdown is anticipated. The output of manufacturing, mining, and utilities is to rise 4.6 percent in 1984:1-1985:1 and 4.3 percent in 1984-85.

Solid Gains in Business Investment

Nonresidential fixed investment in 1972 dollars is to increase sharply, at annual rates varying in the 5-8 percent range in the current and the next four quarters. Its gains will average 10.7 percent in 1983-84, 6.6 percent in 1984:1-1985:1, and 6.4 percent in 1984-85. This implies a slowing but substantial advance through 1985. Business investment accounted for 10.9 percent of real GNP in 1983; according to the average predictions from the survey, the corresponding proportions will be 11.5 percent in 1984 and 11.9 percent in 1985. There is a strong consensus that investment in business plant and equipment is heading upward, although the anticipated rates of increase vary significantly across the respondents.

Housing Expansion to End in the Year Ahead

Housing starts, in million units at annual rate, will increase from 1.72 in 1984:1 to 1.75 in 1984:3, then decrease to 1.68 in 1985:1. The group average forecasts for 1984 and 1985 are 1.74 and 1.61, respectively. (The actual level in 1983 was 1.70.) Residential fixed investment in billions of 1972 dollars will reach a plateau at 59 in 1984:3-1985:1 (up from 57 in 1984:1). The average predictions for 1984 and 1985 are 58 and 57 (compared with the actual value of 52.7 in 1983).

Less Growth Expected in Consumption and State and Local Government Purchases

Total consumption expenditures in 1972 dollars will increase 4.5 percent in 1983-84, 3.4 percent in 1984:1-1985:1, and 3.1 percent in 1984-85. These gains are somewhat smaller than those projected for total output, so the consumption/GNP ratio, after allowing for inflation, should be slightly reduced.

Expenditures of state and local governments will show relatively small gains in real terms if the forecasters as a group prove approximately correct: 2.1 percent in 1983-84, 2.3 percent in 1984:1-1985:1, and 1.7 percent in 1984-85.

Net Exports Near a Low Point; Prospects for a Weaker Dollar

In billions of 1972 dollars, net exports of goods and services will decline from an annual rate of 1.9 in 1984:1 to 0.4 in 1984:3, then rise to 1.8 in 1985:1. The actual value for 1983 was 11.7; the median forecasts for 1984 and 1985 are 0.5 and 3.0, respectively.

Behind these overall figures, there is considerable disagreement about the outlook for the dollar. On this point, 16 respondents stated that they assumed the dollar will weaken and 5 that it will be stable or strong. Compared with the previous survey taken three months ago, this represents a shift in favor of the view that the dollar will decline.

Assumptions on Government Policies and Energy, Federal Spending

Nineteen forecasters assumed no change in the tax policy and nine assumed the enactment of additional taxes in 1984. On defense outlays, the reported assumptions are: a buildup of 1-5 percent, 7; of 6-8 percent, 12; of 9-13 percent, 4 responses.

Federal government purchases of goods and services are to increase 4.7 percent in 1983-84, 8.1 percent in 1984:1-1985:1, and 5.3 percent in 1984-85, according to the median forecasts. Seventeen respondents assumed that M2 will grow 6-11 percent in the year ahead. Twelve placed the growth of M1 above, and four below.

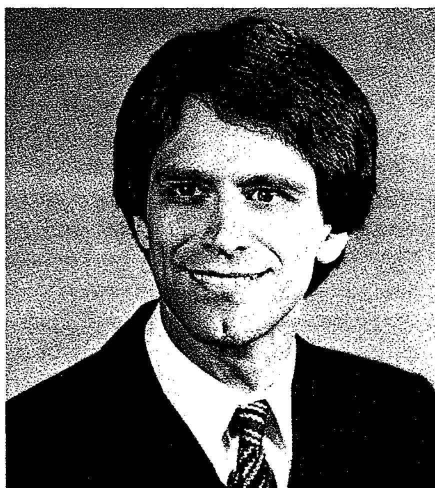
More participants assumed rising than stable or falling demand for energy (the count here is 14 versus 7 responses), but the prevailing view seems to be that energy prices will be stable or lower. (Only seven survey members expressed the assumption that the prices will increase.)

This report summarizes a quarterly survey of predictions by about thirty 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 Robert E. Allison and Patrick Higgins of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

Daniel R. Feenberg

Daniel Feenberg, a research associate in NBER's Program in Taxation since 1980, has been associated with the Bureau since 1978. Feenberg received his A.B. in 1972 from Washington University and his Ph.D. in 1980 from Princeton University. His major fields of research are taxation, public finance, and environmental economics.



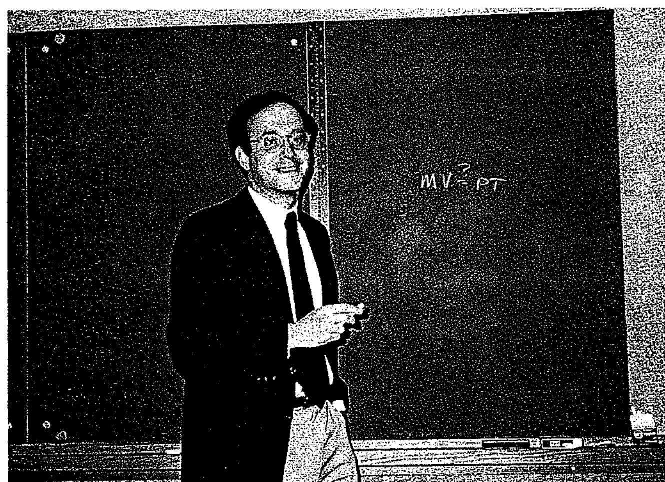
During the summer and fall of 1976, Feenberg was an economist in the Office of Tax Analysis of the U.S. Department of the Treasury. Before joining the NBER staff as a postdoctoral research economist in late 1978, he was also a lecturer in economics at Princeton.

Feenberg is coauthor with E. S. Mills of the 1980 book, *Measuring the Benefits of Water Pollution Abatement.* Journals have published a number of his articles on the tax treatment of the family, the impact of taxes on charitable giving, and the interaction of the tax system with savings and investment.

Feenberg, a St. Louis native, now lives on Oxford Street in Cambridge, an "impeccably intellectual if slightly incongruous address."

Laurence J. Kotlikoff

Laurence Kotlikoff, a member of NBER's Program in Taxation and its project on pensions, has been associated with the Bureau since 1977. Kotlikoff received his B.A. (summa cum laude) from the University of Pennsylvania in 1973 and his Ph.D. in economics from Harvard in 1977.



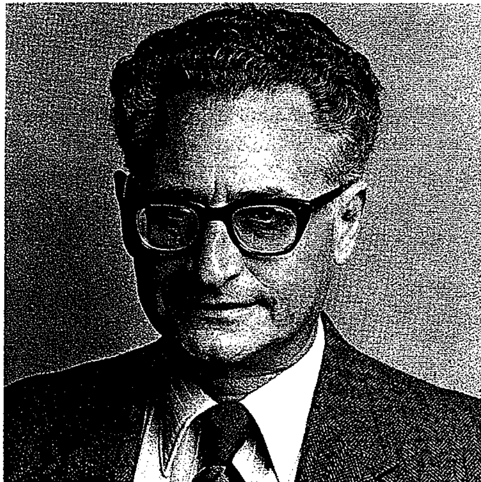
From 1977-80, Kotlikoff was a postdoctoral fellow at the University of California, Los Angeles. He joined the Yale University economics faculty in 1980 as an assistant professor and associate of the Cowles Foundation and was named associate professor in 1981. During 1981-82, Kotlikoff was a senior economist on the President's Council of Economic Advisers. He is currently visiting at NBER.

Kotlikoff has been an associate editor of the *American Economic Review* since 1981; he has also served as a consultant to the U.S. Department of Labor's Bureau of International Labor Affairs (1978-81). His work, particularly on Social Security, private pensions, aspects of taxation, and life-cycle savings, has been published in a number of journals and books. With Daniel Smith he is coauthor of the recent NBER volume, *Pensions in the American Economy.*

An outdoorsman and "classic car" buff, Larry keeps a 1951 Dodge at his vacation cottage in Vermont.

Arnold Zellner

Arnold Zellner, the H. G. B. Alexander Professor of Economics and Statistics at the University of Chicago's Graduate School of Business, has been a member of NBER's Board of Directors since 1980 and its Executive Committee since 1983. Zellner holds an A.B. in physics from Harvard University and a Ph.D. in economics from the University of California at Berkeley.



From 1955–60, Zellner was a member of the economics faculty at the University of Washington, serving as acting assistant, assistant, and then associate professor. In 1961, he joined the economics department at the University of Wisconsin as an associate professor and was later named full professor at that institution. Zellner came to the University of Chicago's Business School in 1966 to assume his current position. Over the years, Zellner has also been a visiting faculty member at a number of institutions including the Netherlands School of Economics and Econometric Institute, the University of California at Berkeley, Monash University, and the University of Southern California.

In 1970 Zellner founded the NSF-NBER Seminar on Bayesian Inference in Econometrics and since has served as its seminar leader. He was a cofounder, and has been coeditor since 1973, of the *Journal of Econometrics.*

In 1982 Zellner became founding editor of the new *ASA Journal of Business and Economic Statistics*. He has also chaired the ASA's Business and Economic Statistics Section and the AEA's Census Advisory Committee.

Zellner is a Fellow of the Econometric Society, the American Statistical Association, the American Academy of Arts and Sciences, and the American Association for the Advancement of Science. He has also written a num- of journal articles and several books including, most recently, *Basic Issues in Econometrics*, forthcoming from the University of Chicago Press. His *Bayesian Econometrics,* a work now in progress, will extend the 1971 volume, *An Introduction to Bayesian Inference in Econometrics*, published by John Wiley and Sons. Zellner chaired the steering committee for the CENSUS-NBER conferences and was editor of the proceedings volumes, *Seasonal Analysis of Economic Time Series* (1978) and *Applied Time Series Analysis of Economic Data* (1983).

Zellner, who grew up in Long Branch, N.J., now lives with his wife Agnes in Chicago. They have five children.

Conferences

The Global Implications of Trade Patterns of Asia

From January 4–6, NBER's Program in International Studies held a conference in Kuala Lumpur, Malaysia, on the "Global Implications of the Trade Patterns of East and Southeast Asia." This conference, organized by NBER's William H. Branson of Princeton University and Colin I. Bradford, Jr., of Yale University, was supported in part by the IBM World Trade Asia Corporation and was jointly sponsored by the Malaysian Economic Association and NBER. The conference program included 16 papers, eight of which discussed trade patterns and trends of developing countries in the region and eight of which covered relevant international or comparative issues in world trade with the area. The program was as follows:

Wednesday, January 4

Opening Address by YBM Tengku Ahmad Rithauddeen, Minister of Trade and Industry, Malaysia

William H. Branson, "Trade and Structural Interdependence between the United States and the NICs"

Jean L. Waelbroeck, Université Libre, Brussels, "Trade and Structural Interdependence: The European Community and the NICs: Their Trade in Manufactures"

Ippei Yamazawa, Hitotsubashi University, Tokyo, "Japan and Her Asian Neighbors in a Dynamic Perspective"

Discussants: Narongchai Akransanee, The Industrial Management Co., Bangkok; J. David Richardson, NBER and University of Wisconsin; and Lawrence B. Krause, Brookings Institution

Chee Peng Lim, University of Malaya, Kuala Lumpur, "Changes in the Malaysian Economy and Trade Trends and Prospects"

Florian Alburo, University of Philippines, Manila, "Manufactured Exports and Industrialization: Trade Patterns and Trends of the Philippines"

Juanjai Ajanant, Chulalongkorn University, Bangkok, "Trade Patterns and Trends of Thailand"

Discussants: Robert E. Baldwin, NBER and University of Wisconsin; Chong Ngian Yet, Ministry of Trade and Industry, Malaysia; and David L. Grove, U.S. Council for International Business

Thursday, January 5

Lawrence B. Krause, "The Structure of Trade in Manufactured Goods in the East and Southeast Asian Region"

Lawrence R. Klein, University of Pennsylvania, "The South Asian and Pacific Far East Countries in Project LINK"

Discussants: William H. Branson and J. David Richardson

Edward Chen, University of Hong Kong, "Hong Kong's Trade Patterns and Trends"

Chung Ming Wong, National University of Singapore, "Trends and Patterns of Singapore's Trade in Manufactures"

Discussants: Dr. Fong Chan Onn, University of Malaya, and Jean L. Waelbroeck

Friday, January 6

Wontack Hong, Seoul University, Korea, "Export-Oriented Growth and Trade Patterns of Korea"

Chi Schive, National Taiwan University, Taipei, "Trade Patterns and Trends of Taiwan"

Ralph Beals, Amherst College, "Trade Patterns and Trends of Indonesia"

Discussants: Gustav Ranis, Yale University; Dr. Tan Tat Wai, Bank Negara Malaysia; and Giuseppe Sacco, Free University of Rome

Colin I. Bradford, Jr., "The Role of the Industrializing Countries of East and Southeast Asia in World Trade: NICs and Next-Tier NICs as Transitional Economies"

Laurence J. Kotlikoff, NBER and Yale University, "Empirical Tests of Alternative Models of International Growth"

Robert E. Baldwin and J. David Richardson, "Recent U.S. Trade Policy and Its Global Implications"

Discussants: Ronald Findlay, Columbia University; Lawrence R. Klein; and Peter B. Kenen, Princeton University

Branson's paper on trade and structural interdependence between the United States and the newly industrializing countries (NICs) finds that the United States, the Latin American NICs, and the Far Eastern NICs form a trade triangle. The United States exports manufactures (mainly capital goods) to the Latin American NICs who in turn sell raw materials on the world market, while the Far Eastern NICs import raw materials and export manufactures (mainly consumer goods) to the United States. These patterns show, on the one hand, the sensitivity of U.S. exports to the debt situation in Latin America, and, on the other hand, the rapidity of change in the structure of U.S. industrial production.

Using data on production and trade in developed countries, Waelbroeck's paper examines the pattern of trade in manufactured goods between developing countries and the European Economic Community (EC, or Common Market). The first section examines the revealed comparative advantage and the geographic pattern of trade of the EC, the United States, and Japan. The second part is devoted to an in-depth study of trade between the EC and developing countries.

Yamazawa's paper finds that Japanese manufacturers have been competing with manufacturers in the Asian NICs and other Asian developing countries: first, in their export markets in the United States and Western Europe, and later, since the mid-1970s, in the Japanese market itself. This has created a deficit in trade in manufactured goods for the Asian less developed countries (LDCs). Behind this competition, strong complementarity has continued between Japan and her Asian neighbors through Japan's supplying capital and intermediate goods and importing labor-intensive consumer goods and primary products. However, the paper argues that in order to further this trade relationship, Japan would increase manufactured imports and improve the imbalance of trade with the Asian LDCs through structural adjustment and industrial cooperation as well as by eliminating "implicit barriers."

The Chee Peng Lim paper traces the changes in the Malaysian economy over the last 20 years and examines how these changes affected the product composition and direction of Malaysia's trade, particularly in reference to the growth in manufactured exports. The paper concludes with an assessment of future directions for growth in the Malaysian economy and their implications for trade prospects and expected trade patterns between Malaysia and the rest of the world.

Alburo examines the industrialization process in the Philippines and the role that trade has played in it. He argues that the country has begun a shift from an "inward-looking" path to an "outward-lookng" strategy. He also presents evidence that the increasing exports of nontraditional manufactured goods in the 1970s have been associated with structural change that is consistent with the country's resource endowments and its comparative advantage. Looking into considerations of both demand and supply, Alburo finds the prospects for sustained structural change encouraging. With policies to minimize problems of resiliency and flexibility, the industrialization process can also be deepened.

Ajanant determines that the growth of Thailand's manufacturing sector during 1960–80, both in terms of production and in exports, was caused by the moderate import-substitution industrialization policy. While industrial activities were promoted, other sectors, such as agriculture, maintained steady growth in terms of both production and export value. Ajanant expects this pattern to continue for another decade.

Despite the world recession that drastically reduced international trade, international specialization continued to progress, Krause's paper concludes. Moreover, LDCs continued to increase their share of world trade in manufactured goods. The developing countries in East and Southeast Asia were the star performers among the LDCs. The basis for the comparative advan-

tage of these countries differed depending on whether they were NICs who moved from labor-intensive goods to more skill- and technology-intensive goods, or whether they were the other developing Asian countries who remained heavily involved in natural-resource-intensive production, despite some movement into labor-intensive development during the 1970s. The paper also examines the special case of textiles and clothing and, despite the multifiber agreement, finds increased scope for LDC trade.

In Klein's paper, the developing countries play an important role and are represented in four area models: Africa, Latin America, Middle East, and Southeast Asia/ Pacific Far East. Present projections for 1983–88 indicate relatively poor prospects for these developing countries in the context of relatively moderate performance for the world as a whole. Within the developing areas of the world, there is great diversity. In 1983–84, the Asian countries should do fairly well in contrast with Latin American countries, where activity levels are expected to be quite depressed. Over a longer period, until 1988, economic prospects appear to be good for the countries of Southeast Asia and the Pacific Far East. Similarly, among Socialist countries, the People's Republic of China is expected to turn in an outstanding performance.

Hong Kong has experienced very rapid growth in the past 20 years based on manufactured exports, according to Chen. One important reason for Hong Kong's success is its ability to diversify products within broad industrial groups to cope with changes in world demand. The other reason is Hong Kong's high level of product design, precision, and workmanship. The direction of future change is towards the production of technology- and skill-intensive exports. This, however, is hindered by the existing relatively low technological capability and by the political uncertainty related to the expiration of Hong Kong's British lease in 1997.

Chung Ming Wong's paper examines the changes in Singapore's trade in manufactured goods in the last two decades. He relates these changes to domestic economic development and to shifts in government policies. Since the turn from import substitution to export promotion in the 1960s, Singapore has achieved high rates of industrial growth by rapid absorption of labor into labor-intensive industries. In view of the current shortage of labor, however, the government is following a deliberate policy of phasing out unskilled-labor-intensive industries and restructuring the economy into high-technology- and skill-intensive activities.

Wontack Hong's paper first sets out to analyze the relationship between the export-oriented growth strategy and the high-growth performance of the Korean economy on the one hand, and Korea's shifting comparative advantage and pattern of trade in manufactured goods on the other. He also looks at the impact of rationing subsidized credit on the pattern of trade in manufactured goods.

Chi Schive shows that Taiwan's fast economic growth during the past two decades came mainly from the expansion of trade. Taiwan's trade pattern was determined by comparative advantage, but the trade balance in Taiwan fluctuated widely in the 1970s, partly as a result of the inflexibility of the exchange rate in that period. When trade expansion created a potential market for material and capital goods, the local entrepreneur responded to this signal insofar as other conditions for the development of such industries were also met. Looking toward future trade patterns of Taiwan, one might expect more imports of consumer goods.

Beals's paper on Indonesia finds that, despite progress toward industrialization since 1966 under the "new order" government, exports have remained almost exclusively unprocessed mineral and agricultural products —with crude oil being the dominant export since 1974. Government policies—including protective tariffs and other barriers to trade, interest rate subsidies and credit controls, tax holidays and other investment subsidies, energy price controls, and investment in capital-intensive industry—have steered industrial growth away from areas of Indonesian comparative advantage and into import-competing sectors. Growth in these sectors has not provided satisfactory employment growth and, further, appears to be slowing down. Beals concludes that Indonesia's pattern of trade and industrialization is quite different from that of other countries being discussed at the conference.

Bradford's paper examines the sources and manifestations of internal and external structural change in the NICs and next-tier NICs in East and Southeast Asia, comparing them with European and Latin American transitional economies. By developing data on shifts in exports, Bradford finds patterns that are broadly consistent with an explanation of structural changes in trade based on proportions of factors used. His paper also finds evidence of policies encouraging pricing of investment goods in rapidly industrializing countries, which appears to have been an important vehicle for countries becoming NICs in the 1970s but may have produced overinvestment in the NICs during the slower-growth 1980s. Bradford also presents data that relate the degree of price distortion to the degree of inward versus outward orientation of growth strategies. Getting prices right, it turns out, while important, is not a sine qua non of economic growth, and the identification of correct prices with outward-oriented growth strategies is sometimes overdrawn.

The Kotlikoff-(Leamer) paper examines the relationship between trade, growth, and factor prices in: (1) the standard Heckscher-Ohlin (HO) model with equal numbers of factors and goods; (2) the uneven HO model, with more goods than factors; and (3) a generalized HO model, with adjustment costs caused by immobility of physical capital in the short run. Preliminary statistical tests of the three models of transitional international growth in 28 countries and 28 industries provide some support for each view of the evolution of international trade and factor prices. This partial support for each of the models suggests that an uneven model with adjustment costs provides a better basis for discussing international trade than any of the three models on their own.

The Baldwin-Richardson paper concludes that three

basic economic and political influences explain most shifts in U.S. trade policy in the postwar period. They are: (1) the emergence and subsequent decline of the United States as a hegemonic power; (2) the persistence during the entire period of a politically significant group of domestic industries that were opposed to duty cuts on competing import products; and (3) efforts by Congress to reduce the greatly increased power granted the President during the Depression and World War II. In fact, the authors find that conflict has punctuated relations between branches of government more often than between political parties. They believe that leadership on U.S. trade policy is still potentially strong despite the decline in U.S. hegemony.

The papers from the conference are being revised and edited prior to expected publication in an NBER conference volume. The availability of this book will be announced in a future issue of the *NBER Reporter.*

The Economics of Trade Policy

On March 9, NBER hosted an international studies conference in Washington on the economics of trade policy. Supported in part by the National Science Foundation, the conference brought together representatives of the trade policy community with academic economists. The agenda was as follows:

Welcome, introduction, overview:
J. David Richardson, NBER and University of Wisconsin

SESSION I
Chairman: J. David Richardson
Topic: *Prospective U.S. Trade Policy, Issues and Options*
Subtopics: "Strategic" Trade Policy; Dynamic Advantage and Industrial Structure; Sectoral Policy at Home and Abroad; Injury; Industry Case Studies and Analysis
Speakers: William H. Branson and Gene M. Grossman, NBER and Princeton University, and Paul R. Krugman, NBER and MIT
Discussants: C. Michael Aho, Office of Senator Bill Bradley; Rachel McCulloch, University of Wisconsin; Allan Mendelowitz, General Accounting Office; and Brian Turner, AFL/CIO

SESSION II
Chairman: Robert E. Baldwin, NBER and University of Wisconsin
Topic: *The Economic Environment for U.S. Trade Policy*
Subtopics: Structure and Trends in U.S. Trade Patterns; Data Analysis of Growing Export Sectors; Multinationals, Productivity, and Trade
Speakers: William H. Branson, and Robert E. Lipsey, NBER and Queens College
Discussants: Mordechai Kreinin, Michigan State University, and Robert Z. Lawrence, Brookings Institution

SESSION III
Chairman: William H. Branson
Topic: *Recent U.S. Trade Policy, Scope and Efficiency*
Subtopics: Estimating and Explaining the Effects of Administrative Trade Policy; Currents and Cross-Currents in Recent Trade Policy; Macroeconomic and Exchange Rate Inferences on Trade Policy
Speakers: Robert E. Baldwin, Robert E. Lipsey, and J. David Richardson
Discussants: Raymond Ahearn, Congressional Research Service; I. M. Destler, Institute for International Economics; and David L. Mallino, AFL/CIO

SESSION IV
General Discussion of an Agenda for Future Research in U.S. International Trade Policy

Richardson introduced the proceedings by welcoming the participants and summarizing the structure of the research to be discussed. The NBER trade policy project aims to analyze both recent and prospective U.S. trade policy conceptually, empirically, and institutionally. Recent trade policy includes many new nontax instruments the economic impacts of which need to be catalogued and assessed. Prospective trade policy includes new conceptions of government as a participant in oligopolistic interchange, or as an insurer of market risk. Analysis of either policy cannot be sensibly undertaken in an environmental vacuum, so the project also attempts to describe and quantify recent trends in the global trading environment and in U.S. and foreign policy environments.

In the first session, Grossman discussed a survey by Richardson and himself of trade policy research for "strategic" environments. Strategic environments are those with small numbers of consciously interdependent agents, such as large multinational firms and key governments. The main contribution of the still nascent research is to delineate contexts in which trade policy has some new strategic role and contexts in which it does not. The most important delineating factors concern the credibility of governments and the oligopolistic behavior of firms, especially toward the expected responses of rivals and the perceived existence of market equilibrium.

Next, Krugman addressed a related question: whether or not strategic policies in advanced trading partners had injured U.S. manufacturing. He proposed answers to the question at four levels. He found little evidence that (1) foreign targeting had led to increased overall

unemployment in the United States, or (2) had led to extraordinary displacement of workers from high-productivity, high-value-added, high-wage industries. While the auto industry was acknowledged to be an important exception to this second finding, steel's problems precede the era of market wage differentials, and significant U.S. import pressure exists in low-productivity, low-value-added, low-wage industry. Third, Krugman found little evidence that targeting abroad had strategically shifted profits from U.S. to foreign firms. Few targeted industries earned high or even normal profits. Finally, although foreign governments might in principle undercut U.S. technological progress by targeting industries with significant externalities, Krugman found little support for this concern in a case study of one of the most likely candidates: semiconductors.

Branson then described additional empirical and case-study research on strategic trade policy. This research brought together academic analysts of trade and industrial policy with staff from the Office of the U.S. Trade Representative (USTR). Two such research meetings have already been held, with a third planned and a fourth contemplated. At the first two meetings, the USTR staff prepared case materials on current industry problems. Then they and the researchers attempted to match the case materials to alternative models of industrial behavior, each of which involved different implications for trade policy. The cases studied included semiconductors, large commercial aircraft, telecommunications, steel, and automobiles. In addition, the meetings featured discussions of the trade policy "process" (initiating and reactive modes were distinguished and compared) and of the linkage among research joint ventures, antitrust, and trade policy.

Branson led off the second session on the economic environment for U.S. trade policy. He summarized research showing how dramatic expansion of both exports of capital goods and imports of consumer goods had shifted U.S. production socioeconomically and geographically. Expanding sectors employed more technology and more skilled workers than contracting sectors. Expanding sectors were concentrated in the West and South, contracting sectors in the "rust-belt" states. Adjustment problems are aggravated by the dissimilarities of recent expansion and contraction, a situation that contrasts with earlier and easier intraindustry expansion and contraction. Since adjustment problems can be moderated by slowing down the trade-related stimuli to adjust, these environmenal characteristics help to explain recent U.S. pressures for trade policy intervention. They also point to the need for research on potentially more efficient solutions to adjustment problems—for example, changes in the macroeconomic policy mix, and general programs of retraining, relocation, and other assistance for those who adjust.

Lipsey continued by highlighting several foreign aspects of the economic environment for U.S. trade policy. He summarized research by Irving B. Kravis and himself that describes Japanese sectoral shifts and their implications for U.S. trade. Preliminary conclusions are that Japanese productivity growth has been considerably higher in tradable goods than in nontradables, and that this pattern is more marked in Japan than in any of its major trading partners. Thus Japan seems to have increased its export shares by driving down *world* prices of the products in which it specialized (and not necessarily creating price wedges in its favor over competitors). Lipsey also reported on research that finds foreign regulation of automotive assembly and trade to be powerful indeed in influencing entry by multinational auto and parts firms. This finding again highlights Krugman's question of whether strategic targeting abroad injures the United States and whether and how the United States might respond in reactive policy.

The afternoon session was devoted to research on recent U.S. trade policy and its economic and political environment. Baldwin summarized a forthcoming NBER conference volume that attempts to quantify the effects of several relatively new trade policies: Japanese voluntary export restraints on autos, the steel trigger-price mechanism, the Multifiber Arrangement covering textiles and apparel imports, trade adjustment assistance, generalized systems of preferences, the strategic petroleum reserve, Domestic International Sales Corporations, and export credit subsidization. In addition to discussing specific conclusions, Baldwin highlighted the general finding that their estimated effects on output, employment, and economic welfare were usually appreciably smaller than claimed by those directly involved or estimated by previous researchers. He also observed the frequency with which these trade policies were estimated to widen real-income differentials among groups, regions, and nations.

Lipsey then focused on the price-centered reason for such real-income differentials. He summarized research by Irving B. Kravis and himself on environmental reasons why measured price levels seemed unduly low in some areas and unduly high in others, sometimes for very long periods.

Next, Richardson summarized research on some aspects of the political-economic environment for U.S. trade policy, based on a recent NBER conference report edited by Baldwin. One important aspect has been the tendency to "cheat" on negotiated tariff reductions by introducing equivalent administrative protection and export promotion. This is a surreptitious substitution of noncooperative policy aggression for cooperative policy concession. It encourages a second aspect of recent trade policy: opaque intricacy. This in turn increases allegations of unfairness and discrimination. It also makes difficult the codification of rules and enforcement procedures that would encourage more cooperative behavior, as one discussant observed. That raises the institutional question of what forum and structure does bring about the most significant cooperation in an environment of administrative trade policy. These environmental aspects help to explain another: the allure of "policy convergence" as a goal for U.S. trade policy, either by forcing "their" policy to become more like "ours" (aggressive reciprocity) or by making "ours" more like "theirs" (discretionary industrial policy).

The more traditional U.S. goal of "policy tolerance" (accept policy differences but exchange policy concessions on the margin of the differences for mutual gain) may seem much less alluring. Yet Richardson observed that this basically empirical judgment is formed best with reference to research that compares the benefits from chipping away at the margin of policy differences to the benefits of a full frontal attack on them.

In addition to the aforementioned individuals, over 90 representatives of government and nonprofit agencies, unions, academic institutions, the legal profession, and the press participated in the day-long conference.

Conference Calendar

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 Summer 1984 issue of the *Reporter* is June 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss at (617) 868-3900.

May 3-4, 1984
Program Meeting: Financial Markets and Monetary Economics, NBER

May 21-22, 1984
Spring Symposium, National Tax Association*

May 25-27, 1984
Program Meeting: Development of the American Economy, NBER

June 11-15, 1984
Interlaken Seminar on Analysis and Ideology, University of Rochester

June 14-16, 1984
State and Local Public Finance, NBER

June 18-22, 1984
Konstanz Seminar on Monetary Theory and Monetary Policy, University of Rochester

Open conference, subject to rules of the sponsoring organization.

June 24-26, 1984
International Seminar on Macroeconomics, NBER

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

June 28-29, 1984
International Coordination of Economic Policy, NBER/Center for Policy Research

July 12-13, 1984
Conference on Macroeconomics, NBER

August 5-8, 1984
Annual Meeting, American Agricultural Economics Association*

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

September 13-14, 1984
Panel on Economic Activity, Brookings Institution

September 19-22, 1984
Debt/Equity Conference, NBER

September 23-25, 1984
Annual Meeting, National Association of Business Economists*

October 19, 1984
Program Meeting: Economic Fluctuations, NBER

November 5-7, 1984
Annual Meeting, International Association of Energy Economists*

November 14-16, 1984
Annual Meeting, Southern Economic Association*

November 15-16, 1984
Public Sector Payrolls, NBER

November 25-28, 1984
Annual Conference, National Tax Association*

November 29-December 2, 1984
Exchange Rate Policies and Systems in Developing Countries, NBER/World Bank

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

February 8, 1985
Monetary Policy in a Changing Environment, American Enterprise Institute

August 4-7, 1985
Annual Meeting, American Agricultural Economics Association*

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

September 11-14, 1985
17th CIRET Conference, Center for International Research on Economic Tendency Surveys

September 29-October 2, 1985
Annual Meeting, National Association of Business Economists*

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

Open conference, subject to rules of the sponsoring organization.

July 27-31, 1986
Annual Meeting, American Agricultural Economics Association*

September 13-17, 1986
Annual Meeting, National Association of Business Economists*

December 28-30, 1986
Annual Conference, American Economic Association*

August 2-5, 1987
Annual Meeting, American Agricultural Economics Association*

September 27-October 1, 1987
Annual Meeting, National Association of Business Economists*

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

Bureau News

Shoven Named to Retirement Commission

Research Associate John B. Shoven, director of NBER's project on the economics of public and private pensions, was recently appointed to a special 18-member Commission on College Retirement. The group, headed by Oscar M. Ruebhausen, a lawyer and former presiding partner at Debevoise and Plimpton (New York), will consider and recommend changes in existing retirement plans and programs for college employees; its final report with recommendations will be published by late 1985. Combined grants of up to $1.5 million from the Carnegie Corporation of New York, the Ford Foundation, the William and Flora Hewlett Foundation, and the Andrew W. Mellon Foundation will support the commission's work. In addition to Shoven, commission members include Robert M. Ball, former U.S. commissioner of Social Security, and Clark Kerr, former chairman of the Carnegie Commission on Higher Education.

Four Named Sloan Fellows

Four NBER associates were recently selected to receive Alfred P. Sloan Foundation research fellowships. They are: Jeremy I. Bulow, Stanford University, a faculty research fellow in the Bureau's pension project; David W. Galenson, University of Chicago, a research associate in NBER's Program on Development of the American Economy; Gene M. Grossman, Princeton University, a faculty research fellow in the Program in International Studies; and Maurice Obstfeld, Columbia University, a research associate in international studies.

Economic Fluctuations Group Meets in Cambridge

Members and guests of NBER's Program in Economic Fluctuations met at MIT on February 2 to discuss their recent research. The day's agenda was:

Thomas J. Sargent, NBER and University of Minnesota, and Neil Wallace, University of Minnesota, "Exploding Inflation"
Discussants: Mark W. Watson, Harvard University, and Peter M. Garber, University of Rochester

Martin S. Eichenbaum, Carnegie-Mellon University, Lars Peter Hansen, University of Chicago, and Kenneth Singleton, NBER and Carnegie-Mellon University, "A Time-Series Analysis of Representative Agent Models of Consumption and Leisure Choice under Uncertainty"
Discussants: Robert G. King, NBER and University of Rochester, and Lawrence H. Summers, NBER and Harvard University

Andrew B. Abel, NBER and Harvard University, "Capital Accumulation and Uncertain Lifetimes with Adverse Selection"
Discussants: James M. Poterba, NBER and MIT, and Peter Diamond, MIT

Olivier J. Blanchard, NBER and MIT, "Debts, Deficits, and Finite Horizons"
Discussants: Robert J. Barro, NBER and University of Chicago, and Guillermo Calvo, Columbia University

Michael Woodford, Princeton University, "Transactions Costs, Liquidity, and Optimal Inflation"
Discussants: Robert Townsend, Carnegie-Mellon University, and Russell Cooper, Yale University

In the first paper of the day, Sargent and Wallace seek to extend their earlier work on Cagan's well-known study of hyperinflation. Their earlier research suffered from two significant deficiencies: (1) it did not predict that inflation and real balances would move systematically in one direction over time (which they in fact seemed to do in six of the seven hyperinflations studied by Cagan); and (2) their model shed no light on the issue of whether hyperinflations eventually reach rates of inflation that exceed the revenue-maximizing rate, as Cagan's estimates have suggested. The new model presented at this conference differs from the old one in that the equations for portfolio balance and the government budget are stochastic rather than deterministic. It turns out that this model is capable of producing both the systematic upward comovement in inflation and real balances and the tendency for inflation rates to exceed the revenue-maximizing rates that have been observed in hyperinflations. The model also preserves the desirable features of the deterministic original.

In discussing this paper, Watson pointed out that the new model predicts an inflation rate that rises system-

atically but tends to stabilize eventually. It appears, however, that inflation tends to rise at an increasing rate throughout hyperinflations. Also, the model is not capable of explaining the end of the hyperinflation. Watson suggested that expanding the model to include currency reform as well as their prediction might solve both problems.

In their paper, Eichenbaum, Hansen, and Singleton estimate a utility function in which consumption and labor each yield services for several periods, so that the utility function is not "time separable." Using monthly, seasonally adjusted aggregate data for the United States, they find that consumption expenditures do produce positive utility in the period when they are purchased and also in the subsequent periods. In contrast, leisure produces positive services in the period in which it occurs but negative services in subsequent periods. Because the representative consumer always has a positive total amount of leisure in any period, he must choose enough current leisure to offset the negative utility of past leisure. This fact implies that changes in hours worked will be made gradually.

In his discussion, Summers mentioned some problems in estimating utility functions with the methodology of Eichenbaum, Hansen, and Singleton. For example, taste shocks may occur, implying, in effect, regime changes. The changing age distribution of the population alone suggests that, in the aggregate sense, taste shocks are a continuing phenomenon. Also, there are measurement problems with virtually every variable used and the data are seasonally adjusted.

Abel's paper examines several aspects of capital accumulation when lifetimes are uncertain. Suppose individuals may live for one or two periods. At the end of the first period, the individual gives birth to an heir. Wealth may be held as riskless bonds or as annuities. If the individual dies at the end of the first period of his life, his heir receives a bequest of the bond holdings; annuities are not bequeathable and pay nothing to the individual or his estate if he dies in the first period. If the individual lives to the second period, he receives his annuity payment, dies at the end of the period, and bequeaths his bond holdings to his heir. Individual utility is assumed to depend on consumption and the size of the bequest. Abel shows that if the annuity pays the actuarially fair rate (which equals the rate of return on bonds), the bequest will be the same size whether the individual dies in the first or the second period. However, if the annuity pays a rate that is less than fair, then the bequest will be larger if the individual dies at the end of the first period. This result occurs because a low expected rate on the annuity causes the individual to substitute bonds for annuities. If he dies at the end of the first period, his bequest is large. If he survives to the second period, he uses some of the bonds to finance his consumption, reducing his bequeathable wealth. Actuarially unfair annuities may exist if individuals have different probabilities of dying at the end of the first period and if they know their own probabilities but no one else does. Under these circumstances, individuals who have low probabilities of death buy relatively more annuities. Abel then examines the effects of introducing a fully funded, compulsory Social Security system, which collects taxes from everyone and pays second-period survivors an actuarially fair annuity. The main result is that, on average, individuals buy smaller private annuities, hold more bonds, and consume more in their first period of life. The larger bond holdings also imply larger average bequests.

In discussing the paper, Diamond suggested that a welfare analysis of the effects of the kind of Social Security considered in the paper is impossible because of the great complexity of the model. Welfare issues arise because Social Security benefits some individuals (those with low probabilities of dying) at the expense of others. Three aspects of the model render welfare analysis impossible: the existence of an imperfect market, bequests (which raise problems of adding intergenerational utilities), and the infinite time horizon implied by the overlapping generations. Poterba pointed out that people for the most part do not buy annuities, even though they do buy insurance policies. Until we understand why this occurs, it will be difficult to model the market for annuities.

Blanchard's paper presents a model in which individuals face a constant probability of dying and thus a finite expected lifetime. Blanchard introduces an infinitely lived government that spends, taxes, and borrows but that must satisfy an overall budget constraint. Because the government is infinitely lived, it uses a lower discount rate than individuals do. Consequently, the government can stimulate consumption by reducing current taxes and issuing debt. Blanchard shows that in both the case of a closed and an open economy, increased debt leads to lower private wealth and (consequently) lower consumption. Blanchard also shows that debt and deficit policy can be used to smooth cycles of output.

While both discussants liked Blanchard's model, Barro argued that the model did not address the issue of bequests. Also, Barro suggested that the government is a creature of people who are currently living and therefore should use the same discount rates as the individuals themselves use.

Woodford's paper analyzes a precautionary model of the demand for money and shows that the optimal rate of inflation is positive (in contrast to Milton Friedman's famous conclusion). In this model, individuals live for three periods. In period zero, they are given an endowment of nonstorable consumption goods, which they can sell to older individuals for money or which they can invest in capital. An investment of one unit of consumption goods in period zero yields a return in period two, and the capital is completely used up in this process. At any time, individuals can sell capital for consumption goods at the going price. However, transactions costs drive a wedge between the price paid by the buyer and that received by the seller. Individuals also can sell money for consumption goods; no transactions costs occur when money is exchanged for consumption goods. Newly printed money is added to the economy only by a transfer payment to people in period

zero. The government chooses the rate of money creation and therefore of inflation. Uncertainty is introduced by assuming that a given individual will consume in either period one or period two but not both, and that in period zero the individual does not know when he will consume.

The individual's problem in period zero is to sell his nonstorable endowment to older individuals for an optimum combination of money and capital. Equilibrium requires that excess demand for capital and for money both be zero. Woodford shows that three types of equilibriums are possible: one in which only money is held, one in which both money and capital are held, and one in which only capital is held. He shows that for each set of values in the economy—transactions costs, rates of return on capital, probability of being a period one consumer, and so on—there exists a unique equilibrium. Furthermore, for very low rates of inflation, the "only-money" equilibrium obtains; for very high rates of inflation, the "only-capital" equilibrium obtains; for moderate rates of inflation, the mixed equilibrium obtains. Woodford then proves the main result that, for positive rates of time preference, the optimal inflation rate always is positive.

Both Townsend and Cooper felt that the main result was correct in the context of Woodford's model, but each wondered if the result would remain true in other sorts of models where other motives besides this particular version of precautionary demand contributed to the demand for money.

John J. Seater, North Carolina State University, served as rapporteur for this meeting. The following associates of NBER also attended: Martin Baily, Brookings Institution; Ben S. Bernanke and Robert E. Hall, Stanford University; Ernst R. Berndt, Rudiger Dornbusch, and Julio J. Rotemberg, MIT; Richard Clarida and Ray C. Fair, Yale University; Benjamin M. Friedman, Jerry R. Green, and Zvi Griliches, Harvard University; Herschel I. Grossman, Brown University; Yannis Ioannides and Robert L. McDonald, Boston University; Frederic S. Mishkin, Columbia University; and Carl E. Walsh, Princeton University.

Invited guests included: Costas Azariadis, Roger Farmer, and Jeremy Siegel, University of Pennsylvania; Jess Benhabib, Steve Cecchetti, Roman Frydman, and Salih Neftci, New York University; Christophe Chamley, Yale University; Richard Cooper, Lawrence Goulder, Bruce Greenwald, Hendrik Houthakker, and Steven Marglin, Harvard University; Marjorie Flavin and James Hamilton, University of Virginia; Scott Freeman and Joe Peek, Boston College; David Germany, Federal Reserve Board; John Geweke, Duke University; Alberto Giovannini and Aloysius Sion, Columbia University; Finn Kydland, Carnegie-Mellon University; Michael Lovell, Wesleyan College; Stephen McNees, Federal Reserve Bank of Boston; Louis Maccini, Johns Hopkins University; Franco Modigliani, James Powell, and Paul A. Samuelson, MIT; Charles Plosser and Paul Romer, University of Rochester; David Runkle, Brown University; Alan Sinai, Lehman Brothers Kuhn Loeb; and Geoffrey Woglom, Amherst College.

Reprints Available

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426. "Measurement of the Public Sector Deficit and Its Implications for Policy Evaluation and Design," by Willem H. Buiter, 1983 (NBER Working Paper No. 1013)

427. "National Savings and Economic Policy: The Efficacy of Investment versus Savings Incentives," by Laurence J. Kotlikoff, 1983 (NBER Working Paper No. 1027)

428. "The Index of Leading Economic Indicators: 'Measurement without Theory' Thirty-Five Years Later," by Alan J. Auerbach, 1982 (NBER Working Paper No. 761)

429. "A Positive Theory of Monetary Policy in a Natural-Rate Model," by Robert J. Barro and David B. Gordon, 1983 (NBER Working Paper No. 807)

430. "Implicit Contracts under Asymmetric Information," by Sanford J. Grossman and Oliver D. Hart, 1983

431. "Federal Reserve Policy, Interest Rate Volatility, and the U.S. Capital Raising Mechanism," by Benjamin M. Friedman, 1982 (NBER Working Paper No. 917)

432. "The Economics of Mortgage Terminations: Implications for Mortgage Lenders and Mortgage Terms," by Patric H. Hendershott, Sheng Cheng Hu, and Kevin E. Villani, 1983 (NBER Working Paper No. 918)

433. "Public Goods in Open Economies with Heterogeneous Individuals," by Joseph E. Stiglitz, 1983 (NBER Working Paper No. 802)

434. "Monetary Policy with a Credit Aggregate Target," by Benjamin M. Friedman, 1983 (NBER Working Paper No. 980)

435. "Issues in the Coordination of Monetary and Fiscal Policy," by Alan S. Blinder, 1983 (NBER Working Paper No. 982)

436. "Profitability, Employment, and Structural Adjustment in France," by Pentti J. K. Kouri, Jorge Braga de Macedo, and Albert J. Viscio, 1982 (NBER Working Paper No. 1005)

437. "The Response of Short-Term Interest Rates to Weekly Money Announcements," by V. Vance Roley, 1983 (NBER Working Paper No. 1001)

438. "International Transmission under Pegged and Floating Exchange Rates: An Empirical Comparison," by Michael R. Darby, 1983 (NBER Working Paper No. 585)

439. "New Measures of Labor Cost: Implications for Demand Elasticities and Nominal Wage Growth," by Daniel S. Hamermesh, 1983 (NBER Working Paper No. 821)

440. "Cost-of-Living Adjustment Clauses in Union Contracts: A Summary of Results," by Ronald G. Ehrenberg, Leif Danziger, and Gee San, 1983 (NBER Working Paper No. 998)

441. "The Roles of Money and Credit in Macroeconomic Analysis," by Benjamin M. Friedman, 1983 (NBER Working Paper No. 831)

442. "Taxation, Corporate Financial Policy, and the Cost of Capital," by Alan J. Auerbach, 1983 (NBER Working Paper No. 1026)

443. "The Effective Tax Rate and the Pretax Rate of Return," by Martin Feldstein, Louis Dicks-Mireaux, and James M. Poterba, 1983 (NBER Working Paper Nos. 508 and 740)

444. "Taxation and Excess Burden: A Life-Cycle Perspective," by E. John Driffill and Harvey S. Rosen, 1983 (NBER Working Paper No. 698)

445. "Taxation, Portfolio Choice, and Debt-Equity Ratios: A General Equilibrium Model," by Alan J. Auerbach and Mervyn A. King, 1983 (NBER Working Paper No. 546)

446. "Arbitrage, Factor Structure, and Mean-Variance Analysis on Large Asset Markets," by Gary Chamberlain and Michael Rothschild, 1983 (NBER Working Paper No. 996) and "Funds, Factors, and Diversification in Arbitrage Pricing Models," by Gary Chamberlain, 1983

447. "Multiple Stable Equilibria in an Optimizing Perfect-Foresight Model," by Maurice Obstfeld, 1984 (NBER Working Paper No. 723)

448. "Rules, Discretion, and Reputation in a Model of Monetary Policy," by Robert J. Barro and David B. Gordon, 1983 (NBER Working Paper No. 1079)

449. "Stockholder Tax Rates and Firm Attributes," by Alan J. Auerbach, 1983 (NBER Working Paper No. 817)

450. "Inflationary Finance under Discretion and Rules," by Robert J. Barro, 1983 (NBER Working Paper No. 889)

451. "Agency, Delayed Compensation, and the Structure of Executive Remuneration," by Jonathan Eaton and Harvey S. Rosen, 1983 (NBER Working Paper No. 777)

452. "The Natural-Rate Hypothesis, the Rational-Expectations Hypothesis, and the Remarkable Survival of Nonmarket-Clearing Assumptions," by Herschel I. Grossman, 1983 (NBER Working Paper No. 1010)

453. "The Demand for International Reserves and Exchange Rate Adjustments: The Case of LDCs, 1964-72," by Sebastian Edwards, 1983 (NBER Working Paper No. 1063)

454. "The Role of Expectations in the Choice of Monetary Policy," by John B. Taylor, 1983 (NBER Working Paper No. 1044)

455. "Covered Interest Parity, Uncovered Interest Parity, and Exchange Rate Dynamics," by Jonathan Eaton and Stephen J. Turnovsky, 1983 (NBER Working Paper No. 984)

456. "Panel Discussion on the Southern Cone," by Jacob A. Frenkel, 1983

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R and D, Patents, and Productivity

R & D, Patents, and Productivity, an NBER conference report edited by Zvi Griliches, will be available from the University of Chicago Press this spring at a cost of $50. This important work on the relationship between R and D and economic performance includes a number of noteworthy findings: for example, the authors observe a significant relationship between expenditures on R and D and (subsequent) growth in productivity. They also find that patents are a useful indicator of inventive activity. However, R and D appears to be relatively unimportant in accounting for the recent worldwide slowdown in productivity growth.

A highly informative introduction to the volume, written by Griliches, provides a useful overview of the research to date on R and D and productivity. In addition to being director of NBER's Program in Productivity and Technical Change, Griliches is a professor of economics at Harvard University.

The Taxation of Income from Capital

The Taxation of Income from Capital, an NBER monograph edited by Mervyn A. King and Don Fullerton, will be available from the University of Chicago Press this spring at a cost of $35. Subtitled *A Comparative Study of the United States, the United Kingdom, Sweden, and West Germany*, this book is the result of collaboration among economists from the four countries and establishes for the first time a common framework for analysis that permits accurate international comparison of tax systems.

Both corporate and personal taxation have been held at least partly responsible for the low investment and productivity growth rates experienced in the West during the last decade. This volume compares effective tax rates on capital income in the nonfinancial corporate sector of the four economies and provides the reader with detailed information about the structure of the corporate sector in each country. The authors find striking variation in effective tax rates on different types of saving and investment within countries and show that this variation, not the average tax burden, is related to low rates of growth.

King and Fullerton are research associates in NBER's Program in Taxation. King is currently visiting professor of economics at MIT; Fullerton is assistant professor of economics at the Woodrow Wilson School, Princeton University.

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Technical Papers Series

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Estimating Autocorrelations in Fixed-Effects Models

Gary Solon
Technical Working Paper No. 32
February 1984
JEL No. 210

This paper discusses the estimation of serial correlation in fixed-effects models for longitudinal data. Like time-series data, longitudinal data often contain serially correlated error terms, but the autocorrelation estimators commonly used for time series, which are consistent as the length of the time series goes to infinity, are *not* consistent for a short time series as the size of the cross section goes to infinity. This form of inconsistency is of particular concern because a short time series of a large cross section is the typical case in longitudinal data.

This paper extends Nickell's method of correcting for the inconsistency of autocorrelation estimators by generalizing to higher than first-order autocorrelations and to error processes other than first-order autoregressions. The paper also presents statistical tables that facilitate the identification and estimation of autocorrelation processes in both the generalized Nickell method and an alternative method used by MaCurdy. Finally, the paper uses Monte Carlo methods to explore the finite-sample properties of both methods.

Consistent Estimation Using Data from More Than One Sample

William T. Dickens and **Brian A. Ross**
Technical Working Paper No. 33
March 1984
JEL Nos. 211, 822

This paper considers the estimation of linear models when group average data from more than one sample are used. We identify conditions under which OLS coefficient estimates are consistent. After showing the standard OLS covariance estimate to be inconsistent, we propose a consistent estimator. Finally, since the conditions under which OLS is consistent are quite restrictive, we develop several other estimators that are consistent in many cases. We also present the large sample distribution properties and an estimator for the asymptotic covariance matrix for the most general of these alternative estimators.

One important application of these findings is in estimating compensating wage differences. Other authors, beginning with Thaler and Rosen (1976), have argued that finer classification schemes would reduce errors-in-variable bias. The analysis presented here suggests that the opposite is true if finer classification results in fewer observations per classification. This could explain why authors using the broader (industry) classification schemes have found larger compensating differences; these estimates may be closer to the true values.

Working Papers Series

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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 January 1984 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.

Occupation, Race, Unemployment, and Crime in a Dynamic System

Tadashi Yamada, Farahmand Rezvani, and **Michael Massourakis**
Working Paper No. 1256
January 1984
JEL No. 810

In this paper, we investigate the relationship between unemployment and property crime in the context of a

dynamic system. We use quarterly time-series data for the United States during 1973:1–1981:4. The results of Granger causality tests indicate that unemployment by occupation (white and blue collar) is significantly associated with robbery, which is the most serious property crime. Unemployment by race (white, black, and Hispanic) also supports the above finding. In general, the linkage between unemployment rates and property crime seems to become stronger as the degree of seriousness of the crime increases. The findings of the dynamic system show that blue-collar, Hispanic, and black unemployment rates have persistently positive effects on robbery. Therefore, these findings suggest that any attempt to reduce property crime through alleviation of unemployment would most efficiently be directed toward specific categories of the labor force.

Can the Production Smoothing Model of Inventory Behavior Be Saved?

Alan S. Blinder
Working Paper No. 1257
January 1984
JEL No. 131

The production smoothing model of inventory behavior has a long and venerable history and has theoretical foundations that seem very strong. Yet certain overwhelming facts seem not only to defy explanation within the production smoothing framework but actually to argue that the basic idea of production smoothing is all wrong. Most prominent among these is the fact that the variance of detrended production exceeds the variance of detrended sales.

This paper first documents the stylized facts. Then it rigorously derives the production smoothing model and explains how the model can be amended to make it consistent with the facts. Next, the paper presents and evaluates estimates of stock adjustment equations derived from the theory. Finally, it reviews the theoretical and empirical evidence and tries to draw some tentative conclusions.

The Federal Civil Service Retirement System: An Analysis of Its Financial Condition and Current Reform Proposals

Herman B. Leonard
Working Paper No. 1258
January 1984

This paper analyzes the financial condition of the federal Civil Service Retirement System (CSRS). It begins by examining various official annual reports about the system published by the Office of Personnel Management and discussing their differing assumptions and resulting differences in estimates of the unfunded liability. It then discusses the construction of a simulation model in which the current unfunded liabilities can be estimated under an entry age normal definition of pension obligations.

The results suggest that, for reasonable estimates of salary increases, inflation, and benefits indexing, the unfunded liabilities of the CSRS are between $500 and $600 billion. (Even under the accrued benefits definition of pension obligations, which I argue is more relevant to private sector employment, the unfunded liability exceeds $400 billion.) I argue that this constitutes a debt similar in burden per dollar to that represented by the explicitly recognized national debt, and nearly half as large.

The last part of the paper considers current proposals to reform the CSRS to reduce the unfunded liabilities. They are found: (1) to reduce the pension wealth of current federal workers by nearly one-half; (2) to fall rather dramatically on middle-aged federal employees; and (3) to leave the unfunded liabilities of the system still in excess of $400 billion.

Restricted Cost Functions and the Rate of Return to Quasi-Fixed Factors, with an Application to R and D and Capital in the Bell System

Mark Schankerman and **M. Ishaq Nadiri**
Working Paper No. 1259
January 1984
JEL No. 600

This paper provides a statistical test to assess the adequacy of static equilibrium models. The test is based on a restricted cost function framework with the envelope conditions that characterize static equilibrium for the quasi-fixed factors. We also show how restricted cost function models can be exploited to investigate some important issues such as the calculation of the rates of return to quasi-fixed factors, the determination of over- or underinvestment in particular assets, and the distinction between short-run excess capacity and long-run economies of scale. We provide an empirical application of these techniques to data on the Bell System for 1947–76, treating the stocks of physical capital and of research and development (R and D) as quasi-fixed inputs. The results suggest that there was substantial overinvestment in capital and underinvestment in R and D compared to the static equilibrium levels, and that the rates of return to capital and R and D were about 4.5 and 10–15 percent, respectively.

Work Incentive Effects of Taxing Unemployment Benefits

Gary Solon
Working Paper No. 1260
January 1984
JEL No. 820

Before 1979, unemployment insurance (UI) benefits were not treated as taxable income in the United States. Several economists criticized this policy on the ground that not taxing UI benefits while taxing earned income allegedly encourages unemployed persons to conduct job searches that are longer than socially optimal. Since 1979, however, UI benefits received by persons in higher-income families have been subject to income tax. This paper investigates whether the introduction of taxation of benefits has had the predicted effect of reducing the duration of unemployment.

The study uses data on a sample of persons who filed for UI in 1978 or 1979 to examine whether high-income claimants collected benefits for shorter periods after the tax change than they did before benefits became taxable. As part of the empirical analysis, the paper develops a generalization of the Weibull distribution and applies a limited-dependent-variable technique for this distribution similar to the Tobit technique for the normal distribution. Despite some variation in the results from specifications of different models, the analysis presents persuasive evidence of a tax effect on the duration of unemployment. The 1979 policy change is estimated to have reduced the duration of average compensated unemployment among the sampled high-income claimants by about one week.

Military Enlistments: What Can We Learn from Geographic Variation?

Charles Brown
Working Paper No. 1261
January 1984
JEL No. 824

This paper analyzes the determinants of the supply of enlistees to the U.S. Army, using quarterly data from 1975:4 through 1982:3 for the 50 states and the District of Columbia.

For high-quality enlistees, defined as those with test scores in the top half of the population or top-scoring individuals who are also high school graduates, supply elasticities with respect to military compensation are estimated to be *about* 1.0. Elasticities with respect to the unemployment rate center on 0.5, larger than most previous estimates. Recruiting resources have the expected effects (Army recruiters increase, and other services' recruiters decrease, the number of Army enlistments). Advertising (both national and local) does not have consistently positive effects. Results are similar for high school graduates, except that the effect of military compensation depends crucially on how it is measured. Estimates of the supply of enlistees of all qualities are weaker still: estimates of compensation effects vary widely, and estimated effects of recruiters are less plausible. Unemployment elasticities of about 0.3 are smaller than for high-quality recruits, but hardly negligible.

A tentative explanation of the weaker results of the latter two groups is that the number of such enlistees is not supply-determined but reflects demand constraints as well. Further work is needed to determine how standards for enlistees vary in each recruiting district in response to both national and local fluctuations in the supply of recruits.

Incentive Effects of Taxes on Income from Capital: Alternative Policies in the 1980s

Don Fullerton and **Yolanda K. Henderson**
Working Paper No. 1262
January 1984
JEL No. 323

In this paper, we evaluate existing tax law as of 1980, President Reagan's tax reform initiatives as enacted in the Economic Recovery Tax Act of 1981 (ERTA), and the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), as well as other proposals that were not enacted. For each law, we measure marginal effective total tax rates for capital in the corporate sector, the noncorporate sector, and the owner-occupied housing sector. These rates include taxation under the corporate income tax, the personal income tax, and property taxes, and are meant to capture the full distortion of individuals' choices between present and future consumption as well as the distortions in the choice of investment.

Effective tax rates in 1980 were perceived as high in the corporate sector, at least partly because of inflation, and especially when compared to the tax-free treatment of imputed rents from owner-occupied housing. In contrast, we find that: (1) the total effective tax rate in the corporate sector was only 35 percent, about half the rate in some previous estimates; (2) the total effective tax in the noncorporate sector was 36 percent, higher than in the corporate sector; (3) the total effective tax in owner-occupied housing was 19 percent, because of a higher relative property tax rate; and (4) under either 1980 or 1982 law, the marginal effective total tax rate does not rise with inflation in any sector or for the economy as a whole. By 1982 the rate in the corporate sector fell to 30 percent, by more than in other sectors.

Air Pollution and Lost Work

Jerry A. Hausman, Bart D. Ostro, and **David A. Wise**
Working Paper No. 1263
January 1984
JEL Nos. 825, 210, 220

We estimate a Poisson specification of the relationship between atmospheric pollution and lost workdays. An important feature of our procedure is control for city-specific effects; one major source of ambiguity in observational data on pollution versus health status or death rates is that a city's pollution may be correlated with other city characteristics that are not controlled for in the analysis. Or, residents' individual attributes may be correlated with pollution levels but not accounted for in the analysis.

Our results suggest a statistically significant and quantitatively important effect of total suspended particulates on workdays lost. A single standard deviation increase in total suspended particulates is associated with approximately a 10 percent increase in workdays lost. As a concomitant of our analysis, we also find a substantial relationship between smoking by others in the individual's household and workdays lost by nonsmokers.

Current and Anticipated Deficits, Interest Rates, and Economic Activity

Olivier J. Blanchard
Working Paper No. 1265
January 1984
JEL Nos. 320, 130

There is widespread feeling that current deficits, in Europe and the United States, may hurt rather than help the recovery. Through a sequence of three models, this paper examines some of the issues involved. The first model focuses on sustainability and characterizes its determinants. It suggests that the issue of sustainability may indeed be relevant in some countries. The second model focuses on the effects of fiscal policy on real interest rates and in particular on the relative importance of the level of deficits and the level of debt in determining interest rates. The third model focuses on the effects of fiscal policy on the speed of the recovery. It shows how a sharply increasing fiscal expansion might be initially contractionary rather than expansionary.

R and D, Production Structure, and Productivity Growth in U.S., Japanese, and German Manufacturing Sectors

M. Ishaq Nadiri, Pierre A. Mohnen, and **Ingmar R. Prucha**
Working Paper No. 1264
January 1984
JEL No. 600

This paper analyzes the production structure and the demand for inputs in three major industrialized countries: the United States, Japan, and Germany. We derive a dynamic factor demand model with two variable inputs (labor and energy) and two quasi-fixed inputs (capital and R and D) directly from an intertemporal cost-minimization problem formulated in discrete time. Adjustment costs are explicitly specified. We estimate the model for the manufacturing sector of the three countries using annual data from 1965 to 1977, paying particular attention to the role of R and D. For all countries we find the rate of return on R and D to be higher than that on capital. The respective magnitudes of these rates of return are similar across countries. We find considerable differences in factor demand schedules; we also find that for all countries the speed of adjustment for capital is higher than that of R and D. Adjustment costs are important in the demand equations for capital and R and D but play a minor role in the decomposition of total factor productivity growth.

Fiscal Policies, Debt, and International Economic Interdependence

Jacob A. Frenkel and **Assaf Razin**
Working Paper No. 1266
January 1984
JEL Nos. 430, 320

This paper deals with the relation between government spending and real rates of interest and with the international transmission of fiscal policies. We examine the dependence of the patterns of consumption in one country on fiscal policies in the rest of the world. For this purpose we construct a general equilibrium model characterized by fully integrated world capital markets, economic agents behaving rationally, and government policies constrained to obey the intertemporal solvency requirements. We show that the effects of changes in countries' net debtor positions and of fiscal policies can be analyzed by reference to a multitude of "transfer problems criteria," which are familiar from the theory of international economic transfers. In the present case the impact of policies depends on the relations among the spending patterns of domestic and foreign private sectors, of domestic and foreign governments, and of domestic and foreign saving propensities.

The analysis draws a distinction between permanent and transitory policies as well as between current and expected future policies. A transitory current fiscal spending must crowd out the foreign private sector

and thereby result in a negative transmission. However, a transitory future rise in government spending induces an immediate increase in foreign private sector's consumption and thereby results in a positive current transmission. These responses are reflected in the current account of the balance of payments, in changes in the net debtor-creditor positions, and in complex changes in the term structure of interest rates. We also show that with full integration of capital markets, fiscal policies may exert different qualitative effects on real rates of interest in different countries since, depending on the structural parameters, the relative prices of nontraded goods (and thereby the price indexes) might be negatively correlated between countries.

Trading and the Tax Shelter Value of Depreciable Real Estate

Patric H. Hendershott and **David C. Ling**
Working Paper No. 1267
January 1984
JEL Nos. 323, 921

For well-diversified investors in depreciable real estate, the trading decision may be made with the sole objective of maximizing the property's depreciation tax shelter, net of all capital gain taxes and transaction costs. This paper develops a dynamic programming model in which the optimal trading strategies and depreciation methods of all investors in a property are simultaneously determined. We analyze the effects of inflation, depreciation, recapture, and choice of depreciation method, and measure the costs of suboptimal trading. We apply the model to both conventional residential and commercial income properties under post-ERTA tax rules. At single-digit inflation rates, properties are traded many times, and the costs of suboptimal trading are significant.

Expectations, Surprises, and Treasury Bill Rates: 1960-82

Patric H. Hendershott
Working Paper No. 1268
January 1984
JEL No. 313

We successfully relate changes in six-month bill rates over semiannual periods in the 1960s and 1970s to expected changes and to surprises. The latter include unanticipated changes in expected inflation, in the growth of industrial production and base money, and in inflation uncertainty. Estimation of the basic equation through the middle of 1983 does not suggest any change in structure. Moreover the equation "explains" 60 percent of the extraordinarily high level of real rates since late 1980, largely the result of an excess of unexpected net increases in anticipated inflation over actual increases.

Our estimates provide some support for the expectations theory; there appears to be information content in six-month forward rates. While this content is swamped by the impact of surprises in equations explaining rate changes in terms of forward rates alone, the content is clear when proxies for the surprises are included in the equations.

"Though Much Is Taken"—Reflections on Aging, Health, and Medical Care

Victor R. Fuchs
Working Paper No. 1269
January 1984
JEL No. 913

The Medicare trust funds face huge prospective deficits by the end of this decade. This paper discusses trends in six areas that bear on the Medicare problem: the number of the elderly, their health status, use of medical care, labor force participation, income, and living arrangements. Among the most important findings are: (1) a very large increase since 1965 in life expectancy at age 65; (2) a very large increase since 1976 in real per capita health care expenditures on the elderly relative to expenditures on persons under age 65; (3) a cross-sectional increase with age in per capita health care expenditures that is primarily attributable to very large expenditures in the last year of life; and (4) a sharp decrease in labor force participation and a sharp increase in relative income of the elderly since 1965. The paper concludes by raising questions about the need to reconsider the definition of the elderly, the need for more flexible labor market arrangements for older workers, and a need for a social consensus concerning appropriate care of dying patients.

Employment and Occupational Advancement under Affirmative Action

Jonathan S. Leonard
Working Paper No. 1270
February 1984
JEL No. 820

Affirmative Action is not only supposed to help move minorities and females into employment, but it is also

supposed to help move them up the job ladder; this second goal is perhaps the more controversial. Studies of Affirmative Action during the late 1960s and early 1970s found it generally ineffective in the white-collar and skilled occupations. Using disaggregated employment data in a new sample of nearly 70,000 establishments, this study finds that Affirmative Action was generally successful during the late 1970s in increasing minority employment in skilled white-collar occupations as well as in unskilled jobs.

Family Labor Supply with Taxes

Jerry A. Hausman and **Paul Ruud**
Working Paper No. 1271
February 1984

Over the period 1960–83, the proportion of federal tax revenue raised by taxing the labor supply rose from 57 to 77 percent. In this paper, we specify and estimate a model of family labor supply that considers both federal and state taxation. The labor supply of husbands and wives is treated jointly rather than separately as in previous research. We use a method to calculate the virtual wage for nonworking spouses within a utility-maximizing framework in order to treat correctly the joint family labor supply decision. Joint family efforts are found to be important. The efficiency cost (deadweight loss) of labor taxation is estimated to be 29.6 percent of the tax revenue raised. The effect of the new 10 percent deduction to ease the marriage tax for working spouses leads to a prediction of 3.8 percent increase in wives' labor supply and a 0.9 percent decrease in husbands' labor supply. Overall taxes paid are predicted to decrease by 3.4 percent.

Lessons from the 1979–82 Monetary Policy Experiment

Benjamin M. Friedman
Working Paper No. 1272
February 1984
JEL No. 311

The experience of U.S. monetary policy during 1979–82 provided useful and potentially important new evidence about how monetary policy affects economic activity. In the light of that evidence, this paper considers six familiar propositions that support the use of monetary aggregate targets for monetary policy. These propositions deal with money and nominal income, with price inflation and real economic growth, and with long-term interest rates. The evidence from the 1979–82 experiment leads to doubt rather than confidence in each of these six propositions, and hence doubt rather than confidence in the use of monetary aggregate targets.

The Behavior of U.S. Short-Term Interest Rates since October 1979

Richard Clarida and **Benjamin M. Friedman**
Working Paper No. 1273
February 1984
JEL No. 311

Short-term interest rates in the United States have been "too high" since October 1979 in the sense that both unconditional and conditional forecasts, based on an estimated vector autoregression model summarizing the prior experience, underpredict short-term interest rates during this period. Although a nonstructural model cannot directly answer the question of why this has been so, comparisons of alternative conditional forecasts point to the post-October 1979 relationship between the growth of real income and the growth of real money balances as closely connected to the level and pattern of short-term interest rates. This finding is consistent with our earlier conclusion, based on analysis of a small structural macroeconomic model, that the high average level of interest rates has been the result of a combination of slow growth of (nominal) money supply and continuing price inflation, which together have kept real balances small in relation to prevailing levels of economic activity.

The Interaction of Residential Segregation and Employment Discrimination

Jonathan S. Leonard
Working Paper No. 1274
February 1984
JEL Nos. 820, 930

This paper seeks to untangle the impact of residential segregation from that of employment discrimination in determining the share of black employment. The major finding is that distance of a workplace from the main ghetto is one of the strongest and most significant determinants of both changes over time and levels of the racial composition of the work force. This paper presents evidence of more heterogeneous micro labor supply within SMSAs than has usually been recognized for policy purposes.

Comparing Chicago with Los Angeles, I find that distance from the ghetto has a stronger impact in Chicago, and that this effect increased during the late 1970s. In contrast, residential segregation is relatively less important in determining workplace demographics in Los Angeles, despite its rudimentary public transit system and prototypical job dispersion. In both cities, residential segregation strongly influences black employment patterns and limits the efficacy of efforts to integrate the workplace.

Accounting for the Decline in Union Membership

William T. Dickens and **Jonathan S. Leonard**
Working Paper No. 1275
February 1984
JEL No. 830

Since the early 1950s, the percentage of the work force organized by unions has declined considerably. In the 1970s that rate of decline accelerated sharply. In an attempt to discover what factors can account for the overall decline and the further deterioration during the 1970s, we decompose the sources of growth and decline in order to determine the relative importance of changes in organizing activity, success in certification elections, decertifications, and net growth resulting from economic causes.

We find that all factors except decertifications account for a substantial part of the change. In addition, interactions among the factors are very important. A significant finding is that while organizing activity and success rates have been declining over time, the net growth (or loss) of membership resulting from economic causes has remained stable when we control for the aggregate level of economic activity. We argue that this finding is inconsistent with the prevailing view that the decline in the percentage of the work force that is organized is primarily caused by the decline of the heavily unionized core industries.

Black Youth Nonemployment: Duration and Job Search

Harry J. Holzer
Working Paper No. 1276
February 1984

This paper analyzes reservation wages and durations of nonemployment for young blacks and whites. I compare self-reported reservation wages for blacks and whites before and after controlling for indicators of labor demand such as received wages, weeks worked, or other personal characteristics. I also analyze the effects of these reservation wages on durations of nonemployment as well as on subsequent wages.

The results show that young blacks seek jobs and wages that are comparable to those of young whites but are high relative to what they actually obtain. On the other hand, young blacks appear more likely to take specific low-skill jobs, at least temporarily. The reservation wages appear to have positive effects on durations of nonemployment and on subsequent wages for both groups, and to explain up to one-third of the higher durations of nonemployment for young blacks.

Monetarist Rules in the Light of Recent Experience

Bennett T. McCallum
Working Paper No. 1277
February 1984
JEL Nos. 310, 130

Recent experience does not include a "monetarist experiment," as some have argued, but may reinforce preexisting reasons for doubting that the best way to formulate monetarist policy prescriptions is by a constant growth rule for the money stock. A more desirable rule would pertain to the monetary base, which is much more directly under Fed control. While a constant growth rule for the base might provide good macroeconomic performance, even better results might be obtained from a rule that adjusts the base growth rate upward or downward at regular intervals depending on whether nominal GNP is below or above a target path specifying constant, noninflationary growth. This type of rule is activist, to an extent, but nondiscretionary. The implied absence of policymaking flexibility is desirable for reasons explained in the literature on dynamic inconsistency.

Unanticipated Money and Interest Rates

V. Vance Roley and **Carl E. Walsh**
Working Paper No. 1278
February 1984
JEL No. 311

Two types of studies have provided evidence on the relationship between unanticipated money and interest rates: several researchers have used quarterly data and a number of others have examined the effect of surprises in money announcements on interest rates. In both instances, the correlation between money surprises and interest rates has usually been found to be positive or zero. This paper first provides an interpretation of the correlation between unanticipated money and interest rates in terms of Federal Reserve policy objectives and operating procedures. Then we examine the correlation of unanticipated money and both short- and long-term interest rates over weekly intervals, combining several aspects of the previous quarterly and announcement studies. In addition, we consider the distinction between unpredicted and unperceived money.

Optimal Wage Renegotiation

Joshua Aizenman
Working Paper No. 1279
February 1984
JEL No. 430

This paper investigates an economy in which there are short-term wage contracts that are renegotiated

under certain conditions. I determine the optimal frequency of wage renegotiation and show that it depends positively on measures of aggregate variability and the slope of the Phillips curve. The role of optimal wage renegotiation is to mitigate the effects of various shocks on output. In the context of an open economy, I show that the desirable exchange rate regime in an economy with optimal wage renegotiation depends on the stochastic structure of the economy.

Incentives for Diversification and the Structure of the Conglomerate Firm

William J. Marshall, Jess B. Yawitz,
and **Edward Greenberg**
Working Paper No. 1280
February 1984

In this paper, we examine the proposition that both the structures of conglomerate firms and their merger activities show evidence of a systematic attempt to diversify income sources and to reduce the volatility of the firms' profits. We test whether firms that are active in one line of business are more likely to be involved in another if the correlation between returns to the two activities is lower. We also test whether, ceteris paribus, the likelihood of merger depends inversely on the correlation of cash flows to the principal activities of the candidates for merger. We conclude that firms do act as if their goals included firm-level diversification.

Exchange Rate Dynamics with Sticky Prices: The Deutsche Mark, 1974-82

Alberto Giovannini and **Julio J. Rotemberg**
Working Paper No. 1281
February 1984
JEL Nos. 132, 931

This paper simultaneously estimates dynamic equations for the Deutsche Mark/dollar exchange rate and the German wholesale price index, both of which emerge from a model in which German prices are sticky. This stickiness is the result of price adjustment costs that take the form posited by Rotemberg (1982).

There are two main results of the empirical analysis: (1) the version of the model in which prices are perfectly flexible is rejected; and (2) real exchange rate variability is mostly accounted for by nominal exchange rate variability. We find substantial overshooting of the exchange rate to such monetary innovations as appear to be typical in Germany.

Trade and Structural Interdependence between the United States and the NICs

William H. Branson
Working Paper No. 1282
March 1984
JEL No. 420

During the decade since 1973, the U.S. economy has become increasingly interdependent with the newly industrializing countries (NICs) among the developing countries. These countries have had high investment-to-GNP ratios, financed mainly by domestic saving but also in part by foreign borrowing. They have invested in manufacturing capacity, importing capital equipment. This increase in international demand for equipment has resulted in an increase in exports of U.S. capital goods to a level of over 50 percent of all U.S. manufactures. In turn, exports of consumer manufactures by the NICs to the OECD countries have expanded rapidly. As the NICs grew during the 1970s, they imported capital goods from the United States and exported consumer manufactures to the United States. This pattern of trade has strengthened the interdependence between the U.S. economy and the NICs.

The geographical pattern of U.S. trade with the NICs shows some interesting asymmetries. U.S. exports are focused mainly on Latin America, especially Mexico; imports are focused on the Far Eastern NICs. A trade triangle has developed, with the United States exporting manufactures, mainly capital goods, to the Latin American NICs who in turn sell raw materials on the world market. The Far Eastern NICs buy raw materials and sell manufactures, mainly consumer goods, to the United States. Thus growth in the U.S. economy has become more interdependent with both the Latin American and the Far Eastern NICs.

The Specification and Influence of Asset Markets

William H. Branson and **Dale W. Henderson**
Working Paper No. 1283
March 1984
JEL Nos. 430, 440

This paper is one chapter in the forthcoming *Handbook of International Economics*. It surveys the literature on the specification of models of asset markets and considers the implications of differences in specification for the macroeconomic adjustment process. Builders of portfolio balance models have generally employed "postulated" asset demand functions, rather than deriving these functions directly from micro foundations. The first major section of this paper lays out a

postulated general specification of asset markets and summarizes the fundamental short-run results of portfolio balance models using a very basic specification of asset markets. Then we supply rudimentary specifications of a balance-of-payments equation and conditions for equilibrium in the goods market, so that the dynamic distribution effects of the trade account under static and rational expectations with both fixed and flexible goods prices can be analyzed.

The second major section of the paper surveys and analyzes micro foundation models of asset demands using stochastic calculus. The microeconomic theory of asset demands implies some but not all of the properties of the basic specification of postulated asset demands at the macro level. Since the conclusions of macroeconomic analysis depend crucially on the form of asset demand functions, it is important to continue to explore the implications of micro foundations for macro specification.

Taxation, Wage Variation, and Job Choice

James N. Brown and **Harvey S. Rosen**
Working Paper No. 1284
March 1984
JEL No. 323

This paper examines the effect of earnings taxes on the variability of wages over time. We estimate a "hedonic wage locus" that indicates how the market allows individuals to substitute the mean level of the wage for its variability across jobs. Information from this locus is then used to estimate the parameters of individuals' indifference curves between the mean and temporal variation of hourly wages. On the basis of these utility function parameters, we predict that lowering the rate of taxation on earnings would lead workers on average to choose jobs with a higher pretax mean wage and with greater wage variation.

Pensions and the Retirement Decision

Barry Nalebuff and **Richard Zeckhauser**
Working Paper No. 1285
March 1984

Pensions do influence retirement decisions, and this analysis provides a framework for assessing that phenomenon. The qualitative features of most defined-benefit pension plans in the United States, as the first section of this paper demonstrates, can be used to induce optimal retirement choices. Pensions are viewed as a form of forced savings; their purpose is to enable the worker to "commit himself" by making it in his own self-interest to retire at an appropriate age. The remaining sections examine the use of pensions in populations that are heterogeneous with respect to such features as disutility of work or expected life span.

Given heterogeneity, a major policy concern is whether pensions are actuarially fair to different groups, retirement cohorts, and the like. We prove that optimal pension plans cannot be actuarially more than fair, in the sense that someone who retires later must impose a smaller cost on the pension pool than he would if he were to retire earlier. However, there are differences in life expectancy among cohorts defined by retirement age: late retirees generally live longer and thus may impose a greater expected cost on the pension fund under an optimal plan. Interestingly, they do impose a higher cost than those retiring earlier under most common pension funds.

In a first-best world, a separate pension plan would be designed for each group of workers. But, government-mandated retirement programs and legislation regulating private pensions require common treatment of different workers. Such homogenization is shown to work to the possible detriment of workers as a whole.

Pensions are a "workhorse" compensation mechanism. They provide an additional instrument beyond wages for attracting, motivating, sorting, and retaining workers, while facilitating appropriate retirement decisions.

How Big Is the Tax Advantage to Debt?

Alex Kane, Alan J. Marcus, and **Robert L. McDonald**
Working Paper No. 1286
March 1984
JEL No. 313

This paper uses an option valuation model of the firm to answer the question, "What magnitude of tax advantage to debt is consistent with the range of observed corporate debt ratios?" We incorporate into the model differential personal tax rates on capital gains and ordinary income. We conclude that variations in the magnitude of bankruptcy costs across firms cannot by themselves account for the simultaneous existence of levered and unlevered firms. When it is possible for the value of the underlying assets to jump discretely to zero, differences across firms in the probability of this jump can account for the simultaneous existence of levered and unlevered firms. Moreover, if the tax-advantage-to-debt ratio is small, the annual rate-of-return advantage offered by optimal leverage may be so small as to make the firm indifferent about debt policy over a wide range of debt-to-firm-value ratios.

Asset Markets, Exchange Rates, and the Balance of Payments

Jacob A. Frenkel and **Michael L. Mussa**
Working Paper No. 1287
March 1984
JEL No. 430

This paper, written as a chapter for *Handbook of International Economics,* reviews developments in the theory of international monetary economics from the late 1960s through the early 1980s. Following a review of the operation of the monetary mechanism of adjustments in the balance of payments in the context of the Mundell-Fleming model, the paper describes the more modern analysis of the dynamics of balance-of-payments adjustments under fixed exchange rates and of exchange rate determination under flexible exchange rates. Beginning with a simple exposition of the monetary mechanism, we then extend the model to incorporate sluggish wage and output adjustments, endogenous monetary policy and sterilization operations, multiplicity of tradable and nontradable goods, large countries, capital mobility, and portfolio balance. Next we turn to an exposition of exchange rate theory, starting with the monetary approach to exchange rate determination. We discuss such issues as purchasing power parities, nontraded goods, the real exchange rate, currency substitution, and the interaction between real and monetary factors in effecting exchange rates. The paper proceeds with a presentation of a more general framework that views the question of exchange rate determination as part of the general theory of the determination of asset prices, and that highlights the unique role of expectations. We then apply the general framework to the interaction between the balance of payments and the equilibrium real exchange rate. The paper concludes with a brief discussion of some empirical issues of exchange rate analysis.

New Evidence That Taxes Affect the Valuation of Dividends

James M. Poterba and **Lawrence H. Summers**
Working Paper No. 1288
March 1984

This paper uses British data to examine the effects of dividend taxes on investors' relative valuation of dividends and capital gains. British data offer great potential to illuminate the issue of dividends and taxes, since there have been two radical changes and several minor reforms in British tax policy toward dividends during the last 25 years. Studying the relationship between dividends and stock price movements during different tax regimes offers an ideal controlled experiment for assessing the effects of taxes on investors' valuation of dividends. Using daily data on a small sample of firms and monthly data on a much broader sample, we find clear evidence that taxes change equilibrium relationships between dividend yields and market returns. These findings suggest that taxes are important determinants of security market equilibrium. This deepens the puzzle of why firms pay dividends.

Exchange Market Intervention under Alternative Forms of Exogenous Disturbances

Stephen J. Turnovsky
Working Paper No. 1289
March 1984

This paper analyzes exchange market intervention in a stochastic model of a small open economy. I distinguish between disturbances that are unanticipated and anticipated, on the one hand, and those that are perceived as transitory or permanent, on the other. The paper demonstrates how the appropriate form of exchange market intervention is sensitive to these aspects of the disturbances. Of particular interest is the case of an unanticipated permanent disturbance, when output may be stabilized perfectly about its frictionless level by the use of a very simple class of intervention rules. I also discuss the optimal rules in other cases.

Labor Compensation and the Structure of Private Pension Plans: Evidence for Contractual versus Spot Labor Markets

Laurence J. Kotlikoff and **David A. Wise**
Working Paper No. 1290
March 1984
JEL No. 824

Distinguishing "spot" from "contract" views of the labor market is of critical importance to a host of economic issues ranging from wage flexibility over the business cycle to financial valuation of the firm. The structural features of U.S. private pension plans permit surprisingly strong inferences about the incentive effects of provisions of private pension plans and the contractual nature of the U.S. labor market.

This paper examines the accrual of vested pension benefits in a nationwide sample of pension plans. We find strikingly large discontinuities in the profile by age of the ratio of annual accrued pension benefits to the standard wage. These discontinuities occur primarily at the ages of full vesting and early retirement. Repre-

sentative plans often exhibit absolute changes in accrual ratios of 20 to 30 percentage points at these ages. The provisions of many plans imply large negative accruals after the age of early retirement. Job change typically involves a large loss in pension wealth as well. Since the average worker's marginal product presumably changes smoothly as he or she ages, these pension data can be reconciled with clearing in the spot market only if age-wage profiles within a firm exhibit exactly offsetting discontinuities at key ages. Casual inspection of firm wage-setting behavior rules out this requirement of spot market clearing. In our view, the magnitude, patterns, and variations in pension accrual ratios are strikingly at odds with spot market equilibrium. While market clearing in longer-term contracts seems the only equilibrium theory consistent with these findings, it also strains our credulity to ascribe optimizing behavior to the pension accrual profiles chosen by a vast array of U.S. businesses.

In the process of presenting these profiles, we also consider the following questions concerning U.S. pensions. What are the incentive effects of private pension plans? What is the cost in pension benefits of job turnover? How important is vesting? Is there a cost in pension benefits of forgoing the early retirement option? Do pension stipulations encourage early retirement? While the considerable heterogeneity of pension plan provisions permits no simple or single answer to these questions, the data suggest that pensions can have major incentive effects on job turnover and retirement. In general, pensions represent a very significant factor, and at certain ages, a dominant factor in employee compensation.

Macroeconomics and Finance: The Role of the Stock Market

Robert Merton and **Stanley Fischer**
Working Paper No. 1291
March 1984

The treatment of the stock market in finance and macroeconomics exemplifies many of the important differences in perspective between the two fields. In finance, the stock market is the most important market with respect to corporate investment decisions. In contrast, macroeconomic modeling and policy discussion assign a relatively minor role to the stock market in investment decisions. This paper explores four possible explanations for this neglect and concludes that macro analysis should give more attention to the stock market. Despite the frequent jibe that "the stock market has forecast ten of the last six recessions," the stock market is in fact a good predictor of the business cycle and the components of GNP. We examine the relative importance of the required return on equity compared with the interest rate in the determination of the cost of capital, and hence investment. In this connection, we review the empirical success of the *Q* theory of investment that relates investment to stock market evaluations of firms. One of the explanations for the neglect of the stock market in macroeconomics may be the view that because the stock market fluctuates excessively, rational managers will pay little attention to the market in formulating investment plans. This view is shown to be unfounded by demonstrating that rational managers will react to stock price changes even if the stock market fluctuates excessively. Finally, we review the extremely important issue of whether the market does fluctuate excessively and conclude that, while not ruled out on a priori theoretical grounds, the empirical evidence for such excess fluctuations has not been decisive.

Excess Labor and the Business Cycle

Ray C. Fair
Working Paper No. 1292
March 1984
JEL No. 130

This paper compares the Medoff-Fay estimates of labor hoarding during troughs, which are based on data from manufacturing plants, with aggregate estimates of excess labor on hand. The two sets of estimates seem consistent, which provides a strong argument in favor of the excess labor hypothesis. This is one of the few examples in macroeconomics where a hypothesis has been so strongly confirmed using detailed micro data.

Effects of Expected Future Government Deficits on Current Economic Activity

Ray C. Fair
Working Paper No. 1293
March 1984
JEL No. 130

This paper considers the possibility that expected future government deficits directly affect economic decisions, in particular the decisions of the Federal Reserve System. Some evidence presented in Section II indicates that the behavior of the Fed may be influenced by expected future deficits. The economic consequences of this behavior are examined in Section III. The results in this section show that fiscal policy is less effective if the Fed responds to expected future deficits than otherwise. I present quantitive estimates of the differences in the effects of fiscal policy.

Some Issues Concerning Interest Rate Pegging, Price Level Determinacy, and the Real Bills Doctrine

Bennett T. McCallum
Working Paper No. 1294
March 1984
JEL Nos. 311, 023

In a recent paper, Canzoneri, Henderson, and Rogoff show that it is possible for the monetary authority to peg the nominal interest rate without creating price level indeterminacy in a simplified version of the 1975 Sargent-Wallace model. My paper begins by reviewing that result, which involves a limiting case of a money supply rule that depicts the authority as responding to current values of the interest rate. Then it shows that there exists an alternative rule that will peg the nominal rate without creating indeterminacy, but that this rule induces a different pattern of price level fluctuations. Next, the paper considers whether indeterminacy will prevail if the authority tries to effect a peg in a third way: by simply standing ready to buy and sell securities at the desired rate. Finally, I draw the implication of the foregoing results for arguments concerning the real bills doctrine and direct some critical comments at the recent attempted rehabilitation of that doctrine by Sargent and Wallace.

Some Pleasant Monetarist Arithmetic

Michael R. Darby
Working Paper No. 1295
March 1984

Contrary to the conclusion of Sargent and Wallace, it is possible to exogenously and independently vary monetary and fiscal policy and retain steady-state equilibrium in such economies as the U.S. economy. In particular, the central bank is not forced to monetize increased deficits either now or in the future. This conclusion is based on the fact that the real aftertax yield on government bonds is considerably less than the growth rate of real income except during brief disinflationary periods.

Stock Prices and Economic News

Douglas K. Pearce and **V. Vance Roley**
Working Paper No. 1296
March 1984
JEL No. 313

This paper examines the daily response of stock prices to announcements about the money supply, inflation, real economic activity, and the discount rate. Survey data on market participants' expectations of these announcements, except for announcements of the discount rate, are used to identify the unexpected component of the announcements; we thus test the efficient markets' hypothesis that only the unexpected part of any announcement, the surprise, moves stock prices. The empirical results support this hypothesis and indicate further that surprises related to monetary policy significantly affect stock prices. There is only limited evidence of an impact from inflation surprises and no evidence of an impact from real activity surprises on the announcement days. There is also only weak evidence of stock price responses to surprises beyond the announcement day.

The Demand for Labor in the Long Run

Daniel S. Hamermesh
Working Paper No. 1297
March 1984
JEL Nos. 821, 022

This paper presents the theory of the demand for labor with a catalog and a critique of methods used to estimate parameters that describe empirical labor demand and substitution possibilities. It also presents a critical survey of studies of own-price demand elasticities for labor as a whole and for workers categorized by demographic group, of substitution parameters among workers of different types, and of workers for capital. The main findings are: (1) the long-run, constant-output elasticity of demand for labor that is treated as homogeneous is between 0.15 and 0.5; (2) own-price demand elasticities are higher for workers who have less general human capital embodied in them; (3) skilled labor and physical capital are p complements; and (4) more tentatively, youths and women are q substitutes in production. I then discuss the implications and importance for policy of these and other results. Finally, I present suggestions for improving the literature and narrowing the range of knowledge of the underlying parameters, especially by concentrating more on disaggregated and even microeconomic data.

External Shocks and Domestic Response: Israel's Macroeconomic Performance, 1965-82

Michael Bruno
Working Paper No. 1298
March 1984

This paper applies an aggregate supply and demand framework to the study of Israel's type of stagflation.

After a very rapid growth period between 1967–73, Israel's subsequent slowdown in share growth and acceleration in inflation seem particularly marked by any international comparison. The unemployment rate and the current account deficit have, on average, risen less.

I attempt to disentangle the effects of supply shifts (changes in raw material prices and real wages) from the role of demand management and the main macro policy trade-offs. Unlike other middle-income countries that continued to expand by borrowing heavily, Israel could not substantially increase an already large foreign debt and had to sacrifice growth and price stability to overcome the large post-1973 current account deficit. This trade-off was exacerbated considerably on the domestic front by the inability to reverse an earlier trend of rapidly rising public expenditure and employment. While this accounts for the relatively low employment rate, it also hampered the potential for growth, particularly of exportables. After 1977, developments were dominated by much higher, self-perpetuating inflation that was set in motion by an ill-fated plan for the liberalization of foreign exchange and the loss of monetary control. This has further worsened the current-account/inflation trade-off and seems to have locked the economy into a low-growth, high-inflation trap.

Incentives and Wage Rigidity

Edward P. Lazear
Working Paper No. 1299
March 1984

With the growth of the literature on incentive compensation has come the belief by some that incentive pay may be less rigid than pay that is not designed to effect incentives. Some have gone so far as to argue that this may explain differences in unemployment rates across countries. I show that there is no direct link between incentives and wage rigidity. Many compensation schemes that provide incentives have the reverse effect: that is, they tend to make wages more rigid than would be the case if incentives were not an issue at all. This paper explores the relationship between wage rigidity and the provision of incentives in a variety of circumstances.

Rational Bubbles in the Price of Gold

Behzad T. Diba and **Herschel I. Grossman**
Working Paper No. 1300
March 1984
JEL No. 026

This paper is a theoretical and empirical study of the possibility of rational bubbles in the relative price of gold. The critical implication of the theoretical analysis is that if rational bubbles exist, the time series of the relative price of gold, as well as any time series obtained by differencing a finite number of times, is nonstationary. The empirical evidence relating to this nonstationarity property involves diagnostic checks for stationarity carried out in both the time domain and the frequency domain. This evidence strongly suggests that the process generating the first difference of the log of the relative price of gold is stationary, a finding that is inconsistent with the existence of rational bubbles. More broadly, the empirical analysis finds a close correspondence between the time-series properties of the relative price of gold and the time-series properties of real interest rates, which the theory relates to the time-series properties of the fundamental component of the relative price of gold. In sum, the evidence is consistent with the combined conclusion that the relative price of gold corresponds to market fundamentals, that the process generating first differences of market fundamentals is stationary, and that actual price movements do *not* involve rational bubbles

Supply Shocks and Monetary Policy Revisited

Robert J. Gordon
Working Paper No. 1301
March 1984
JEL No. 311

This paper reviews the main issues that supply shocks pose for the conduct of monetary policy. A simple version of the Gordon–Phelps model shows that the necessary condition for actual real GNP to be maintained at its equilibrium level in the wake of a supply shock is for the change in nominal GNP to exceed the change in the nominal wage by the change in the income share of the raw material in GNP. The required "wedge" between nominal GNP and wage growth can be accomplished by any combination of monetary accommodation and nominal wage flexibility. Without this combination, a "macroeconomic externality" occurs, with real GNP falling below its equilibrium level.

I examine the obstacles to monetary accommodation in terms of a taxonomic wage adjustment equation that allows for differing responses to current inflation, lagged inflation, and lagged wage change. Monetary accommodation is infeasible when there is full indexation to current inflation; it creates a permanent acceleration of inflation following a one-time permanent shock when there is indexation to lagged inflation. With "forward-looking" expectation formation in the sense of Taylor, a supply shock is likely to cause changes in parameters of the wage adjustment equation as workers attempt to avoid the macroeconomic externality.

The final section of the paper discusses doctrinal debates that originated in part from the empirical failures of earlier Phillips curves that neglected supply shocks.

Taxation and Savings— A Neoclassical Perspective

Laurence J. Kotlikoff
Working Paper No. 1302
March 1984
JEL No. 321

This paper discusses recent neoclassical analyses of taxation and savings. Contrary to the popular view that fiscal policy has highly ambiguous impacts on savings, neoclassical models admit a host of policies with clear and potentially quite powerful effects on the accumulation of wealth. The paper considers four fundamental types of fiscal policies and compares their quantitative effect on savings. The essential elements of these policies involve inter- and intragenerational redistribution, marginal and intramarginal taxation, and the level of government consumption. Conventional accounting measures of "taxes," "spending," and "deficits" provide, at best, little guide to changes in underlying fiscal instruments and, at worst, precisely opposite indicators of the direction of such changes. Indeed, the continued use of and concern with conventional fiscal measures is symptomatic of widespread fiscal illusion. I develop these points within the context of certainty models. The paper also considers the role of fiscal policy in both mitigating and exacerbating economic risks facing the private sector. Since precaution is a major motivation for saving, governments can greatly influence wealth accumulation either by using fiscal policy to pool private risks or by making fiscal policy itself highly uncertain.

Bequests as a Means of Payment

B. Douglas Bernheim, Andrei Shleifer, and **Lawrence H. Summers**
Working Paper No. 1303
March 1984
JEL No. 915

Although recent research suggests that intergenerational transfers play an important role in aggregate capital accumulation, our understanding of bequest motives remains incomplete. We develop a simple model of "exchange-motivated" bequests, in which a testator influences the decisions of his beneficiaries by holding wealth in bequeathable forms and by conditioning the division of bequests on the beneficiaries' actions. The model generates falsifiable empirical predictions that are inconsistent with other theories of intergenerational transfers. We present econometric and other evidence that strongly suggests that bequests are often used as a means of payment for services rendered by beneficiaries.

Pecuniary and Market-Mediated Externalities: Towards a General Theory of the Welfare Economics of Economies with Imperfect Information and Incomplete Markets

Bruce Greenwald and **Joseph E. Stiglitz**
Working Paper No. 1304
March 1984

This paper presents a simple but general framework for analyzing the impact of the externalities of information. By identifying the traditional pecuniary effect of these externalities (which nets out), the paper greatly simplifies the problem of determining when tax interventions can improve Pareto optimality. The framework of the paper is used to analyze adverse selection, signaling, moral hazard, incomplete contingent claims markets, and queue rationing equilibriums.

The Permanent Income Hypothesis and Consumption Durability: Analysis Based on Japanese Panel Data

Fumio Hayashi
Working Paper No. 1305
March 1984
JEL No. 320

I test the permanent income hypothesis on a four-quarter panel of about 2000 Japanese households for ten commodity groups. Consumption is a distributed lag function of expenditures, and the utility function is additively separable in time. Durability is defined as the persistence of the distributed lag. The permanent income hypothesis implies that, for each commodity group, expected change in expenditures is correlated neither with past expenditure changes on other commodities nor with expected change in disposable income, if one controls for its own lags. The main results are: (1) durability is substantial, even for food and services; (2) the permanent income hypothesis applies to almost all (probably more than 90 percent) of the population; and (3) the habit persistence hypothesis is rejected in favor of the permanent income hypothesis.

Monetarist Monetary Policy, Exchange Risk, and Exchange Rate Variability

David H. Papell
Working Paper No. 1306
March 1984
JEL No. 430

This paper investigates the relationship between the new monetary control procedures, implemented by

the Federal Reserve Board in October 1979, and the subsequent increase in exchange rate variability for the United States. It shows that, in the context of a stochastic, rational expectations model, exchange rate variability minimizing monetary policy is identical to the policy that, in a deterministic, perfect foresight model, would place the economy on the borderline between exchange rate overshooting and undershooting. The model is estimated for the United States where generalized floating began in 1973. The new monetary control procedures have had two opposite effects. Monetary policy has become less accommodative, increasing exchange rate variability through overshooting. On the other hand, systematic deviations from uncovered interest rate parity, which can be attributed to exchange risk, have also increased. These increase exchange rate variability through undershooting. I show that the latter dominate the former, providing an explanation of increased exchange rate variability consistent with undershooting, not with overshooting.

The Demand for International Reserves and Monetary Equilibrium: Some Evidence from Developing Countries

Sebastian Edwards
Working Paper No. 1307
March 1984
JEL Nos. 431, 432

Traditionally, two alternative explanations have been offered for the behavior of international reserves through time. On the one hand, the literature on the demand for international reserves postulates that reserve movements respond to discrepancies between desired and actual reserves. On the other hand, according to the monetary approach to the balance of payments, changes in international reserves will be related to excess demands for or excess supplies of money. The purpose of this paper is to empirically integrate these two basic explanations for international reserve movements. This is done by estimating a dynamic equation that explicitly allows reserve movements to reflect the monetary authority's excess demand for international reserves, and the public's excess demand for money. The results obtained, using a sample of 23 developing countries that maintained a fixed exchange rate during 1965–72, confirm the hypothesis that reserve movements respond *both* to monetary factors and to differences between actual and desired reserves. These results indicate that the exclusion of monetary considerations from the dynamic analysis of international reserves will yield biased coefficients.

Simulating Alternative Social Security Responses to the Demographic Transition

Alan J. Auerbach and **Laurence J. Kotlikoff**
Working Paper No. 1308
March 1984
JEL No. 322

The United States and other western economies are experiencing dramatic changes in the growth and age structure of their populations. Fluctuations in birth rates are the most important determinants of these changes in the postwar period. This paper examines the dynamic effects of baby "booms" and baby "busts" on a range of economic variables using a perfect-foresight, life-cycle simulation model. In addition to describing general transition (as opposed to simply long-run) effects of fertility change, the paper considers alternative Social Security policies for avoiding sharp increases in long-run payroll tax rates. These include reductions in benefit replacement rates, advances in the retirement age of Social Security, taxation of Social Security benefits, and the accumulation of a significant Social Security trust fund.

According to the simulated demographic transitions, the declines in the U.S. fertility currently underway can have very major impacts on long-run factor returns and can produce precipitous short-term changes in saving rates. While Social Security policy has important effects on the simulated demographic transitions, these effects are of secondary importance to the long-run level of economic welfare. Even if payroll tax rates rise dramatically, long-run welfare (measured in terms of levels of adult consumption and leisure) is, nonetheless, substantially higher in the case of a sustained drop in the fertility rate. This reflects, in part, the decline in the number of dependent children per adult; while a sustained decline in the fertility rate eventually means a much larger ratio of elderly per capita, the decline in children per capita means an overall decline in the long-run ratio of dependents to prime age workers in the economy. A second explanation for the simulated long-run welfare gains is capital deepening associated with lower population growth rates.

The Behavior of U.S. Deficits

Robert J. Barro
Working Paper No. 1309
March 1984
JEL No. 320

The tax-smoothing theory suggests that deficits particularly respond to recession, temporarily high government spending, and anticipated inflation. My empirical estimates indicate that a relationship of this type has been reasonably stable in the United States since

at least 1920. In particular, the statistical evidence does not support the idea that there has been a shift toward a fiscal policy that generates either more real public debt on average or larger deficits in response to recessions. Further, the deficits for 1982-83 and projections for 1984 are consistent with the previous structure. The high values of these deficits reflect the customary response to substantial recession (interacting with big government) and to expected inflation.

The Impact of Affirmative Action on Employment

Jonathan S. Leonard
Working Paper No. 1310
March 1984
JEL No. 820

Affirmative Action under Executive Order 11246 ranks among the most controversial of domestic federal policies. This study asks whether Affirmative Action has been successful in promoting the employment of minorities and females. It compares the change in demographics between 1974 and 1980 at more than 68,000 establishments and finds that both minority and female employment have increased faster at establishments subject to Affirmative Action. Compliance reviews, while not well targeted, are also found to have been effective.

Unions and Equal Employment Opportunity

Jonathan S. Leonard
Working Paper No. 1311
March 1984
JEL No. 830

This paper analyzes differences in the growth of minority and female employment between union and nonunion manufacturing plants in California during the late 1970s. In this sector, unionized plants do not exhibit any more gross employment discrimination against black or Hispanic men, or against black or white women, than do nonunion plants, despite the recessions of the 1970s that displaced low-seniority workers. Black males actually enjoy faster growth of employment share in unionized plants, suggesting that Title VII has been effective in increasing opportunities for blacks. This may help explain why unionization, although decreasing in the private sector, has been increasing among blacks. I also examine the role played by unions in mediating Affirmative Action regulations.

There are significant differences across particular unions, especially between craft and industrial unions, within industries that correspond to each union's public record on Equal Employment Opportunity (EEO). Black employment increases most rapidly in industries with a long history of black employment, in plants organized by unions that take a liberal position towards EEO, and in industries with a large union wage effect. At least in California manufacturing during this period, the belief that unions have hindered minority and female employment does not seem to hold true for industrial unions.

Banking and Insurance

Joseph G. Haubrich and **Robert G. King**
Working Paper No. 1312
March 1984
JEL Nos. 023, 310

This paper studies the economic role of financial institutions in economies where agents' incomes are subject to privately observable, idiosyncratic, random events. The information structure precludes conventional insurance arrangements. However, a financial institution—perhaps best viewed as a savings bank—can provide partial insurance by generating a time pattern of deposit returns that redistributes wealth from agents with high incomes to those with low incomes, resulting in a level of expected utility higher than that achievable in simple security markets. Insurance is incomplete because the bank faces a trade-off between provision of insurance and maintenance of private incentives.

The Effects of Inflation and Money Supply Announcements on Interest Rates

Thomas Urich and **Paul Wachtel**
Working Paper No. 1313
March 1984
JEL No. 311

This paper examines the impact on interest rates of the money supply and announcements of the inflation rate. We use survey data on expectations of the money supply and on consumer and producer price indexes to distinguish between anticipated and unanticipated components of the announcements. We then use this distinction to test for the efficiency of the response in the financial market to the announcements of new information. The results indicate that the unanticipated components of the announced changes in the Producers Price Index and in the money supply have an immediate positive effect on short-term interest rates. The Consumer Price Index announcement has no apparent effect. Moreover, there is no evidence of a delayed announcement effect. However, there is some indication of a liquidity effect on interest rates of the money supply change. This takes place when reserves are changing and several weeks prior to the information announcement.

A Test of Dual Labor Market Theory

William T. Dickens and **Kevin Lang**
Working Paper No. 1314
March 1984
JEL No. 824

Despite substantial differences in their views of the appropriate policy response to the existence of poverty, neither the proponents of dual market theory nor its critics have proposed potentially conclusive tests of the dual market hypothesis. This paper presents a test of the two central propositions of dual market theory: (1) the existence of two distinct labor markets with different wage-setting mechanisms; and (2) the existence of barriers to mobility between the labor markets. We find considerable support for both hypotheses.

Estimation of a switching model of wage determination with unknown regimes yields two distinct wage equations. The one with which most workers are associated closely resembles the standard human capital regression with significant returns to education and experience. The other equation is flat with no returns to human capital. These two equations resemble the predictions of dual market theory for the "primary" and "secondary" markets, respectively. Further, we present evidence that (at least) some nonwhite workers are involuntarily confined to the secondary market. This crowding of minority workers into the low-wage labor market accounts for a substantial portion of white/nonwhite wage differences.

We interpret these results as providing empirical support for the dual market hypothesis and for recent theoretical work on efficiency wage models. In addition, combining the efficiency wage argument with the observation that much of the white/nonwhite wage difference is explained by the exclusion of nonwhites from the primary sector suggests an explanation for the persistence of wage differences.

Funding and Asset Allocation in Corporate Pension Plans: An Empirical Investigation

Zvi Bodie, Jay O. Light, Randall Mørck,
and **Robert A. Taggart, Jr.**
Working Paper No. 1315
March 1984
JEL No. 520

This paper contrasts and empirically tests two different views of corporate pension policy: the traditional view that pension funds are managed without regard to either corporate financial policy or the interests of the corporation and its shareholders, and the corporate financial perspective represented by the recent theoretical work of Black (1980), Sharpe (1976), Tepper (1981), and Treynor (1977), which stresses the potential effects of a firm's financial condition on its pension funding and asset allocation decisions. We find several pieces of evidence supporting the corporate financial perspective. First, we find that there is a significant inverse relationship between firms' profitability and the discount rates they choose when reporting their pension liabilities. In view of this, we adjust all reported pension liabilities to the assumption of a common discount rate. We then find a significant positive relationship between firm profitability and the degree of pension funding, as is consistent with the corporate financial perspective. We also find some evidence that firms facing higher risk and lower tax liabilities are less inclined to fully fund their pension plans. On the asset allocation question, we find that the distribution of plan assets invested in bonds is bimodal, but that it does not tend to cluster around extreme portfolio configurations to the extent predicted by the corporate financial perspective. We also find that the percentage of plan assets invested in bonds is negatively related to both total size of plan and the proportion of unfunded liabilities. The latter relationship shows up particularly among the riskiest firms and is consistent with the corporate financial perspective on pension decisions.

A Reconsideration of the Effects of Unionism on Relative Wages and Employment in the United States, 1920-80

John Pencavel and **Catherine Hartsog**
Working Paper No. 1316
March 1984

H. Gregg Lewis's estimates of the relative wage effect of unionism between 1920 and 1958 are routinely cited although they have rarely been subject to scrutiny. This paper extends Lewis's data to 1980 and, in particular, constructs a series on union membership that links with the data available in the 1970s from the Current Population Surveys. We proceed to reexamine the effects of trade unions both on relative wages and on relative man-hours worked. Our estimates of the relative wage effect are similar to Lewis's, although these are not measured with precision, and a wide range of estimates are consistent with the results. With respect to the effect of unionism on relative man-hours worked, we are not at all satisfied that the analysis of these data clearly points to the existence of a negative effect.

NBER Reporter

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