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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. SPRING 1988

Program Report

Labor Studies

Richard B. Freeman

In the past three years, the Bureau's Program in Labor Studies has completed projects on public sector unionism and on the impact of immigration and trade on the labor market, both under my direction. Major projects on pensions in the labor market and on government pay and payrolls, each directed by David A. Wise, were also concluded during this period. Now, a Bureau project on private sector unionism is focusing on the decline in union density in the United States. At the same time, NBER labor economists are analyzing industrial wage differentials and investigating optimal firm behavior and contracts in labor relations. We also are actively involved in research on economic demography and poverty.[1] Finally, to provide researchers with the basic information needed for comparative analysis of labor markets, the Bureau's Program in Labor Studies has begun a major effort to collect micro data files for several OECD countries and has established links with British, Australian, and Japanese economists to further this work.

Unionism in Transition

Perhaps the most important change in unionism in the United States over the past decade has been the marked shift in its relative importance in the public sector as opposed to the private sector. In an August 1986 conference on public sector unionism, NBER researchers explored several aspects of public labor markets and union activity, and documented the ways in which unionism and industrial relations in the public sector and the private sector differ.[2]

William T. Dickens, Jonathan S. Leonard, Henry S. Farber, and I all find that in the private sector, the decline in unionism reflects more than structural changes

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This issue of the *Reporter* highlights the Bureau's Program in Labor Studies. Next, Lawrence B. Lindsey describes his research in tax reform and taxpayer behavior, and N. Gregory Mankiw discusses his work on interest rates. 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.

[1] *As there were over 150 NBER Working Papers in the labor program since my last report (Winter 1984/5* NBER Reporter*), I limit this summary to topics that have generated a considerable number of papers and that reflect general research interest.*

[2] *R. B. Freeman and C. Ichniowski, eds.,* When Public Sector Workers Unionize, *Chicago: University of Chicago Press, 1988; J. S. Zax, "Labor Relations, Wages, and Nonwage Compensation in Municipal Employment," NBER Working Paper No. 1582, March 1985, and "Municipal Employment, Municipal Unions, and Demand for Municipal Services," NBER Working Paper No. 1728, October 1985; C. Ichniowski, "Public Sector Union Growth and Bargaining Laws: A Proportional Hazards Approach with Time-Varying Treatments," NBER Working Paper No. 1809, January 1986; and J. Gyourko and J. Tracy, "An Analysis of Public and Private Sector Wages Allowing for Endogenous Choices of Both Government and Union Status," NBER Working Paper No. 1920, May 1986.*

in the economy: important forms of economic behavior, particularly by employers, are a major factor in the decline of private sector unions.[3]

Steven G. Allen has examined the controversial issue of the effect of unions on productivity in the private sector. He finds that the level of productivity tends to be higher in unionized than in nonunionized construction, but that the growth of productivity is lower in the unionized sector.[4]

David Card and Joseph S. Tracy have been concerned with the determinants of strikes and have used specially created files that link strikes to information on company performance.[5] David E. Bloom, in collaboration with others, and Farber have studied the role of arbitration in dispute resolution within the public sector.[6]

John M. Abowd shows that collective bargaining settlements bring about very little loss in efficiency as reflected in stockholders' value of enterprises. Finally, Card has investigated the effects of airline deregulation on unionized mechanics. He finds that they have shifted jobs, going from incumbent trunk lines to smaller airlines. They also experienced a drop in wages following deregulation.[7]

[3] *W. T. Dickens and J. S. Leonard, "Structural Changes in Unionization: 1973-81," NBER Working Paper No. 1882, April 1986; R. B. Freeman, "The Effect of the Union Wage Differential on Management Opposition and Union Organizing Success," NBER Working Paper No. 1748, November 1985; H. S. Farber, "The Decline of Unionization in the United States: What Can Be Learned from Recent Experience?" NBER Working Paper No. 2267, May 1987; R. B. Freeman and J. S. Leonard, "Union Maids: Unions and the Female Work Force," NBER Working Paper No. 1652, June 1985; R. B. Freeman, "How Do Public Sector Wages and Employment Respond to Economic Conditions?" NBER Working Paper No. 1653, February 1985; W. T. Dickens, D. R. Wholey, and J. C. Robinson, "Bargaining Unit, Union, Industry, and Locational Correlates of Union Support in Certification and Decertification Elections," NBER Working Paper No. 1671, July 1985.*

[4] *S. G. Allen, "The Effect of Unionism on Productivity in Privately and Publicly Owned Hospitals and Nursing Homes," NBER Working Paper No. 1649, June 1985; "Union Work Rules and Efficiency in the Building Trade," NBER Working Paper No. 1733, October 1985; "Can Union Labor Ever Cost Less?" NBER Reprint No. 985, February 1988; "Unions and Efficiency in Private Sector Construction: Further Evidence," NBER Working Paper No. 2254, May 1987; and "Productivity Levels and Productivity Change under Unionism," NBER Working Paper No. 2304, July 1987.*

[5] *J. S. Tracy, "An Empirical Test of an Asymmetric Information Model of Strikes," NBER Working Paper No. 1870, March 1986.*

[6] *D. E. Bloom and C. L. Cavanagh, "An Analysis of the Selection of Arbitrators," NBER Working Paper No. 1938, June 1986, and "Negotiator Behavior under Arbitration," NBER Working Paper No. 2211, March 1987; D. E. Bloom, "Empirical Models of Arbitrator Behavior under Conventional Arbitration," NBER Working Paper No. 1841, February 1986, and "Arbitrator Behavior in Public Sector Wage Disputes," NBER Working Paper No. 2351, August 1987; M. H. Bazerman and H. S. Farber, "Divergent Expectations as a Cause of Disagreement in Bargaining: Evidence from a Comparison of Arbitration Schemes," NBER Working Paper No. 2139, January 1987.*

[7] *J. M. Abowd, "Collective Bargaining and the Division of the Value of the Enterprise," NBER Working Paper No. 2137, January 1987; and D. Card, "The Impact of Deregulation on the Employment and Wages of Airline Mechanics," NBER Working Paper No. 1847, February 1986, and "Efficient Contracts with Costly Adjustment: Short-Run Employment Determination for Airline Mechanics," NBER Working Paper No. 1931, May 1986.*

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Wage Determination

There recently has been renewed interest in issues that occupied labor economists in the 1950s and early 1960s: specifically, wage differentials, and the compensation systems associated with industries or firms rather than those attributable to differences in human capital among individuals. Dickens and Lawrence F. Katz, as well as Alan B. Krueger and Lawrence H. Summers, have documented the existence of substantial differences in industry wages beyond those attributable to measurable labor skills. They and others also consider the possibility that the differences are caused by efficiency wages. Dickens and Kevin Lang speculate that dual labor markets are the explanation for wage differentials. Linda A. Bell and I show that changes in industry prices and productivity can alter industry wages, contrary to the traditional Salter model of industry wage determination.[8]

Sherwin Rosen and Edward P. Lazear have been studying optimal compensation schemes, ranging from deferred wages to tournaments.[9] Other NBER researchers have analyzed optimal retirement policy; the role of involuntary unemployment as a discipline device; monitoring for crime at workplaces; hiring procedures at firms; and the use of pay and supervision to influence workers.[10]

Two major research projects on wages and compensation, directed by Wise, have culminated in NBER volumes: one on the importance and peculiarities of pensions, and the other on the nature of wagesetting in the public sector.[11] Two themes run through most of the studies in these volumes: a concern for the effects of demand, or employer behavior, on wages, as opposed to concentration on human capital or supply factors; and determination of the optimal components of compensation.

Poverty, Unemployment, and Demography

NBER researchers have continued to work extensively on the issues of poverty and unemployment. Rebecca M. Blank finds relatively little evidence that being on welfare increases one's dependency on public assistance. David T. Ellwood and Summers reject the theory that the welfare system is the cause of much poverty.

Harry J. Holzer analyzes the jobseeking behavior of unemployed youths. Card and Daniel Sullivan evaluate the effect of training programs on the success of young men in the labor market. Brian Hall and I use a survey of over 500 homeless persons in New York City to estimate the extent and nature of homelessness in the United States.[12]

Victor R. Fuchs has studied the feminization of poverty and the increased concentration of poverty among children. He finds that the feminization of poverty occurred in the 1960s, but that since then the female share of poverty has been constant or decreasing.[13]

We also have examined topics in economic demography, focusing particularly on issues of poverty and family behavior. In work that has received considerable national attention, Bloom and his coauthors have studied some factors that influence when and if one marries and how long the marriage may last.[14] Wise is

[8] *W. T. Dickens and K. Lang, "Labor Market Segmentation and the Union Wage Premium," NBER Working Paper No. 1883, April 1986; "Neoclassical and Sociological Perspectives on Segmented Labor Markets," NBER Working Paper No. 2127, January 1987, and "Testing Dual Labor Market Theory: A Reconsideration of the Evidence," NBER Working Paper No. 1670, July 1985; W. T. Dickens and L. F. Katz, "Interindustry Wage Differences and Industry Characteristics," NBER Working Paper No. 2014, August 1986, and "Interindustry Wage Differences and Theories of Wage Determination," NBER Working Paper No. 2271, June 1987; A. B. Krueger and L. H. Summers, "Efficiency Wages and the Wage Structure," NBER Working Paper No. 1952, June 1986, and "Reflections on the Interindustry Wage Structure," NBER Reprint No. 850, April 1987; W. T. Dickens, L. F. Katz, and K. Lang. "Are Efficiency Wages Efficient?" NBER Working Paper No. 1935, June 1986; L. F. Katz, "Efficiency Wage Theories: A Partial Evaluation," NBER Working Paper No. 1906, April 1986; J. I. Bulow and L. H. Summers, "A Theory of Dual Labor Markets with Application to Industrial Policy, Discrimination, and Keynesian Unemployment," NBER Reprint No. 798, December 1986; L. A. Bell and R. B. Freeman, "Does a Flexible Industry Wage Structure Increase Employment? The U.S. Experience," NBER Working Paper No. 1604, April 1985.*

[9] *S. Rosen, "Implicit Contracts: A Survey," NBER Working Paper No. 1635, June 1985; "Prizes and Incentives in Elimination Tournaments," NBER Working Paper No. 1668, July 1985; and "Transactions Costs and Internal Labor Markets," NBER Working Paper No. 2407, October 1987; E. P. Lazear, "Incentive Contracts," NBER Working Paper No. 1917, May 1986.*

[10] *J. S. Leonard, "Carrots and Sticks: Pay, Supervision, and Turnover," NBER Working Paper No. 2176, March 1987; A. Weiss, "Incentives and Work Behavior: Some Evidence," NBER Working Paper No. 2194, March 1987; H. J. Holzer, "Hiring Procedures in the Firm: Their Economic Determinants and Outcomes," NBER Working Paper No. 2185, March 1987; A. Weiss and H. Landau, "Validating Hiring Criteria," NBER Working Paper No. 2167, February 1987; K. Lang, "Why Was There Mandatory Retirement? Or, the Impossibility of Efficient Bonding Contracts," NBER Working Paper No. 2199, March 1987; G. A. Akerlof and L. F. Katz, "Do Deferred Wages Dominate Involuntary Unemployment as a Worker Discipline Device?" NBER Working Paper No. 2025, September 1986; W. T. Dickens, L. F. Katz, K. Lang, and L. H. Summers, "Employee Crime, Monitoring, and the Efficiency Wage Hypothesis," NBER Working Paper No. 2356, August 1987.*

[11] *D. A. Wise, ed.,* Pensions, Labor, and Individual Choice, *Chicago: University of Chicago Press, forthcoming, and* Public Sector Payrolls, *Chicago: University of Chicago Press, 1987.*

[12] *R. M. Blank, "How Important Is Welfare Dependence?" NBER Working Paper No. 2026, September 1986; D. T. Ellwood and L. H. Summers, "Poverty in America: Is Welfare the Answer or the Problem?" NBER Working Paper No. 1711, October 1985; H. J. Holzer, "Search Method Use by Unemployed Youth," NBER Working Paper No. 1859, March 1986, "Informal Job Search and Black Youth Unemployment," NBER Working Paper No. 1860, March 1986, and "Employed and Unemployed Job Search: A Comparison of Choices and Outcomes among Youth," NBER Working Paper No. 1861, March 1986; D. Card and D. Sullivan, "Measuring the Effect of Subsidized Training Programs on Movements In and Out of Employment," NBER Working Paper No. 2173, February 1987; and R. B. Freeman and B. Hall, "Permanent Homelessness in America?" NBER Working Paper No. 2013, September 1986.*

[13] *V. R. Fuchs, "Why Are Children Poor?" NBER Working Paper No. 1984, July 1986, and "The Feminization of Poverty," NBER Working Paper No. 1934, June 1986.*

[14] *D. E. Bloom and N. G. Bennett, "Marriage Patterns in the United States," NBER Working Paper No. 1701, September 1985; and N. G. Bennett, A. K. Blanc, and D. E. Bloom, "Commitment and the Modern Union: Assessing the Link between Premarital Cohabitation and Subsequent Marital Stability," NBER Working Paper No. 2416, October 1987.*

directing a major Bureau project on the economics of aging. Alan L. Gustman, Olivia S. Mitchell, and their coauthors all have analyzed retirement behavior among older workers and firms' policies toward those workers.[15]

Internationalization and Cross-Country Comparisons

The internationalization of the U.S. economy, and a growing recognition that economists can learn about economic behavior in the United States from the experiences of other countries, have generated two streams of work in the labor studies program. First, in a major project that culminated in a September 1987 conference, NBER researchers collaborated with economists from Canada and Australia to study the impact of trade and immigration on their respective labor markets. They produced a number of interesting results on the determinants of the labor skills of immigrants, the number of illegal migrants, and the effects of immigration and trade on wages and employment in the United States, Canada, and Australia. In related work, George J. Borjas analyzed the determinants of immigration to the United States and the effects of immigrants on the U.S. labor market.[16]

Second, NBER researchers have analyzed labor markets in other countries and have compared them with the U.S. labor market. Jacob A. Mincer and Yoshio Higuchi use human capital to document the consistency of differences in wage structures and labor turnover between the United States and Japan. Tadashi and Tetsuji Yamada focus specifically on the labor force behavior of women in Japan. Martin L. Weitzman and I study the Japanese bonus system. We show that bonuses, unlike wages, are associated positively with employment, and the bonus system is consistent with the "share economy."

In additional comparative studies, Bloom and I contrast the response of youth unemployment and wages to the baby boom across OECD countries. Orley C. Ashenfelter and Card show that the higher unemployment in Canada relative to the United States cannot be explained by differences in the two countries' labor market institutions. Joseph G. Altonji and John C. Ham attribute roughly three-fourths of the variation in employment growth in Canada over time to shocks emanating from the United States.[17] We hope to continue this work on comparative labor markets over the next few years.

[15] *A. L. Gustman and T. L. Steinmeier, "A Disaggregated, Structural Analysis of Retirement by Race, Difficulty of Work, and Health," NBER Working Paper No. 1585, March 1985; O. S. Mitchell and R. A. Luzadis, "Firm-Level Policy toward Older Workers," NBER Working Paper No. 1579, March 1985; S. Pozzebon and O. S. Mitchell, "Married Women's Retirement Behavior," NBER Working Paper No. 2104, December 1986; and O. S. Mitchell, "Social Security Reforms and Poverty among Older Dual-Earner Couples," NBER Working Paper No. 2382, September 1987.*

[16] *G. J. Borjas, "Self-Selection and the Earnings of Immigrants," NBER Reprint No. 969, January 1988, "Immigrants, Minorities, and Labor Market Competition." NBER Reprint No. 918, October 1987, and "The Self-Employment Experience of Immigrants," NBER Working Paper No. 1942, June 1986.*

[17] *J. A. Mincer and Y. Higuchi, "Wage Structures and Labor Turnover in the United States and Japan," NBER Working Paper No. 2306, July 1987; R. B. Freeman and M. L. Weitzman, "Bonuses and Employment in Japan," NBER Working Paper No. 1878, April 1986; T. and T. Yamada and F. Chaloupka, "A Multinomial Logistic Approach to the Labor Force Behavior of Japanese Married Women," NBER Working Paper No. 1783, December 1985; T. and T. Yamada, "Part-Time Work versus Full-Time Work of Married Women in Japan," NBER Working Paper No. 1608, April 1985; D. E. Bloom and R. B. Freeman, "The 'Youth Problem': Age or Generational Crowding?" NBER Working Paper No. 1829, February 1986; O. C. Ashenfelter and D. Card, "Why Have Unemployment Rates in Canada and the United States Diverged?" Economia 53, 210, Supplement (July 1986), pp. S171-S195; and J. G. Altonji and J. C. Ham, "Variation in Employment Growth in Canada: The Role of External, National, Regional, and Industrial Factors," NBER Working Paper No. 1816, January 1986.*

Research Summaries

Tax Reform and Taxpayer Behavior

Lawrence B. Lindsey

The 1980s have been a decade of radical reform and experimentation in U.S. tax policy. New tax bills either were debated or enacted every year from 1981 through 1987. The two major pieces of legislation of the decade, the Economic Recovery Tax Act of 1981 (ERTA) and the Tax Reform Act of 1986 (TRA), combined to totally transform the tax code in the space of six years.

Two basic themes drove this frenzied pace of legislative activity. First was the growing realization that high rates of taxation significantly altered taxpayer behavior, often in ways unintended by the Congress. As a result, the top marginal tax rate on individuals was reduced from 70 percent to 50 percent by ERTA and further reduced to 33 percent by TRA. The second major theme of legislation was a reduction in the use of the tax code to favor certain types of economic activity. In the personal income tax, major changes were made in the treat-

ment of both capital gains income and charitable contributions, among others.

To a significant extent, the reduction in marginal tax rates and the less favorable treatment of certain economic activities tend to complement one another. Lower marginal tax rates necessarily make tax-favored activities less attractive, while reduced tax incentives for specific activities may generate revenue to offset the cost of across-the-board tax rate reductions. However, their combined effect is certain to change the behavior of America's taxpayers.

Evidence on the effects of ERTA shows just how significantly taxpayer behavior can change. Under ERTA, the top marginal tax rate was reduced from 70 percent to 50 percent beginning in 1982. Ordinarily, this rate reduction might be expected to cost the Treasury a significant amount of revenue. Simulations done using the National Bureau of Economic Research TAXSIM model suggest that taxpayers earning over $200,000 would have been expected to pay $24.4 billion less in taxes in the first four years following the rate reductions, 1982 through 1985. In fact, these taxpayers paid $18.3 billion more in taxes under the new rate regime than they would have been expected to pay under the old rates of up to 70 percent.[1]

The argument that lower rates of tax may yield higher revenues than high rates do is at least as old as Adam Smith and *The Wealth of Nations*. This argument rests on the observation that the size of the tax base may be at the discretion of taxpayers to some extent. When tax rates are very high, there is little incentive for the taxpayer to engage in the taxed activity. For example, a 70 percent rate allows the taxpayer to retain only 30 cents of each dollar earned. When the tax rate is reduced to 50 percent, the taxpayer's aftertax share rises 67 percent, to 50 cents on the dollar from 30 cents.

Similar logic suggests that reductions in taxes levied at comparatively low rates are unlikely to increase revenue. For example, a reduction in the tax rate from 21 percent to 15 percent is proportionately as large as the cut from 70 to 50 percent. But the taxpayer sees an increase in his aftertax share from 79 cents on the dollar to only 85 cents on the dollar, or about 8 percent. Thus, the incentive effects at these low rates are much smaller. The data from the 1981 tax cut clearly show that for most income groups, the increase in the tax base was not enough to compensate for the reduction in the tax rates. The overall result was that ERTA cost the Treasury a significant amount of tax revenue. Only in the case of taxpayers earning more than $200,000 were more taxes paid under ERTA than under old law.

Some types of income respond significantly more to tax rate reductions than other types of income do. For example, upper-income taxpayers reported significantly more wage income and business and self-employment income after ERTA than had been expected, but not more interest and dividend income. These upper-income taxpayers likely have more discretion about the form of their compensation than most taxpayers do. Substitution of fringe benefits and "business consumption" such as automobiles, travel, and entertainment for ordinary income may have declined when marginal tax rates were reduced. At a 70 percent rate, fringe benefits cost only 30 percent as much as cash compensation, while at a 50 percent rate they cost half as much.

The evidence also indicates that upper-middle-income groups may have increased their labor supply dramatically as a result of the tax rate reductions, particularly the labor supply of the secondary earner in the family. These taxpayers may have substituted wage compensation for fringe benefit compensation as their upper-income counterparts did. I estimate that in total there was an economywide increase in taxable wages (through greater labor supply) of $38 billion per year, or roughly 2.5 percent. A further $30 billion, or 1.8 percent of wage income, may have resulted from substituting wages for fringe benefits. In total, these changes would produce an additional $14 billion of federal income tax revenues annually.[2]

These data are consistent with a finding that by 1985 the 1981 tax cuts had boosted real economic activity (GNP) by about 2 percent above what it would have been otherwise. Alternatively, this may be thought of as an increase in the economywide growth rate of about 0.5 percent per year from 1981–5. This figure is probably smaller than some supporters of the 1981 tax cuts may have hoped, but it does indicate a clear supply-side response in the economy. Stated differently, it implies that the equivalent of 2.5 million more people are working today as a result of the supply-side effects of the tax cuts.

Capital gains income also was extremely responsive to the tax rate reductions of 1981, as it had been to earlier changes in the capital gains tax rate. Changes in the tax rate on capital gains were quite frequent from 1965–82 and peculiar provisions of the tax law caused capital gains tax rates to vary widely, even among taxpayers with relatively similar incomes. Clearly, measuring the capital gains tax rate is not an easy task. This may be one of the reasons why the results of economic investi-

[1] *L. B. Lindsey, "Estimating the Behavioral Response of Taxpayers to Changes in Tax Rates: 1982-1984, with Implications for the Revenue-Maximizing Tax Rate,"* Journal of Public Economics *33 (1987), pp. 173-206.*

[2] *L. B. Lindsey, "Did ERTA Raise the Share of Taxes Paid by Upper-Income Taxpayers? Will TRA86 Be a Repeat?" in* Tax Policy and the Economy, *Volume 2, L. H. Summers, ed. Cambridge, MA: MIT Press, 1988.*

gations of the effect of capital gains tax rates on taxpayer behavior vary so greatly.

Careful measurement of the tax rate for six different income classes from 1965 to 1982 indicates that a 1 percent increase in the share of income that taxpayers were allowed to keep led to an increase in capital gains realizations of about 5 percent. This confirms earlier studies that show that capital gains income is by far the most sensitive component of the tax base to changes in tax rates. This analysis suggests that the revenue-maximizing top marginal tax rate on capital gains is somewhere between 15 and 20 percent.[3]

The TRA may prove counterproductive from a revenue point of view in its treatment of capital gains. Prior to the 1986 reform, capital gains were taxed at a fraction of the regular tax rate. This favorable treatment was eliminated in the same 1986 bill, producing the largest capital gains tax rate increase in at least 50 years. The average marginal tax rate on capital gains income will increase from about 16 percent to 26 percent under the new bill. The new rate may well prove to be above the revenue-maximizing point.

To estimate the effect of the new bill, I combined the behavioral estimates from four other studies with my earlier results. The estimated taxpayer behavior from each study was used as the behavioral parameter in the NBER TAXSIM program, which then simulates the results of the 1986 bill. Four of the five studies indicate that the changes wrought by the tax reform bill will lower capital gains tax revenue.[4]

I also considered the possible differential effect of tax rate changes on the transitory versus the permanent behavior of taxpayers. Three of the studies used in the paper provide different results for the transitory and permanent effects. I model the transitory behavior of taxpayers separately from the permanent behavior. The model indicates that a large surge of capital gains realizations should have occurred in late 1986, as taxpayers tried to beat the scheduled increase in tax rates on January 1, 1987. These higher realizations would substantially increase tax revenue for fiscal 1987, perhaps by as much as $20 billion. Preliminary indications from the Department of the Treasury indicate that this is precisely what happened. The model then predicts a sharp fall-off in tax revenues in 1988 and 1989.[5]

Capital gains realizations are only one economic activity adversely affected by the tax law change. Charitable giving also is severely affected. Economic research has long shown that charitable contributions are quite sensitive to the price, or aftertax cost, of making the gift. A taxpayer in the 40 percent tax bracket faces a net cost of giving of 60 cents for each dollar contributed. If that taxpayer's tax rate falls to 30 percent, the price of giving rises to 70 cents on the dollar, an increase of 17 percent.

The tax changes of the 1980s have had the effect of raising the cost of making charitable gifts. As already noted, the top marginal tax rate has been reduced from 70 percent to 33 percent over the period. This reduction has the effect of more than doubling the price of giving for a taxpayer in the top bracket, from 30 cents on the dollar to 67 cents on the dollar.

The TRA was particularly unfavorable for charitable giving. First, the bill reduced marginal tax rates, thus increasing the cost of giving. Second, the bill ended the tax deduction of charitable giving for taxpayers who do not itemize. The 1981 tax changes had instituted a special deduction for those who do not itemize: they comprise the vast majority of all taxpayers. Under the new tax law, only taxpayers who itemize their deductions receive a tax incentive for their charitable contributions. Third, the tax bill sharply reduced the number of taxpayers itemizing, thus cutting the fraction of taxpayers eligible for a tax deduction for their gifts. Finally, the bill contained special provisions designed to reduce the incentive for taxpayers to contribute gifts of appreciated property such as real estate, works of art, and securities.

I model the combined effect of these provisions using the NBER TAXSIM model. The results indicate, when the bill takes final effect, a decline in charitable giving of about one-sixth compared with what otherwise would have occurred. The simulation results show that gifts of appreciated property would be especially hard hit. Preliminary indications suggest that, in fact, this has occurred.[6]

In conclusion, the evidence from a wide range of studies shows that taxpayers are highly sensitive to tax rates in many of their economic activities. Further research into the effect of tax rates on the tax base is particularly important, given the current federal budget situation. In addition, the unintended consequences of legislation, such as the effect of tax changes on charitable giving, show that policymakers must consider carefully the many possible implications of their decisions.

[3] *L. B. Lindsey, "Capital Gains Rates, Realizations, and Revenues," NBER Working Paper No. 1893, April 1986, and in* The Effects of Taxation on Capital Accumulation, *M. Feldstein, ed. Chicago: University of Chicago Press, 1987, pp. 69-100.*

[4] *One of those studies was authored by NBER associates Martin Feldstein, Joel B. Slemrod, and Shlomo Yitzhaki. Another was coauthored by NBER associate Charles T. Clotfelter.*

[5] *L. B. Lindsey, "Capital Gains under the Tax Reform Act of 1986: Revenue Estimates under Various Assumptions," NBER Working Paper No. 2215, April 1987, and* National Tax Journal *40, 3 (1987), pp. 487-504.*

[6] *L. B. Lindsey, "Individual Giving under the Tax Reform Act of 1986," in* The Constitution and the Independent Sector, *Washington, DC: Independent Sector and United Way Institute, 1987, pp. 137-146.*

Interest Rates

N. Gregory Mankiw

Anyone who has a mortgage or a savings account cares about interest rates. When interest rates rise, the return to saving and the cost of borrowing go up. When interest rates fall, saving becomes less attractive and borrowing becomes cheaper.

Interest rates also have an important impact on the economy as a whole. Higher interest rates tend to depress spending by firms on plant and equipment and spending by households on new housing and consumer durable goods. Therefore, an increase in interest rates often foretells of a coming recession. Interest rates are closely watched both by private investors and by makers of public policy.

Much of my research attempts to understand fluctuations in interest rates. This topic has received much attention among macroeconomists and, despite all the attention, remains little understood. Here I will summarize some of what my coauthors and I have learned.

The Term Structure

At this writing, the yield on long-term government bonds exceeds the yield on three-month Treasury bills by about 300 basis points (three percentage points). This yield spread is large by historical standards. Since 1961, the average spread between the long-term interest rate and the short-term interest rate has been less than 100 basis points.

How can we interpret this exceptionally large spread? Perhaps the most obvious interpretation is that long-term securities are now better investments than short-term securities are. Since long-term government bonds have a higher yield than three-month Treasury bills do, it seems profitable to take money out of Treasury bills and invest it in long-term bonds.

Economists, however, are usually skeptical that there are such opportunities for easy profits. Instead, they often presume that asset prices adjust quickly to keep in line the holding returns on different assets. This presumption is the essence of the "efficient markets hypothesis." If investors are using all available information efficiently in making their portfolio decisions, then at market prices there shouldn't be any remaining profit opportunities.

This logic applied to the term structure of interest rates is called the "expectations theory" of the term structure. It implies a very specific interpretation of the large current spread between long rates and short rates. According to the expectations theory, if yields on long bonds greatly exceed the short rate, investors must be expecting capital losses on these long-term bonds. This expected capital loss explains why there are no easy profits to be made, despite the substantial yield spread.

The yield spread, combined with the expectations theory, has a prediction for future yields. Since bond prices move inversely with the yield, an expected capital loss is equivalent to an expected increase in long-term yields. Therefore, when the yield spread is large and investors are expecting a capital loss on long-term bonds, they are also expecting long-term yields to increase in the future.

The expectations theory of the term structure is easily tested and, unfortunately, easily refuted. The test entails examining whether the yield spread correctly forecasts future interest rates. According to the expectations theory, when long rates are greatly above short rates, long rates should rise subsequently. When long rates are below short rates, long rates should fall subsequently.

Examination of data from the United States, Canada, the United Kingdom, and Germany for the past 25 years shows that just the opposite is more nearly true. When long rates are high relative to short rates, they tend to fall rather than rise. Rather than seeing the capital loss predicted by the expectations theory, we tend to see a capital gain. When the yield spread is large, holding returns on long bonds tend to exceed the short rate.[1]

Another possible explanation for the yield spread is that it reflects increased risk. Perhaps the long rate is high relative to the short rate when long-term bonds are especially risky. Since investors require higher return to compensate them for accepting risk, greater risk is reflected in a higher yield spread.

However, analysis of the data also fails to support this explanation of the term structure. I have examined whether long-term bonds are unusually risky when the yield spread is great. It turns out that there is no apparent relationship between the yield spread and the amount of risk investors face.

Despite economists' innate skepticism, the obvious interpretation of the yield curve best fits the facts. When long rates greatly exceed short rates, it appears to be a good time to buy long-term bonds and to take money out of short-term instruments. This profit opportunity is by no means risk-free, however. Calculations I have made show that this strategy wins only with a two-thirds probability. While the market appears to leave some profit opportunities for the shrewd investor, there is no sure money to be made.

The Change in Interest Rates in 1914

One of the major changes in the behavior of interest rates occurred in 1914. Before 1914, short-term interest

[1] *N. G. Mankiw, "The Term Structure of Interest Rates Revisited," NBER Reprint No. 777, October 1986.*

rates fluctuated substantially; after 1914, short rates were much more stable. Moreover, before 1914, short rates had a predictable seasonal pattern, while after 1914, short rates had no seasonal pattern. Much of my research has examined the implications and causes of this dramatic change in the behavior of interest rates.[2]

The creation of the Federal Reserve in 1914 is the standard explanation of the smoothing of interest rates. The Fed was created in large part to smooth interest rates, so it is perhaps not surprising that it had that effect. The surprising finding, however, is that this smoothing of interest rates occurred not just in the United States but also in other countries. It is sometimes suggested that the worldwide nature of the change in interest rates implies that the Fed could not have been responsible.

My work with Robert B. Barsky, Jeffrey A. Miron, and David N. Weil has suggested how the introduction of the Federal Reserve in the United States might have been responsible for a worldwide change in the behavior of interest rates. In particular, we have proposed that policy interaction between countries might provide the missing link. We have developed a theory in which interest rate stabilization, although desired by all countries, occurs only if each country has a central bank. If any individual country tries to stabilize interest rates by itself, it causes undesirable gold flows. Together, all central banks can stabilize interest rates without causing these gold flows. The theory suggests that the founding of the Federal Reserve might have been important because it marked the beginning of a new era in which all major countries had a central bank.

Optimal Smoothing of Interest Rates

Since the founding of the Federal Reserve in 1914, changes in short-term interest rates have been largely unpredictable. In other words, the short rate has been approximately a random walk. By contrast, changes in short-term interest rates were much more predictable before 1914; for example, short rates usually were high in October and November and low in June and July.

I have developed a theory of monetary policy that shows why the Fed finds it optimal to make interest rate changes unpredictable.[3] The interest rate can be viewed as a tax rate; the interest rate is the tax on holding money balances, since money does not earn interest. The higher the tax rate, the greater the inefficiency caused by a tax. I show that the inefficiency of this tax on money balances is minimized by making the short rate a random walk. Hence, the unpredictable nature of interest rates may be the result of the Federal Reserve pursuing an optimal monetary policy.

This theory of Federal Reserve behavior has an implication that can be tested easily. If the interest rate is being set optimally as a tax rate, it should tend to move together with other tax rates. I find that interest rates do tend to rise as tax rates rise, and fall as tax rates fall. An increase in federal revenue of 1 percent of GNP is typically associated with a 1.2 percentage point increase in the short-term interest rate.

[2] *N. G. Mankiw and J. A. Miron, "The Changing Behavior of the Term Structure of Interest Rates," NBER Reprint No. 734, July 1986; N. G. Mankiw, J. A. Miron, and D. N. Weil, "The Adjustment of Expectations to a Change in Regime: A Study of the Founding of the Federal Reserve," NBER Reprint No. 915, October 1987; and R. B. Barsky, N. G. Mankiw, J. A. Miron, and D. N. Weil, "The Worldwide Change in the Behavior of Interest Rates and Prices in 1914," NBER Working Paper No. 2344, August 1987.*

[3] *N. G. Mankiw, "The Optimal Collection of Seigniorage: Theory and Evidence," NBER Reprint No. 991, February 1988.*

Economic Outlook Survey

First Quarter 1988

Victor Zarnowitz

According to the March survey of 18 professional forecasters taken by NBER and the American Statistical Association, the economy will be quite sluggish in the first half of 1988 but should improve considerably thereafter. Industrial production and real investment in business plant and equipment are predicted to grow much faster than total output this year, and somewhat slower next year. The strength in exports is expected to persist throughout 1988 and 1989, so that the trade deficit will be greatly reduced. Inflation and interest rates are likely to increase gradually.

Activity May Slow Sharply, but Not for Long

The median predictions of growth in real GNP are 0.7 percent, 0.6 percent, 1.8 percent, 3.0 percent, and 3.2 percent for the five successive quarters 1988:1–1989:1, all at annual rates (a.r.). They indicate the second downward revision since the October 1987 stock market crash of the forecasts for the first three quarters of this year. (The corresponding figures in the December 1987 survey averaged 1.1 percent higher.)

Real growth of less than 1 percent a.r. for two consecutive quarters would represent a pronounced slowdown. Indeed, five respondents expect output to de-

Projections of GNP and Other Economic Indicators, 1988-9

	Annual				
				Percent Change	
	1987 Actual	1988 Forecast	1989 Forecast	1987 to 1988	1988 to 1989
1. Gross National Product ($ billions)	4486.2	4733.5	5050.0	5.5	6.7
2. GNP Implicit Price Deflator (1982 = 100)	117.5	121.3	126.1	3.2	4.0
3. GNP in Constant Dollars (billions of 1982 dollars)	3819.6	3900.0	3994.5	2.1	2.4
4. Unemployment Rate (percent)	6.2	6.0	6.0	-0.2[1]	0.0[1]
5. Corporate Profits After Taxes ($ billions)	137.1	142.0	151.0	3.6	6.3
6. Nonresidential Fixed Investment (billions of 1982 dollars)	446.8	475.0	485.0	6.3	2.1
7. New Private Housing Units Started (annual rate, millions)	1.62	1.50	1.55	-7.24[2]	3.33[2]
8. Change in Business Inventories (billions of 1982 dollars)	42.4	19.0	23.8	-23.4[3]	4.8[3]
9. Treasury Bill Rate (3-month, percent)	5.83	5.80	6.21	-0.03[1]	0.41[1]
10. Consumer Price Index (annual rate)	3.6	4.0	4.4	0.4[1]	0.4[1]

	Quarterly							
		1988				1989	Percent Change	
	1987 Q4 Actual	Q1	Q2	Q3	Q4	Q1	Q4 87 to Q4 88	Q1 88 to Q1 89
		Forecast						
1. Gross National Product ($ billions)	4598.0	4644.0	4703.5	4763.0	4845.0	4928.5	5.4	6.1
2. GNP Implicit Price Deflator (1982 = 100)	118.7	119.6	120.6	121.8	123.1	124.1	3.7	3.8
3. GNP in Constant Dollars (billions of 1982 dollars)	3875.1	3882.0	3888.0	3905.0	3934.0	3965.0	1.5	2.1
4. Unemployment Rate (percent)	5.9	5.9	6.0	6.1	6.1	6.1	0.2[1]	0.2[1]
5. Corporate Profits After Taxes ($ billions)	141.2	142.6	141.5	140.0	140.0	142.0	-0.8	-0.4
6. Nonresidential Fixed Investment (billions of 1982 dollars)	459.6	467.9	472.0	476.0	480.0	483.0	4.4	3.2
7. New Private Housing Units Started (annual rate, millions)	1.52	1.50	1.50	1.52	1.51	1.55	-0.46[2]	3.33[2]
8. Change in Business Inventories (billions of 1982 dollars)	58.3	35.0	17.3	18.0	17.5	21.9	-40.8[3]	-13.1[3]
9. Treasury Bill Rate (3-month, percent)	6.00	5.77	5.75	5.77	5.92	6.10	-0.08[1]	0.33[1]
10. Consumer Price Index (annual rate)	3.5	3.7	3.9	4.1	4.2	4.6	0.7[1]	0.9[1]

SOURCE: The National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, March 1988. The figures on each line are medians of eighteen individual forecasts.

[1]Change in rate, in percentage points.
[2]Possible discrepancies in percentage changes are caused by rounding.
[3]Change in billions of dollars.

cline in 1988:1 and two expect it to decline in 1988:2. However, most of the survey participants now anticipate that the slowdown will be short-lived. Several predict single-quarter declines scattered through the near future. Only two predict a recession: that is, a longer contraction in business activity (one forecasts three quarters of decline and one expects four quarters of decline).

By the end of 1988 and early 1989, the expansion is expected to reaccelerate to the previous long-term growth trend of 3 percent or somewhat higher. But most respondents see this as temporary, since output in 1989 is predicted to average only 2.4 percent higher than in 1988 (not much more than the growth rate of 2.1 percent projected for both 1987-8 and 1988:1-1989:1).

Real Growth Forecasts: Dispersion and Probabilities

The forecasts in this survey generally antedate the most recent economic news, which, on the whole, has turned out much better than expected (for example, the unemployment rate fell to its lowest level in a decade). Furthermore, the dispersion of the individual predictions is unusually high this time: the standard deviations of quarterly forecasts of real GNP growth have a range of about 2-3 percent.

When asked what probabilities they attach to different outcomes for growth, the forecasters actually shifted moderately in the optimistic direction, as suggested by the following percentage distributions:

Chances in 100 of Real GNP Growing by	1987-8 (December 1987 Survey)	1987-8 (March 1988 Survey)	1988-9 (March 1988 Survey)
4 percent or more	4	5	8
2.0-3.9 percent	46	52	55
0-1.9 percent	39	33	25
Less (Negative)	11	10	13

These replies illustrate the high level of uncertainty that prevails.

How Likely Is a Recession in the Year Ahead?

The individual assessments of the probability that real GNP will decline yield the following statistics for the immediate past and future:

Chances in 100 of Decline in Real GNP

	Mean	Median	Standard Deviation
1988:1	35	20	33
1988:2	32	30	28
1988:3	23	10	23
1988:4	23	10	25
1989:1	26	18	26

The figures are low in absolute terms but considerably higher than observed on average in past surveys. The distributions are skewed to the right (that is, they have low model values), so that their means considerably exceed their medians. They also are highly dispersed.

The Range of Unemployment Forecasts

The predictions of the civilian unemployment rate in 1989:1 vary from 5.5 percent to 7.2 percent, averaging 6.1 percent. Ten respondents expect the rate to be higher a year from now, five expect it to be lower, and three expect it to be about the same. The mean levels for 1988 and 1989 are 6.0 percent and 6.1 percent, but the ranges are 5.6-6.6 percent and 5.1-7.1 percent, respectively.

Higher Inflation Rates Widely Expected

The rate of change in the GNP implicit price deflator (IPD) is forecast to rise from 3.2 percent in 1988 to 4.0 percent in 1989, according to the survey averages. The median quarterly forecasts for 1988:1-1989:1, when expressed at annual rates, are in about the same range. The predicted inflation rates fluctuate over time and vary considerably across individuals, but it is widely expected that they will show some upward drift. The probabilistic forecasts also show a shift in favor of more inflation, a reverse of the shift observed in the previous survey.

Chances in 100 of IPD Increasing by	1987-8 (December 1987 Survey)	1987-8 (March 1988 Survey)	1988-9 (March 1988 Survey)
6 percent or more	3	5	11
4.0-5.9 percent	32	26	41
2.0-3.9 percent	56	62	41
Less than 2 percent	9	6	8

For the consumer price index (CPI), the group projects a gradual rise in inflation from 3.7 percent in 1988:1 to 4.6 percent in 1989:1, and from 4.0 percent in 1988 to 4.4 percent in 1989. (In 1987 the CPI rose 3.6 percent.) All but three respondents foresee some increase in CPI inflation during the year ahead.

Little Consensus on Interest Rates

The three-month Treasury bill rate is expected to remain slightly below 6 percent (its level in 1987:4) through 1988, and to average 5.8 percent for the year as a whole. The group's median forecast for 1989 is a little higher: 6.2 percent. However, individual predictions of the T-bill rate differ markedly. Thus, the range for 1989:1 (and for 1989 as a whole) is 4.8-7.0 percent. About 70 percent of the sample predict that the rate will be higher next year, but not by much; on the other hand, several respondents expect it to move significantly lower.

The proportions of expected rises and declines are similar for the long-term rates. The averages predict that the yield on new high-grade corporate bonds will rise slowly but will stay close to 10 percent. The range for 1989:1 is 8.8-11.0 percent.

Short-Term Gains in Exports, Production, and Investment

Stimulated by the fall of the dollar, real exports are expected to continue rising. Net exports of goods and services in billions of 1982 dollars will be -115 in 1988:1 and -82 in 1989:1, a reduction of 29 percent in this measure of the trade deficit. The corresponding median forecasts for 1988 and 1989 imply a narrowing of the negative export-import balance by 24 percent.

This development should help manufacturing activity. The index of industrial production is predicted to gain 4 percent in 1988, an upward revision from the previous survey and an improvement even over the strong 1987. However, the group's forecasts for 1988-9 call for the index to rise by only 2.2 percent.

Nonresidential fixed investment in constant dollars is expected to be up a vigorous 6.3 percent in 1987-8, according to the median forecast from this survey. Most of the gain will come in the first half of the year. Presumably, equipment exports will be one source of this strength; lower real interest rates, implied by the average forecasts of inflation and nominal interest, may help as well. Plant and equipment investment is predicted to rise only 2.1 percent in 1988-9.

Inventory Adjustments and Corporate Profits

Change in business inventories will be negative in 1987–8 (–23 billions of 1982 dollars). After this downward adjustment, inventory investment is expected to rise slightly in 1988–9.

Corporate profits after taxes are forecast to rise 3.6 percent in 1987–8, lsss than the 5.5 percent rate of growth expected on average for GNP in current dollars. Having weathered the weakness this year, however, profits are expected to gain an improved 6.3 percent in 1988–9 (in line with the prospective improvement in GNP).

The Hesitant Consumer

Real consumption expenditures accounted for 65 percent of real GNP in 1987, gaining 1.9 percent. Most forecasters expect their growth to be slow in both 1988 and 1989: 1.2 percent and 1.6 percent, respectively, according to the medians from this survey. Thus, consumption is the major source of the expected slowdown in macroeconomic activity.

Individual predictions of consumption are quite different, though. For example, the mean of the forecasts for 1988:1–1989:1 is 1.5 percent, with a standard deviation of 2.2 percent and a range of –4 to –6 percent. Until recently, consumption forecasts had a much smaller range.

An End to the Decline in Housing

Residential investment is predicted to decline in 1988 but rise in 1989. The average forecast for 1989 is 195 billions of 1982 dollars, approximately the same as the forecast for 1988:1. New private housing starts similarly are expected to be fairly flat, at 1.5 million units (a.r.) in 1988, less than 1.6 million in 1989. The individual predictions are clustered close to these averages, with only a few outliers. (The range for 1988 is 1.4–1.8 percent.)

Government Purchases Restrained

Federal government purchases of goods and services, in constant dollars, are predicted to decline in 1988:1 but to gain 1.6 percent for the year as a whole. Their growth in 1989 is forecast at only 0.7 percent. State and local government purchases are expected to expand more steadily, at an average rate of 2.7 percent in this year and next. There is only moderate dispersion among the individual predictions for these two variables.

Assumptions

Most forecasters assume there will be no change in tax legislation, but a few expect some increases in taxes. Three forecasters predict that defense outlays will remain at their recent levels; seven expect them to increase 1–3 percent; and four forecasters predict a decrease of 1–5 percent. The estimates of monetary growth rates range widely: eight forecasters expect M1 to grow 3–9 percent and 12 forecasters expect M2 to grow 4–9 percent. Eight forecasters expect stable or slightly increasing oil prices; eight expect sharp rises in real exports; and four predict sharply increasing import prices.

This report summarizes a quarterly survey of predictions by 18 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 Deborah A. Nicholson of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

Lawrence B. Lindsey

Lawrence Lindsey began his association with the NBER ten years ago as a research assistant and became a faculty research fellow in NBER's Program in Taxation in 1984. Lindsey holds an A.B. from Bowdoin College and an M.A. and Ph.D. in economics from Harvard University.

From 1981–4 Lindsey was on the staff of the President's Council of Economic Advisers. He served there

as a junior staff economist in public finance, staff economist in taxation, and finally senior staff economist for tax policy. In 1984 he was named an assistant professor of economics at Harvard University.

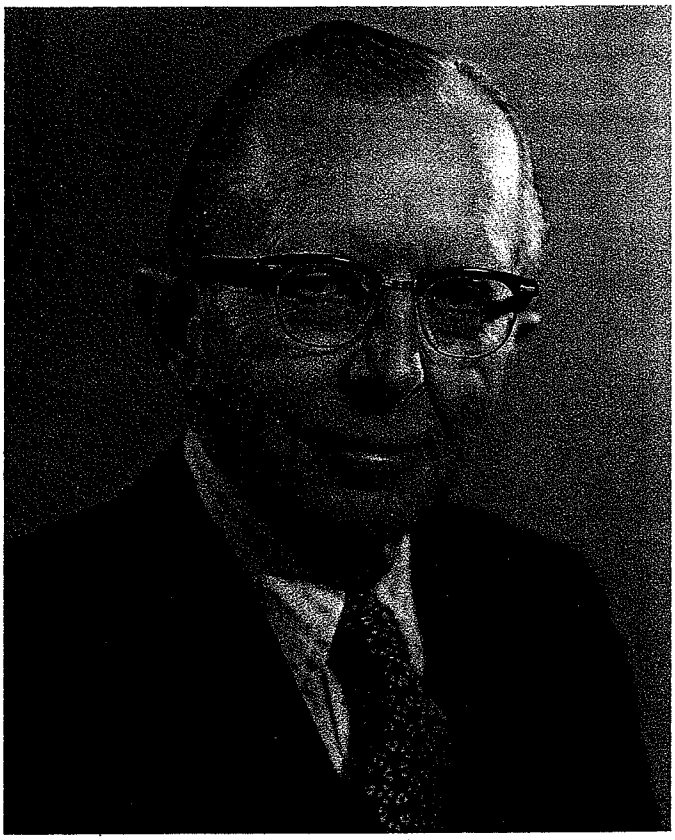
Lindsey's research on taxation has been published widely in NBER books, academic journals, and newspapers.

In 1985 he received the National Tax Association's Outstanding Thesis Award for his "Stimulating the Response of Taxpayers to Changes in Tax Rates." He also was elected to a three-year term on that group's Federal Taxation and Finance Committee in 1986.

Lindsey and his wife Sue live in Wayland (MA). Their hobbies are cooking and travel.

Paul W. McCracken

Paul W. McCracken, a professor emeritus at the University of Michigan, has served on the NBER's Board of Directors since 1973 and has been a member of the Executive Committee since 1981. He holds an A.B. degree from William Penn College (Oskaloosa, Iowa) and M.A. and Ph.D. degrees in economics from Harvard University.



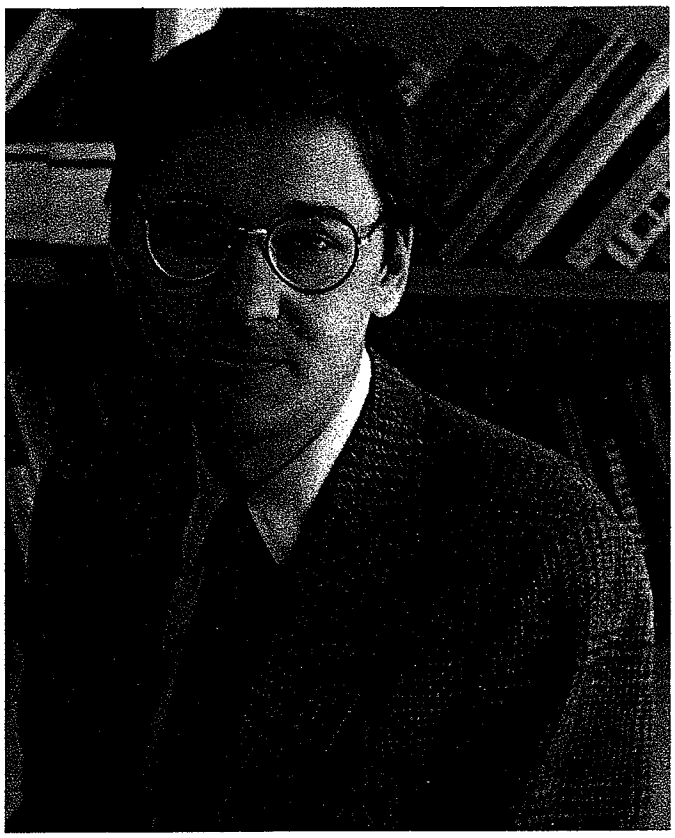
After graduate study at Harvard, McCracken worked as an economist in the U.S. Department of Commerce, and then as a financial economist and director of research at the Federal Reserve Bank of Minneapolis. Since 1948 he has been a member of the faculty of the School of Business Administration at the University of Michigan. In 1966 he was appointed Edmund Ezra Day Distinguished University Professor of Business Administration.

McCracken was on leave from the university in 1956–9, while he served as a member of the President's Council of Economic Advisers. He returned to the Council at the beginning of 1969 to serve for three years as its chairman. He is now a member of the Economic Policy Advisory Board formed by President Reagan at the beginning of his administration.

McCracken and his wife Ruth have two daughters, Linda Jo and Paula Jeanne. His hobbies are traveling and gardening.

N. Gregory Mankiw

N. Gregory Mankiw, of Harvard University, has been a member of the NBER's Programs in Taxation, Economic Fluctuations, and Financial Markets and Monetary Economics since 1985.



Mankiw received his A.B. in economics from Princeton University in 1980 and his Ph.D. in economics from MIT in 1984. He was a staff economist at the Council of Economic Advisers in 1982–3 and an instructor at MIT from 1984–5. In 1985 he was named an assistant professor of economics at Harvard University, where he was promoted to full professor in 1987.

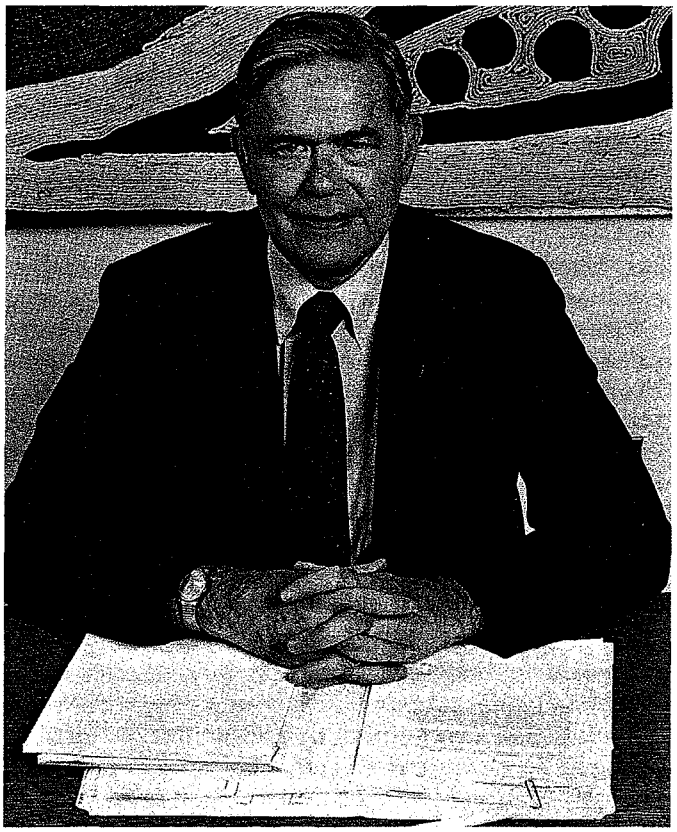
This year Mankiw is one of six Olin Fellows doing

research in the Bureau's Cambridge office. He was also the recipient of a National Science Foundation Presidential Young Investigators Grant for 1987-91. His work has been published in a number of academic journals and NBER books.

Mankiw and his wife, Deborah, live in Wellesley (MA) with their border terrier, Keynes.

Merton J. Peck

Merton J. Peck, acting dean of Yale's School of Organization and Management, has been a member of the NBER's Board of Directors since 1986. Peck received his B.A. from Oberlin College and his M.A. and Ph.D. from Harvard University.



He began his teaching career as an assistant professor of economics at the University of Michigan in 1955. From 1956-60, he was an assistant professor, and from 1960-1 an associate professor, of business administration at Harvard University. He has been a professor of economics at Yale University since 1963, chairing the department in 1970-4 and 1978-84.

Peck also worked in the Office of the Secretary of Defense from 1961-3 and was a member of the President's Council of Economic Advisers from 1968-9. His research on transportation, regulation, and technology has been published in numerous journals and books.

Peck is married and has four grown children. In his leisure time, he is an avid mystery reader.

Conferences

International Seminar on Macroeconomics

Robert J. Gordon

The tenth International Seminar on Macroeconomics (ISOM) was held in Ragny, France on June 12-13, 1987. ISOM is cosponsored by the National Bureau of Economic Research and La Maison des Sciences de l'Homme. The seminar is organized jointly by Robert J. Gordon of the NBER and Northwestern University and Georges de Menil of the Ecole des Hautes Etudes en Sciences Sociales (EHESS).

The primary focus of the program was international policy coordination and proposals for stabilizing exchange rates. The papers and their discussants were:

Marcus M. Miller, University of Warwick, and John Williamson, Institute for International Economics, "The International Monetary System: An Analysis of Alternative Regimes"

Discussants: Stanley Fischer, NBER and MIT, and Gilles Oudiz, Compagnie Bancaire, Paris

Francesco Giavazzi, NBER and University of Venice, and Marco Pagano, University of Naples, "The Advantage of Tying One's Hands: EMS Discipline and Central Bank Credibility"

Discussants: David Begg, Bank of England, and Maurice Obstfeld, NBER and University of Pennsylvania

Jeffrey A. Frankel, NBER and University of California at Berkeley, and Alan T. MacArthur, University of California at Berkeley, "Political versus Exchange Rate Obstacles to International Capital Mobility: A Study of Forward Rate Data for 24 Countries" (NBER Working Paper No. 2309)

Discussants: William H. Branson, NBER and Princeton University, and Matthew D. Shapiro, NBER and Yale University

Gerhard O. Orosel, Institute für Wirtschaftwissenschaften der Universitat Wien, "International Mobility of Financial Capital and Exchange Rate Volatility"

Discussants: Marcus M. Miller; and Bernard Dumas, NBER and University of Pennsylvania

Robert B. Barsky, NBER and University of Michigan; N. Gregory Mankiw, NBER and Harvard University; Jeffrey A. Miron, NBER and University of Michigan; and David N. Weil, NBER, "The Worldwide Change in the Behavior of Interest Rates and Prices in 1914" (NBER Working Paper No. 2344)

Discussants: Giorgia Basevi, Universita degli Studi di Bologna; Gianni Toniolo, University of Venice; and Alan C. Stockman, NBER and University of Rochester

Colin Mayer, Institute of Economics and Statistics, Oxford University, "New Issues in Corporate Finance"
Discussants: N. Gregory Mankiw; and Yves Barroux, Bank of France

Miller and Williamson examine the relative implications for global price and output stability of free floating, and specific agreements to stabilize nominal exchange rates (Ronald McKinnon's proposal) or real exchange rates (Williamson's proposal). They use a simple Dornbusch-type, symmetric, two-country model. McKinnon's proposal is represented as fixed nominal exchange rates and targeting of global money supply. (The authors also consider a variant with a stable price target.) Williamson's proposal is represented as fixed real exchange rates and the use in each country of fiscal policy to target nominal income growth. The authors analyze the steady-state variance of global prices and global output under alternative regimes. They show that the effectiveness of the Williamson proposal depends on the nature of the shocks. In the case of demand shocks, the proposal substantially reduces the variability of both price and output. In the case of supply shocks, the variability of output is reduced, but at the inevitable expense of an increase in the variability of prices.

In the second paper, Giavazzi and Pagano examine the existing European Monetary System (EMS) from the point of view of the monetary authority of an inflation-prone country that must decide whether or not to join. They treat the system exclusively as a form of precommitment about macroeconomic policy. Adherence means that the new entrant agrees to raise inescapably the cost to itself of inflationary surprises by denying itself the possibility of offsetting, through currency depreciation, the loss of competitiveness that they imply. When the country is outside the EMS, on its own, its monetary authority has an ill-starred incentive to reduce the value of the public debt and raise output via unanticipated inflation. This incentive is ill-starred because the public knows it and therefore thwarts it and also systematically raises its long-run expectations of inflation. By accepting, in advance, to bear an additional cost of unanticipated inflation, the monetary authority offsets this distortion, enhances its credibility, and thereby, in fact, lowers the effective cost of inflation reduction. The conditions favorable to joining the EMS are worked out in a small model in which the monetary authority maximizes an objective function of inflation and output, subject to the typical macroeconomic constraints of an open economy. The authors find that the result is often favorable to "tying one's hands."

During the last 20 years, the growth of international capital mobility has reduced substantially the autonomy of national decisionmaking in monetary policy. Frankel and MacArthur examine this subject with a new body of evidence and new concepts. They decompose real interest rate differentials among 24 countries in the 1980s into the covered nominal interest rate differential, the exchange risk premium, and expected real depreciation. They consider the first term to be the appropriate measure of the degree of capital mobility. They argue that this is the correct measure of the presence or absence of political obstacles to the movement of capital. They point out that in a world in which purchasing power parity does not hold, the last term need not be zero even if capital markets are perfectly free. Real interest rate parity may be invalidated by the imperfect integration of goods markets (sticky prices) rather than the imperfect integration of capital markets. Their conclusion is that the covered interest differential measure shows a generally high degree of political integration of capital markets in the OECD countries, as well as in Hong Kong and Singapore, in the 1980s.

Orosel starts from a definition of perfect capital mobility similar to that of Frankel–MacArthur (uncovered nominal interest parity) and proceeds to explore the effect of sticky goods prices on the variability of exchange rates. He does this by adding stochastic disturbances to a Dornbusch model of a small economy under flexible exchange rates in the steady state. He proves that, under most conditions, exchange rates are more variable when goods prices are rigid than when they are flexible.

The empirical relationship between nominal interest rates and real interest rates in the face of international capital mobility is one of the phenomena that Barsky, Mankiw, Miron, and Weil put into historical perspective in their paper. The principal focus of this paper is the effect on interest rate and price patterns of major changes in the international monetary regime in 1914. One of the ironies of history was that in 1914 the United States gained a central bank, the Federal Reserve System, at almost exactly the same time that the world lost the gold standard. Despite the turbulence of the period, world nominal interest rates and world price movements became substantially more stable after these two changes. The authors conclude that the creation of the Federal Reserve System was more important to the stabilization of interest and inflation rates than the demise of the gold standard was. They argue that the birth of an American partner for the existing European central banks made new efforts and approaches to stabilization possible. The moral for today may be that the reliability of national monetary authorities may have as great an effect on international financial stability as the choice of an exchange rate regime does.

Mayer reviews new comparative measures, based on flow-of-funds accounting, of the sources of funding for corporate investment in the United States, Japan, Germany, and the United Kingdom. He emphasizes the careful matching of the commitments of users and suppliers of funds in Germany and Japan and contrasts it with the greater anonymity of the relationship between stockholders and corporate managers in the United Kingdom and the United States. He argues that

reforms that increase competition, such as those that have been created in the United States and the United Kingdom, may tend to reduce incentives for risk-taking and thereby cause research and investment expenditures to be at below optimal levels. He points to the increased facility of takeovers as an example of a development that discourages long-term relationships between corporations and the suppliers of their finance. He argues that, if this is indeed its effect, it detracts from the longer-term growth prospects of the economy.

These papers will be published in the *European Economic Review,* Volume 32, No. 5, May-June 1988.

Hal R. Varian, University of Michigan, "Differences of Opinion in Financial Markets"

Discussants: Michael Rothschild, NBER and University of California at San Diego, and Josef Lakonishok, University of Illinois

Avraham Kamara, University of Washington, "Trading Systems, Liquidity, and Default: Evidence from the Treasury Bill Markets" (jointly with Colin Lawrence of Drexel, Burnham & Lambert)

Discussants: Thomas H. McCurdy, Queen's University, and Edward J. Kane, NBER and Ohio State University

Frederic S. Mishkin, NBER and Columbia University, "What Does the Term Structure Tell Us about Future Inflation?"

Discussants: Kenneth A. Froot, NBER and MIT, and Louis K. C. Chan, Cornell University

Risk and Financial Markets

With memories of the recent stock market crash fresh in their minds, economists from more than 40 universities gathered in Cambridge on December 4 and 5 for an NBER-sponsored Universities Research Conference on "Risk and Financial Markets." The conference program, organized by NBER Research Associate V. Vance Roley of the University of Washington, was:

Jay Shanken, University of Rochester, "Intertemporal Asset Pricing: An Empirical Investigation"

Discussants: John Y. Campbell, NBER and Princeton University, and A. Craig MacKinlay, University of Pennsylvania

Marjorie B. McElroy, Duke University, and Edwin Burmeister, University of Virginia, "Arbitrage Pricing Theory as a Restricted Nonlinear Multivariate Regression Model: ITNLSUR Estimates"

Discussants: Bruce N. Lehmann, NBER and Columbia University, and D. Chinhyung Cho, University of Wisconsin

Panel Discussion: "Efficient Market Theory after the Crash": Robert J. Shiller, NBER and Yale University; Robert C. Merton and Lawrence H. Summers, both of NBER and Harvard University

James M. Poterba, NBER and MIT, and Lawrence H. Summers, "Mean Reversion in Stock Prices: Evivence and Implications"

Discussants: G. William Schwert, University of Rochester, and Andrew W. Lo, NBER and University of Pennsylvania

Gerard Gennotte, University of California at Berkeley, and Terry A. Marsh, NBER and University of California at Berkeley, "Variations in Economic Uncertainty and Risk Premiums on Capital Assets"

Discussants: Kenneth J. Singleton, NBER and Stanford University, and Peter Bossaerts, Carnegie-Mellon University

Shanken finds a number of empirical regularities in his study of size and industry portfolios and stock and bond indexes. Over 1953–82, expected stock returns are negatively related to the one-month Treasury bill yield and positively related to a measure of rate volatility. Variances of returns also are directly related to the Treasury bill rate for every portfolio examined. Shanken further finds that abnormally large risk-adjusted January returns are apparent for several industry portfolios as well as for portfolios of smaller firms. In addition, there is an increase in the interest rate risk of smaller firms in January.

By replacing unknown random factors that potentially affect stock returns with observed macroeconomic variables, McElroy and Burmeister recast the arbitrage pricing model as a multivariate regression model with cross-equation restrictions. This approach eliminates many of the problems associated with the usual techniques. One advantage is that it allows a direct economic interpretation of the factors affecting stock returns. McElroy and Burmeister use returns on 70 stocks to estimate the model, and they find that a set of macroeconomic variables, including inflation and real final sales, affect stock risk premiums.

During the panel discussion, Shiller treated the audience to the results of a survey of investors that he conducted following the crash in October 1987. (His findings are reported in NBER Working Paper No. 2446, "Investor Behavior in the October 1987 Stock Market Crash: Survey Evidence." That paper is summarized in the January/February 1988 issue of the *NBER Digest.*) Shiller's basic finding is that investors on October 19 reacted to the price movements they were witnessing, and not to news of economic events. Summers followed with a preview of the results of his work with Poterba on the variability of stock prices. Their somewhat reassuring conclusion was that stock prices tend to revert to a long-run trend, despite wide swings in the short run. Merton discussed his theory of the crash: that an imbalance in technological innovation in the financial market led to a sort of gridlock and breakdown of the

system. That is, the trading systems and certain other aspects of the market were not equipped to handle portfolio insurance, 24-hour redemptions in mutual funds, and the like. October 19 thus resembled previous backlogs in the market, except for its magnitude.

Poterba and Summers find that about half of the short-run variation in stock prices is attributable to transitory, or short-lived, components. These movements tend to die out over time, and prices revert to a long-run trend. Poterba and Summers analyze over 100 years (1871–1986) of returns to holding common stock in the New York Stock Exchange. They also consider the returns on investing in 17 foreign equity markets since World War II and the experience of 82 individual firms whose shares have been traded on the NYSE continually since 1926. They conclude that "the transitory component in stock prices is quantitatively important, accounting for the bulk of the variance in returns."

Gennotte and Marsh examine the impact of changes in economic uncertainty on asset returns and interest rates. Their model implies that variations in stock market risk premiums are not, in general, related to variations in the volatility of stock market returns in the usual linear way. Gennotte and Marsh also find that dividend yields and lagged stock returns can be used to predict future stock returns, and that stock returns can be more volatile than dividends when stock pricing is rational.

Varian investigates trade caused by different beliefs. These differences may be the result of different opinions or different information. He argues that, in general, differences in information will not cause trade. Only differences in opinion generate stock market volume. Varian shows that if tastes are identical, and if risk tolerance does not grow too rapidly, then assets that have more dispersed opinions will have lower prices and a greater volume of trade. In general, the effect of differences of opinion on asset prices will depend on the curvature of asset demand functions with respect to the opinions of the agents.

Kamara and Lawrence demonstrate that differences in trading systems explain significant deviations from "the law of one price." Futures and forward contracts on an identical asset are not perfect substitutes. First, futures contracts are traded in an auction market on an organized exchange with an open outcry system. Forward contracts, on the other hand, are traded in a secondary over-the-counter dealer market. The cost of liquidity is usually lower in futures contracts than in forward contracts. Second, the futures exchange has a clearing association that serves as a guarantor of the financial fulfillment of all futures contracts. Forward markets do not have a clearing association. The functioning of a clearing association reduces the default risk significantly. They show that Treasury bill futures rates contain significantly lower liquidity and default premiums than forward rates do. Default premiums embedded in the forward-futures rates spreads vary directly with maturity and inversely with economic growth. The value of the greater transactional efficiency of the futures market varies directly with the volatility of underlying spot rates. This explains the success of financial futures markets in the 1970s.

Mishkin examines empirically what the term structure of interest rates tells us about future inflation. His results indicate that the information in the term structure about changes in future inflation is strikingly different from the information in the overall level of interest rates about future inflation. While nominal interest rates provide substantial information about the level of future inflation, the term structure provides almost no information about future changes in inflation. On the other hand, the term structure of nominal interest rates contains a great deal of information about the term structure of *real* interest rates. Furthermore, while there was a dramatic shift in the degree to which nominal interest rate movements reflected expectations of future inflation when the monetary policy regime shifted in October 1979, the informtion in the term structure about future inflation and real interest rates did not shift. Indeed, it remained quite stable throughout the 1964–85 sample period.

Conference on the European Monetary System

The NBER sponsored a conference on "The European Monetary System" (EMS) in Cambridge on December 11. The program, organized by Francesco Giavazzi, NBER and Universita di Bologna, and Alberto Giovannini, NBER and Columbia University, was:

Introduction: Francesco Giavazzi and Alberto Giovannini, "Questions Raised by the EMS Experience"

Marianne Baxter, University of Rochester, and Alan C. Stockman, NBER and University of Rochester, "Business Cycles and the Exchange Rate Regime"

Discussant: Lawrence H. Summers, NBER and Harvard University

Susan M. Collins, NBER and Harvard University, "Inflation and the EMS"

Discussant: Kenneth A. Froot, NBER and MIT

Matthew B. Canzoneri, Georgetown University, and Dale W. Henderson, NBER, Georgetown University, and Board of Governors of the Federal Reserve System, "Is Sovereign Policymaking Bad?"

Discussant: Francesco Giavazzi

Marcus M. Miller, University of Warwick and Center for Economic Policy Research, and John Williamson, Institute for International Economics, "The International Monetary System: An Analysis of Alternative Regimes"

Discussant: Takatoshi Ito, NBER and the University of Minnesota

Paul R. Krugman, NBER and MIT, "The Bias in the Band: Exchange Rate Expectations under a Broad-Band Regime"
Discussant: Marianne Baxter

The EMS, once thought of as some sort of European oddity, has survived both its detractors and the unprecedented swings of the dollar exchange rate. But can the EMS experience teach the rest of the world anything about the appropriate institutional arrangements for a sustainable system of limited exchange rate fluctuations? Research by Giavazzi and Giovannini suggests that the EMS experience cannot be exported easily to the rest of the world. Moreover, they find that the EMS might not survive the full liberalization of financial markets expected for 1992.

Baxter and Stockman investigate the differences in the behavior over time of key economic aggregates under alternative exchange rate systems. Aside from the greater variability of real exchange rates under flexible than under pegged nominal exchange rate systems, they find little evidence of any systematic differences in the behavior of other macroeconomic aggregates or international trade flows under alternative exchange rate systems. Business cycles appear to have become more nation specific and less worldwide since 1973. Some trade and industrial production series have become more volatile since 1973, but there is little indication that these changes are related to the choice of an exchange rate system.

Between 1979 and 1986, there was an impressive convergence in the inflation rates of EMS member countries. This observation has prompted many to conclude that joining the EMS was responsible for reducing inflation in countries prone to inflation. Collins argues that the theory and the empirical evidence supporting this claim are inconclusive at best. She points out that there are a variety of views about how the EMS exchange regime actually works, including cooperative versus noncooperative decisionmaking and symmetric versus asymmetric choice of instruments. She develops a single framework in which these alternatives can be contrasted and shows that some tend to be more inflationary than non-EMS regimes do. While joining the EMS may have altered the "rules of the game," there is little evidence that it increased the credibility of disinflationary programs. For example, in France any changes in credibility seem to have come after 1982, not in 1979. Finally, there is no shift in inflation in the EMS after 1979. All countries underwent a shift after 1979; inflation rates tended to be more similar within the EMS than among developed countries in general, even before 1979.

It is often argued that a system such as the EMS benefits high-inflation members by increasing their credibility in the fight against inflation without hurting low-inflation members. In their paper, Canzoneri and Henderson assume that Italy has a high inflation bias and Germany a low one under flexible exchange rates. They consider an old and a new view on modeling the EMS. According to the old view, both policymakers take the money supply as the policy instrument, but Italy takes a fixed value of the exchange rate as an intermediate target. According to the new view, Germany takes the money supply as its instrument while Italy chooses the exchange rate. Canzoneri and Henderson conclude that this argument, that the EMS benefits high-inflation members, is not supported by the models of inflation bias that are currently in vogue.

Miller and Williamson first compare the behavior of output and prices with free floating of exchange rates and national money supply targets. They then consider two alternatives for monetary coordination. First is McKinnon's proposal to fix nominal exchange rates and stabilize monetary growth (or average inflation); second is Williamson's system of target zones for stable real exchange rates, complemented by nominal income targets for fiscal policy.

Krugman offers an approach to modeling the behavior of exchange rates when authorities have committed themselves with at least some degree of credibility to prevent the exchange rate from moving outside some announced target zone. The basic result is that when the fundamentals that drive the exchange rate are uncertain, the belief that the edges of the band will be defended exerts a stabilizing effect on the exchange rate within the band. When the exchange rate is near the top of the band, the market realizes that it has more room to go down than up; when it is at the bottom, that it has more room to go up than down. The result is to generate regressive expectations that keep the exchange rate within the band for a wider range of fundamentals than if there were no announced target zone. The basic approach also can deal with cases in which the commitment to defend the band is uncertain. Imperfect credibility weakens, although it does not eliminate, the stabilizing effect of the target zone; it also implies an eventual crisis in which the market tests the authorities' resolve, leading either to a gain in credibility that pulls the exchange rate back into the band or to a collapse of the target zone either into a free float or a rerealignment.

Funding for the conference was provided by the German Marshall Fund. The following people attended: Philippe Bacchetta, Richard N. Cooper, Alain de Crombrugghe, Xavier Sala I Martin, Sabine Miltner, Kevin O'Rourke, Ana Revenga, Nouriel Roubini, and Mark Sundberg, Harvard University; Ralph Bryant, The Brookings Institution; Rudiger Dornbusch, NBER and MIT; Jeffrey A. Frankel, NBER and the University of California at Berkeley; Koichi Hamada, Yale University; Elhanan Helpman, NBER, Tel Aviv University, and MIT; Catherine L. Mann, Federal Reserve Board; Helmut W. Mayer, Bank for International Settlements, Basel; Alain Morisset, Commission of the European Communities; Maurice Obstfeld, NBER and the University of Pennsylvania; Marco Pagano, University of Naples and MIT; Kenneth S. Rogoff, NBER and the University of Wisconsin; Massimo Russo, International Monetary Fund; Jeffrey D. Sachs, NBER and Harvard University; and Terry Vaughn, The MIT Press.

Saving In the United States and Japan

One of the striking contrasts between the U.S. and Japanese economies is in personal saving. In Japan, the personal saving rate has been around 16 percent, while in the United States it has been around 5 percent and declining in the mid-1980s. Analyses of this difference in saving behavior and its implications for trade imbalances between the two countries were the topics of a conference cosponsored by the National Bureau of Economic Research and the Tokyo Center for Economic Research on January 9 and 10.

The conference program included the following:

David A. Wise, NBER and Harvard University, "Saving for Retirement: The U.S. Case"

Discussants: Tatsuo Hatta, Osaka University; Masahiro Kuroda, Keio University; and Seiritsu Ogura, Saitama University

Kazuo Sato, Rutgers University, "The Role of IS Balance and Its Macroeconomic Implications: The Case of Japan"

Phillip Turner, OECD, "Savings and Investment, Exchange Rates, and International Imbalances: An Empirical Study"

Discussants for both papers: Masaru Yoshitomi, Economic Planning Agency (Japan); Jeffrey D. Sachs, NBER and Harvard University; and Koichi Hamada, Yale University

Jeffrey D. Sachs, "Macroeconomic Interdependence of the United States, Japan, and the Asian NICs"

Susan M. Collins, NBER and Harvard University, "Savings and Economic Development"

Discussants for both papers: Gary Saxonhouse, University of Michigan; Mitsuhiro Fukao, Bank of Japan; and Kazumi Asako, Yokohama National University

Fumio Hayashi, NBER and University of Pennsylvania; Takatoshi Ito, NBER and University of Minnesota; and Joel B. Slemrod, NBER and University of Michigan, "Housing Finance Imperfections and Private Saving: A Comparative Simulation Analysis of the United States"

Charles Y. Horioka, NBER and Osaka University, "Housing Demand and Saving for Housing in Japan"

Discussants for both papers: David A. Wise; Fumio Hayashi; and Naoyuki Yoshino, Saitama University

Tsuneo Ishikawa, University of Tokyo, "Saving and Labor Supply Behavior of the Aged Households: A Study Based on Micro Data"

Albert Ando, NBER and University of Pennsylvania, and Fumio Hayashi, "Life-Cycle and Bequest Savings of Japanese Households: A Study Based on the National Survey of Family Income and Expenditure Data"

Discussants for both papers: Tatsuo Hatta; Masahiro Kuroda; and Seiritsu Ogura

Many reasons have been suggested for the high saving rate in Japan. They include high housing prices, caused by a land shortage, and the (apparent) high saving rate among the elderly. According to the macroeconomic identity, the sum of personal, corporate, and government imbalances between saving and investment must equal the external imbalance of the country. Hence, excess saving over investment in Japan and a shortage of saving in the United States are the other side of the trade imbalance between the two countries.

In his paper, Wise investigates the U.S. saving experience. He shows that the typical U.S. household holds virtually no financial savings. Most personal "saving" is in the form of housing, which is not decumulated during retirement. Most saving is done by corporations and government through pension plans and Social Security, although the latter is pay-as-you-go. Wise looks at the large impact of IRA programs on personal saving in the United States, drawing funds from consumption without affecting other forms of saving. His paper casts doubt on the applicability of the simplest form of the life-cycle hypothesis.

Both Sato and Turner study interaction between the current account imbalances and domestic investment-saving (IS) imbalances in Japan. Sato investigates how the IS balances in the private sector have shifted from shortage to surplus in the mid-1960s. He identifies the pressure of housing demand as an important motivation for saving. Turner analyzes the effect of the real interest rate and the real exchange rate on the domestic IS balance.

Collins contrasts the Korean and Japanese experiences with regard to the IS and external balances during their respective periods of rapid growth. She shows that when personal saving fell in Korea, the difference between domestic investment (set by government planning) and saving was financed by borrowing from abroad. Japan avoided foreign borrowing in the 1950s and 1960s by curbing investment if necessary. Collins convincingly refutes a casual observation that Korea is like a second Japan in its economic development and growth.

The total value of land in Japan is almost twice that of land in the United States, although Japan has an area only 4 percent as large as the United States. The important implications of Japan's high land prices emerge in a number of papers. For example, Sato suggests that an increase in Japan's money supply most likely will increase land prices first, because more financing to corporations will include the purchase of land from households. Sachs shows that elimination of import quotas and of agricultural protection in Japan may increase her trade surpluses. Elimination of protection for agricultural products will cause a decline in land

prices, which is equivalent to a redistribution of wealth from the old, who have a higher propensity to consume, to the young, who have a lower propensity to consume. Thus, a short-run housing boom, reducing the external surpluses, may be overtaken by the long-run increase in saving.

Hayashi, Ito, and Slemrod conclude that high housing prices, a shorter mortgage horizon, and tax rules contribute to a higher saving rate among the young in Japan than in the United States, and thus to higher aggregate saving. Their model shows that if Japan adopted U.S.-type tax incentives, namely the full deductibility of mortgage interest payments and the full taxation of interest income, then the private saving rate in Japan would decrease by at least a few percentage points.

Horioka presents a puzzle: using saving surveys, he documents that housing is the most frequently given reason for saving in Japan. However, he also shows that saving for housing, after dissaving in depreciation is taken into account, is not significant in the macroeconomic data.

Ishikawa and Ando and Hayashi study the saving behavior of older workers. Ishikawa investigates the hypothesis that the high labor force participation rate among the elderly in Japan contributes to their higher saving, and thus to a higher aggregate saving rate.

The study of the saving behavior of the elderly in Japan is complicated by widespread extended families. When many elderly merge their households with those of their sons or daughters, they usually are counted as dependents of the younger households. Ando and Hayashi, using detailed data, investigate the difference in saving behavior between the elderly in the merged families and the elderly in independent households.

Other participants in the conference were: Shozaburo Fujino and Toshiyuki Mizoguchi, Hitotsubashi University; Yoshitsugu Kanemoto, University of Tsukuba; Atsushi Maki and Michihiro Oyama, Keio University; Masahiro Okuno-Fujiwara, University of Tokyo; and Hiroshi Yoshikawa, Osaka University.

Credit Market Imperfections

The NBER held a conference on "Credit Market Imperfections and Economic Activity" at the Federal Reserve Bank of Chicago on February 18-19. R. Glenn Hubbard, NBER and Northwestern University, organized the following program:

Peter C. Reiss, NBER and Stanford University, "The Effects of Credit and Finance on Oil and Gas Exploration"

Steven M. Fazzari, Washington University, R. Glenn Hubbard, and Bruce C. Petersen, Northwestern University and Federal Reserve Bank of Chicago, "Financing Constraints and Corporate Investment" (NBER Working Paper No. 2387)

James Kahn, University of Rochester, "Endogenous Financial Structure in an Economy with Private Information"

Bruce C. Greenwald, Bell Communications Research, and Joseph E. Stiglitz, NBER and Princeton University, "Finance Constraints and Economic Activity" (NBER Working Paper No. 2494)

Jeffrey K. Mackie-Mason, NBER and University of Michigan, "Taxes, Information, and Corporate Financing Choices"

Robert S. Chirinko, University of Chicago, and Stephen R. King, Federal Reserve Bank of New York, "Bank Loans and Information Accumulation"

Between 1978 and 1986, oil and gas prices first rose and then fell dramatically. These oscillations had a profound effect on both the domestic oil and gas industry and on the economies of many oil-producing states. In particular, these oil price shocks influenced capital spending for exploration and development: from an all-time high of $55.7 billion in 1981, capital spending fell to a ten-year low of $26.6 billion in 1986. Reiss uses a panel dataset on domestic oil and gas firms to study whether the availability of credit affected firms' responses to the initial increase in oil prices from 1978 to 1981, and the subsequent decline in prices from 1981 to 1986. His evidence indicates that firms had relatively easy times raising capital during the boom in oil prices. During the deflation in oil prices, however, firms' credit and collateral positions played an important role in their ability to smooth investment spending. Credit contracts may limit a firm's ability to respond to investment opportunities as its collateral base shrinks in response to a deflation in product prices.

Fazzari, Hubbard, and Petersen build on recent research concerning imperfections in the markets for equity and debt. This work suggests that some firms do not have sufficient access to external capital markets to enable them to respond to changes in the cost of capital, asset prices, or tax-based investment incentives. To the extent that firms are constrained in their ability to raise funds externally, investment spending may be sensitive to the availability of internal finance. That is, investment may display "excess sensitivity" to movements in cash flow. Using panel data on individual manufacturing firms, the authors compare the investment behavior of rapidly growing firms that exhaust all of their internal finance with that of mature firms paying dividends. They find that q values remain very high for significant periods of time for firms paying no dividends, relative to those for mature firms. Also, investment is more sensitive to cash flow for the group of firms most likely to face external constraints. These results are consistent with an augmented model, which takes into

account different financing regimes for different groups of firms.

Kahn derives equilibrium financial contracts in a model with potential adverse selection problems. He shows that if agents are allowed sufficient flexibility in structuring their financial transactions, they may attain an efficient outcome. In addition, certain patterns in financial structure emerge, as some types of arrangements are ruled out in equilibrium. Equilibrium contracts can be expressed in terms of debt and equity, with different types of agents generally issuing different types of liabilities.

Greenwald and Stiglitz develop a simple model of macroeconomic behavior that incorporates the impact of financial market "imperfections," such as those generated by asymmetric information in financial markets. These information asymmetries may lead to breakdowns in markets, in which risks are shared, like the equity market. In particular, the authors analyze firm behavior in the presence of equity rationing and imperfect futures markets with lags in production. As a result, firms act in a risk-averse manner. The macroeconomic consequences can account for many of the widely observed aspects of actual business cycles.

Mackie-Mason analyzes the effects of tax policy on corporate financing choices. He studies observable, incremental financing choices made by firms; previous researchers have looked at a firm's debt-equity ratio. Using the incremental-choice approach, he finds that nondebt tax shields crowd out interest deductibility, thus decreasing the desirability of debt issues at the margin. In an analysis of 1418 new security issues by U.S. firms during 1977–84, Mackie-Mason finds that a one-standard-deviation increase in a firm's tax loss carryforwards lowers the probability of issuing debt (and increases the probability of an equity issue) by about 8 percent when a firm seeks new public financing. Increasing a measure of investment tax credits by one standard deviation shifts the likelihood of an issue from debt toward equity by about 14 percent. Since only about 24 percent of public security issues are debt rather than equity, such a change in tax shield could reduce the number of public debt issues by half. Thus, the increase in corporate tax shields during the early 1980s (for example, ACRS, safe-harbor leasing, R and D tax credits) may explain in part a dramatic decline in the proportion of debt issues (from 38 percent of all new public issues in 1980 to 24 percent in 1984).

Chirinko and King examine the hypothesis that, in the process of issuing loans, banks acquire private credit information that is useful in reducing loan losses. They model a risk-neutral bank facing regulatory, balance sheet, and information accumulation constraints. Using data on a panel of eight money-center banks between the first quarter of 1984 and the second quarter of 1987, they find that the information accumulation hypothesis is an important element in understanding bank behavior.

Also attending the conference: David Aschauer and Steven Strongin, Federal Reserve Bank of Chicago; Laurie Simon Bagwell, Stanford University; Charles W. Calomiris and Charles Himmelberg, Northwestern University; Mark L. Gertler, NBER and University of Wisconsin; Roger H. Gordon, NBER and University of Michigan; Gary Gorton, University of Pennsylvania; Kenneth L. Judd, NBER and University of Chicago; Robert L. McDonald, NBER and Northwestern University; Stephen Oliner, Glenn Rudebusch, and Steven A. Sharpe, Federal Reserve Board; Paul M. Romer, NBER and University of Rochester; Andrei Shleifer and Robert Vishny, NBER and University of Chicago; Georghios A. Sofianos, Federal Reserve Bank of New York; John Veitch, University of Southern California; and Steven D. Williamson, Federal Reserve Bank of Minneapolis.

Third Annual Macroeconomics Conference

The NBER's third annual Conference on Macroeconomics was held in Cambridge on March 11–12. The conference, which drew more than 75 academic economists from all over the country, was organized by NBER Research Associate Stanley Fischer, currently on leave from MIT to serve as research director of the World Bank. The program was:

Alberto Alesina, NBER and Carnegie-Mellon University, "Macroeconomics and Politics"
Discussants: Kenneth Rogoff, NBER and University of Wisconsin, and Kenneth Shepsle, Harvard University

Kazuo Ueda, Osaka University, "Perspectives on the Japanese Current Account Surplus"
Discussants: Rudiger Dornbusch, NBER and MIT, and Susan Collins, NBER and Harvard University

John F. Kennan, University of Iowa, "Equilibrium Interpretations of Employment and Real Wage Fluctuations"
Discussants: Mark Bils, NBER and University of Rochester, and John B. Taylor, NBER and Stanford University

Panel Discussion: "What Does the October Stock Market Crash Teach Us about the Efficiency of the Stock Market?"
Discussants: Fischer Black, NBER and Goldman, Sachs & Company; Kenneth Frisch, University of Chicago; Albert S. Kyle, University of California at Berkeley; and Robert J. Schiller, NBER and Yale University

David H. Romer, NBER and Princeton University, "What Are the Costs of Excessive Deficits?"
Discussants: Paul Evans, Ohio State University, and James Tobin, Yale University

Matthew D. Shapiro, NBER and Yale University, and Mark W. Watson, NBER and Northwestern University, "Sources of Business Cycle Fluctuations"
Discussants: Robert E. Hall, NBER and Stanford University, and Danny Quah, NBER and MIT

Alesina focused on the relationship between political institutions and the macroeconomy. In particular, he considered the effects of electoral competition on macroeconomic policy and on the economic cycle. He also analyzed how different degrees of independence at the central bank can determine a nation's monetary policy. Alesina finds that independent central banks are associated with below-average inflation rates and may reduce the politically induced volatility of monetary policy and inflation.

Ueda discussed the causes of the recent increase in the Japanese current account surplus. By estimating the relationship between exports and imports, and saving and investment, Ueda finds that price elasticities of trade flows and interest rate elasticities of net savings are fairly low, He therefore concludes that the U.S. fiscal expansion increased the Japanese current account surplus mainly through its effect on U.S. income and in turn on Japanese exports. In addition, the decrease in oil prices was a major factor behind the current account surplus because of Japan's low price elasticity of imports. Decreases in the growth rate of government expenditures also led to an increase in the current account surplus, but a large part of the decrease in Japanese budget deficits was simply a response to favorable foreign shocks and resulting gains in incomes. In this sense, U.S. economic expansion and decreases in oil prices had a much greater impact on the Japanese current account than the decrease in Japanese budget deficits did.

Kennan analyzed monthly data on employment, hours worked, and real wages in manufacturing industries for six countries (Austria, Canada, Denmark, Japan, the United Kingdom, and the United States). If the data represent equilibrium responses to labor demand shocks (such as technology shocks), then the real wage should be strongly procyclical. However, Kennan finds that, under certain structural interpretations of the data, the real wage is not strongly procyclical, even though the model is driven almost entirely by labor demand shocks.

In the afternoon panel discussion, each participant presented his view of the October 19 crash. Black theorized that investors' tastes had been changing, in that they were tolerating higher levels of risk at various levels of income than before. He also assumed that investors' estimates of mean reversion—that is, the change in the market's expected return following a change in the level of the market—were growing more slowly than actual mean reversion before the crash. When investors realized their error, he believes, they reduced their estimates of expected return and cut back their holdings of stock.

French believes that neither investor panic nor a breakdown of market mechanisms on October 19 drove prices to an irrationally low level. Rather, the crash may have been the response of an efficient market to news about expected future cash flows or returns. French theorized that prices were irrationally high before the crash, that investors were unaware of this, and that events on or about October 19 brought prices back to rational levels. His conclusion is that no new regulation of the stock market is necessary.

Kyle, who was a staff member of the Brady Commission, noted that on October 19 four large institutions sold stock and index futures representing $4.6 billion in securities, while all of the specialists on the New York Stock Exchange and all of the locals at the Chicago Mercantile Exchange made net purchases of less than $1 billion. This greatly strained the capitalization and marketmaking capacity of the specialists. Apparently, either individual large institutions can affect prices significantly from day to day, or specialists and marketmakers do not stabilize prices significantly from day to day. Moreover, the price relationships during the week of October 19 were inconsistent with usual assumptions that the market operates efficiently. Price volatility during the week was equal to normal volatility during a two-year period. From Monday afternoon through Thursday, futures prices were many percentage points cheaper relative to cash market prices than arbitrage-based models would predict. Stock index put option prices on Tuesday morning were so high that any investor with reasonable expectations about future price movements could make money by selling them.

Shiller asserted that investors already had a "crash mentality" before October 19, associated with views about borrowing, government debt, and the perception that portfolio insurance was affecting markets. The proximate cause of the crash, he believes, was a response to price declines: the assumption by investors that the crash had arrived. In Shiller's opinion, the crash was as much a sociological or psychological phenomenon as an economic one.

Romer's paper focuses on some of the possible costs of large government budget deficits. If present and future taxpayers are less than perfectly linked, and if standard calculations of what is optimal imply that the capital stock is too low, then redistributions from future to present taxpayers (as would be caused by a policy of temporarily low taxes and high deficits) directly reduce social welfare. The welfare costs of deficits through this channel are likely to be very large, even if the links between present and future consumers are nearly perfect. By contrast, other commonly emphasized costs of deficits, in particular the costs of crowding out of capital (caused either by imperfect links between generations or by liquidity constraints), or of an irregular pattern of taxes, appear to be small.

Shapiro and Watson find that aggregate demand has played an important role in business cycle fluctuations in the postwar period. Their estimates suggest that 30 percent of the cyclical variability in output can be at-

tributed to shocks to aggregate demand. However, real permanent shocks are even more important, they conclude, explaining the remaining 70 percent of variability in cyclical output. The dominant permanent shock is not technology, but labor supply. Shocks to labor supply significantly affect output, regardless of the frequency with which they occur.

The papers and discussions of this conference will be published in *NBER Macroeconomics Annual* (Volume 3), edited by Stanley Fischer. It will be available from The MIT Press later this year.

Conference Calendar

Each *NBER Reporter* includes 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 1988 issue of the *Reporter* is June 1. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-3900.

April 29, 1988
Program Meeting: Labor Studies, NBER

April 29-30, 1988
Universities Research Conference on Trade Policies for International Competitiveness, NBER*

May 5-6, 1988
World Capital Market Integration, NBER

May 5-6, 1988
International Capital Flows and the Future of Financial Markets, Royal Institute of International Affairs

May 12-14, 1988
Income and Wealth: 50th Anniversary Conference, NBER

May 13, 1988
Financial Time Series, NBER

May 19-20, 1988
Model Comparison Seminar, NBER/CEME

May 19-21, 1988
The Economics of Aging, NBER

June 2-3, 1988
Evolution of Firms and Industries, NBER

June 2-4, 1988
Conference on Public Finance, NBER

June 7-8, 1988
International Seminar on Macroeconomics, NBER

June 23-25, 1988
Second Annual Meeting, European Society for Population Economics*

June 30-July 3, 1988
Annual Meeting, Western Economic Association*

July 6-8, 1988
Joint International Conference on Operational Research, Management Sciences and New Technologies, Association of European Operational Research Societies, Institute of Management Sciences, and AFCET

July 8-9, 1988
Strategic Trade Policy, NBER and Center for Economic Policy Research

July 11-August 19, 1988
Summer Institute, NBER

August 2-3, 1988
Latin American Meeting, The Econometric Society*

August 8-11, 1988
Joint Statistical Meetings, American Statistical Association*

September 15-16, 1988
Panel on Economic Activity, Brookings Institution

September 25-28, 1988
81st Annual Conference, National Tax Association-Tax Institute of America*

September 25-28, 1988
Annual Meeting, National Association of Business Economists*

October 6-7, 1988
Annual Conference, International Association of Business Forecasting

October 7-8, 1988
Conference on Housing, NBER

Open conference, subject to rules of the sponsoring organization.

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

October 27-29, 1988
International Policy Coordination and Exchange Rate Fluctuations, NBER

October 30-November 2, 1988
North American Conference, International Association for Energy Economics*

November 15, 1988
Tax Policy and the Economy, NBER

November 16-17, 1988
Compensation Policy and Firm Performance, NBER

November 18, 1988
Program Meeting: Labor Studies, NBER

November 20-22, 1988
Annual Meeting, Southern Economic Association*

December 1-2, 1988
Special Brookings Papers Meeting, Brookings Institution

December 16-17, 1988
Universities Research Conference: Economic Fluctuations, NBER*

January 6-7, 1989
Conference on Savings, NBER

January 7-8, 1989
Labor Relations and Corporate Management: Comparative Perspective, NBER, Center for Economic Policy Research, and TCER

February 23-26, 1989
Conference on International Taxation, NBER

March 10-11, 1989
Annual Conference on Macroeconomics, NBER

March 16-19, 1989
Stock Market Volatility and the Crash, NBER

August 14-17, 1989
Joint Statistical Meetings, American Statistical Association*

September 17-20, 1989
Annual Meeting, National Association of Business Economists*

October 8-11, 1989
82nd Annual Conference, National Tax Association-Tax Institute of America*

November 19-21, 1989
Annual Meeting, Southern Economic Association*

September 23-26, 1990
Annual Meeting, National Association of Business Economists*

September 22-25, 1991
Annual Meeting, National Association of Business Economists*

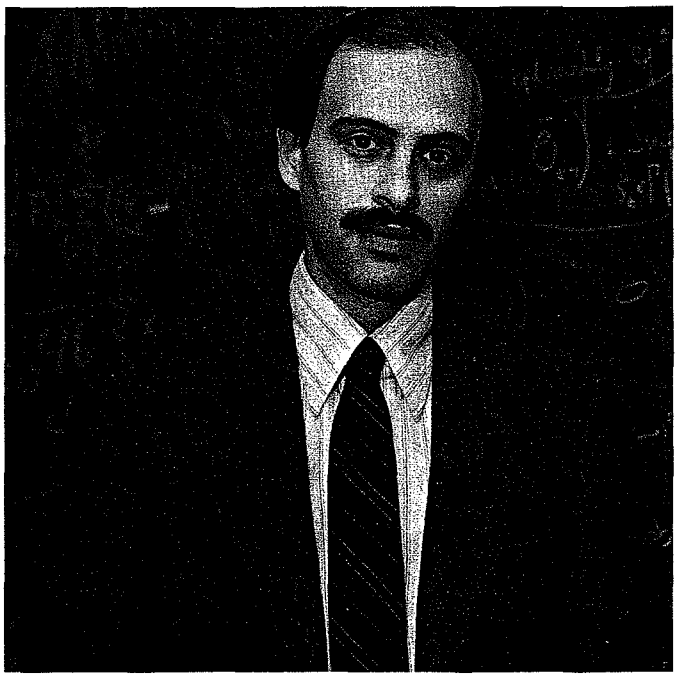
September 15-18, 1992
Annual Meeting, National Association of Business Economists*

September 19-23, 1993
Annual Meeting, National Association of Business Economists*

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

NBER Research Associate Is Awarded Clark Medal

Sanford J. Grossman, a Research Associate in the NBER's Programs in Economic Fluctuations and Financial Markets and Monetary Economics, was the 1987 recipient of the John Bates Clark Award from the American Economic Association. According to the award citation, Grossman's work "is unified by a concern with the economics of information and the efficiency tradeoffs that are attributable to conditions of uncertainty and information asymmetry.... His research has brought new insights into the relations between corporate financial structure and managerial incentives and the market for corporate control (takeover). More recent work on incentives, information asymmetries, and noncontractibility has opened up an entirely new area of research on incomplete contracting."



His current research topics include takeover bids, securities trading subject to transactions cost, the determinants of market liquidity, and the analysis of program trading and portfolio insurance.

Grossman is the John L. Weinberg Professor of Economics at Princeton University, where he has been a member of the faculty since 1985. He has also taught at Stanford University, the University of Pennsylvania, and the University of Chicago.

He received his B.A. in 1973, M.A. in 1974, and Ph.D.

in 1975 from the University of Chicago. In 1980, he was elected a Fellow of the Econometric Society, and he has received numerous other awards and grants. Grossman is married and has one child.

The Clark Medal is awarded every other year to the economist under the age of 40 who is judged to have made the most significant contribution to economics. Past recipients of the John Bates Clark Award who have an NBER association are: Research Associate Emeritus Milton Friedman, 1951; Research Associates Zvi Griliches, 1965, Franklin M. Fisher, 1973, Daniel McFadden, 1975, Martin Feldstein, 1977, Joseph E. Stiglitz, 1979, A. Michael Spence, 1981, James J. Heckman, 1983, and Jerry A. Hausman, 1985; and former Research Associate Gary S. Becker, 1967.

Imperfect Competition and Economic Fluctuations

Over 100 macroeconomists gathered at Stanford University on February 5 for a meeting of the NBER's Program in Economic Fluctuations. R. Glenn Hubbard, of NBER and Northwestern University, organized the day's presentations, which focused on "Imperfect Competition and Economic Fluctuations." The agenda was:

Robert E. Hall, NBER and Stanford University, "A Noncompetitive, Equilibrium Model of Fluctuations"
Discussant: Olivier J. Blanchard, NBER and MIT

Matthew D. Shapiro, NBER and Yale University, "The Cyclical Behavior of Price-Cost Margins: Demand Elasticity and Marginal Cost"
Discussant: Robert Porter, Bell Communications Research

Julio J. Rotemberg, NBER and MIT, and Lawrence H. Summers, NBER and Harvard University, "Labor Hoarding, Inflexible Prices, and Procyclical Productivity"
Discussant: Robert B. Barsky, NBER and University of Michigan

Dennis W. Carlton, NBER and University of Chicago, "The Theory of Allocation and Its Implications for Marketing and Industrial Structure"
Discussant: Jeremy I. Bulow, NBER and Stanford University

Mark Bils, NBER and University of Rochester, "Cyclical Pricing of Durable Goods"
Discussant: Andrew S. Caplin, NBER and Princeton University

Ian Domowitz, R. Glenn Hubbard, and Bruce C. Petersen, all of Northwestern University, "Market Structure, Durable Goods, and Cyclical Fluctuations in Markups"
Discussant: Peter Reiss, NBER and Stanford University

Hall's paper analyzes the impact on economic fluctuations of the interaction between capacity constraints and market structure. He finds that although monopoly power is inefficient because it reduces output, when times are very good, the economy operates at full capacity regardless of market structure. In this sense, the efficiency loss associated with monopoly power is concentrated in bad times. If the production sector has a monopolistic market structure and slack capacity, then a shift in preference toward the good produced in the imperfectly competitive sector causes its relative price to rise; that is, provided that the shift in preference also increases the production good's elasticity of demand. With a binding constraint on capacity, a shift in preference toward the production good always causes its relative price to rise. A shift in preference that changes the composition of demand only at the level of the individual will affect the aggregate level of output.

In his paper, Shapiro extends earlier work by Hall on the estimation of markups of average (over time) price over marginal cost. He estimates a markup that varies over the business cycle for several two-digit manufacturing industries that produce nondurables. The key assumption is that firms' monopoly power is constant over the business cycle. ("Monopoly power" is indexed by the ratio of the market's to the firm's price elasticity of demand.) Shapiro's results suggest that monopoly power is important in several industries, that markups are countercyclical, and that marginal costs are procyclical in some industries but countercyclical in others.

Rotemberg and Summers address the procyclical physical productivity of labor. One theory holds that procyclical productivity arises because capacity adjustments are costly, so that the utilization of capacity (in terms of capital and labor) fluctuates over the cycle. Rotemberg and Summers contrast this labor-hoarding explanation for procyclical productivity with an alternative that stresses increasing returns to scale. Their explanation focuses on the combined effects of labor hoarding and a particular form of price rigidity: "micro" price rigidity, in the Rotemberg-Summers terminology, refers to a situation in which firms cannot or will not adjust price in response to temporary, idiosyncratic disturbances in demand. To support their labor-hoarding-price-rigidity explanation, Rotemberg and Summers point to the timing of cyclical movements in productivity, the greater procyclicality of productivity in Japan than in the United States, and the absence of procyclical productivity for energy and materials inputs.

Carlton develops a general theory of resource allocation. He discusses the costs of instituting and operating real-world auction markets to show that nonprice allocation mechanisms for resources will sometimes supplant or supplement the price system. Given imperfect knowledge about the state of demand (and the absence of a perfect auction market), firms may set

the wrong price; hence, resource allocation through the price system entails deadweight losses. A profit-maximizing firm has an incentive to use knowledge about customers' demands to reduce or eliminate the deadweight losses associated with resource allocation through the price system. For example, a firm may use knowledge about customers' relative demands to ration goods efficiently during high-demand states.

Bils analyzes the effects of durability, luxuriousness, firm entry and exit, and long-term growth on the cyclical behavior of markups of price over marginal cost. A key feature of his model is that low-income/high-elasticity consumers purchase more luxurious goods during booms. Thus the cyclical variation in a firm's elasticity of demand is determined by cyclical variation in customer mix as well as by cyclical movements in aggregate income. Bils shows that firms producing nondurable goods exhibit procyclical markups, but luxurious goods exhibit less procyclicality in markups. Long-run growth, and short-run entry and exit, work in the direction of countercyclical markups.

Domowitz, Hubbard, and Petersen investigate the role of market structure and durability in the price and markup behavior of manufacturing industries. Using panel data on a number of four-digit U.S. manufacturing industries, they find that durability, and the interaction between durability and concentration, have a strong effect on the cyclical behavior of prices and markups. Markups of price over marginal cost are large (roughly 35 percent) and similar on average for producers of durables and nondurables. Markups are generally procyclical, more so for producers of nondurables and for more concentrated industries. The effects of concentration on markups are much more pronounced in industries that produce durables than in industries that produce nondurables. In highly concentrated, durable-producing industries, markups are acyclical or countercyclical. The price response to demand disturbances also differs markedly between concentrated, durable industries and concentrated, nondurable industries.

Steve J. Davis, assistant professor of business economics at the University of Chicago, assisted in the preparation of this report.

State and Local Project Meets

Members and guests of the NBER's Project on State and Local Government Finance met in Cambridge on February 12. Project Director Harvey S. Rosen, NBER and Princeton University, organized the following agenda:

Dennis Epple and Thomas Romer, Carnegie-Mellon University, "Mobility and Redistribution"

Philip J. Cook, Duke University (joint work with Charles T. Clotfelter, NBER and Duke University), "The Structure of Demand for Lotto and Other Lottery Games"

Robert P. Inman, NBER and University of Pennsylvania, and Daniel L. Rubinfeld, University of California at Berkeley, "A Federalist Fiscal Constitution for an Imperfect World"

Brian A. Cromwell, University of Michigan, "The Impact of State and Federal Grants on Capital Maintenance Decisions in the Local Public Sector"

Douglas Holtz-Eakin, NBER and Columbia University, and Therese J. McGuire, Princeton University, "A Preliminary Epitaph for Federal Revenue Sharing"

Epple and Romer study income redistribution by local governments. They assume that tax rates and levels of redistribution are determined by a majority vote of the residents of each local jurisdiction. Nonetheless, property ownership seems to influence redistribution. Even small, relatively high-income communities opt for high levels of redistribution if their households are renters. On the other hand, owner-occupants prefer lower levels of redistribution than renters do. Thus it is not the threat of out-migration that leads to observed low levels of local redistribution in most municipalities in U.S. metropolitan areas; rather, it is the relatively high proportion of owner-occupants.

Cook and Clotfelter analyze lotto, a state lottery game characterized by huge jackpots and correspondingly long odds of winning. Lotto is now responsible for about one-third of all lottery sales. One interesting feature of this game is that large states have higher sales per capita than small states do. (There is no such pattern for other lottery games.) As a result, there is a strong incentive for the smaller states to combine and offer a larger, more attractive lotto game than is possible on the basis of their populations alone. Two such consortiums are already in operation. Lotto players appear to respond more to the size of the jackpot and the likelihood that the winner will have to share it than to the probability of winning; these preferences could be described as "risk preferring."

Inman and Rubinfeld seek to provide guidelines for the allocation of fiscal and regulatory activities among the various tiers of government. They suggest a five-step decision rule to assist decisionmakers—that is, legislators or justices—in resolving the allocation of public economic activities among local, state, or national levels of government. They apply their technique to an analysis of three current, perhaps controversial, federal grants programs: General Revenue Sharing (GRS), water and sewer grants, and Aid for Families with Dependent Children.

Cromwell asks whether state and federal grant policies induce local governments to substitute new investment for the maintenance of existing capital, resulting in excessive deterioration of public infrastructure. Using a new dataset on local mass transit, he shows that private owners of transit capital equipment devote

significantly more resources to maintenance than public owners of similar capital do. Cromwell suggests that this difference is related to state and federal grant policies.

Holtz-Eakin and McGuire use a sample of New Jersey municipalities to examine the likely response of local governments to the elimination of GRS. They find that eliminating GRS will have two effects. First, fewer resources will be available to finance expenditures. Second, the incentives for local taxation will be reduced and local taxes, and spending, may fall further. Reducing the incentive to tax alone will result in a per capita drop of $3.43 (3.2 percent) in municipal taxes, $1.84 (5.9 percent) in nontax revenues, and $7.76 (1.9 percent) in current expenditures. The combined effect of the loss in aid and the reduced incentives to tax will be a per capita decline of $51.97 in current expenditures, $4.14 in taxes, and $5.78 in nontax revenue. Therefore, the elimination of GRS will have a substantial impact on local government budgets.

Also participating in the meeting were: David F. Bradford and James R. Hines, Jr., NBER and Princeton University; Randall Eberts, Federal Reserve Bank of Cleveland; Daniel R. Feenberg, NBER; Roger H. Gordon, NBER and University of Michigan; Charles R. Hulten and John Wallis, NBER and University of Maryland; Helen F. Ladd, Duke University; Lawrence B. Lindsey, NBER and Harvard University; Gilbert E. Metcalf, Harvard University; Edwin S. Mills, Northwestern University; Robert A. Moffitt, NBER and Brown University; James M. Poterba, NBER and MIT; and Michelle J. White, University of Michigan.

Positive Models of Monetary and Fiscal Policy

A small group of monetary and fiscal economists met at the Bureau's Cambridge office on February 25 for a workshop on "Positive Models of Monetary and Fiscal Policy." NBER Research Associates Alberto F. Alesina, Carnegie-Mellon University, and Herschel I. Grossman, Brown University, organized the following program:

Herschel I. Grossman and Suk Jae Noh, Brown University, "A Reputational Theory of Public Finance"
Discussant: Robert J. Barro, NBER and Harvard University

Kiminori Matsuyama, Northwestern University, "Credibility and Intertemporal Consistency: A Note on Strategic Monetary Policy Models"
Discussant: Guido Tabellini, University of California at Los Angeles and Carnegie-Mellon University

Warwick J. McKibbin, Reserve Bank of Australia, Nouriel Roubini, Harvard University, and Jeffrey D. Sachs, NBER and Harvard University, and "Dynamic Optimization in Two-Party Models" (NBER Working Paper No. 2213)
Discussant: Kiminori Matsuyama

Alberto F. Alesina and Stephen Spear, Carnegie-Mellon University, "An Overlapping-Generations Model of Electoral Competition" (NBER Working Paper No. 2354)
Discussant: Philippe Weil, NBER and Harvard University

Takeo Hoshi, MIT, "Noisy Inflation, Government Reputation, and Monetary Policy"
Discussant: John B. Van Huyck, Texas A and M University

Jun Il Kim, Brown University, "Private Information and Reputation"
Discussant: Nouriel Roubini

Grossman and Noh analyze a reputational equilibrium in which a proprietary fiscal authority issues debt, collects taxes, and provides productive public services. The authority's objective is to maximize the rents extracted by the political establishment. The authors show that the closer the productive technology is to constant returns to scale in labor and public services, the closer will be the tax rate and provision of public services under the equilibrium proprietary fiscal policy to what they would be under a hypothetically benevolent fiscal policy. With a low discount factor, however, the proprietary fiscal authority can be trapped on the wrong side of the Laffer curve. In this event, a higher discount factor would support an equilibrium with a lower tax rate, a larger provision of public services, and both higher welfare for the representative citizen and a larger rent transfer to the political establishment.

The recent literature on strategic models of monetary policy assumes that the central bank cannot commit to pursuing previously announced policies once the public has signed nominal wage contracts. It is implicitly assumed, however, that the central bank *can* commit to not changing policy announcements right before nominal wage contracts are signed in future periods. If neither type of commitment is possible, then the central bank needs to satisfy additional credibility constraints. The credibility criterion used in the literature—subgame perfection or its variants—cannot capture this issue. Matsuyama discusses two other criteria, proposed by Farrell and Maskin (1987) and Pearce (1987), in the context of two-person, infinitely repeated games.

McKibbin, Roubini, and Sachs study the problem of formulating optimal dynamic policy in an economy with two competing political parties that have quadratic intertemporal objective functions. The economy also has a linear structure and a multidimensional state space. To find the optimal policies of each party, the authors take into account both parties' objectives, the

structure of the economy, and the probability of future election results.

Alesina and Spear show how the overlapping-generations model can be applied to the political arena. They present a dynamic model of political competition between two "parties" with different policy preferences. A "party" is explicitly modeled as a sequence of overlapping generations of candidates, all of whom face finite decision horizons. In general, there is a conflict between the interests of the individual policymakers and those of the party, which includes subsequent generations of candidates. They characterize this conflict and suggest a scheme of intergenerational transfers within the party that can resolve or mitigate the conflict.

Hoshi introduces exogenous uncertainty into a model of monetary policy signaling and analyzes its effects on equilibrium inflation. In his model, inflation in the first period signals people as to the type of government they have. They then update their beliefs and form expectations about inflation in the second period. These expectations affect the government's overall payoff. In the model, inflation is not perfectly controllable by the government, so the signal contains some noise. Hoshi shows that under some conditions, the type of government that cares relatively more about unemployment will produce higher inflation on average; people will form higher inflation expectations when they see higher inflation.

Kim investigates the possible existence of a (partially) separating reputational equilibrium in a positive model of monetary policy with informational asymmetry. Assuming that the policymaker has private information on money demand shocks, the reputation mechanism can be a good substitute for commitment by the policymaker. The derived reputational equilibrium solution involves the policymaker's credible revelation of its private information. If the policymaker expects a relatively large shock to money demand, it announces its forecast truthfully and accommodates the shock. If the shock is expected to be relatively small, then the policymaker truthfully announces that the forecast is small and implements a policy of constant money growth. The reputational equilibrium solution constitutes a partially separating equilibrium and is more efficient than a myopic policy is.

Also attending the meeting were: Guillermo A. Calvo, University of Pennsylvania; Matthew Canzoneri, Georgetown University; Michelle R. Garfinkel, Brown University; and Patrick Kehoe, University of Minnesota.

Financial Markets and Monetary Economics

Nearly 50 members and guests of the NBER's Program in Financial Markets and Monetary Economics met in Cambridge on February 26. Program Director Benjamin M. Friedman, NBER and Harvard University, organized the day-long meeting. The agenda was:

Guillermo A. Calvo, University of Pennsylvania, "Servicing the Public Debt: The Role of Expectations"
Discussant: Herschel I. Grossman, NBER and Brown University

Guido Tabellini, University of California at Los Angeles and Carnegie-Mellon University, "Domestic Politics and the International Coordination of Fiscal Policies"
Discussant: Matthew Canzoneri, Georgetown University

John Y. Campbell, NBER and Princeton University, and Robert J. Shiller, NBER and Yale University, "Stock Prices, Earnings, and Expected Dividends" (NBER Working Paper No. 2511)
Discussant: Kenneth French, University of Chicago

Jayendu Patel, Harvard University, and Richard J. Zeckhauser, NBER and Harvard University, "Treasury Bill Futures as Hedges Against Inflation Risk" (NBER Working Paper No. 2322)
Discussant: Zvi Bodie, NBER and Boston University

Robert S. Pindyck and Julio J. Rotemberg, NBER and MIT, "The Excess Comovement of Commodity Prices"
Discussant: Kenneth D. West, NBER and Princeton University

Calvo uses real and monetary models with finite horizons to analyze debt repudiation by borrowing governments. He shows plausible cases in which the presence of government bonds generates multiple perfect-foresight equilibriums. Higher interest rates induce higher optimal repudiation shares or inflation rates, so it is possible to have two equilibriums with the same ex ante *real* interest rate on government bonds.

Tabellini investigates the desirability of coordinating international fiscal policy when current policymakers are unable to enter into binding agreements with future policymakers about the composition of public spending. This distortion generates a bias toward budget deficits. International coordination can exacerbate the deficit bias and thus can reduce social welfare at home and abroad, by enabling the domestic and foreign governments to form a coalition that excludes future policymakers. This international coalition reduces the cost of running a budget deficit and thus enhances the adverse effects of the domestic political distortion.

Campbell and Shiller estimate that a long historical average of real earnings is a good predictor of the present value of future real dividends. This is true even when the information contained in stock prices is taken into account. Using aggregate U.S. stock market data from 1871–1986, they estimate that, for each year, the optimal forecast of the present value of future real dividends is roughly a weighted average of moving average earnings and current real price, with between two-thirds and three-quarters of the weight on the earnings mea-

sure. They also show that the excess volatility of stock prices directly implies the forecastability of long-horizon stock returns.

Inflation uncertainty is one of the important risks facing agents in a monetary economy: in the United States from 1953–84, unexpected quarterly inflation had a standard deviation of 2.1 percent. The costs of such uncertainty are likely to be even higher for multiyear contracts, since a 1 percent unexpected inflation this year implies an upward revision of 0.43 percent for expected inflation for the forthcoming year and 1 percent for the years beyond that. Patel and Zeckhauser estimate the benefits of using Treasury bill futures as a hedge against inflation. They show that Treasury bill futures can reduce single-period inflation risk by about 30–40 percent, and the expected cost of using such futures is close to zero.

Pindyck and Rotemberg ask why commodity prices move together under standard competitive conditions. They consider only unrelated commodities, defined as commodities for which the net new supply at a given time is affected by the changes in other commodity prices only to the extent that these changes in prices affect macroeconomic conditions. For such commodities, prices will move together only in response to shocks that affect current or expected future macroeconomic variables. For the seven unrelated commodities they study (cocoa, copper, cotton, crude oil, gold, lumber, and wheat), there are large comovements in monthly changes in commodity prices from 1960 to 1985. However, past and present values of macroeconomic variables (such as industrial production, inflation, interest rates, exchange rates, the money supply, and the stock market) explain very little of these comovements. Pindyck and Rotemberg then consider whether commodity prices move together in response to information available only to market participants about future industrial production and inflation. While all of the variables explain a great deal of the commodity movements, a fair amount of comovement remains unexplained, they conclude.

Productivity Program Meeting

The NBER's Program on Productivity met in Cambridge on March 4. Program Director Zvi Griliches, of Harvard University, organized this agenda:

Robert S. Chirinko, University of Chicago, "Lag Constraints, Asset Prices, and a New Test of the Putty-Clay Hypothesis"

Discussants: Fumio Hayashi, NBER and Osaka University, and James M. Poterba, NBER and MIT

Bronwyn H. Hall, NBER, and Fumio Hayashi, "R and D as an Investment"

Discussants: Saul Lach, Columbia University, and Zvi Griliches

Peter Reiss, NBER and Stanford University, "Exploration as Research"

Discussant: Ariel Pakes, NBER and University of Wisconsin

Progress Reports:

Therese Flaherty, NBER and Harvard University, and Philip Webre, Congressional Budget Office, "Learning Curves at the Production Line Level"

Frank R. Lichtenberg, NBER and Columbia University, "Productivity Growth at the Plant Level"

Catherine G. Morrison, NBER and Tufts University, "Markups in U.S.-Japanese Manufacturing"

Zvi Griliches, "Patent Statistics as Economic Indicators: A Survey"

Chirinko examines "vintage capital" in a Tobin's *Q* framework. Vintage effects arise if the extent to which capital can be combined with labor and other factors of production is determined irrevocably at the time of purchase (that is, capital is "putty" prior to purchase but becomes "clay" after installation). When coupled with radical changes in raw materials prices (such as those associated with OPEC in the 1970s), vintage capial plays an important role in explanations of short-run economic fluctuations and long-run productivity growth. However, Chirinko finds little support for the presence of vintage or putty-clay capital; thus it can play only a minor role in explaining the slowdown in productivity growth. Based on distributed lag constraints, his paper also highlights the relationships between *Q* investment models, capital depreciation, and delivery lags.

About 20 percent of the gross investment expenditures of U.S. manufacturing firms is on research and development (R and D). Like investment in physical capital, spending on R and D also responds to news about future prospects of the firm, such as profitability, technological opportunities, or changes in factor prices. Using data from a panel of large U.S. manufacturing firms that was developed within the NBER's productivity program, Hall and Hayashi develop a stochastic dynamic programming model to analyze investments by firms with two types of capital (physical capital and knowledge). Expenditures on the physical capital stock are incurred one or more years before the capital actually becomes productive, whereas R and D capital is produced jointly as a function of current expenditure and the past technological position of the firm. Two individual firm-specific stocks are considered: one to the overall profitability of the firm, and one to the "productivity" of R and D. Hall and Hayashi estimate that these two shocks account for about 70 percent of the total variance in net investment, 15 percent of the variance in the firm-level R-and-D-capital ratio, but only about 10 percent of the variance in the annual rates of return.

The paper by Reiss measures some of the differences between research and development. Using a unique dataset on the exploration and drilling activities of independent domestic oil and gas firms, Reiss analyzes why some firms do more development than research. He also asks whether a firm's choice between research and development affects its overall return to innovative activity. During the sample period, Reiss finds, there is substantial variation within and across firms in the ratio of exploration to development. In general, exploration appears to be much more sensitive to variations in the final prices of oil and gas. Moreover, Reiss finds significant variation in exploration success rates across firms.

Flaherty and Webre analyze learning and labor productivity at the product line level. They use nine years of monthly production data to characterize the patterns of learning and productivity change during the life of one fairly typical semiconductor fabrication facility. They specify the usual (Cobb-Douglas) production function, incorporating learning as a basis for their derived equation for labor requirements. Then they introduce other factors suggested by clinical studies of productivity at the plant level including: diseconomies of scope associated with multiple products; the ramp-up of production volume associated with the beginning of a plant's life; and the decline of production volume associated with the end of a plant's life.

Lichtenberg's research on manufacturing productivity uses Census Longitudinal Establishment Data on the output and inputs of about 19,000 plants annually over ten years. He finds that substantial output is foregone when firms introduce new plant and equipment. He also examines the effect of R and D investment on total factor productivity growth and shows that improved measurement of productivity at the firm level yields more efficient estimates of the rate of return to R and D. Lichtenberg also finds that plants that change owners tend to be relatively inefficient prior to that change and exhibit above-average increases in productivity after the change. Finally, Lichtenberg's preliminary results indicate that productivity is an increasing function of the number of plants owned by the firm and a decreasing function of the number of industries in which the firm operates: diversification hurts productivity, perhaps because of the inability of the firm to monitor and coordinate diverse activities.

Morrison constructs a model based on production theory to analyze a firm's markup behavior. The model incorporates adjustment costs for both labor and capital, and nonconstant returns to scale. Using manufacturing data for the United States and Japan from 1958 through 1981, Morrison finds that the markups are procyclical and increase over time but are different in the two countries. In addition, both supply and demand shocks seem to affect the markup behavior of manufacturing firms significantly.

Griliches discussed a survey of "Patent Statistics as Economic Indicators" focusing primarily on the analysis of trends in aggregate patenting. He finds that short-run movements in the total number of patents granted per year are largely the result of fluctuations in the resources of the Patent Office rather than a reflection of real phenomena. On the other hand, the lack of growth in the overall number of patent applications in the last 30 years or so, in spite of a significant growth in R and D expenditures, raises questions about diminishing returns to R and D and the possible "exhaustion" of technological opportunities.

Other participants included: Thomas Abbott, Bureau of the Census; Ernst Berndt, Robert S. Pindyck, and Nancy Rose, NBER and MIT; Kim B. Clark, NBER and Harvard University; Iain Cockburn, Rebecca Henderson, and Muriel Thalmann, Harvard University; Robert J. Gordon and R. Glenn Hubbard, NBER and Nortwestern University; Wayne B. Gray, NBER and Clark University; Charles R. Hulten, NBER and University of Maryland; Robert E. Lipsey, NBER; Queens College, and City University of New York; Rachel McCulloch, NBER and Brandeis University; and M. Ishaq Nadiri and Edward Wolff, NBER and New York University.

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64. "Exchange Rate Dynamics and Optimal Asset Accumulation Revisited," by Maurice Obstfeld, February 1988 (JEL No. 431)

Bureau Books

Tax Policy and the Economy

Tax Policy and the Economy, edited by Lawrence H. Summers, is now available from The MIT Press for $12.95. This is the second in an annual series of NBER paperback volumes based on a conference on tax policy held each November. The papers in this volume cover: taxation and U.S. multinational investments; budget deficits

and the balance of trade; tax neutrality and intangible capital; the taxation of capital income; how tax rates affect tax collection; and pensions, taxes, and the retirement decision.

This volume is nontechnical and should appeal not only to academic, government, and corporate economists, but also to tax attorneys, individuals in business, and anyone with an interest in the policy debate over taxes.

Summers is the Nathaniel Ropes Professor of Political Economy at Harvard University and an NBER research associate.

This volume may be ordered directly from The MIT Press, 55 Hayward Street, Cambridge, MA 02142; the phone number is (617) 253-2884.

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628. Academic discounts of 10 percent for individual volumes and 20 percent for standing orders for *all* NBER books published by the University of Chicago Press are available to university faculty; orders must be sent on university stationery.

The United States in the World Economy

The United States in the World Economy, edited by Martin Feldstein, is now available from the University of Chicago Press. The clothbound volume is $75.00; the paperback is $24.95. This volume, the result of an NBER conference, includes background papers prepared by nine academic economists; personal statements by such prominent individuals as Philip Caldwell, John R. Block, H. Brewster Atwater, Jr., James R. Schlesinger, Peter G. Peterson, and E. Gerald Corrigan; and summaries of the discussion that followed each presentation. Among the topics considered are foreign competition in Latin America and the Asian Pacific rim; Third World debts; innovations in international financial markets; changing patterns of international investment; international capital flows; and international competition in goods, services, and agriculture.

Prepared for a sophisticated but nontechnical audience, these papers present complicated economic issues clearly, indicating the many ways in which the American economy influences and is influenced by economic events and conditions around the world. As Feldstein states in his introduction, "This conference and the resulting book will have been a success if they increase the awareness of corporate leaders, policymakers, and economic analysts to this changing role of the United States in the world economy." *The United States in the World Economy* should appeal to policymakers, as well as specialists in, or students of, macroeconomics and international economics.

Feldstein is the George F. Baker Professor of Economics at Harvard University and is president and CEO of the National Bureau of Economic Research.

International Aspects of Fiscal Policies

International Aspects of Fiscal Policies, edited by Jacob A. Frenkel, is now available from the University of Chicago Press for $48.50. This volume includes nine papers presented at an NBER conference on international macroeconomics and two expert commentaries on each.

One of the papers shows that recent fiscal changes in the United States, West Germany, and Japan have caused major disturbances in net flows of savings and investment. Among the other issues discussed are: the effects of a large nation's expansion on exchange rates, interest rates, and the balance of payments; how different currency regimes influence the international transmission of inflation; the interaction among tax policies, international trade, and international competitiveness; and the interrelationship among fiscal policies, trade intervention, and world interest rates.

This volume should be of interest to economists working with international issues, as well as to graduate students in the fields of global monetary economics, finance, and macroeconomics.

Frenkel is the David Rockefeller Professor of International Economics at the University of Chicago and a Research Associate of the National Bureau of Economic Research. Currently, he is on leave from teaching and serves as the economic counselor and director of research at the International Monetary Fund.

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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 1988 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 the NBER.

Some Empirical Evidence on Hysteresis in Aggregate U.S. Import Prices

Richard Baldwin
Working Paper No. 2483
January 1988
JEL Nos. 431, 411

This paper investigates empirically the hypothesis that hysteresis has occurred in U.S. aggregate prices of imports excluding oil. I find that a shift has occurred in the exchange rate pass-through relationship in the 1980s; the nature of the shift is consistent with the hysteresis hypothesis. The results are less conclusive on two specific structural models of this phenomenon: the beachhead model and the bottleneck model. The data broadly support both models, but neither by itself can provide a convincing account of all the evidence.

The Basic Analytics of Moral Hazard

Richard J. Arnott and **Joseph E. Stiglitz**
Working Paper No. 2484
January 1988
JEL No. 020

This paper develops the basic analytics of moral hazard for the two-outcome case in which either a fixed-damage accident occurs or it does not. We focus on the relationship between the insurance premium paid and the insurance benefits received in the event of an accident, in benefit-premium space. Even when the underlying functions, the expected utility function and the function relating the accident probability to the accident-prevention effort, are extremely well-behaved, the indifference curves and feasibility set (the set of insurance contracts that at least break even) are not. Indifference curves need not be convex and feasibility sets never are; price- and income-consumption lines may be discontinuous; and effort in general is not a monotonic or continuous function of the parameters of the insurance policies provided.

Part I of this paper establishes these results, while Part II discusses some of their implications. The bad behavior of indifference curves and the feasibility set profoundly affects the nature and existence of competitive equilibrium. We illustrate this, although we do not provide a thorough analysis. We also show that our canonical model of an insurance market with moral hazard can be reinterpreted to provide a model of loans with bankruptcy, or of work incentives.

Monopoly Wealth and International Debt

Jonathan Eaton
Working Paper No. 2485
January 1988
JEL No. 422

When rents generated by government policies are perceived as permanent, the rights to earn them may be capitalized as assets that form a component of nonhuman wealth. Such assets raise international indebtedness. Shifts in policy that increase or decrease the importance of such rents can generate movements in the current account that are correlated with the real exchange rate. Because the elimination of policies that generate rents imposes a capital loss borne entirely by living generations, while the benefit of the removal of a distortion is shared between those alive and those unborn, it is possible that such a reform can reduce the expected lifetime welfare of the living. If there is a monopoly in the provision of nontraded goods, then there may be several steady states that can be Pareto ranked.

Financing versus Forgiving a Debt Overhang

Paul R. Krugman
Working Paper No. 2486
January 1988
JEL No. 431

This paper examines the trade-offs facing the creditors of a country whose debt is large enough that it

cannot attract voluntary new lending. If the country is unable to meet its debt service requirements out of current income, the creditors have two choices. They can *finance* the country, lending at an expected loss in the hope that the country eventually will be able to repay its debt after all; or they can *forgive,* reducing the debt level to one that the country can repay. The post-1983 debt strategy of the International Monetary Fund and the United States has relied on financing, but many current calls for debt reform recommend forgiveness instead.

This paper shows that the choice between financing and forgiveness represents a trade-off. Financing gives the creditors an option value: if the country turns out to do relatively well, creditors will not have written down their claims unnecessarily. However, the burden of debt distorts the country's incentives, since the benefits of good performance go largely to creditors rather than to the country itself.

The paper also shows that the trade-off can be improved if both financing and forgiveness are made contingent on states of nature that the country cannot affect, such as oil prices and world interest rates.

The Implications of Knowledge-Based Growth for the Optimality of Open Capital Markets

Meir Kohn and **Nancy P. Marion**
Working Paper No. 2487
January 1988
JEL Nos. 431, 111

This paper reexamines the view that opening capital markets must have long-run benefits. The analysis shows that the desirability of opening a country's capital markets depends on the nature of the technology assumed. Models of knowledge-based growth predict that changes that alter the economy's level of production also will affect the economy's growth rate and hence the welfare of future generations. Standard neoclassical growth models imply no such effects on growth or welfare. If production does involve an important element of learning by doing, inference from the standard models may be seriously misleading. In particular, opening capital markets does not necessarily improve welfare for the nation or for the world as a whole.

Consumer Durables and the Optimality of Usually Doing Nothing

Avner Bar-Ilan and **Alan S. Blinder**
Working Paper No. 2488
January 1988
JEL No. 020

This paper develops a simple but important point that is often overlooked: it is quite possible that the best policy for a rational, optimizing agent is to do nothing for long periods of time—even if new, relevant information becomes available. We illustrate this point using the market for durable goods. Lumpy costs in durables transactions lead consumers to choose a finite range, not just a single level, for their consumption of durables. The boundaries of this range change with new information and, in general, obey the permanent-income hypothesis (PIH). However, as long as the durable stock is within the chosen region, the consumer will not change the stock. Hence, individuals will make durable transactions infrequently, and their consumption can differ substantially from the prediction of the strict PIH.

Such microeconomic behavior means that aggregate data cannot be generated by a representative agent; explicit aggregation is required. We show that time series of durable expenditures should be divided into two separate series: the average expenditure per purchase and the number of transactions. The predictions of the PIH hold for the former, but not for the latter. For example, the short-run elasticity of the number of purchases with respect to permanent income is much larger than one for plausible parameter values. We put our theory to a battery of empirical tests. Although the tests are not always consistent with the theory, most empirical results are in line with our predictions.

The Challenge of High Unemployment

Alan S. Blinder
Working Paper No. 2489
January 1988
JEL No. 130

It is argued that policymakers, macroeconomists, and microeconomists should all take high unemployment more seriously. I discuss the shortcomings of existing theories of unemployment and propose a new definition of involuntary unemployment. I then sketch a model in which falling aggregate demand leads to Keynesian unemployment because labor is heterogeneous and relative wages matter. Microeconomic theory may be criticized for assuming away unemployment and, in the process, radically changing the answers to some basic questions in trade theory and public finance. Finally, I offer some speculative explanations for the low unemployment now found in such states as New Jersey and Massachusetts.

Does the Consumption of Different Age Groups Move Together? A New Nonparametric Test of Intergenerational Altruism

Andrew B. Abel and **Laurence J. Kotlikoff**
Working Paper No. 2490
January 1988
JEL No. 321

In recent years, Robert Barro's (1974) ingenious model of intergenerational altruism has taken its place among the major theories of consumption and saving. Despite its policy importance, the Barro model has been subjected to few direct tests. This paper presents a new direct test based on a property of the Barro model that, to our knowledge, has not been exploited previously: that the Euler errors (that is, disturbances in the Euler equations) of altruistically linked members of Barro's extended families (clans) are identical. Under time-separable, homothetic utility, and controlling for clan preferences about the age distribution of consumption, this equality of Euler errors means that the percentage changes over time in consumption of all Barro clan members are equal. With some weak additional assumptions, this proposition implies that the average percentage change in household consumption within an age cohort should be the same for all age cohorts.

Testing the Barro model by comparing average percentage changes in consumption across age cohorts is particularly advantageous because it is nonparametric; in determining whether the average consumption of different age cohorts moves together, we place no restrictions on preferences beyond the assumptions of homotheticity and time separability. In particular, each Barro clan can have quite different preference parameters.

The new quarterly Consumer Expenditure Surveys (CES) covering 1980 through the first quarter of 1985 are an excellent data set for determining whether the consumption of different age groups move together. The CES records the consumption of each sample household for up to four quarters and thus can be used to determine the average quarterly percentage change in consumption of households in a given age group.

The null hypothesis of our test is that cohort differences in the average percentage change in consumption are caused simply by sampling and measurement error. Alternative hypotheses, suggested by the life-cycle model, are that: the percentage changes in the average consumption of any two cohorts are more highly correlated the closer in age the two cohorts are; and, the variance in the percentage change in consumption is a monotonic function of the age of the cohort.

The data fail to reject the null hypothesis of equal Euler errors. Indeed, the results provide fairly strong support for the intergenerational altruism model as opposed to the life-cycle model.

The Real Exchange Rate, Employment, and Output in Manufacturing in the United States and Japan

James P. Love and **William H. Branson**
Working Paper No. 2491
January 1988
JEL Nos. 400, 431

In the spring of 1981, the U.S. dollar began a four-year period of real appreciation that took it to a peak of more than 50 percent by first quarter 1985. Since then, the dollar has depreciated substantially but remains above its 1980 level. During the same period, the Japanese yen first depreciated by 12 percent in real terms from 1981 to 1982 and then appreciated by some 30 percent to 1986. These swings in real exchange rates affect the relative competitiveness of U.S. and Japanese industry and the employment and output of sectors producing tradable goods. This paper estimates these effects.

Using time-series data for 1970 to 1986, we use a simple model of supply and demand to estimate the impact of swings in the effective real exchange rate of the dollar and the yen on manufacturing employment and output in the United States and Japan, disaggregated by industry sectors, and by production and nonproduction workers in the case of the U.S. employment. These results are part of a larger research project to estimate the effects of the movements in the real exchange rate on world manufacturing industries.

We find significant and substantial effects of the dollar appreciation on employment and output in U.S. manufacturing. In particular, we find that exchange rate movements have had important effects on the durable goods sectors, including primary metals, fabricated metal products, and nonelectrical machinery. Other factors that suffer large employment and output losses when the dollar appreciates are stone, clay, and glass products; transportation; instruments; and chemicals. We also estimate the effects on nonproduction and production workers in the United States. Employment of the latter is more sensitive to the real exchange rate, especially in the durable goods sectors. This suggests the possibility of hysteresis in trade.

For Japan, we find that movements in the yen have significant effects on employment and output in the durable goods sectors, especially those producing machinery. In particular, yen appreciation causes sub-

stantial losses in employment and output in fabricated metal products, general machinery, and electrical machinery. The results for Japan are not as clear as for the United States, perhaps because we have only annual data for Japan but quarterly data for the United States. Nevertheless, the importance of movements in the real exchange rate for employment and output in manufacturing is evident in both cases.

Investment Tax Incentives and Frequent Tax Reforms

Alan J. Auerbach and **James R. Hines, Jr.**
Working Paper No. 2492
January 1988
JEL Nos. 320, 520

Despite the frequency of tax changes and their potential importance to investors, almost all of the analysis of tax-based investment incentives assumes that investors never anticipate any tax changes. We depart from this approach by analyzing the historical pattern of U.S. corporate investment incentives from 1953–86, incorporating investor awareness that the tax code may change.

Our analysis includes a predictive equation for future tax variables in a model of optimal investment subject to adjustment costs and uncertainty. We find that expectations of future tax changes significantly affect the incentive to invest only if adjustment costs are low. In this case, the incentive to invest in 1986 was strong, as investors anticipated the coming reduction in investment incentives.

Multinational Firms and Manufactured Exports from Developing Countries

Magnus Blomström, Irving B. Kravis, and **Robert E. Lipsey**
Working Paper No. 2493
January 1988
JEL Nos. 420, 440

Multinational firms have played an important role in leading the less developed countries (LDCs) into world markets. Multinationals from the United States, Japan, and Sweden have all increased their shares of LDC exports of manufactured goods since the mid-1960s or mid-1970s. Their importance was particularly notable in Latin America, while their role in Asia decreased.

The comparative advantages of affiliates of U.S. and Swedish multinationals in developing countries resembled those of their home countries more than those of their host countries; exports of Japanese affiliates are more similar to those of their host countries. In some cases, the advantage of the multinationals as exporters seems to be that they are able to combine company comparative advantages with the location advantages of producing in the developing countries.

Financial Market Imperfections and Business Cycles

Bruce C. Greenwald and **Joseph E. Stiglitz**
Working Paper No. 2494
January 1988
JEL No. 023

This paper develops a simple model of macroeconomic behavior that incorporates the impact of financial market "imperfections," such as those generated by asymmetric information. These information asymmetries may lead to breakdowns in markets in which risks are shared, such as the equity market. We analyze firm behavior in the presence of equity rationing and imperfect futures markets in which there are lags in production. Firms act in a risk-averse manner. We trace out the macroeconomic consequences and show that they are able to account for many of the widely observed aspects of actual business cycles.

VAR Models as Structural Approximations

Ray C. Fair
Working Paper No. 2495
January 1988
JEL No. 132

This paper presents a way to estimate the accuracy of vector autoregression (VAR) models for answering structural questions. I generate data from a dynamic, deterministic solution of a structural model, estimate a VAR model using a subset of these data, and compare the properties of the VAR model to the properties of the structural model. This procedure has the advantage of eliminating the effects of error terms, since the data are generated from a deterministic simulation. The VAR models do not seem to be good structural approximations.

Consumption: Beyond Certainty Equivalence

Olivier J. Blanchard and **N. Gregory Mankiw**
Working Paper No. 2496
January 1988
JEL Nos. 130, 920

This paper discusses the recent research on the consumption function that has attempted to relax the assumption of certainty equivalence. While many open questions, both theoretical and empirical, remain, it is clear that the assumption of certainty equivalence can be misleading. Under more plausible specifications of preferences toward risk, uncertainty lowers the level of consumption, increases the expected rate of growth of consumption, and increases the response of consumption to news about income. Moreover, changes in the amount of uncertainty are a potentially important source of fluctuations in consumption.

Firm Heterogeneity, Internal Finance, and Credit Rationing

Charles W. Calomiris and **R. Glenn Hubbard**
Working Paper No. 2497
January 1988

Assessing the extent to which agents or firms face imperfections in the capital market and quantity restrictions on credit is crucial for measuring intertemporal trade-offs in consumption or the cost of capital for investment. In contrast to standard, price-clearing, "full-information" models of loan markets, models of credit allocation with imperfect information (which we describe as "information-intensive") have "the interest rate" that needs not reflect the shadow price of credit in financial intermediation. Credit rationing to some borrowers is likely.

In actual markets, many full-information and information-intensive loan contracts are offered. This paper focuses on firm heterogeneity in credit markets; we analyze mechanisms by which credit markets sort borrowers in the presence of differing degrees of asymmetric information. We emphasize the potential for credit rationing in equilibrium, and the response of credit allocation to borrower-specific shocks. Our approach suggests that external finance will be differentially available to entrepreneurs—holding constant their project opportunities—according to their internal net worth position. That is, there is an important link for many firms between internal finance and investment spending.

We develop a simple general equilibrium model of credit allocation in which different loan contracts are offered to different types of borrowers. The extent to which different borrowers can obtain credit depends on the distribution of internal finance, aggregate levels of net worth, and whether projects are observable. While credit restrictions to some classes of borrowers are a feature of multiple-contract equilibrium, the severity can vary substantially in response to financial disturbances. We consider shocks to borrowers' net worth. Credit restrictions may occur in response to a deterioration of net worth positions. A "credit collapse," in which no loans are offered to certain types of borrowers, is possible. Investment and financing decisions in general are not independent. We discuss implications for tax policy and for public policy toward financial institutions.

International Evidence on the Persistence of Economic Fluctuations

John Y. Campbell and **N. Gregory Mankiw**
Working Paper No. 2498
January 1988
JEL No. 130

This paper presents new evidence on the persistence of fluctuations in real GNP. We estimate nonparametrically two measures of persistence using postwar quarterly data from Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. We compare these estimates with Monte Carlo results from various AR(2) processes. For six out of seven countries, the results indicate that a 1 percent shock to output should change the long-run univariate forecast of output by well over 1 percent. We also estimate low-order ARMA models for output growth, which yield similar conclusions. Finally, we examine the persistence in relative outputs of different countries.

The Determinants of Queues for Federal Jobs

Alan B. Krueger
Working Paper No. 2499
January 1988
JEL No. 823

This paper examines the determinants of the number and quality of outside applicants for federal job openings. The main finding is that the application rate for government jobs increases as the ratio of federal-to-private sector earnings increases but does not appear to be related to the relative level of fringe benefits. Furthermore, an increase in the federal-private sector earnings differential is associated with an increase in the average quality of applicants for federal jobs. The paper discusses the implications of these findings for wage determination and recruitment in the federal government.

Are Public Sector Workers Paid More than Their Alternative Wage? Evidence from Longitudinal Data and Job Queues

Alan B. Krueger
Working Paper No. 2500
January 1988
JEL No. 824

This paper longitudinally compares pay in the public and private sectors. Although not decisive because of small sample sizes, the results tend to corroborate the conclusions of previous cross-sectional studies. Specifically, I find that on average wages of federal workers exceed those of private sector workers by 10 percent to 25 percent, while wages of state and local government workers are roughly equivalent to, or slightly less than, the wages of private sector workers. Furthermore, these conclusions hold for a sample of workers who joined the government after being involuntarily displaced from their jobs in the private sector. In addition, a comparative analysis of the length of job queues suggests that on average more workers apply for job openings in the federal government than in the private sector. Finally, both longitudinal and cross-sectional analyses support the conclusion that the union wage gap is substantially smaller in the public sector than in the private sector.

The Baby Boom's Legacy: Relative Wages in the 21st Century

Phillip B. Levine and **Olivia S. Mitchell**
Working Paper No. 2501
January 1988
JEL Nos. 820, 841, 918

This paper assesses the impact of the post-World War II baby boom on relative wages by the time this baby boom cohort becomes the oldest segment of the work force. We use time-series data to estimate a model of the demand for workers in eight age/sex groupings. Using these estimates, we simulate relative wages in the year 2020 assuming the age/sex composition of the work force behaves according to projections. We use the results to examine the baby boom's potential impact on wages of older, prime-age, and teenage workers, as well as on the anticipated wage gap between males and females.

Structural Adjustment Policies in Highly Indebted Countries

Sebastian Edwards
Working Paper No. 2502
February 1988
JEL Nos. 400, 410

This paper deals with structural adjustment in the highly indebted countries. First it analyzes the origins of the debt crisis. Then it discusses the nature of the adjustment followed by the debt-ridden countries between 1982 and 1987. For most nations, the adjustment has been highly recessive. Next, it considers the potential role of trade reforms in securing the resumption of sustained growth.

The Informational Content of Ex Ante Forecasts

Ray C. Fair and **Robert J. Shiller**
Working Paper No. 2503
February 1988
JEL No. 132

The informational content of different forecasts can be compared by regressing the actual change in a variable to be forecast on forecasts of the change. We use the procedure in Fair and Shiller (1987) to examine the informational content of three sets of ex ante forecasts: the National Bureau of Economic Research and American Statistical Association Survey, Data Resources Incorporated, and Wharton Economic Forecasting Associates. We compare these forecasts to each other and to "quasi ex ante" forecasts generated from a vector autoregressive model, an autogressive components model, and a large-scale structural model (the Fair model).

The Political Economy of Controls: American Sugar

Anne O. Krueger
Working Paper No. 2504
February 1988

This paper outlines the salient characteristics of competing models of economic regulation and controls. In light of these models, it then examines the evolution of the American sugar program from 1934 to 1987. While lobbying and other features of traditional models were clearly important to the program, other elements

played a key role. In particular, a technocracy developed, and the complexity of regulation helped to perpetuate the sugar program. Similarly, lobbying and the role of vested interests were important in the evolution of the program once it began, but there was an element of "accident" in the programs' initiation. Once it existed, it became an instrument to be captured and used by politicians, technocrats, and economic interests alike.

Obstacles to International Macroeconomic Policy Coordination

Jeffrey A. Frankel
Working Paper No. 2505
February 1988
JEL No. 431

Coordination of macroeconomic policies among countries is not as straightforward in practice as it appears in theory. This paper discusses three obstacles to successful international coordination—uncertainty as to: (1) the correct initial position of the economy; (2) the correct objective; and (3) the correct model linking policy actions to their effects in the economy. Previous results (in NBER Working Paper No. 2059) showed that coordination when policymakers disagree about the correct model very well could reduce national welfare rather than raise it. This paper extends those results to allow for explicit recognition by policymakers of uncertainty regarding the correct model, as well as uncertainty about the model to which other policymakers subscribe. It also shows that the potential gains from coordination, even when positive, are usually small relative to the gains from unilateral policy changes based on improved knowledge of the model.

The Efficiency of the Market for Single-Family Homes

Karl E. Case and **Robert J. Shiller**
Working Paper No. 2506
February 1988
JEL No. 932

We perform tests of efficiency of the market for single-family homes using data on repeat sales prices of 39,210 individual homes, each for two sales dates. The homes were in Atlanta, Chicago, Dallas, and San Francisco/Oakland between 1970 and 1986.

While the evidence for seasonality in real housing is weak, there is some evidence of inertia in housing prices. A citywide real log change in the price index in a given year tends to be followed by a similar change in the same direction (and one-quarter to one-half as large) in the subsequent year. However, the inertia cannot account for much of the variation in changes in real housing prices. There is so much noise in individual housing prices relative to citywide price index changes that the R^2 in forecasting regressions for annual real price change in individual homes is never more than 0.04.

Randomization with Asymmetric Information

Richard J. Arnott and **Joseph E. Stiglitz**
Working Paper No. 2507
February 1988

It is well known by now that, in the presence of moral hazard or adverse selection, randomization of insurance premiums and benefits may be Pareto-efficient. This paper: (1) provides a typology of the various forms that randomization may take; (2) derives necessary and/or sufficient conditions for the desirability of these various forms of randomization; (3) obtains some simple characterization theorems of the efficient random policies; (4) gives some intuition behind the results; and (5) considers why randomization appears to occur less often in practice than the theory suggests it should.

Deterrence, Work, and Crime: Revisiting the Issues with Birth Cohort Data

Helen Tauchen, Ann Dryden Witte, and **Harriet Griesinger**
Working Paper No. 2508
February 1988
JEL No. 916

In this paper, we analyze the criminal behavior of a cohort sample of young men over an eight-year period. We use random-effects probit and Tobit techniques. As far as we are aware, this work represents the first time that a richly specified model of criminal activity has been estimated using panel data for a general population group.

We find very robust evidence for a general deterrent effect emanating from police resources. Our results regarding general deterrence are open to fewer questions than previous findings are. We also find that working and going to school significantly decrease the prob-

ability of committing criminal acts and by virtually identical amounts. This similarity of effect, when coupled with other findings, suggests that crime does not serve mainly as a direct source of income and that incentive effects emanating from higher wages are not very strong. There is little empirical support for the "crime as work" model that has dominated economic thought over the last two decades. More fruitful models of work and crime may result if work is conceived as having its primary effects either through preferences or through information.

Why Do Pensions Reduce Mobility?

Steven G. Allen, Robert L. Clark,
and **Ann A. McDermed**
Working Paper No. 2509
February 1988

Previous studies have found that workers who are covered by pensions are much less likely than other workers to leave their jobs, but the evidence on how specific pension characteristics affect turnover is inconclusive. This paper examines how mobility is affected by vesting standards, the compensation level, and the capital loss of pension wealth for job changers. In two different data sets, we find that the capital loss is strongly associated with lower turnover rates, whereas vesting and the compensation level have relatively little impact. Large capital losses are associated mainly with lower layoff rates rather than lower quit rates.

The Deadweight Loss from "Nonneutral" Capital Income Taxation

Alan J. Auerbach
Working Paper No. 2510
February 1988
JEL No. 320

This paper develops an overlapping-generations, general equilibrium growth model with an explicit characterization of the role of capital goods in the production process. The model is rich enough to simultaneously evaluate and measure the different distortions associated with capital income taxation (across sectors, across assets, and across time), yet simple enough to yield intuitive analytical results.

The main result is that taxation of capital income is almost certainly suboptimal in theory. Empirically, however, optimal deviations from uniform taxation are inconsequential. Although the gains from a move to uniform taxation are not large in absolute magnitude, they would be offset only by an overall rise in capital income tax rates of several percentage points.

A separate contribution of the paper is the development of a technique for distinguishing intergenerational transfers from efficiency gains in analyzing the effects of policy changes on long-run welfare.

Stock Prices, Earnings, and Expected Dividends

John Y. Campbell and **Robert J. Shiller**
Working Paper No. 2511
February 1988
JEL No. 313

For aggregate data on the U.S. stock market from 1871 to 1986, a long historical average of real earnings is a good predictor of the present value of future real dividends. This is true even when the information contained in stock prices is taken into account. We estimate that, for each year, the optimal forecast of the present value of future real dividends is roughly a weighted average of moving average earnings and current real price, with between two-thirds and three-quarters of the weight on the earnings measure. This means that simple present value models of stock prices can be strongly rejected.

We use a vector autoregressive approach that enables us to compute the implications of this for the behavior of stock prices and returns. We estimate that log dividend-price ratios are more variable than, and virtually uncorrelated with, their theoretical counterparts given the present value models. Annual returns on stocks are quite highly correlated with their theoretical counterparts but are two to four times as variable.

Our approach also reveals the connection between recent papers showing forecastability of long-horizon returns on corporate stocks and earlier literature claiming that stock prices are too volatile to be accounted for in terms of simple present value models. We show that excess volatility directly implies the forecastability of long-horizon returns.

Randomness in Tax Enforcement

Suzanne Scotchmer and **Joel B. Slemrod**
Working Paper No. 2512

For most parameter values, increased randomness about how much taxable income an auditor would assess leads to higher reported income and more revenue. When reducing randomness is costly, optimality requires some randomness in assessed taxable income. Even if reducing randomness is costless, taxpayers may prefer some randomness when the increased revenue can be rebated, so that the government's revenue stays fixed. These results do not rely on the presence of a distortion in labor supply.

The Challenge to U.S. Leadership in High Technology Industries (Can the United States Maintain Its Lead? Should It Try?)

Rachel McCulloch
Working Paper No. 2513
February 1988
JEL No. 420

The United States emerged from World War II as the acknowledged global leader in basic science and its industrial application. While U.S. science has been able to maintain that preeminence in most areas, the nation's technological lead has met increasingly formidable challenges from abroad. Although the evidence on recent U.S. performance is mixed, other nations, and especially Japan, have clearly gained ground in high technology production and trade. The future of U.S. high technology production has thus emerged as a major focus of public policy. This paper reviews the recent performance of U.S. high technology industries, examines possible motives underlying government policies to promote high technology production, and offers some guidelines for evaluating the outcomes of alternative policy regimes.

Organized Labor and the Scope of International Specialization

Robert W. Staiger
Working Paper No. 2514
February 1988
JEL Nos. 411, 422

This paper examines the interaction between union wages and the international pattern of production and trade. If union goods are produced at different levels of labor intensity, then the introduction of an active union in the domestic industry ensures that only the least labor-intensive range of union goods will be produced there. Goods requiring the highest labor intensity will be produced abroad because of the relatively high cost of domestic union labor. Narrowing the scope of domestic union production will eliminate those goods that are relatively labor intensive, leading a rent-maximizing union to raise its union premium. I consider the implications of this union behavior for comparative statics results.

Heckscher-Olin Theory and Noncompetitive Markets

Robert W. Staiger
Working Paper No. 2515
February 1988
JEL Nos. 411, 422

This paper explores the role of export subsidies when goods arriving from foreign countries initially are of unknown quality to domestic consumers, who learn about their quality only through consumption. If consumers view price as a signal of quality when confronted with such goods, then a role for export subsidies can arise. In particular, without export subsidies, entry of high-quality firms may be blocked by their inability to sell at prices reflecting their true quality. Export subsidies enable high-quality producers to begin exporting profitably even while they are unable to convey their high quality to consumers credibly, during the "introductory" period. Thus, in breaking the entry barrier for high-quality firms, export subsidies can raise average quality in the market. A welfare-improving role for export subsidies emerges. Moreover, even when high-quality firms can signal their high quality to consumers through an introductory pricing strategy, there may be a role for government policy: the signal (low introductory price) represents a transfer of surplus from foreign producers to domestic consumers. That transfer can be avoided with an appropriate export tax/subsidy policy.

Has State Redistribution Policy Grown More Conservative?

Robert Moffitt
Working Paper No. 2516
February 1988
JEL Nos. 320, 900

Real benefits in the major cash transfer program in the United Stares—Aid to Families with Dependent Children (AFDC)—have fallen drastically over the past 20 years. State legislatures, which set the levels of AFDC benefits, have failed to increase nominal benefits to keep up with inflation, resulting in a 25 percent decline in real benefits between 1960 and 1984.

The most popular explanation of this decline is that state legislatures, reflecting the changing preferences of voters, have grown more conservative in their tastes for redistribution. This paper presents evidence for a different explanation: that legislatures have let federally financed Food Stamps displace state-financed AFDC benefits. A similar displacement of AFDC by Medicaid benefits also appears to have occurred. Aside from implying that preferences for redistribution in fact have not changed, the results show that the total transfer benefit has increased, as should be expected with growing income levels. The findings also imply that neither the Food Stamp program nor, presumably, any other lump-sum transfer provided by Congress is likely to have an effect on the incomes of the population of poor families headed by females. Instead, such programs merely will provide budget relief to the states.

The Implications of Insurance for the Efficacy of Fiscal Policy

Andrew B. Abel
Working Paper No. 2517
February 1988
JEL No. 320

Various tax policies provide consumers with forms of insurance. Social Security has the payoff characteristics of an annuity. The income tax provides consumers with a degree of income insurance because the government shares part of the individual's income risk. Redistributive taxes can be used to spread aggregate income risks across different generations. The effects of these and other tax policies depend crucially on the nature of existing private insurance arrangements.

Rules versus Discretion in Monetary Policy

Stanley Fischer
Working Paper No. 2518
February 1988
JEL Nos. 310, 430

This paper examines the case for rules rather than discretion in the conduct of monetary policy, both from a historical and an analytical perspective. It starts with the rules of the game under the gold standard. These rules were ill-defined and not followed; active discretionary policy was pursued to defend the gold standard, but the gold standard came closer to a regime of rules than to the current system. I describe and appraise the arguments developed by Milton Friedman for rules in general; I also analyze alternative rules, including the constant money growth rate rule, interest rate rules, nominal GNP targeting, and price level rules. Until 1977 the general argument for monetary rules suffered from the apparent dominance of discretion: if a particular monetary policy was desirable, it could always be adopted by discretion. The introduction of the notion of dynamic inconsistency made a stronger case for rules. In the final section of the paper I analyze the case for rules in light of recent game-theoretic approaches to policy analysis.

Capital Subsidies and Countervailing Duties in Oligopolistic Industries

Barbara Spencer
Working Paper No. 2519
February 1988

Under the General Agreement on Tariffs and Trade (GATT), countries are allowed to impose countervailing duties to offset foreign subsidies. However, the GATT rules limit the amount of duty to the amount of the subsidy. This paper examines a generalized model of imperfect competition with capital subsidies and shows the conditions under which a countervailing duty will offset the effect of the subsidy on exports. Also, it specifies conditions under which exports will increase despite the imposition of the maximum tariff under the GATT. In addition, the paper considers whether profit-shifting motives for a subsidy still exist even when this maximum duty is anticipated.

The Role of Demand Management in the Maintenance of Full Employment

Bennett T. McCallum
Working Paper No. 2520
February 1988
JEL Nos. 130, 311

This paper begins by identifying nominal price stickiness as the logical basis for the Keynesian or activist point of view concerning demand management policy. It then characterizes two alternative approaches to policy analysis that have been adopted by adherents of the Keynesian position: the "disequilibrium" and "Phillips curve" approaches. The former is inherently defective, while the latter has yet to be implemented satisfactorily. Indeed, implementation that is not open to Lucas-critique weaknesses is not in sight. In response to the implied dilemma for policymakers, the paper describes a rule for the conduct of monetary policy that relies upon minimal understanding of price-adjustment dynamics and that should be robust to regulatory and technological change in the economy's financial and payments institutions. Some evidence suggests that the rule, if adopted, would lead to approximately zero inflation (on average) and to output/employment fluctuations that are small by historical standards. Finally, I consider possible criticisms relating to recent European experience and to recent theoretical developments.

Tariffs and Saving in a Model with New Families

Charles M. Engel and **Kenneth Kletzer**
Working Paper No. 2521
February 1988
JEL No. 400

This paper analyzes how a tariff may affect saving through intergenerational redistribution of income caused by changes in factor prices and by the distribu-

tion of tariff revenue. We use a Blanchard-type overlapping-generations model. We examine two types of revenue distribution schemes: lump-sum distribution of current revenues to currently living individuals; and distribution as a subsidy to holders of physical wealth. (There is no fiscal policy in this paper; the government budget is balanced continuously.) We draw some general conclusions about the nonneutralities that arise in this type of model as opposed to single-generation models, or to models in which perfect bequest motives exist.

Sectorial Shocks and Structural Unemployment

Michael H. Riordan and **Robert W. Staiger**
Working Paper No. 2522
February 1988
JEL Nos. 411, 422, 821

When current employers have more information about worker quality than potential employers do, sectorial shocks cause structural unemployment. That is, some workers laid off from an injured sector remain unemployed despite the fact that they are of sufficient quality to be productively employed in an expanding sector at the prevailing wage. Moreover, sectorial unemployment rates are not monotonic in the severity of sectorial shocks caused by the interaction of layoff activity and hiring activity. Finally, equilibrium employment decisions are not constrained to be Pareto efficient and can be improved by a policy of adjustment assistance.

Some Empirical Evidence on the Production Level- and Production Cost-Smoothing Models of Inventory Investment

Martin S. Eichenbaum
Working Paper No. 2523
February 1988
JEL No. 130

The production-smoothing model long has been the basic paradigm for conducting empirical research on inventories. The basic hypothesis embedded in this model is that inventories of finished goods serve primarily to smooth production levels in the face of fluctuating demand and convex cost functions. However, once we allow for shocks to technology and to the costs of producing output, firms also will use inventories to shift production from higher to lowercost periods. In this sense, inventories can serve to smooth production costs rather than production levels.

In this paper, I examine the empirical plausibility of the production level- and production cost-smoothing models of inventories. I derive and contrast a set of unconditional moment restrictions implied by these models in order to minimize the role of auxiliary assumptions about market structure and industry demand. I find overwhelming evidence against the production level-smoothing model but very little evidence against the production cost-smoothing model. Therefore, I conclude that the variance of production exceeds the variance of sales in most manufacturing industries because the role of inventories in smoothing production costs is quantitatively more important than the role in smoothing production levels.

Takeover Bids Below the Expected Value of Minority Shares

Lucian Arye Bebchuk
Working Paper No. 2524
February 1988

Crossman and Hart established the proposition that successful takeover bids whose outcome can be predicted perfectly in advance must be at or above the expected value of minority shares. This proposition provided the basis for their identification of a free-rider problem and became a major premise for the analysis of takeovers.

In this paper, I show that this proposition does not always hold once we drop the assumption that the only successful bids are those whose success could have been predicted with certainty. In particular, I show that any unconditional bid that is below the expected value of minority shares but above the independent target's per-share value will succeed with a certain positive probability. The bidder's expected payoff from such a bid (not counting the transaction costs of making the bid) is always positive, and bidders might elect to make such bids. These results have implications for the nature of the free-rider problem and for the operation of takeovers. In particular, I show that when a raider can increase the value of a target's assets, the raider might elect to bid even if no dilution of minority shares is possible and the raider holds no initial stake in the target.

The Poor at Birth: Infant Auxology and Mortality at Philadelphia's Almshouse Hospital, 1848-73

Claudia Goldin and **Robert A. Margo**
Working Paper No. 2525
March 1988
JEL Nos. 042, 841, 913

This paper presents an analysis of birthweights and infant mortality in mid-nineteenth-century Philadel-

phia based on the obstetrics records of Philadelphia's Almshouse Hospital, an institution for the poor and their offspring. We observe that children of the poor weighed between 2900 and 3200 grams on average at birth; this is about the 10th to 25th centile of modern birthweight standards. Birthweights declined during the Civil War decade, consistent with the poor state of the economy in the 1860s. Because birthweights were lower than modern standards, there were higher rates of infant mortality among the urban poor than there are today. Moreover, infant mortality was far worse than what would be expected from a modern schedule of mortality by birthweight; a major determinant of that excess mortality appears to be the poor quality of nineteenth-century obstetrics.

The Compliance Cost of Itemizing Deductions: Evidence from Individual Tax Returns

Mark M. Pitt and **Joel B. Slemrod**
Working Paper No. 2526
March 1988
JEL No. 321

The resource cost of operating the income tax system is large, totaling as much as 7 to 8 percent of the revenue raised. One source of this cost is the system of itemized deductions, which can require extensive recordkeeping and calculation. This paper estimates the resource cost of itemizing deductions. In contrast to previous studies of compliance costs that rely on evidence from surveys, our work is based on data reported on tax returns. We infer that there are taxpayers who would save money by itemizing but who choose not to do so.

We also find that in 1982 the private cost of itemizing totaled $1.44 billion, or $43 per itemizing taxpayer. The compliance cost dissuaded over 650,000 taxpayers from itemizing: because they would have saved taxes, this resulted in an extra tax liability of nearly $200 million. We conclude that increasing the standard deduction by $1000 would save $100 million in resources that otherwise would be devoted to itemizing.

Optimal Policies with Strategic Distortions

Kala Krishna and **Marie C. Thursby**
Working Paper No. 2527
March 1988
JEL Nos. 411, 420, 610

Recent work in optimal trade policy for imperfectly competitive markets usually identifies the optimal level of one instrument; when more instruments are allowed, general interpretations are unavailable. This paper analyzes the jointly optimal levels of a variety of instruments with oligopolistic competition. We derive a targeting principle for identifying optimal policies using the concept of a "strategic distortion." Optimal policies vary with the distortions present, the number of firms, and assumptions about market segmentation and regulation. We illustrate the principles of targeting using agricultural marketing boards.

Can Public Spending Cuts Be Inflationary?

Willem H. Buiter
Working Paper No. 2528
March 1988
JEL Nos. 310, 320, 430, 130

This paper uses a "demand for seigniorage revenue" and "supply of seigniorage revenue" approach to determine the consequences of cuts in public spending for the rate of inflation. Monetary financing is viewed as the residual financing mode, with tax rates and public debt-GDP ratios held constant. In a small open economy with an exogenous real interest rate, cuts in public spending for consumption will lower the inflation rate in the revenue-efficient region of the seigniorage Laffer curve. When there are cuts in public sector capital formation, the inflation rate can rise even in the seigniorage-efficient region. This will be the case if the expenditure effect (which reduces the deficit one-for-one) is more than offset by direct and indirect revenue effects (which raise the deficit) and by an adverse money demand effect.

When the real interest rate is endogenous, the scope for public spending cuts increasing inflation is enhanced.

On the Determinants of the Value of Call Options on Default-Free Bonds

Stephen A. Buser, Patric H. Hendershott, and **Anthony B. Sanders**
Working Paper No. 2529
March 1988
JEL No. 313

Models of interest-dependent claims that imply similar term structures and levels of interest rate volatility also produce similar estimates of bond option values. We establish this result for simple option forms with known closed-form solutions as well as for more complex options that require numerical methods for evaluation. We confirm the finding for a wide range of economic conditions. It is robust with respect to the number and nature of factors that generate interest rate movements.

Change in Market Assessments of Deposit Institution Riskiness

Edward J. Kane and **Haluk Unal**
Working Paper No. 2530
March 1988
JEL No. 313

Using the Goldfeld and Quandt switching regression method, we investigate the variability from 1975–85 in the risk components of bank and savings-and-loan stock. We develop evidence that the market beta, interest sensitivity, and residual risk of deposit institution stock all varied significantly during this period. Reassessing previous event studies in light of these findings suggests that event study methods tend to overreach their data.

The Line Item Veto and Public Sector Budgets: Evidence from the States

Douglas Holtz-Eakin
Working Paper No. 2531
March 1988
JEL Nos. 320, 324

Recent proposals assume that endowing the president with a line item veto will reduce spending. However, analysis of a rich dataset on state budgets indicates that long-run budgets are not altered by an item veto. Even in the short run, the potency of the item veto is contingent upon the political setting. Governors with political incentives to use an item veto alter spending and revenues in a way that is statistically and quantitatively significant. These results suggest that adoption of the line item veto, in general, is unlikely to reduce the size of the federal budget.

Alternative Mechanisms for Corporate Control

Randall Mørck, Andrei Shleifer, and **Robert W. Vishny**
Working Paper No. 2532
March 1988
JEL Nos. 512, 521, 522

We examine performance and management characteristics of *Fortune* 500 firms experiencing one of three types of control change: internally precipitated management turnover; hostile takeover; and friendly takeover. We find that firms experiencing internally precipitated management turnover perform poorly relative to other firms in their industries but are not concentrated in poorly performing industries. In contrast, targets of hostile takeovers are concentrated in troubled industries. There is also weaker evidence that targets of hostile takeovers underperform their industry peers. We interpret this evidence as consistent with the idea that the board of directors is capable of firing managers whose leadership leads to poor performance relative to their industry, but that it often requires an external challenge in the form of a hostile takeover when the whole industry is in decline.

The evidence also indicates that firms run by a member of the founding family are less likely to experience either internally precipitated top management turnover or a hostile takeover. On the other hand, firms whose top management team is dominated by one relatively young top executive lack internal discipline but are more likely to experience a hostile takeover.

Fads, Martingales, and Market Efficiency

Bruce N. Lehmann
Working Paper No. 2533
March 1988
JEL No. 313

Much of the theoretical basis for current monetary and financial theory rests on the economic efficiency of financial markets. Not surprisingly, there has been considerable effort spent on testing the efficient markets hypothesis, usually by examining the predictability of equity returns. Unfortunately, there are two competing explanations of the presence of such predictable variation: (1) market inefficiency and stock price overreaction caused by speculative fads, and (2) predictable changes in expected security returns associated with forecast changes in fundamentals of the market or of individual securities. These explanations can be distinguished by examining equity returns over short time intervals, since there should be little systematic change in the fundamental valuation of individual firms over such intervals as a week in an efficient market. This study finds sharp evidence of market inefficiency: there are systematic tendencies for current winners and losers in one week to experience sizable reversals of return over the subsequent week, reflecting apparent arbitrage profits. These measured arbitrage profits persist after corrections for the mismeasurement of security returns because of thin trading and bid-ask spreads, and for plausible levels of transactions costs.

Credit, Money, and Aggregate Demand

Ben S. Bernanke and **Alan S. Blinder**
Working Paper No. 2534
March 1988
JEL No. 311

Standard models of aggregate demand treat money and credit asymmetrically; money is given a special status, while loans, bonds, and other debt instruments are lumped together in a "bond market" and suppressed by Walras's Law. This makes bank liabilities central to the monetary transmission mechanism, while giving no role to bank assets.

We show how to modify a textbook IS-LM model to permit a more balanced treatment. As in Tobin (1969) and Brunner-Meltzer (1972), the key assumption is that loans and bonds are imperfect substitutes. In the modified model, credit supply and demand shocks have independent effects on aggregate demand. The nature of the monetary transmission mechanism is also somewhat different. The main policy implication is that the relative value of money and credit as policy indicators depends on the variances of shocks to money and credit demand. We present some evidence that money demand shocks have become more important relative to credit demand shocks during the 1980s.

National Price Levels and the Prices of Tradables and Nontradables

Irving B. Kravis and **Robert E. Lipsey**
Working Paper No. 2536
March 1988
JEL Nos. 431, 227

This paper examines changes in national price levels, and in the prices of tradables and nontradables, and relates them to changes in variables found to be associated with differences in price levels among countries.

Across countries, national price levels increase systematically with the level of a country's per capita income; the ratios of tradables' to nontradables' prices decrease with income. Over time, increases in per capita income generally are associated with increases in price levels in the industrial countries; the opposite relationship tends to prevail among developing countries. Increases in income are associated more consistently with declines in the ratio of tradables' to nontradables' price levels than with the increases in general price levels. Increases in the exchange value of a currency also are associated with declines in the price levels for tradables relative to nontradables. Countries with price levels that are high or low relative to those predicted by the structural equations tend to move toward those predicted levels.

An Analysis of Pension Benefit Formulas, Pension Wealth, and Incentives from Pensions

Alan L. Gustman and **Thomas L. Steinmeier**
Working Paper No. 2535
March 1988
JEL Nos. 820, 918

This paper investigates empirical issues related to pensions. It uses the 1983 Survey of Consumer Finances (SCF), a dataset with detailed information on workers and their pensions. The paper presents new estimates of pension values for various groups. It compares pension values based on relatively complete SCF data with estimates based on incomplete data. It also examines incentives that pensions create for retirement and job mobility and relates these incentives to plan characteristics. Some findings appear inconsistent with standard explanations for the existence and nature of pensions.

The Effect of the Investment Tax Credit on the Value of the Firm

Andrew B. Lyon
Working Paper No. 2537
March 1988
JEL Nos. 323, 522

A change in the tax law that increases investment incentives for new assets may result in excess returns on new investment, causing firm value to increase. Alternatively, because the investment incentives apply only to new investments, the value of existing assets that compete with these investments may decline. This paper develops a model that shows that, in general, investment incentives have a theoretically ambiguous effect on firm value. Models proposed by Abel (1982), Auerbach and Kotlikoff (1983), and Feldstein (1981) are special cases of this more general model. I find that the changes in firm value are positively related to the expected receipt of investment tax credits. There is no support for a relationship between expected changes in the value of a firm's existing assets and changes in firm value.

What Moves Stock Prices?

David M. Cutler, James M. Poterba,
and **Lawrence H. Summers**
Working Paper No. 2538
March 1988
JEL Nos. 313, 521

This paper estimates the fraction of the variance in aggregate stock returns that can be attributed to various kinds of news. First, we consider macroeconomic news; we show that it explains little more than one-third of the variance of returns. Second, to explore the possibility that the stock market responds to information that is omitted from our specifications, we also examine market moves coincident with major political and world events. The relatively small responses of the market to such news, along with evidence that large market moves often occur on days without any identifiable major news releases, casts doubt on the view that stock price movements are fully explicable by news about future cash flows and discount rates.

Product Development and International Trade

Gene M. Grossman and **Elhanan Helpman**
Working Paper No. 2540
March 1988
JEL Nos. 411, 621

We develop a multicountry, dynamic general equilibrium model to study the creation of comparative advantage through R and D and the evolution of world trade over time. In our model, firms must incur resource costs to introduce new products. Forward-looking potential producers conduct R and D and enter the product market whenever profit opportunities exist. Trade has both intraindustry and interindustry components. The different incentives that face agents in different countries for investment and saving decisions give rise to intertemporal trade. We derive results on the dynamics of trade patterns and trade volume, and on the temporal emergence of multinational corporations.

Competitiveness, Realignment, and Speculation: The Role of Financial Markets

Maurice Obstfeld
Working Paper No. 2539
March 1988
JEL No. 431

Current and planned measures for liberalizing the external capital accounts of France and Italy call into question the continued viability of the policy of periodic realignment of exchange rates that has been followed in the European Monetary System (EMS). This paper is a first step in studying the real and monetary effects of EMS-style realignments in a setting of free, cross-border financial flows. The first set of results concerns a situation in which there are no *fundamental* factors behind domestic inflation. Under a policy regime in which domestic inflation automatically triggers devaluation, the economy can undergo self-fulfilling depreciation-inflation spirals, triggered by speculative attack on the exchange rate. Such spirals occur only when realignments offset past inflation fully. The second set of results shows how an exchange rate collapse can occur after inflation is set off by expansionary fiscal policy. Sometimes, but not always, the crisis will be preceded by a period of capital inflows and real currency appreciation. In other cases, fiscal expansion may set off an immediate crisis.

LDC Debt: Forgiveness, Indexation, and Investment Incentives

Kenneth A. Froot, David Scharfstein, and **Jeremy Stein**
Working Paper No. 2541
March 1988

We compare different indexation schemes in terms of their ability to facilitate forgiveness and to reduce the investment disincentives associated with the overhang of debt among large LDCs. Indexing to an *endogenous* variable (for example, a country's output) has a negative moral hazard effect on investment. This problem does not arise when payments are linked to an *exogenous* variable, such as commodity prices. Nonetheless, indexing payments to output may be useful when debtors know more about their willingness to invest than lenders do. We also reach new conclusions about the desirability of default penalties under asymmetric information.

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