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NBER Reporter Online, Volume 1987

NBER Reporter Online

Provided in Cooperation with:
National Bureau of Economic Research (NBER), Cambridge, Mass.

Suggested Citation: National Bureau of Economic Research (NBER) (Ed.) (1987) : NBER Reporter Online, Volume 1987, NBER Reporter Online, National Bureau of Economic Research (NBER), Cambridge, MA

This Version is available at:
https://hdl.handle.net/10419/62112

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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. SUMMER 1987

Program Report

The Economics of Aging

David A. Wise

NBER's project on the Economics of Aging has been underway for approximately 18 months. Its goal is to further our understanding of the determinants of the economic well-being and the health status of the elderly, and to estimate the consequences for the elderly and for the population at large of an increasingly older population with longer individual life spans. We expect the project to continue for several years.

Initial NBER studies on aging were presented at a conference in New Orleans in March 1987; descriptions of the papers delivered may be found in the "Conferences" section of this issue of the *NBER Reporter*. A second conference is planned for April 1988. Members of the project also met during the 1986 Summer Institute and more than a dozen papers on the economics of aging will be presented at the 1987 Summer Institute.

Most of the research to date falls within four categories: (1) housing, living arrangements, and family support; (2) labor force participation and retirement; (3) the economics of health and health care; and (4) financial status. This report summarizes the initial research findings of the project.

Housing, Living Arrangements, and Family Support

A large proportion of the savings of the elderly is in the form of housing. Therefore, the life-cycle theory of consumption suggests that many older persons should reduce housing wealth as they age in order to maintain consumption levels. A related theory states that many elderly are liquidity constrained and would like to divest themselves of housing wealth to increase their consumption in other forms, were it not for the large transaction costs, both economic and psychic, of moving from one dwelling to another. Both hypotheses are questioned by Dan McFadden and Jonathan Feinstein in "The Dynamics of Housing Demand by the Elderly: I. Wealth, Cash Flow, and Demographic Effects" and by Steven F. Venti and myself in "Aging, Moving, and Housing Wealth."

While the McFadden/Feinstein paper is based on data from the Panel Study of Income Dynamics and the Venti/Wise paper on the Retirement History Survey, both papers study the impact of diverse social and economic variables on the housing decisions of the elderly. They focus on the decision to move and, having chosen to move, whether to increase or decrease housing equity and/or the user cost of housing.

McFadden and Feinstein find that the higher satisfaction with housing is, the less mobility there is, and the less likely the elderly are to "downsize." They conclude that this and other findings call into question the

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This issue of the *Reporter* highlights the Bureau's project on the Economics of Aging. Next, B. Douglas Bernheim describes his research in private saving and public policy and Matthew D. Shapiro discusses capital formation and productivity fluctuations. 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.

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life-cycle model as traditionally formulated. In addition, they find only weak evidence that liquidity constraints affect the housing conditions of the elderly. This result is consistent with the apparent lack of enthusiasm among elderly homeowners for reverse annuity mortgages. Their analysis also reveals a strong relationship between retirement and changes in family composition (on the one hand) and in housing mobility (on the other).

Venti and I confirm that families with high incomes typically also have high housing wealth and that families with low incomes typically have low housing wealth. Thus, reverse mortgage schemes have a limited potential for increasing the consumption of the low-income elderly. We find that families with high incomes but low housing wealth are somewhat more likely to move than families with low incomes but high housing wealth. The latter are most likely to be liquidity constrained. Our analysis also reveals that the elderly who move are as likely to increase as to decrease housing equity.

Venti and I also find that the typical elderly person who moves is not liquidity constrained, and that the economic and psychic costs apparently are not major reasons that the elderly reduce housing equity as they age. We conclude that the absence of a well-developed market for reverse mortgages apparently can be explained by a lack of demand for these financial instruments. Finally, like McFadden and Feinstein, we find a substantial relationship between retirement and changes in family composition and in housing mobility.

Konrad Stahl addresses similar questions in "Housing Patterns and Mobility of the Aged: The United States and West Germany." The age distribution of the West German population today is very similar to the distribution predicted for the United States in the year 2000. Like McFadden/Feinstein and Venti/Wise, Stahl finds that in both West Germany and the United States moving is associated with substantial increases in housing cost-to-income ratios. On the other hand, consumption of housing services, measured by rooms per family member, declines when the elderly move. Again, this is true in both Germany and the United States. He also concludes that the potential for adjusting housing consumption by moving is much greater in the United States than in Germany, since elderly Americans are approximately four times as likely to move as their German counterparts are. Finally, Stahl concludes that a strong impediment to mobility in Germany is the apparent rent advantage given to existing tenants. If they move, they typically must pay substantially more for rental housing. Venti and I report a similar finding for the United States.

In "Household Dissolution and the Choice of Alternative Living Arrangements of Elderly Americans," Axel Börsch-Supan studies the economic and demographic determinants of the decision to live independently versus in a shared accommodation. He decomposes households into separate family nuclei and finds that approximately one-third of elderly family nuclei do not live independently. However, while this proportion has increased among the general population in

the early 1980s, it has decreased among elderly Americans. More than 70 percent of elderly nuclei not living independently live with their adult children. In most of these cases, the parents head the common household. Among these two-generation households between 1974 and 1983, an increasing percentage was headed by the parent generation rather than by the adult children. He attributes this development to the increasing difficulty of finding affordable housing for first-time home buyers. Those children who "take in" their parents have about twice the income level of the average second-generation (children) nuclei family. Finally, he concludes that the choice of living arrangements is determined primarily by demographic variables.

Laurence J. Kotlikoff is studying the extended family using a survey sponsored by NBER and the Hebrew Rehabilitation Center for the Aged (Boston). The survey will collect information on children of the elderly residing in Massachusetts and ultimately will provide a unique source of information about the behavior of the extended family. His preliminary findings indicate that a significant minority of the elderly, many of whom need assistance with activities of daily living (the "vulnerable elderly"), have little or no contact with their children. There appears to be less contact between children and the vulnerable elderly than between children and the nonvulnerable elderly, with the least amount of contact between children and the institutionalized elderly. In addition, although many of the parents in the sample are poor, financial support from their children is uncommon, other than in the form of shared housing. The initial impression conveyed by the data is that many of the elderly are well cared for by their children, while a significant minority either have no children or have no children who provide significant time or care.

Labor Force Participation and Retirement

Kotlikoff and I are continuing our work on the incentive effects of private pension plans. In "Employee Retirement and a Firm's Pension Plan" we analyze the relationship between pension wealth accrual and retirement, based on the experience of a *Fortune* 500 firm. It is clear that departure rates from the firm are very strongly related to the incentive effects inherent in pension wealth accrual. Because of strong incentive effects in the pension plan, especially the advantageous early retirement provisions, only about 10 percent of the firm's employees at age 50 are still working for the firm at age 65; fewer than 50 percent are still working for the firm at age 60. Kotlikoff and I note that while a great deal of effort has been directed toward estimating the effects of Social Security provisions on labor force participation, much less attention has been given to the effects of private pension plans. We suggest that pension plan provisions have had a much greater effect on retirement than the recent changes in Social Security benefits have had.

In "Social Security and the Determinants of Full and Partial Retirement: A Competing-Risks Analysis," Glenn Sueyoshi considers the determinants of retirement, taking explicit account of full versus partial retirement. He finds that increases in Social Security benefits in the early 1970s increased the probability of full retirement but reduced the probability of partial retirement. However, the predicted effects are relatively small, and the results indicate that Social Security is not the primary factor behind the reduction in labor force participation by the elderly in the 1970s.

John Rust is developing "A Dynamic Programming Model of Retirement Behavior." His model accounts for the sequential nature of the retirement decision, and the role of expectations about uncertain future variables such as the worker's future life span, health status, marital and family status, earnings from employment, assets, Social Security, and other variables. He has directed his primary work to date toward the development of an algorithm to estimate such a model from observed data. He hopes that his procedure will be useful for others in the analysis of similar problems.

Financial Status

About 80 percent of the elderly poor are single; 60 percent of the elderly poor are widows. Two project papers analyze the reasons for the relatively greater poverty of widows and their future prospects. In "The Wealth and Poverty of Widows: Assets Before and After the Husband's Death," Michael D. Hurd and I trace backward to the financial status of the couple when the husband was alive and attempt to explain how widows become poor. We find that, based on standard definitions of poverty, the death of a husband very often induces poverty of a surviving widow. A large fraction of the wealth of the couple is lost when the husband dies. This loss is especially large when the widow being observed is poor: almost all the private pension wealth previously accrued by the married couple is lost at the husband's death. In addition, the prior households of poor widows saved less than the households of nonpoor widows did. The typical couple had very little life insurance before the husband's death and, therefore, had no way to make up the loss in wealth when he died.

In "The Poverty of Widows: Future Prospects," Hurd estimates the future economic status of widows. He begins by estimating the future financial status of the population of the Retirement History Survey. He then considers changes in the initial conditions of that population, such as increased pension coverage and increased Social Security benefits, and their implications for the financial status of widows. By the year 2000, up to 60 percent of the surviving group of 1979 widows will be below the poverty level, based on Hurd's consumption measure of poverty. He finds that increases in private pension coverage and survivorship rules will do little to reduce their poverty. Increased life expectancy also will have only a small effect on their poverty. Only increases in Social Security benefits will have a substantial effect on the proportion of widows who are poor.

B. Douglas Bernheim is studying the relationship among expectations of the elderly about future income,

age of retirement, and other variables and their actual realizations. In "Social Security Benefits: An Empirical Study of Expectations and Realizations" (NBER Working Paper No. 2257, May 1987), he analyzes individual predictions about future Social Security benefits compared with benefits actually received. He shows that individuals' estimates of their future benefits would be greatly improved if they had information on what their benefits would be if they were to retire now.

In "The Time of Retirement: A Comparison of Expectations and Realizations," Bernheim studies the accuracy of expectations concerning the timing of retirement. He finds that expectations about age of retirement are highly accurate. More than 60 percent of the elderly who had expected to retire within four years actually did retire within one year of the expected date.

One form of saving for retirement is an Individual Retirement Account (IRA). Since 1982, when IRAs became available to all employees, they have become a popular form of saving. In "Have IRAs Increased U.S. Saving? Evidence from Consumer Expenditure Surveys" (NBER Working Paper No. 2217, April 1987), Venti and I analyze the net saving effect of contributions to these accounts. We conclude that the vast majority of contributions to these accounts has represented net saving; without these accounts, the national saving rate would have been even lower than it was. We postulate that if the accounts were to continue to be promoted, they could be a very important form of saving for retirement and that, for those who make contributions, accumulated wealth at the age of retirement would be much higher than it would have been otherwise.

Health

Alan M. Garber has begun a series of studies on the economics of health care, focusing on long-term care and the evaluation of the worth of health interventions for the elderly. His initial work, on "Long-Term Care, Wealth, and Health of the Disabled Elderly Living in the Community," considers the relationship between financial status and hospital, nursing home, and home health care utilization for a sample of noninstitutionalized disabled elderly. It is based on data from the 1982 National Long-Term Care Survey. He finds that living alone is associated with a marked increase in the use of paid home health care. Garber's preliminary results suggest that most of the disabled elderly who live in the community have significant resources, and that home equity and income do not decrease with the number of functional impairments. The results confirm that the elderly who live alone use some long-term care services heavily, and that informal supports (for example, children) appear to be an important source of care.

John B. Shoven, Jeffrey O. Sundberg, and John P. Bunker analyze "The Social Security Cost of Smoking" (NBER Working Paper No. 2234, May 1987). One cost of smoking is a reduction in the expected Social Security benefits that results from a decreased life expectancy induced by smoking. The three authors find the expected loss of net benefits accompanying smoking to be very large relative to the estimates of medical costs and lost wages resulting from smoking. Single nonsmoking men can expect to receive a net transfer from Social Security of $3436, while smokers receive expected benefits $17,782 short of their expected contributions. The expected Social Security cost of smoking for single men age 20 thus exceeds $21,000. Couples who both smoke can expect $30,000 less in Social Security benefits than nonsmoking couples do.

Research Summaries

Private Saving and Public Policy

B. Douglas Bernheim

The private saving rate during the 1980s has been disappointing. Despite the enactment of a number of policies designed to make saving and investment more rewarding (such as liberalized individual retirement accounts and Keogh plans, reduced capital gains taxes, and increased investment incentives at the corporate level), virtually every measure of private saving has declined substantially since the mid- to late 1970s. Recent tax reforms, which reverse prior policy by eliminating many provisions favorable to capital income, could potentially accentuate this decline in coming years. In view of these trends, economists should have a better understanding of the determinants of private saving and the relationships between private saving and public policy.

Over the last several years, I have been engaged in research designed to address various aspects of these issues. My work has two parts: first, I consider the determinants of private saving; second, I study specific public policies.

Determinants of Private Saving

Much of the academic debate over private saving concerns the validity of the Life-Cycle Hypothesis (LCH). This hypothesis holds that consumers exercise great foresight when forming long-term financial plans and choose the appropriate level of saving to achieve some carefully premeditated path of consumption over their lifetimes. The LCH has very strong implications for the effects of various fiscal policies.

I focus on two aspects of the LCH. The first is the importance of intergenerational linkages. Over the

past decade, economists have become increasingly aware that the existence of significant intergenerational altruism among a large segment of the population would represent a major departure (in terms of its implications for public policy) from the standard life-cycle view. This realization was caused in large part by the work of Robert J. Barro, who points out that altruistically motivated transfers between parents and children could potentially neutralize the effects of public policy regarding the use of deficits and the provision of Social Security.[1] Barro bases his conclusions on the observation that, in essence, these policies are transfers between successive generations. To the extent that generations are already linked through private transfers, the average individual will tend to adjust gifts and bequests to offset undesired redistribution arising from public policy.

This view has been highly influential and indeed has led some analysts to downplay the potentially adverse consequences of large budget deficits. Since its validity rests squarely on the assumption that successive generations are linked through gifts and bequests, evidence on the importance of intergenerational altruism merits close scrutiny.

One potential avenue for distinguishing bequest motives is to examine patterns of wealth holdings among the retired. If these individuals save solely to provide for their own consumption, then their resources should decline with age. On the other hand, the desire to leave a bequest may cause many consumers to maintain relatively high levels of wealth long after retirement. Data drawn from the Retirement History Survey (RHS) reveal that conventional measures of wealth do decline substantially for the bulk of individuals after they retire. However, most retirees hold a substantial fraction of their financial resources in the form of annuities (private pensions and Social Security). Based upon measures of wealth that include the value of annuities, there appears to be little or no tendency for retirees to draw down their resources. Formal statistical analysis does not support the view that private saving is motivated purely by the desire to redistribute consumption over the life cycle.[2]

While the preceding observations suggest that many individuals may be motivated by the desire to leave significant bequests, they shed relatively little light on the nature of these motives. Love and affection no doubt play a significant role in determining the size and distribution of bequests. Nevertheless, other factors also may come into play. In work with Andrei Shleifer and Lawrence H. Summers, I investigate the possibility that testators use bequests to influence the behavior of potential beneficiaries.[3] Such influence may be overt, as when parents threaten to disinherit miscreant offspring, or more subtle, as when parents reward more attentive children with potential heirlooms.

Again, data drawn from the RHS suggest that this kind of behavior may be extremely common. In addition, bequest motives of this type help to explain several empirical observations that seem inconsistent with other possibilities. These findings are of significant interest for a variety of reasons. Our analysis suggests several important interactions between demographic and economic issues and may help to explain a number of diverse phenomena, including living arrangements among the elderly and international differences in saving rates. In addition, Barro's arguments about the irrelevance of certain fiscal policies (noted above) do not hold up when intergenerational transfers entail a quid pro quo.

In a separate project, I focus on a second aspect of the LCH: the assumption that consumers think seriously about and plan coherently for the relatively distant future. As a participant in NBER's Project on the Economics of Aging, I am studying the accuracy and behavioral importance of expectations among individuals approaching retirement. In one paper, I compare expected Social Security benefits (reported by individuals prior to retirement) to actual realizations of benefits.[4] I find strong evidence that most consumers do think seriously about future financial events. While they do not form expectations on the basis of all available information, they do appear to be reasonably competent at making relatively accurate forecasts conditional upon the information that they do use. Indeed, the data broadly suggest that consumers correctly anticipated the general effect of significant legislative changes in the level of Social Security benefits during the early 1970s. However, the study also indicates that the Social Security Administration could improve individuals' forecasts of future benefits significantly by providing each program participant with a yearly statement containing a calculation of benefits based upon existing law.

In another paper, I compare expected dates of retirement with actual retirement dates.[5] This study complements the first, in that the emphasis is on the accuracy of an economic plan rather than a forecast of an event that, for the most part, is determined externally. The data strongly suggest that individuals form serious economic plans and ordinarily stick to them.

[1] *R. J. Barro, "Are Government Bonds Net Wealth?"* Journal of Political Economy *81 (1974), pp. 1095-1117.*

[2] *B. D. Bernheim, "Dissaving after Retirement: Testing the Pure Life-Cycle Hypothesis," NBER Working Paper No. 1409, July 1984, and* Issues in Pension Economics, *Z. Bodie, J. B. Shoven, and D. A. Wise, eds. Chicago: University of Chicago Press, 1987.*

[3] *B. D. Bernheim, A. Shleifer, and L. H. Summers, "The Strategic Bequest Motive," NBER Reprint No. 697, March 1986, and* Journal of Political Economy *93, 6 (December 1985), pp. 1045-1076.*

[4] *B. D. Bernheim, "Social Security Benefits: An Empirical Study of Expectations and Realizations," NBER Working Paper No. 2257, May 1987.*

[5] *B. D. Bernheim, "The Timing of Retirement: A Comparison of Expectations and Realizations," NBER Working Paper, forthcoming. A brief description of this paper appears in "The Economics of Aging" conference report in this issue of the* NBER Reporter.

All of the studies mentioned earlier focus on individual behavior. But since a very large fraction of private saving in the United States is institutional (that is, it takes place through pension funds), it is impossible to understand all the determinants of the saving rate without careful study of institutions. In work with John B. Shoven, I argue that the nature of the funding of defined-benefit plans may be an important reason why personal saving has not responded positively to high real interest rates and tax incentives during the last five years.[6] From a firm's standpoint, funding the promised pension is a target, and higher rates of return permit reaching that target with lower contributions. Thus, according to the Flow of Funds Account of the Federal Reserve System, between 1982 and 1984 net pension contributions declined from 6 percent of disposable personal income to 4 percent. This is sufficient to explain the disappointing performance of the personal saving rate.

Public Policy on Saving

A second portion of my research focuses on the manner in which specific fiscal instruments, including budget deficits, Social Security, and capital income taxation, affect national saving and capital accumulation. As mentioned earlier, some analysts hold the notion that, by adjusting gifts and bequests, individuals may offset public policies involving intergenerational transfers partially or completely; these analysts have downplayed the potentially adverse effects of deficits and Social Security on capital accumulation. In a recent paper, Kyle Bagwell and I examine the internal logic of this argument and find it lacking.[7] We point out that the argument is based upon certain implicit assumptions that lead to a variety of absurd conclusions. For this reason, we reject the view that private transfers might neutralize the effects of public policies.

In a separate study, I critically evaluate the existing body of theory and evidence on the effects of government budget deficits.[8] Unfortunately, efforts to measure the economic effects of deficits directly are fraught with difficulties that, taken together, may well be insuperable. Therefore, it is not at all surprising that these studies have proved inconclusive. In light of this fact, there is little alternative but to extrapolate from theoretical reasoning and indirect behavioral evidence, suggesting that budget deficits significantly stimulate current consumption and depress long-run capital accumulation. The study also presents new evidence, based on international comparisons, that corroborates this view.

Many authors also have investigated the effect of Social Security on private saving. My own study of this issue finds that previous results may understate the depressive effect of Social Security on personal wealth accumulation by a factor of three or more.[9] These earlier studies measure the value of future Social Security benefits in a way that is inconsistent with the behavioral hypothesis on which the studies are based. The use of an appropriate measure of benefit value dramatically alters the empirical results.

The final policy issue that I have studied is the effect of taxation on private capital accumulation. In work with Shoven, I examine the importance of taxes relative to credit market conditions as determinants of the cost of capital.[10] We analyze real interest rates in the United States, United Kingdom, West Germany, and Japan. Over the relevant period (the 1970s and 1980s) persistent interest rate differentials exist. We model the tax systems of the four countries and calculate the cost of financial capital, decomposing the differentials among the costs of capital in the various countries into tax and nontax components.

We find that, under prevailing tax systems, differences in the cost of capital between countries are largely attributable to differences in domestic credit market conditions rather than to taxes. Nevertheless, taxes cannot be dismissed completely. In particular, eliminating the taxation on income from capital either at the personal or corporate levels (or both) would have a profound effect on the cost of capital in the United States relative to other countries. Under one plausible scenario, the adoption of a consumption tax would eliminate more than 60 percent of the differential between the cost of capital in the United States and Japan.

In another paper, I focus specifically on the impact of estate taxes on personal saving and portfolio allocation.[11] Previously, a number of commentators have noted that common estate planning techniques allow wealthy individuals to pass on vast resources essentially tax free. In addition, the portfolio reallocations arising from the tax avoidance schemes depress income tax revenues. I find that prior to the Tax Reform Act of 1986, this effect easily could have offset all revenues collected through the estate tax. The recent Tax Reform Act vitiates this conclusion only partially.

[6] *B. D. Bernheim and J. B. Shoven, "Pension Funding and Saving," NBER Working Paper No. 1622, May 1985, and* Pensions and Retirement in the United States, *J. B. Shoven, ed. Chicago: University of Chicago Press, forthcoming.*

[7] *B. D. Bernheim and K. Bagwell, "Is Everything Neutral?" NBER Working Paper No. 2086, December 1986, and* Journal of Political Economy, *forthcoming.*

[8] *B. D. Bernheim, "Ricardian Equivalence: An Evaluation of Theory and Evidence," NBER Working Paper, forthcoming, and* NBER Macroeconomics Annual 1987, *S. Fischer, ed. Cambridge, MA: M.I.T. Press, forthcoming.*

[9] *B. D. Bernheim, "The Economic Effects of Social Security: Toward a Reconciliation of Theory and Measurement," NBER Working Paper No. 1511, December 1984, and* Journal of Public Economics, *forthcoming.*

[10] *B. D. Bernheim and J. B. Shoven, "Taxation and the Cost of Capital: An International Comparison," in* The Consumption Tax: A Better Alternative? *American Council for Capital Formation, forthcoming.*

[11] *B. D. Bernheim, "Does the Estate Tax Raise Revenue?" NBER Working Paper No. 2087, December 1986, and* Tax Policy and the Economy, *L. H. Summers, ed. Chicago: University of Chicago Press, forthcoming.*

Capital Formation and Productivity Fluctuations

Matthew D. Shapiro

Standard theories imply that the cost of capital—a composite of the purchase price of investment goods, tax variables, and the cost of funds—should be a major determinant of fixed investment. Consequently, one might expect to find a major correlation between changes in fixed investment and changes in the cost of capital.

Yet, data for the U.S. economy show a very weak association between the cost of capital and investment fluctuations. Instead, investment fluctuations are strongly associated with fluctuations in output.

These correlations are difficult to reconcile with either neoclassical or neo-Keynesian accounts of capital formation. The neoclassical theory, in which firms choose the capital stock so that the physical return to an extra unit of capital equals the cost of capital, would seem to predict a strong relationship between the cost of capital and capital formation.

Similarly, neo-Keynesian models make strong predictions about the cost of capital and fluctuations in investment. The interest rate is an important component of the cost of capital. If the interest rate does not affect investment, then one important link in the Keynesian transmission mechanism of monetary shocks to the goods market is broken.

What accounts for the strong correlation of investment and output and the weak correlation of investment and the cost of capital? Recent research suggests that productivity fluctuations can explain year-to-year fluctuations in output. Under the assumption that technical change is disembodied, changes in productivity will change the physical returns to capital. For example, an increase in productivity will increase the return to capital and hence lead to increased investment. These changes in productivity occur much more frequently than do the changes in tax laws that dominate long-run changes in the cost of capital. At business cycle frequencies, productivity fluctuations may be more important than the cost of capital in determining investment fluctuations, even though the cost of capital is important in determining the level of the capital stock.

Understanding the joint dynamics of output, investment, and the cost of capital is important for economic policy. First, if the cost of capital does not affect investment, then short-run swings in interest rates will leave investment unchanged. In the absence of a meaningful relationship between interest rates and investment, one of the crucial channels for monetary policy (that is, tight money squeezing investment) will be eliminated. Second, tax policy often is designed to affect the rate of investment. Policies such as investment tax credits and accelerated depreciation are meant to promote capital formation. Hence, knowing the degree to which changes in the cost of capital will affect investment is crucial to evaluating such tax policies.

This article first outlines a test of whether the observed fluctuations in productivity are truly taking place. Then it discusses the estimation of the demand for capital in the presence of productivity fluctuations. Finally, it explains how the joint movements of investment, output, and the cost of capital are consistent with the view that shocks to productivity are a key source of economic fluctuations.

Sources of Shocks

The claim that productivity shocks are an important source of output and investment fluctuations over the business cycle is controversial. Growth in productivity can be calculated as growth in output minus a weighted average of growth in inputs (capital and labor). Measured productivity grows more in booms than in recessions; that is, productivity growth is procyclical. Keynesian theories imply that this procyclicality arises because measured productivity has a demand component. Hence, the procyclicality of productivity is a consequence, not a cause, of the business cycle.[1]

On the other hand, productivity fluctuations may be an important cause of business cycles. This line of argument is known as the theory of Real Business Cycles.[2] Without endorsing all of the assumptions of real business cycle theories (such as continuous clearing of the labor market), it is possible to maintain that productivity shocks are an important impetus to aggregative fluctuations.

To establish whether observed fluctuations in productivity are actually occurring, I compare two measures of productivity shocks.[3] The first and standard one is based on output quantity growth net of input quantity growth (the Solow residual). The second is based on output price growth net of input price growth (the dual productivity residual). If observed productivity shocks are truly shocks to supply, then these two measures should be identical. Under the Keynesian alternative that demand shocks are driving output, the measures should differ. Keynesian theories of labor hoarding, or of monopolistic excess capacity, predict that measured productivity is procyclical. Output can increase without an increase in inputs when demand increases. Specifically, the difference between the quantity-based measure and the price-based measure should be procyclical.

[1] *R. E. Hall, "Market Structure and Macroeconomic Fluctuations," NBER Reprint No. 845, April 1987, and* Brookings Papers on Economic Activity *2 (1987), pp. 285-322, observes that the assumption that measured productivity has an aggregate demand component implies an assumption that prices are not set competitively.*

[2] *F. E. Kydland and E. C. Prescott, "Time to Build and Aggregate Fluctuations,"* Econometrica *50 (November 1982), pp. 1345-1370.*

[3] *M. D. Shapiro, "Are Cyclical Fluctuations in Productivity Due More to Supply Shocks or Demand Shocks?" NBER Working Paper No. 2147, February 1987, and* American Economic Review Proceedings *77 (May 1987), pp. 118-224.*

I test these hypotheses using panel data on U.S. industries. For most industries, the hypothesis that both measures of productivity are the same holds true. More importantly, deviations between the two measures essentially are not cyclical. Therefore, these tests support the view that observed productivity shocks are truly productivity shocks. In addition to providing support for the explanation of the output/investment correlation, this finding should have broad implications for debates over the sources of business cycles. In particular, it calls into question models that have productivity responding positively to aggregate demand shocks.

Estimation of the Demand for Capital

I estimate the demand for capital based on the representative firm's problem of intertemporal profit maximization. Productivity shocks enter the profit function explicitly through the specification of the technology. The profit-maximization problem implies that the expected marginal product of capital equals the expected cost (stochastic first-order conditions). This condition is explicitly intertemporal because of the durability and cost of adjusting the capital stock. Expectations errors are uncorrelated with the information available when the expectation was formed. Consequently, the stochastic first-order condition, which holds only in expectation, can be estimated using the actual data and an instrumental variables procedure.[4] The estimated first-order conditions are then solved to yield a demand for capital.

This procedure for estimating the demand for capital is immune from several important criticisms of much of the work on the demand for capital. First, the estimated demand for capital is based explicitly on technology and policy. The key policies considered are tax rules that affect the cost of capital. Therefore, the model can accommodate structural shifts that arise when policy changes (Lucas's famous critique that many econometric models will be unstable when policy changes).[5]

Second, the equation for the demand for capital is based on the firm's intertemporal profit-maximization problems, which, because of the durability of capital, are long term. Summers has criticized conventional investment equations that focus on short-run swings in investment.[6]

Finally, the estimates take into account how observed productivity shifts the production function. This obviates the severe problem of simultaneous equations bias that would be present otherwise.

The demand for capital estimated by this technique displays rates of adjustment that are plausible. About half of the adjustment to a change in the cost of capital takes place after one year. Moreover, the estimated magnitudes of the adjustments are important. For example, the estimates imply that if the reductions in the cost of capital mandated in the 1981 tax law had remained permanent, the long-run capital stock would have been 5 percent higher than it would have been otherwise.

Dynamics of Investment, Output, and the Cost of Capital

Suppose that firms in the economy face shocks to productivity. These shocks will affect both their ability to produce and their desire to invest. A firm may become more productive either through adoption of a new technique or by an improvement in the quality of its workers. This increase in productivity will raise both output and investment. Output will increase because the firm becomes more efficient and can produce goods at a lower price. Investment will increase both because new capital may be required to implement the productivity changes and because the marginal product of capital has increased. Productivity shocks can be the underlying factor that determines both investment and output. Therefore, one might expect to see the large co-movements of investment and output that we do see in the data.

Based on the estimates discussed in the previous section and estimates of the processes governing productivity and other shocks, the model yields predictions about the joint movements of the key aggregates: investment, output, labor, interest rates, and a measure of productivity shocks. These predictions are compared with the movements of the actual data for the U.S. economy. The models fit the data well.

First, the productivity shock appears to be an important joint determinant of both investment and output, just as the theory predicts. Second, the strong correlation of investment and output found in the data is replicated in the model. Finally, in both the model and the data, the correlation of interest rates and investment is very weak. Calculations show that this weak correlation arises because productivity movements swamp the effect of interest rates in U.S. data. A large and sustained change in interest rates or the tax variables that determine the cost of capital will affect investment. Conventional techniques that ignore the key role of productivity shocks may fail to find this effect.

[4] *M. D. Shapiro, "The Dynamic Demand for Capital and Labor," NBER Reprint No. 860, May 1987, and* Quarterly Journal of Economics *101 (August 1986), pp. 513-542; and "Capital Accumulation and Capital Utilization: Theory and Evidence," NBER Working Paper No. 1900, April 1986, and* Journal of Applied Econometrics *1 (July 1986), pp. 211-234.*

[5] *R. E. Lucas, Jr., "Econometric Policy Evaluation: A Critique,"* Carnegie-Rochester Conference on Public Policy *1 (1976). Reduced-form investment equations are one of Lucas's examples.*

[6] *L. H. Summers, "Requiem for the Investment Equation," unpublished, Harvard University, 1986.*

Economic Outlook Survey

Second Quarter 1987

Victor Zarnowitz

According to the June survey of 28 professional forecasters taken by NBER and the American Statistical Association, the median forecasts show the economy continuing along the path of a relatively slow but steady expansion. Having grown 2.5 percent in 1986, real GNP is expected to gain 2.6 percent this year and 2.7 percent the next. These projections are similar to those made by the group three months ago. Yet a closer look at the individual forecasts and their composition reveals increasing risks and uncertainties. The probabilities of a serious slowdown or recession starting in the year ahead are seen as higher. Inflation and interest rates are considered more likely to rise than decline.

Many Forecasters Worry about a Sluggish 1988

Expressed at annual rates (a.r.), forecasts of real GNP growth average 2.2 percent, 2.6 percent, 3.2 percent, 2.6 percent, and 2.8 percent for the five successive quarters 1987:2–1988:2; over the period as a whole, the expected gain is 2.8 percent. But the individual point predictions differ considerably, as shown by the following percentage distributions:

Percentage Change in Real GNP	*Mean Response (Percentage) 1987:2 to 1988:2*	*1987–8*
4.0 percent or more	4	0
3.0 to 3.9 percent	50	40
2.0 to 2.9 percent	31	44
Less than 2.0 percent	15	16
Total	100	100

Most respondents expect growth to exceed 3 percent in 1987:2–1988:2 but to fall below 3 percent in 1987–8. The ranges of the respective forecasts are 0.0–4.5 percent and 0.4–3.4 percent.

Chances of a Recession Still Low but Rising

The probabilistic forecasts provide more direct measures of uncertainty. Their dispersion is much greater than that of the corresponding point forecasts. They also show a sunstantial shift downward when growth prospects for 1987 and 1988 are compared:

Percentage Change in Real GNP	*Mean Response (Percentage) 1986–7*	*1987–8*
4.0 percent or more	10	10
2.0 to 3.9 percent	67	50
0 to 1.9 percent	20	32
Negative	3	8
Total	100	100

The average of individual assessments that the economy's output will decline are 13, 12, 15, 20, and 26 out of 100 in the five quarters through 1988:2. More of the responses fall into the mean probability classes that signaled danger in the past (31–40 percent, 41–50 percent, and higher) than previously in this expansion.

Inflation Somewhat Higher— Not Accelerating

The median forecasts show the GNP implicit price deflator (IPD) rising 3.1 percent in 1986–7, 3.9 percent in 1987:2–1988:2, and 4.0 percent in 1987–8. The quarterly forecasts for 1987:2–1988:2 vary between 3.7 percent and 4.2 percent a.r. Compared with the previous survey, most predictions of inflation are higher, but the revisions in either direction tend to be relatively small. The probabilistic forecast distributions show a clear but moderate shift toward higher inflation in 1988.

Percentage Change in IPD	*Mean Response (Percentage) 1986–7*	*1987–8*
8.0 percent or more	1	3
6.0 to 7.9 percent	4	8
4.0 to 5.9 percent	20	45
2.0 to 3.9 percent	70	38
Less than 2.0 percent	5	6
Total	100	100

Few forecasts indicate that inflation may accelerate in the near future. This is consistent with the paucity of predictions that macroeconomic activity is about to heat up and enter a boom stage. The consumer price index, reflecting the effects of costlier imports, is to rise 3.8 percent in 1986–7 and 4.5 percent in 1987–8, according to the median forecasts. The quarterly figures for 1987:2–1988:2 fall into the narrow range of 4.2–4.4 percent. Here the revisions from the previous survey are larger than for IPD, averaging about 0.5 percent.

Moderate Rises and Upward Revisions in Interest Rate Forecasts

The three-month Treasury bill rate is expected to increase gradually from 5.7 percent to 6.3 percent between 1987:2 and 1988:2. The annual averages are 5.8 percent for 1987 (this could be slightly *lower* than in 1986) and 6.3 percent for 1988 (indicating no further rise in the second half of next year).

Projections of GNP and Other Economic Indicators, 1987–8

	Annual				
				Percent Change	
	1986 Actual	1987 Forecast	1988 Forecast	1986 to 1987	1987 to 1988
1. Gross National Product ($ billions)	4206.1	4444.5	4750.8	5.7	6.9
2. GNP Implicit Price Deflator (1982 = 100)	114.5	118.0	122.7	3.1	4.0
3. GNP in Constant Dollars (billions of 1982 dollars)	3674.9	3772.2	3873.0	2.6	2.7
4. Unemployment Rate (percent)	7.0	6.6	6.5	-0.4[1]	-0.1[1]
5. Corporate Profits After Taxes ($ billions)	134.0	141.8	156.5	5.8	10.4
6. Nonresidential Fixed Investment (billions of 1982 dollars)	456.7	451.9	469.0	-1.0	3.8
7. New Private Housing Units Started (annual rate, millions)	1.81	1.73	1.66	-4.21[2]	-4.05[2]
8. Change in Business Inventories (billions of 1982 dollars)	6.6	17.0	20.6	10.4[3]	3.6[3]
9. Treasury Bill Rate (3-month, percent)	5.97	5.80	6.29	-0.17[1]	0.49[1]
10. Consumer Price Index (annual rate)	1.9	3.8	4.5	1.9[1]	0.7[1]

	Quarterly							
		1987			1988		Percent Change	
	1987 Q1 Actual	Q2	Q3	Q4	Q1	Q2	Q1 87 to Q1 88	Q2 87 to Q2 88
		Forecast						
1. Gross National Product ($ billions)	4339.2	4400.5	4480.0	4549.6	4631.5	4709.6	6.7	7.0
2. GNP Implicit Price Deflator (1982 = 100)	116.2	117.4	118.5	119.7	120.9	122.0	4.0	3.9
3. GNP in Constant Dollars (billions of 1982 dollars)	3735.2	3756.0	3780.6	3810.5	3835.5	3862.0	2.7	2.8
4. Unemployment Rate (percent)	6.7	6.6	6.5	6.5	6.4	6.5	-0.3[1]	-0.1[1]
5. Corporate Profits After Taxes ($ billions)	145.0	143.2	145.0	146.0	151.0	155.3	4.1	8.4
6. Nonresidential Fixed Investment (billions of 1982 dollars)	442.4	450.0	453.7	458.9	461.5	466.5	4.3	3.7
7. New Private Housing Units Started (annual rate, millions)	1.81	1.71	1.70	1.69	1.66	1.68	-7.91[2]	-1.49[2]
8. Change in Business Inventories (billions of 1982 dollars)	31.0	12.0	13.5	10.0	18.0	20.0	-13.0[3]	8.0[3]
9. Treasury Bill Rate (3-month, percent)	5.53	5.71	5.95	6.00	6.17	6.30	0.64[1]	0.59[1]
10. Consumer Price Index (annual rate)	4.5	4.2	4.3	4.4	4.2	4.4	-0.2[1]	0.2[1]

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, June 1987. The figures on each line are medians of twenty-eight 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.

The yield on new high-grade corporate bonds is also forecast to increase in each of the five quarters covered, from 9.0 percent in 1987:2 to 9.6 percent in 1988:2. The annual figures for 1987 and 1988 are about the same.

Three months ago the forecasts were slightly lower (6.1 percent for the bill rate and 9.2 percent for the bond yield, for example).

All but a few forecasters anticipate some increases in both inflation and interest rates. The ranges of the individual forecasts for 1988:2 are 5.5–7.5 percent for the bill rate and 8.6–11.4 percent for the bond yield.

Modest Gains in Production, Larger Gains in Profits

Output of manufacturing, mining, and utilities is expected to grow 2.3 percent in 1987, a great improvement from the stagnation in 1986 but still less than the predicted gain in real GNP. (The March survey was more optimistic than this current survey.) In 1988, industrial production will rise 3.1 percent, more than total output, according to both the new and the previous median forecasts. Individual forecasts differ but the averages suggest steady gains of about 3.6 percent a.r. per quarter through 1988:2.

Corporate profits after taxes (in current dollars) are expected to gain 5.8 percent in 1986–7 and 10.4 percent in 1987–8. These group forecasts include some large revisions from the previous survey, downward for this year and upward for the next. Taken with the output expectations, these projections imply large increases in profit margins, presumably caused in large measure by increases in import prices and related prices.

Consumption to Grow Slowly, Housing Weaker

Real consumption, a source of great strength in 1986 when it increased 4.1 percent, is expected on average to gain only 2.0 percent in 1987. (The March forecast was 2.2 percent.) Improvements to a rate of 2.5 percent are projected for both 1987:2–1988:2 and 1987–8.

According to the forecasters, residential fixed investment, in constant dollars, which rose 9.5 percent last year, should move up only 1.5 percent in 1987 and decline 4.1 percent in 1987:2–1988:2 and 0.9 percent in 1988. Housing starts are predicted to fall 4.2 percent in 1986–7 and 4.0 percent in 1987–8. These median forecasts represent substantial downward revisions from the previous survey.

Business Investment Down in 1987, Up in 1988

Nonresidential fixed investment in 1982 dollars is expected to decline 1.0 percent in 1987, about the same as in 1986. However, its average level in 1988 should be 3.8 percent higher than in 1987, a significant upturn. A similar gain is projected for 1987:2–1988:2. In this respect the current forecasts tend to be more optimistic than those produced by the group in the first quarter of 1987.

The median forecasts for inventory investment, in billions of 1982 dollars, are 17 for 1986–7 and 21 for 1987–8, similar to the corresponding figures in the previous survey.

Trade Deficits Significantly Lower

The deficits as measured by net exports of goods and services are predicted to be about 16 percent lower at mid-1988 than at mid-1987. A comparison of the averages for 1987 and 1988 yields a very similar result. These forecasts are not very different from their March counterparts. The expectation that trade deficits will decline is widely shared.

Assumptions

Ten respondents report that they assumed "little or no change" in tax policy. A few expect some increase in excise taxes, a few others larger rises in the tax burden. The quoted figures are 4–10 percent in 1987–8 and $8–20 billion in 1988.

Most of the reporting forecasters see defense outlays as rising by 3–5 percent or less in both 1987 and 1988. Some even assume small declines, probably in real terms.

Numerical estimates of monetary growth in 1986–7 range from 6 percent to 14 percent for M1 (12 responses) and from 5 percent to 9 percent for M2 (16). The projections for 1987–8 vary in the 5–8 percent and 6–10 percent intervals for M1 and M2, respectively (based on 17 responses).

Most of the comments on the dollar state that it will continue soft, losing 8–15 percent in 1986–7 and 5–7 percent in 1987–8 (12); a few see the dollar steadying in the near future (3). Some assume that real exports will grow "strongly" or by 6–10 percent in both 1987 and 1988; a few see the shrinkage of the trade deficit as a slow process.

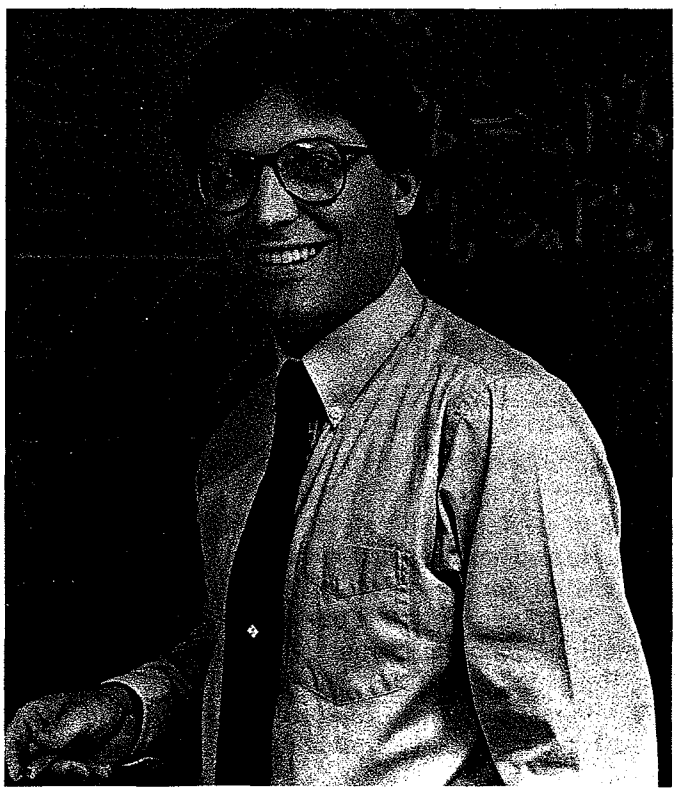
Stable energy demand and prices are assumed by several respondents. Oil prices are likely to stay in the $16–20/barrel range in 1987 (14) and in the $17–24/barrel range in 1988 (12).

This report summarizes a quarterly survey of predictions by 28 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

B. Douglas Bernheim

Doug Bernheim, a research associate in NBER's Program in Taxation, was recently named a tenured professor of economics at Stanford University. A California native, Bernheim received his A.B. from Harvard University in 1979 and his Ph.D. in economics from MIT in 1982. He joined the Stanford faculty in 1982 and has



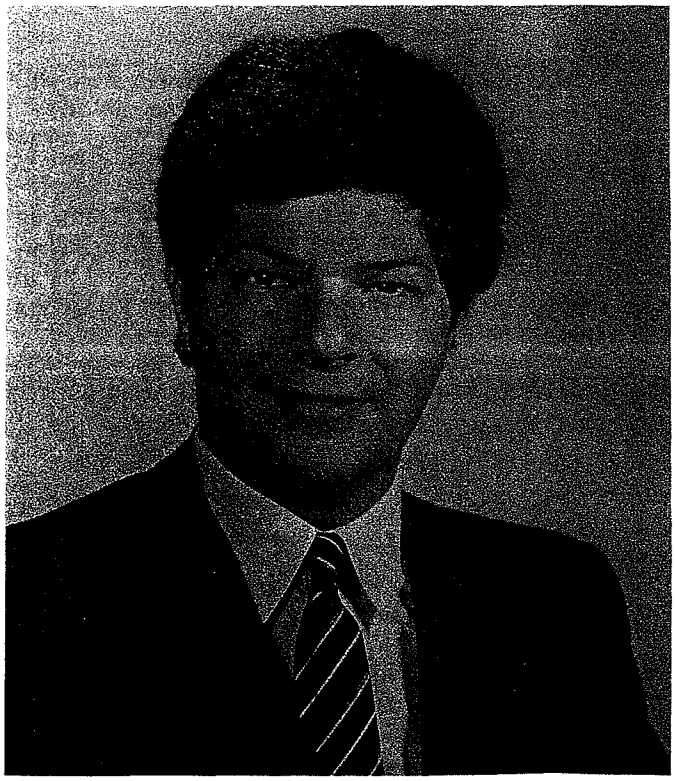
taught public finance and microeconomics there at the undergraduate and graduate levels.

Bernheim was an NBER Olin Fellow in 1985–6 and is currently an Alfred P. Sloan Foundation Research Fellow (through 1989). His articles have been published in the *Quarterly Journal of Economics,* the *American Economic Review,* the *Journal of Political Economy,* and other journals. He has also written on taxes, pensions, and retirement issues for a number of NBER books.

Doug and his wife, Debbie, live in Menlo Park with their two daughters, Melissa and Jennifer. His hobbies include gardening, cooking, jogging, and basketball.

Matthew D. Shapiro

Matthew Shapiro has been a faculty research fellow in NBER's Program in Financial Markets and Monetary Economics since 1985, and was an Olin Fellow at the Bureau during the 1986–7 academic year. He received his B.A. and M.A. from Yale University in 1979 and his Ph.D. from MIT in 1984.



Shapiro served as a junior staff economist at the Council of Economic Advisers in 1979–80 and was named an assistant professor in Yale's economics department in 1984. He also has been on the research staff of the Cowles Foundation for Research in Economics at Yale since 1984. Shapiro's work has been published in a number of leading economic journals as well as in NBER's Working Paper Series.

A Minneapolis native, Shapiro is single and resides in New Haven. He plays the cello and is an avid tennis player.

Conferences

Empirical Studies of Strategic Trade Policy

The Center for Economic Policy Research (CEPR) and NBER cosponsored a workshop on "Empirical Studies of Strategic Trade Policy" in London on January 30. The meeting was attended by officials from several UK government departments and from the European Commission, and academic economists from several European countries, as well as those participating in the research program. The following papers were discussed:

Andrew Caplin, NBER and Princeton University, and Kala Krishna, NBER and Harvard University, "Most Favored Nation (MFN) Status and the Structure of Tariffs"

Val Lambson, University of Wisconsin, Madison, and J. David Richardson, NBER and University of Wisconsin, Madison, "Tacit Collusion and Voluntary Restraint Agreements (VRAs) in the U.S. Auto Market"

Victor Norman, CEPR and Norwegian School of Economics and Business Administration, "Strategic Policies for Export Industries: Two Norwegian Examples"

Alasdair Smith, CEPR, and Anthony Venables, CEPR and University of Sussex, "Trade Policy under Imperfect Competition: Some Further Results"

Richard Baldwin, Columbia University, and Paul R. Krugman, NBER and MIT, "Market Access and International Competition" (NBER Working Paper No. 1936)

In the first paper, Caplin and Krishna analyze the role played by MFN status in the determination of tariff levels. They consider three possible models of tariff setting: noncooperative tariff setting, in which countries set tariffs without concern for their international repercussions; bilateral once-and-for-all negotiations over tariff levels; and a sequence of tariff bargaining sessions over time. In the first two models, Caplin and Krishna find that the introduction of MFN status leads to the setting of higher tariff levels. Only in the third model does an MFN clause tend to reduce tariffs, because it increases the incentives to make bilateral deals between the formal bargaining rounds.

Lambson and Richardson investigate the interaction between the VRAs and strategic behavior by firms in this market. They assume that automobile prices are

set by tacit collusion among firms that enforce such agreements by reducing their prices in the event of deviations from collusion. The importance of strategic behavior by firms in the model means that a VRA not only constrains sales but also firms' capacity and "threatened capacity."

This has two opposing effects on collusion. First, the VRA limits the ability to punish deviations from collusion: even if it reduces its price, a firm may not be able to increase its sales and punish other firms, which tends to work *against* collusion. By restricting the ability of Japanese firms to expand their sales, for example, the VRA increases the temptation to U.S. firms to abandon collusion and to initiate a price war to increase their market share, which tends to keep prices down. The second effect, on the other hand, works *for* collusion: firms find it less profitable to cheat on a collusive agreement. Although a firm may still deviate from the agreement by charging lower prices, the VRA limits its sales, and the lower price will not produce such a large increase in profits. This makes it more attractive to firms to abide by the agreement.

Lambson and Richardson argue that the tacit collusion model correctly predicts the industry-level profits and firms' capacity utilization levels but is less successful in explaining profits at the firm level. The theory, for example, predicts that among colluding firms, larger firms should have higher capacity utilization rates than smaller firms have. The data confirm this. The authors find no clear evidence that the VRA strengthens collusion among firms in the automobile industry. This contrasts with the findings of earlier studies.

Norman considers governments' use of strategic trade policy to change market conditions in order to transfer profits from foreign to home firms. He argues that such a policy may be impractical if the optimal strategy is sensitive to the specification of the market "game." Governments are unlikely to have the information necessary to choose the best policy. Norman focuses on the issues faced by the Norwegian government in the case of one export industry: Caribbean cruise shipping. Policies that reduce exporters' costs allow home country firms to compete more aggressively, but if the foreign firms do not reduce their capacity in response, the only beneficiaries would be the foreign consumers. If, however, foreign competitors react by reducing their capacity, the profits of the Norwegian firms rise. The firms themselves may be much better informed about which outcome is likely to occur than the government is, but they may have incentives not to reveal the true market structure to the government.

Smith and Venables present a quantitative partial equilibrium assessment of the effects of trade and industrial policy on the UK refrigerator industry. They assume that firms experience economies of scale in production and that the market is imperfectly competitive. They then choose values for the parameters of the theoretical model from a variety of sources so that the model's solutions are consistent with observed values of trade and production. Smith and Venables then simulate the effects of an import tariff, an export subsidy, and a production subsidy, for cases in which the number of firms and of the refrigerator models they produce are held constant, where only the number of firms is fixed, and where there is free entry of firms. Their tentative results suggest that these policy interventions will produce nontrivial gains for the domestic economy, although mostly at the expense of foreigners.

In the final paper of the workshop, Baldwin and Krugman investigate the impact of strategic trade policy in two industries, both of which are characterized by strong "learning" effects: the 16K RAM sector of the semiconductor industry between 1978 and 1983, and large commercial aircraft. Baldwin and Krugman simulate the impact of the apparent restriction on entry by U.S. producers into the Japanese market. This restriction allows Japanese producers to increase their production; the presence of *learning by doing* brings about falling production costs and helps the Japanese to capture 40 percent of the world market. However, Baldwin and Krugman's model indicates that the gains to Japanese producers from their increased market share were more than offset by the loss in consumer welfare caused by higher prices, since the Japanese producers seem to have been less efficient than those in the United States.

Baldwin and Krugman also study strategic aspects of the European Airbus project. They develop a model of competition between the Airbus Industrie and Boeing and simulate the behavior of the market with and without the Airbus. Their results imply that the Airbus project increased competition, which drove down the price of aircraft and permitted consumers to benefit from lower prices. This outweighed the implicit interest subsidy to the Airbus consortium provided by European governments.

This summary was prepared with the assistance of Alasdair Smith and Caroline Digby, both of CEPR.

Second Macro Conference Held

NBER's second Annual Conference on Macroeconomics was held in Cambridge on March 13–14. The conference, which drew more than 60 academic economists from throughout the United States, was organized by Stanley Fischer of NBER and MIT. The program was:

Chairman: Stanley Fischer

B. Douglas Bernheim, NBER and Stanford University, "Ricardian Equivalence: An Evaluation of Theory and Evidence"

Discussants: Marjorie A. Flavin, NBER and University of Virginia, and Charles I. Plosser, University of Rochester

Jeffrey A. Frankel, NBER and University of California, Berkeley, and Richard Meese, University of California, Berkeley, "Are Exchange Rates Excessively Variable?" (NBER Working Paper No. 2249)

Discussants: Robert P. Flood, Jr., NBER and Northwestern University, and Patrick Minford, University of Liverpool

Chairman: Christopher A. Sims, NBER and University of Minnesota

Paul M. Romer, NBER and University of Rochester, "Crazy Explanations for the Productivity Slowdown"

Discussants: Ben S. Bernanke, NBER and Princeton University, and Martin Baily, NBER and the Brookings Institution

Kemal Dervis, The World Bank, and Peter Petri, Brandeis University, "The Macroeconomics of Successful Development: What Are the Lessons?"

Discussants: Arnold C. Harberger, University of Chicago, and Miguel Urrutia, International Development Bank

Panel Discussion

Lawrence H. Summers, NBER and Harvard University, "The Scientific Illusions in Macroeconomics"

Discussants: Alan S. Blinder, NBER and Princeton University, Lars Peter Hansen, NBER and University of Chicago, and Bennett T. McCallum, NBER and Carnegie-Mellon University

Chairman: Martin Feldstein, NBER and Harvard University

Julio J. Rotemberg, NBER and MIT, "The New Keynesian Microfoundations"

Discussants: N. Gregory Mankiw, NBER and Harvard University, and Edward C. Prescott, University of Minnesota

Robert H. Topel and Kevin M. Murphy, NBER and University of Chicago, "The Evolution of Unemployment in the United States: 1968-1985"

Discussants: William T. Dickens, NBER and MIT, and David Lilien, University of California, Irvine

Bernheim considers whether government budget deficits make any difference: to national saving, to the interest rate, and to the balance of payments. The Ricardian equivalence hypothesis points out that an increased current deficit implies that taxes will have to be higher sometime in the future than they otherwise would be, in order to pay off the debt. People may anticipate these taxes by increasing their saving now in order to pay the future taxes. In its strongest form, the hypothesis holds that private saving will increase by exactly the same amount as the budget deficit; therefore, interest rates will be unaffected, and the current account likewise will not change. Bernheim concludes that deficits do matter. But the discussants' comments indicate that this conclusion is not shared by all.

Frankel and Meese ask whether exchange rates fluctuate excessively. Both the longer-term and day-to-day movements in the exchange rate since 1973 appear to be larger than was anticipated then. Nonetheless, those fluctuations might be fully justified as rational responses to changes in the fundamental economic forces that should move the exchange rate. Frankel and Meese take a cautious approach: they say that, in the absence of successful models of exchange rate fundamentals, it is not possible to show conclusively that rates fluctuate excessively. After dismissing various tests and models as inconclusive, they use survey data on the expectations of market participants to uncover the process by which expectations are formed, and to decide whether independent movements in expectations may account for exchange rate movements. They conclude that rates probably have fluctuated excessively but caution that, even so, intervention by central banks will not necessarily succeed in stabilizing rates.

Romer examines the recent productivity slowdown in the United States in the context of the long-run growth of the economy. His main empirical finding is that capital formation appears to play the key role in determining growth over long periods, even though standard theories suggest that its role should be quite small. In seeking to explain why capital and investment might play such a role, Romer suggests that there are increasing returns to scale for the economy as a whole, even if not necessarily for the individual firms in the economy. The economy's stock of knowledge increases as individual firms invest and innovate. He also explores the role of increasing returns to scale when firms are not perfectly competitive. Romer shows that virtually all growth is accounted for by growth in the capital stock, and very little by increased labor inputs. Thus, an increase in employment contributes very little to faster growth, implying that average output per worker declines.

Dervis and Petri analyze growth in the developing countries. They begin by isolating 20 middle-income countries. They find that the fast growers invested more of their GNP, began with smaller governments, and expanded exports very rapidly. They did not have especially small government budget deficits, nor did they enjoy any unusual improvement in the terms of trade. For example, Korea has enjoyed extraordinary rates of growth for two decades, with time out mainly at the beginning of the 1980s. Turkey did reasonably well until the mid-1970s, then went into a deep crisis, and with the aid of foreign capital inflows, turned the situation around rapidly in the early 1980s. While both countries opened up significantly to trade, liberalizing imports and encouraging exports, the governments (particularly in Korea) did not take a laissez-faire approach. Also, capital markets were not seriously liberalized in either country. There was outward orientation, with an emphasis on the provision of appropriate price signals.

Rotemberg presents an evaluation of some recent work attempting to lay the microeconomic foundations of a Keynesian-type macroeconomic theory. In the last few years there has been an explosion of work on the new Keynesian microfoundations. Much of this work builds on the assumption that prices are costly to

change. This in itself is not an explanation of price stickiness and in particular invites the question of how such costs can possibly be large enough to produce recessions, which cost the economy billions and perhaps hundreds of billions of dollars in lost output. The key result is that small costs of changing prices for firms may be able to generate large business cycles.

Topel and Murphy analyze changes in the unemployment rate since the late 1960s. The underlying puzzle is why the "natural" or full employment rate of unemployment has risen, from about 4.5 percent in the late 1960s to an estimated 6.0 to 6.5 percent today. A frequent explanation for part of the change is that today's labor force has a higher proportion of groups with higher natural rates of unemployment. Topel and Murphy standardize for this factor by examining unemployment rates for males aged 18–64, a group whose labor force attachment is strong. They find that the rise in unemployment is very broadly based, not concentrated by industry, age, or schooling, although to some extent it is affected by geographic location. Most of the increase in total unemployment is accounted for by an increase in the frequency of very long spells of unemployment. Unemployment is more broadly based than it used to be, with the employed facing a greater probability of encountering unemployment than they used to. Finally, intersectorial labor mobility has declined as the unemployment rate has risen. Relative wages have not changed much, and real wages have been falling over much of the period since 1973.

These papers and their discussions will be published in *NBER Macroeconomics Annual 1987,* forthcoming from the M.I.T. Press. Its availability will be announced in a future issue of the *NBER Reporter.*

The Economics of Aging

NBER's Project on Aging sponsored a conference on "The Economics of Aging" on March 20–21 in New Orleans. Project Director David A. Wise, also of Harvard University, organized the program:

FINANCIAL STATUS AND EXPENDITURES

B. Douglas Bernheim, NBER and Stanford University, "The Timing of Retirement: Comparison of Expectations and Realizations"

Discussant: Edward P. Lazear, NBER and University of Chicago

Michael D. Hurd, NBER and SUNY at Stony Brook, and David A. Wise, "The Wealth and Poverty of Widows: Assets Before and After the Husband's Death"

Discussant: Robert W. Fogel, NBER and University of Chicago

Michael D. Hurd, "The Poverty of Widows: Future Prospects"

Discussant: David E. Bloom, NBER and Harvard University

LABOR FORCE PARTICIPATION AND RETIREMENT

Laurence J. Kotlikoff, NBER and Boston University, and David A. Wise, "Employee Retirement and a Firm's Pension Plan"

Discussant: Ariel Pakes, NBER and University of Wisconsin

Glenn Sueyoshi, MIT, "Social Security and the Determinants of Full and Partial Retirement: A Competing-Risks Analysis"

Discussant: Angus Deaton, NBER and Princeton University

John Rust, NBER and University of Wisconsin, and Richard Burkhauser, Vanderbilt University, "A Dynamic Programming Model of Retirement Behavior"

Discussant: Gary Burtless, Brookings Institution

HEALTH

John B. Shoven, NBER and Stanford University (with Jeffrey O. Sundberg and John P. Bunker), "The Social Security Cost of Smoking" (NBER Working Paper No. 2234)

Discussant: Paul J. Taubman, NBER and University of Pennsylvania

Alan M. Garber, NBER and Stanford University, "Long-Term Care, Wealth, and Health of the Disabled Elderly Living in the Community"

HOUSING, LIVING ARRANGEMENTS, AND FAMILY SUPPORT

Steven F. Venti, NBER and Dartmouth College, and David A. Wise, "Aging, Moving, and Housing Wealth"

Discussant: James M. Poterba, NBER and MIT

Konrad Stahl, Universität Dortmund, "Housing Patterns and Mobility of the Aged: The United States and West Germany"

Discussant: Henry Pollakowski, Harvard University

Axel Börsch-Supan, NBER and Harvard University, "Household Dissolution and the Choices of Alternative Living Arrangements among Elderly Americans"

Discussant: John M. Quigley, University of California, Berkeley

Daniel McFadden, NBER and MIT, and Jonathan Feinstein, MIT, "The Dynamics of Housing Demand by the Elderly: I. Wealth, Cash Flow, and Demographic Effects"

Discussant: Yannis Ioannides, NBER and Virginia Polytechnic Institute

Laurence J. Kotlikoff (with John Morris), "Childless and Abandoned Elderly: Some New Data on the Extended Family"

Discussant: David T. Ellwood, NBER and Harvard University

Bernheim uses data from the Social Security Admin-

istration's Retirement History Survey (RHS) to study expectations about the timing of retirement. He finds that individuals' forecasts of their own retirement dates are highly accurate. Individuals' expectations did not seem to be biased during periods in which Congress legislated large real increases in Social Security benefits. This suggests either that the benefit increases were anticipated, or that unanticipated changes in benefits have little effect on short-term plans for retirement.

Hurd and Wise verify that widows are much more likely than couples to be poor and that they make up a large proportion of the elderly poor: 80 percent are widows and other single individuals. Using the RHS, Hurd and Wise find that widows often become poor upon the death of the husband, even though, before his death, the married couple was not poor. While only 9 percent of married couples were poor, 35 percent of the surviving widows are poor. Clearly, a large proportion of the couple's wealth is lost when the husband dies.

Hurd and Wise also find that the households of poor widows both earned and saved less before the husband's death than did the households of widows who are not poor. Finally, household income often fell after the husband's death because there were no survivorship benefits nor life insurance.

Hurd goes on to estimate the fraction of widows who will become poor. His measure of poverty status is based on consumption, not income, since he believes that this is the appropriate measure of well-being for the elderly.

According to Hurd's projections, the fraction of widows in poverty should not increase substantially in the future. However, the differences between the consumption- and income-based measures of poverty are large. Even more important is the valuation put on Medicare/Medicaid: for two reasonable valuations of that health insurance, the fractions in poverty are very different.

Kotlikoff and Wise describe the provisions of the pension plan of a typical large corporation. The plan provides strong incentives to retire beginning at age 55. After age 65, negative pension accruals and negative Social Security accruals effectively impose a tax rate of almost 100 percent on wage earnings for many employees of the firm.

It is clear that these inducements to retire early have a substantial effect on rates of departure from the firm. The jumps in departure rates at specific ages coincide with the discontinuities and kink points in the worker compensation profiles, and with wage earnings profiles and Social Security accrual. The results suggest that the effects on labor force participation of increases in Social Security benefits are likely to be small relative to the effects of private pension provisions.

Empirical analyses of retirement behavior typically assume a single form of retirement. Sueyoshi, on the other hand, considers the determinants of full or partial retirement. Social Security affects the two forms of retirement in different ways: increases in benefits raise the probability of full retirement by more than the probability of partial retirement. Increases in the increment to Social Security benefits from additional work lower the probability of partial retirement by more than that for full retirement. Sueyoshi's results indicate that the large increase in Social Security benefits in the early 1970s increased the probabilities of full retirement while lowering the probability of partial retirement.

Rust and Burkhauser formulate a model of retirement behavior in which the worker's objective is to maximize expected discounted utility over his remaining lifetime. At each time period, the worker chooses how much to consume and whether to work full time or part time, or to leave the labor force. The model accounts for the sequential nature of the retirement decision problem. It also considers the role of expectations of such uncertain future variables as: the worker's life span, health status, marital and family status, and employment status; and earnings from employment, assets, Social Security, disability, and Medicare payments.

Shoven and his coauthors examine the Social Security cost of smoking from an individual point of view. If smokers have a shorter life expectancy than nonsmokers have, then by smoking they are giving up potential Social Security benefits. Shoven and his coauthors estimate this cost and consider the effects of smoking on the system as a whole.

They use mortality rates for smokers and nonsmokers, and expected Social Security taxes and benefits for each group, using median earnings as a base. They find that smoking costs men about $20,000 and women about $10,000 in expected net benefits, and conclude that the prevalence of smoking has a direct effect on the financial viability of the Social Security system; every decrease in the number of smokers increases the system's liability. Therefore, changes in smoking behavior should be recognized as affecting the system.

Providing and financing long-term care of the elderly are among the most challenging policy issues facing the aging American population. Garber studies a group of noninstitutionalized, elderly Medicare recipients who are impaired in the performance of at least one basic activity. He asks how their wealth, living arrangements, and health affect their use of hospital services, paid home health care, and unreimbursed home care. He finds that the number of limitations on activity increases with age, but (in this population) household income and the value of home equity do not decrease with either the level of disability or with age. The determinants of home health care utilization in his sample are distinct from the factors that have been significant predictors of medical care utilization in other studies.

Venti and Wise study the relationship between family attributes and moving, and between moving and changes in housing wealth. Moving is often associated with retirement, the death of a spouse, or other changes in marital status. At the same time, median housing wealth increases as the elderly age. Even when the elderly move, their housing equity is as likely to increase as to decrease. So high transaction costs associated with moving are apparently not the cause of the stability in housing wealth as the elderly age. For whatever rea-

son, apparently homeowners have a considerable attachment to their homes. The absence of a well-developed market for reverse mortgages may be explained by a lack of demand for these financial instruments; the evidence suggests that the typical elderly family does not wish to reduce housing wealth to increase current consumption.

Stahl compares the elderly's household attributes, housing choices, and housing mobility patterns in the United States and West Germany and asks whether it is feasible and desirable for the government to provide incentives for reducing the housing consumption of the elderly to accommodate more of the younger households' growing demand for housing. He finds that in both countries, especially among the homeowners, the aged consume substantially more living space than their younger counterparts do. He also finds that the American elderly on average are more mobile than the Germans are, but the differences vary widely across households. He concludes that early retirement and reductions in rent differences between vacant and occupied housing stock will encourage a reduction in the elderly's consumption of housing.

Börsch-Supan also studies housing choices of the elderly. These include the choice between living in one household with their adult offspring, or sharing accommodations with other related or unrelated elderly. In contrast to young families who experienced a rapid increase in the proportion of alternative living arrangements in the early 1980s, for the elderly this proportion steadily decreased from 1974 to 1983. Börsch-Supan's main finding is that demographic determinants rather than economic variables predominate. The difference in income growth between the young and the elderly can explain only part of the discrepancy in household dissolution decisions; the balance is caused by the elderly's slow adaptation to new economic circumstances.

McFadden and Feinstein also investigate the pattern of housing mobility among the elderly. They focus on two issues: determining which household characteristics tend to increase the probability of a move; and whether elderly households systematically move to smaller, less expensive dwellings when they do move, and what makes such "downsizing" particularly likely. They find that wealthier households are less likely to move and to downsize, and that changes in family composition or retirement status significantly increase the likelihood of a move. They do not find much evidence of imperfections in the housing market, or of pervasive liquidity constraints.

Kotlikoff and Morris present findings from a new survey of extended families among the elderly of Massachusetts. The data suggest that while many of the elderly receive considerable attention from their children, a significant minority of them—many of whom need assistance with the activities of daily living—either have no children or receive no significant care or attention from their children. There appears to be less care and attention by children of these vulnerable elderly than between children and the nonvulnerable elderly. The least amount of contact seems to be between children and the institutionalized elderly. In addition, although many of the parents are very poor, financial support from children to parents, other than in the form of shared housing, is uncommon.

The new data come from two sources: a Hebrew Rehabilitation Center panel survey of the elderly in Massachusetts and a Hebrew Rehabilitation Center-National Bureau of Economic Research survey of the children of these elderly. The children of the elderly were asked about their own economic situation and contact with their parents as well as about the economic situation and parental contact of each of their siblings.

In addition to the authors and discussants, Richard Suzman of the National Institute on Aging attended this conference.

Measurement of Saving, Investment, and Wealth

NBER's Conference on Research in Income and Wealth met in Baltimore on March 27-28 to discuss the measurement of saving, investment, and wealth. The program, organized by Robert E. Lipsey of NBER and Queens College and Helen Stone Tice of the Bureau of Economic Analysis (U.S. Department of Commerce), was:

Aggregate National and Sectorial Saving

SESSION I: National Income Account (NIA) and Flow-of-Funds (FOF) Account Saving Estimates

Chairman: Edward Denison, The Brookings Institution

Thomas M. Holloway, Bureau of Economic Analysis, "Present NIPA Saving Measures, Their Characteristics and Limitations"

Discussant: Paul Wachtel, NBER and New York University

John F. Wilson, James L. Freund, Fredrick D. Yohn, and Walter Lederer, Federal Reserve Board, "Household Saving Measurement: Recent Experience from the Flow-of-Funds Perspective"

Discussant: George M. von Furstenberg, Indiana University

Clark W. Reynolds, Stanford University, "NIA and FOF Saving Estimates in Latin American Countries"

Discussant: Nathaniel Leff, Columbia University

SESSION II: Expanded Measures of Saving and Investment

Chairman: Robert E. Gallman, NBER and University of North Carolina

Patric H. Hendershott, NBER and Ohio State University, and Joe Peek, Boston College and Federal Reserve Bank of Boston, "Private Saving in the United States: 1950-85" (NBER Working Paper No. 2294)

Discussant: Frank de Leeuw, U.S. Department of Commerce

Dale W. Jorgensen, Harvard University, and Barbara Fraumeni, Northeastern University, "The Accumulation of Human and Nonhuman Capital"
Discussant: Sherwin Rosen, NBER and University of Chicago

SESSION III: Sectorial Saving Measures—I

Chairman: Zoltan E. Kennessey, Board of Governors, Federal Reserve System

Michael J. Boskin, NBER and Stanford University, Marc S. Robinson, Stanford University and UCLA, and Alan Huber, Stanford University, "Government Capital Investment and Wealth"
Discussant: Robert Eisner, Northwestern University

Thomas K. Rymes, Carleton College, "On Banks and the Measurement of Sectorial Savings Relations"
Discussant: Anna J. Schwartz, NBER

SESSION IV: Sectorial Saving Measures—II

Chairman: Murray F. Foss, American Enterprise Institute

Stephen P. Taylor, Federal Reserve Board, "The United States and the World Current-Account Discrepancy"
Discussant: Michael Dooley, International Monetary Fund

Richard and Nancy Ruggles, Yale University, "Saving and Capital Formation of Enterprise Sectors: A Market Transactions View"
Discussant: Vito Natrella, Economic Consultant

Household Microdata on Saving and Wealth

SESSION V: New Household Microdata

Chairman: H. J. Adler, Statistics Canada

Enrique J. Lamas and John M. McNeil, U.S. Bureau of the Census, "Year-Apart Estimates of Household Net Worth from the Survey of Income and Program Participation"
Discussant: Martin David, University of Wisconsin

Richard Curtin, F. Thomas Juster, and James Morgan, Institute for Social Research, University of Michigan, "Survey Estimates of Wealth: An Assessment of Quality"
Discussant: Gene Smolensky, University of Wisconsin

SESSION VI: Life-Cycle Saving

Chairman: Edward C. Budd, Pennsylvania State University

Nancy A. Jianakopolos, Paul L. Menchik, and F. Owen Irvine, Michigan State University, "Using Panel Data to Assess the Bias in Cross-Sectional Inferences of Life-Cycle Changes in the Level and Composition of Household Wealth"
Discussant: B. K. Atrostic, U.S. Department of the Treasury

Daniel B. Radner, Social Security Administration, "The Wealth of the Aged and Nonaged, 1984"
Discussant: Marilyn Moon, American Association of Retired Persons

Steven G. Allen, NBER and North Carolina State University, Robert L. Clark and Ann McDermed, North Carolina State University, "Pension Wealth, Age-Wealth Profiles, and the Distribution of Net Worth"
Discussant: Cordelia Reimers, Hunter College

SESSION VII: Distribution of Wealth

Chairman: Harold Watts, Columbia University

Michael D. Hurd, NBER and SUNY, Stony Brook, and Gabriella Mundaca, SUNY, Stony Brook, "The Importance of Gifts and Inheritances among the Very Wealthy"
Discussant: Denis Kessler, Centre National de la Recherche Scientifique

Edward N. Wolff and Marcia Marley, New York University, "Long-Term Trends in U.S. Wealth Inequality: Methodological Issues and Results"
Discussant: Robert B. Avery, Board of Governors, Federal Reserve System

Aggregate National and Sectorial Saving

Holloway provides an overview of present National Income and Product Account (NIPA) saving measures and discusses the NIPA concepts and conventions that affect the measurement of saving. These include the scope of what is considered production, the sectoring of the economy, the attribution of pension funds to households, and imputations for nonmarket activities. He explains the effects of the comprehensive revision of the NIPA in 1985, describes some limitations of the official measures, and proposes several alternatives to them.

Wilson, Freund, Yohn, and Lederer review aspects of the flow-of-funds accounts (FFAs) that relate to the measurement of personal saving and suggest how to improve that measurement. Flow-of-funds estimates of personal saving tend to run higher than the NIPA estimates made and published by the Bureau of Economic Analysis. The authors identify certain areas of potential improvement in the capital account estimates, mostly in connection with potential reattributions of financial asset holdings toward sectors other than households. Some portion of the difference between NIPA and FFA saving estimates appears to reflect problems with the NIPAs because revisions to early NIPA data tend to bring the estimates closer together over time. There are also indications that personal income estimates associated with private pension funds may be too low.

Reynolds observes that flow-of-funds data have considerable potential for addressing the role of finance in savings mobilization and in gaining a better understanding of the sectorial distribution of savings. In particular, the Colombian FFA estimates show that the

level of household saving has been substantially underestimated in the NIPAs. This led to the preparation of integrated real and financial flow accounts; to higher, more reliable estimates of net household saving; and to a reduction to minimum levels of the discrepancy between real and financial accounts.

Hendershott and Peek develop and analyze adjusted saving measures that incorporate corrections for four measurement errors in the official statistics. They adjust the official NIPA personal saving series for the difference between income tax payments and actual liabilities, increase it to reflect saving via net purchases of government pension assets (including Social Security) and consumer durables, and decrease it by that part of aftertax interest income attributable to inflation. They also increase corporate saving by that part of aftertax interest expense attributable to inflation. The adjusted personal and private saving rates are only slightly below their post-1950 averages, not at all-time lows as reported in the official NIPA statistics. Furthermore, over the past 35 years, personal saving has been more volatile and corporate saving less volatile than the official measures. Finally, the inflation premium corrections remove the negative correlation between personal and corporate saving.

Jorgensen and Fraumeni present comparable measures of investment in human and nonhuman capital. They define human capital in terms of lifetime labor incomes for all individuals in the population. The measurement of investment in human capital is based on a system of demographic accounts. The measurement of investment in nonhuman capital is based on economic accounts for the accumulation of investment goods. Jorgensen and Fraumeni implement these concepts through a system of national accounts for the United States, covering 1948–84.

Boskin, Robinson, and Huber present revised estimates of various components of the government's contribution—positive or negative—to national wealth in the postwar period. They find that: (1) The share of national output devoted to private consumption has risen substantially, from 63 percent to 69 percent, over 1951–85. The national saving rate has fallen about four percentage points. (2) Federal government assets, tangible and financial, are substantial. Throughout the 1970s, they grew much more rapidly than the national debt did. By 1980, in constant 1985 dollars, federal government tangible assets were about $1.9 trillion and financial assets $940 billion compared to liabilities of $1.5 trillion. However, since about 1980, conventional liabilities have grown much more rapidly than assets have, leading to a $700 billion decline in the excess of assets over liabilities. (3) The state and local government sector contributes substantially to government and national wealth. State and local fixed reproducible capital are about twice that of the federal government, $1.9 trillion in 1985 versus $1.0 trillion. Total government reproducible capital amounts to 55 percent of the private nonresidential capital stock in 1985. Thus, government net investment often has been sufficient to turn the government sector into a net saver despite large budget deficits.

Rymes considers simple general equilibrium theories of banking that suggest that monetary authorities: (1) tax the community by not following efficient monetary policies, or (2) provide the service, by themselves and indirectly through private banks, of the public good: monetary stability. Current imputation procedures suffer from an important defect: the failure to impute a different overall price level; this leads to measured banking output being understated and measured rates of saving in the personal and government sectors overstated.

Taylor notes that statistics on the world balance of payments experienced a severe degradation after 1979 and that, from 1982 on, the data inconsistencies across countries have resulted in world net imbalances on current account of as much as $100 billion. In 1984 the IMF established a working party to study the problem, and Taylor summarizes the findings that resulted from their 1985–6 work. The focus was investment income accounts, in which the discrepancies had grown most dramatically after 1979. Recommendations in the working party report could reduce these imbalances for the sample year 1983 from a $33 billion net debit to a $6 billion debit. This would result from more systematic treatment of direct investment income and better measurement of interest-bearing asset positions for almost all countries. The working party report recommends comparable improvements for shipping and other transportation. Altogether the proposals reduce the imbalance to under $30 billion outside the trade account, which has a small but volatile world discrepancy. U.S. estimates of investment income are severely understated, but the errors are on both sides of the account, and the U.S. component of the world imbalance is evidently small.

Richard and Nancy Ruggles investigate the empirical evidence on the saving and capital formation of different enterprise sectors. Household gross saving (excluding saving in pension funds) is only slightly greater than household gross capital formation, and the household sector is not a net supplier of funds to other sectors. Mining and manufacturing industries have tended to save in excess of their capital formation, while regulated industries and real estate have typically financed their capital formation by borrowing. Pension funds have been net lenders to other sectors.

Household Microdata on Saving and Wealth

Lamas and McNeil ask whether the Survey of Income and Program Participation (SIPP) provides useful measures of the relative net worth of various population subgroups and of year-to-year changes in net worth. They conclude that the periodic SIPP data on differentials in wealth holding among population groups are a useful addition to the stock of economic statistics, despite their limitations in coverage and underreporting. The underreporting problems mean that SIPP is not an appropriate source for measuring the concentration of wealth.

Curtin, Juster, and Morgan examine the three most recent surveys of household net worth and assess their quality and their potential usefulness for analysis. The three surveys examined are: the 1983 Survey of Consumer Finances (SCF), the 1984 Wealth Supplement to the Panel Study of Income Dynamics (PSID), and the 1984 Wealth Supplement to the SIPP. The authors examine five characteristics related to quality: the sample and questionnaire design; the derived distribution of wealth holdings, especially the upper tail; measurement errors; the incidence of item nonresponse and imputed values; and the comparison of survey estimates with independent information on national wealth. The authors conclude that the SCF, mainly because of its extensive oversampling of high-income households and the detail in which asset data were collected, is the most accurate and useful of the three. Furthermore, they suggest that where the asset totals calculated from the SCF differ from those attributed to the household sector in the FOF accounts on the BEA capital stock data, it is the SCF measures that are more likely to be correct.

Jianakoplos, Menchik, and Irvine assess the biases in cross-sectional inferences of life-cycle changes in the level and composition of household wealth. They compare age-wealth profiles based on five cross-sectional surveys of a panel with time-series age-wealth profiles for each of the 15 age cohorts from the *same* panel observed over 15 years. These comparisons confirm that productivity growth and differential mortality (the poor die young) cause substantial distortions in age-wealth profiles based on cross-sectional data and cause inferences about portfolio reallocations over time to be misleading. Furthermore, procedures used in previous research to adjust cross-sectional data for the productivity effect are unreliable and do not correct for the differential mortality effect.

Radner discusses wealth data requirements for the analysis of the economic status of households and presents selected estimates of wealth for 1984 from the SIPP. He emphasizes the economic resources available to households other than the very wealthy; his particular focus is on age groups, with a special interest in the aged. He then compares estimates of the age-wealth cross-sectional relationship for five household surveys and two synthetic estimates. Then, he presents detailed estimates from the 1984 SIPP. These tabulations illustrate several types of useful wealth estimates that can be made from household survey data.

Allen, Clark, and McDermed present the first evidence of pension wealth from the pension-provider component of the 1983 SCF. Their findings indicate that the expected present value of pension benefits represents a major component of household net worth. They show that median pension wealth, based on projected final earnings, for households with pensions is over $30,000. This represents approximately 35 percent of median household net worth. Pension wealth rises with the age of household heads as the years until receipt of benefits decline. Pension wealth is primarily owned by households within the 25th and the 95th percentile of the nonpension wealth distribution. The inclusion of pension wealth in an analysis of wealth distribution tends to reduce the inequality of measured wealth. This paper provides new insights into the wealth distribution among U.S. households and the role of pensions in determining the relative net worth of families.

Hurd and Mundaca use data from the 1964 Survey of the Economic Behavior of the Affluent to estimate the fraction of household assets from inheritances and the fraction from gifts. These data are well suited for this calculation because the survey is heavily weighted to households with high incomes, and because the respondents were directly asked the fractions of assets from inheritances and from gifts. They estimate that 15–20 percent of household wealth came from inheritances and 5–10 percent from gifts. Even in households with very high incomes, very few people say that a large fraction of their assets was inherited or was given to them. According to the responses in this survey, it is not creditable that more than 50 percent of household assets came from gifts and inheritances. Data from the 1983 SCF with high-income supplement roughly confirm the results from the 1964 survey, although the results from the 1983 survey are much less comprehensive than those from the 1964 survey.

Wolff and Marley discuss some of the methodological issues involved in reconciling microdata and published data on household wealth distribution both with each other and with aggregate balance sheet data on household wealth. They find that the long-run record based on original sources shows a decline in wealth inequality in the United States from the early 1920s to the late 1940s, followed by relative stability in inequality, except for cyclical fluctuations. This mirrors very closely the time pattern for income inequality. The basic record holds up even after an adjustment and the use of consistent national balance sheet data. However, if Wolff and Marley include Social Security and pension wealth in the household portfolio, the results indicate a continuing decline in wealth inequality from the late 1940s to the present, because of the relative growth of retirement wealth. Second, they find that the estimates of the level of household wealth concentration are quite sensitive to the methods used in their construction and to the choice of wealth concept. For estate tax data, adjustments in the aggregate balance sheet data and the treatment of trust and pension funds make a difference of two to four percentage points of the share of the top percentile. Adjustments to survey data also can make a substantial difference in point estimates. However, the trend in wealth inequality remains very similar among different choices of adjustment procedures and of wealth concepts.

A conference volume including these papers and their discussions is forthcoming from the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

International Economic Cooperation

An NBER conference on "International Economic Cooperation" brought together NBER research associates with more than a dozen individuals whose key positions in government and business have provided them with direct experience in the international cooperation of economic policy. The conference, organized by NBER President Martin Feldstein and held on April 3–5, focused on cooperation in four areas: macroeconomic policy; international debt; international trade; and international financial policies. For each topic, an NBER research associate prepared a nontechnical background paper; the discussion of each subject was launched by prepared statements from three or four speakers.

The authors and associated speakers for the four topics were:

Macroeconomic Policy
Background paper: Stanley Fischer, NBER and MIT
Prepared remarks:
—Michael Blumenthal, Chairman of Unisys; Former Secretary of the Treasury
—Charles Schultze, Director of Economics, the Brookings Institution; Former Chairman, Council of Economic Advisers
—Alan Greenspan, Chairman Designate of the Federal Reserve Board of Governors; Former Chairman, Council of Economic Advisers
—Helmut Schmidt, Publisher of *Die Zeit*; Former Chancellor of the Federal Republic of Germany

International Debt
Background paper: Jeffrey D. Sachs, NBER and Harvard University
Prepared remarks:
—Anthony Solomon, Chairman of S. G. Warburg; Former President of the Federal Reserve Bank of New York
—William Ogden, CEO, Continental Illinois Bank and Trust; Former CFO of Chase Manhattan Bank
—Eduardo Wiesner, International Monetary Fund; Former Minister of Finance of Colombia
—Tim McNamar, Chairman of Gulf Pacific; Former Deputy Secretary of the Treasury

International Trade Policies
Background paper: J. David Richardson, NBER and University of Wisconsin
Prepared remarks:
—Robert Strauss, Attorney; Former Special Trade Representative
—Michiko Kunihiro, Chief Cabinet Councilor on External Affairs (Japan); Former Minister Plenipotentiary at the Japanese Embassy in Washington
—Edmund Pratt, Chairman and CEO, Pfizer, Inc.; Cochairman of the Business Roundtable

International Financial Policies
Background paper: Richard C. Marston, NBER and University of Pennsylvania
Prepared remarks:
—Jacques Attali, Special Advisor to President Mitterand of France
—Guido Carli, Senator of the Italian Republic; Former Governor of the Bank of Italy
—John Petty, CEO, Marine Midland Banks; Former Assistant Secretary for International Affairs, U.S. Department of the Treasury
—Robert Solomon, Guest Scholar at the Brookings Institution; Former Director of the Federal Reserve Board's Division of International Finance

Macroeconomic Policy

Blumenthal began by offering a prototype of the large, computer-age multinational firm of which his company, Unisys, is an example. He stressed that a revolution in technology and factor mobility has increased the need for international policy coordination, while making it more difficult at the same time.

Schultze pointed out that in practice economic policies often become ends in themselves, rather than the means to better economic performance. Coordination is often thwarted, a result that macroeconomic models would not predict.

Greenspan focused principally on the implications of highly developed international capital markets for exchange rate management. Any realistic effort to reduce the volatility of exchange rates must equalize the supplies of assets denominated in major currencies.

Schmidt spoke of the importance of strong U.S. economic and political leadership for the West and emphasized the dangers of isolation. Discussion centered on the costs and benefits of coordinated policies seeking to stabilize currency values. Participants agreed that the current stalemate over the U.S. budget deficit has reduced the scope for effective macroeconomic cooperation.

International Debt

Anthony Solomon opened the second session, addressing new developments in the LDC debt problem. Without adequate and steady growth in the industrialized countries, the resumption of growth in the LDCs and two-way resource flows will be impossible, and more debt moratoriums will occur.

Ogden described the policy response to the last five years of debtor problems. He stressed the need for political leadership in reformulating the roles of the debtor countries, multinational institutions, and commercial banks in dealing with the debt crisis.

Wiesner focused on Latin America's broad policy changes in response to domestic developments and the withdrawal of international liquidity. Structural adjustment programs, administered with moderation, comprise the correct long-term strategy for promoting growth.

McNamar identified four phases of the current debt challenge beginning in 1982 and lasting until 25 years from now. He was encouraged by the growth of securitization and use of alternative debt instruments. Aid to debtor countries from governments of industrialized countries also will be needed in the coming years but may not be forthcoming. The discussion centered on whether forgiveness can or should be an integral part of the solution to the debt problem. Participants expressed disappointment at the failure of the U.S. government to transform the ideas behind the Baker initiative into policy.

International Trade Policies

Strauss spoke about the trade negotiations of the past few years as well as the current U.S. trade situation. He expressed concern that Japan's inability to deal with U.S. trade issues has greatly eroded support within the United States for good trade policy. Nevertheless, he felt that the trade bill coming out of the Congress in the fall will be a reasonably responsible piece of legislation.

Kunihiro pointed out that international trade today is confronted with three major obstacles: inordinate trade imbalances; instability of exchange rates; and growing debts of developing countries. He felt concerned that the rhetoric aimed at Japanese exporters often assumes a tone of vengeance. Such responses may lead to policies that in the end will antagonize America's trading partners.

Pratt spoke of the efforts of the Business Roundtable in promoting free trade and supporting multilateral trade negotiations. Unfortunately, however, the United States has given up more than it has received in previous multilateral trade talks. Pratt was pleased that competitiveness issues will play a larger role in the Uruguay Round. In the discussion, the need for an international political consensus on trade issues was stressed. A number of participants felt that the Gephardt trade bill would be damaging. Several speakers pointed out that trade imbalances ultimately are a macroeconomic problem.

International Financial Policies

Attali felt that we have now reached the end of the era of floating exchange rates and that a target zone system should be adopted. First, we must design a system in which the political costs of breaking the rules are greater than the costs of changing the parameters. If target zones are to work, political leaders must place a high priority on maintaining them.

Carli recounted the way in which countries cooperated under the Bretton Woods system. He suggested that similar forms of cooperation may be appropriate today and that stimulative policies in Japan and Germany would not be enough to reduce the U.S. current account deficit.

Petty emphasized that adjustments to the exchange rate system and the degree of international capital mobility will lie at the intersection of politics and economics. He discussed the need for national policymakers to endorse global economic policies.

Robert Solomon spoke about the Louvre exchange rate agreement, the practicality of target zones, and the importance of repercussion effects between developing and industrialized countries. He felt that the dollar would have to fall further if the United States is to pay back its net external debt. In the general discussion, many participants expressed pessimism about the ability of the industrialized countries to stabilize currency values effectively. Some argued that worldwide coordination of monetary policy is neither desirable nor practical.

Other participants at the conference were: William H. Branson, NBER and Princeton University; Geoffrey Carliner, NBER; Georges de Menil, Institute for Advanced Studies in the Social Sciences (Paris); Robert Erburu, CEO, Times-Mirror Company; Martin Feldstein, NBER and Harvard University; Earl Foell, *Christian Science Monitor*; Jacob A. Frenkel, NBER and IMF; Kenneth A. Froot, NBER and MIT, who assisted in the preparation of this article; David Gergen, *U.S. News & World Report*; Richard N. Rosett, Washington University and Chairman of NBER's Board of Directors; and Renato Ruggiero, Secretary General of the Ministry of Foreign Affairs (Italy).

The background papers, prepared remarks, and discussion, with an introduction by Martin Feldstein, will be published by the University of Chicago Press in an NBER conference volume. In addition, a brief Summary Report of the proceedings will be produced later this year. The availability of these two publications will be announced in a future issue of the *NBER Reporter*.

Conference on Fiscal Federalism

NBER sponsored a conference on fiscal federalism in New York on April 10–11. The program was:

Wallace E. Oates, University of Maryland, and John Wallis, NBER and University of Maryland, "Decentralization in the Public Sector: An Empirical Study of State and Local Government"

Discussant: James R. Hines, Jr., NBER and Princeton University

Robert P. Inman, NBER and University of Pennsylvania, "The Growth of Federal Grants"

Discussant: Thomas Romer, Carnegie-Mellon University

Charles R. Hulten, NBER and University of Maryland, and Robert Schwab, University of Maryland, "Income Originating in State and Local Governments"

Discussant: Helen F. Ladd, Duke University

Jeffrey S. Zax, NBER and Queens College, CUNY, "The Effects of Jurisdiction Types and Numbers on Local Public Finance"

Discussant: Alan J. Auerbach, NBER and University of Pennsylvania

Lawrence B. Lindsey, NBER and Harvard University, "State and Local Tax Deductibility under the New Tax Law"

Discussant: Daniel R. Feenberg, NBER

Douglas Holtz-Eakin, NBER and Columbia University, and Harvey S. Rosen, NBER and Princeton University, "Tax Deductibility and Municipal Budget Structure" (NBER Working Paper No. 2224)

Discussant: Ronald Fisher, Michigan State University

George R. Zodrow, Rice University, "Eliminating State and Local Tax Deductibility: A General Equilibrium Model of Revenue Effects"

Discussant: Don Fullerton, NBER and University of Virginia

Oates and Wallis examine the pattern of fiscal centralization that has evolved during the twentieth century. They use a variety of economic and historical factors to explain the development of an increasingly centralized state and local entity. They find that population size, urbanization, income, and the size of the agricultural sector all have been important determinants of fiscal centralization.

Inman considers the federalist fiscal structure of the United States, which has moved steadily toward increased centralization in the financing of government services and transfers. He uses two alternative hypotheses to try to explain this move to more centralized financing. The first—that aid is allocated to correct market failures in the local public economy, or to equalize the provision of meritorious public goods—mostly fails to explain the observed pattern of federal aid. There is an effort to equalize the provision of services across states, but the extent of equalization is modest at best. The second hypothesis—that aid is allocated to ease the fiscal pressure in the state-local sector *when*, and only when, it is in the political interest of Congress to do so—is supported by national data on the growth in state-local spending and the growth in federal aid from 1948 to 1985.

There are two striking breaks in the political structure of budgeting, though. In 1968–71, there was increasing decentralization in congressional decisionmaking; the consequence was a sharp increase in aid per capita. From 1981–5, there was strong centralization in budgeting; the consequence was a significant decrease in per capita aid. Whether the 1981–5 break reflects a new trend in the aid budget or was unique remains to be seen.

Hulten and Schwab develop a set of income and product accounts for the state and local sector that parallel the accounts in the private sector. In contrast to the National Income Accounts' measure of income originating in the state and local sector, which ignores the role of capital, their estimate includes the imputed user cost associated with the stock of public sector capital. They show conceptually that the treatment of capital income is an important issue in a range of policy questions, including the tax reform debate and the design of intergovernmental grants. Their empirical results indicate that current National Income Accounting procedures dramatically underestimate the amount of income originating in the state and local sector; in recent years, this understatement is on the order of $100 billion.

They also find that labor productivity (output per worker) grew at an average annual rate of 0.6 percent, even under an assumption that total factor productivity growth was zero; by contrast, the official government figures implicitly assume no growth in labor productivity. Finally, Hulten and Schwab find that the state and local sector is capital intensive: their results suggest that the capital-output ratio in the state and local sector is roughly one-third greater than in the private sector.

Zax investigates the effects of alternative local government structures on aggregate local public debt and expenditures. Larger governments may experience economies of scale in the production and distribution of local public goods, but smaller and more plentiful governments provide a greater variety of public goods. Zax demonstrates that aggregate shares of county debt and expenditures in total income are smaller in counties with more jurisdictions. He concludes that a complex system of local government, which relies on special school districts as well as municipalities, may provide local public services at less expense than a consolidated government consisting of systems of small municipalities.

The deductibility of state and local taxes, worth over $30 billion in 1983, is a significant feature of fiscal federalism. However, what is less clear is how that deductiblility influences the behavior of state and local governments. In his paper, Lindsey asks how deductibility affects the level of taxation and the type of tax used, and how changes in the value of deductibility caused by the Tax Reform Act of 1986 affect congressional votes on tax reform.

He finds that state and local taxes are affected significantly by the net-of-tax cost of raising revenue. As the price of raising personal taxes increases, there is a substantial degree of substitution of business for personal taxes. In states with high prices of taxation, sales taxes are the tax source of choice. Increased deductibility, which lowers the cost of raising revenue, causes substitution of income taxes for sales taxes. Analysis of congressional voting shows that the overall effect of tax reform on taxes paid in the state is significant. However, the impact of tax reform on the price of raising state and local revenue does not affect congressional votes.

Holtz-Eakin and Rosen investigate the effects of deductibility of local taxes on communities' budgetary decisions. They estimate the effect of changes in the tax price of local spending induced by deductibility on the mix between deductible and nondeductible revenue sources and expenditures. Tracking the fiscal behavior of 172 local governments from 1978 to 1980, they find that the tax price has a powerful effect on the use of deductible revenue sources but no statistically signifi-

cant effect on the use of nondeductible revenue sources. If deductibility were eliminated, there might be a substantial decline in local government spending, they conclude.

Recent proposals to eliminate or reduce federal deductibility of state and local taxes have sparked interest in the question of how federal revenue gains would be reduced by shifts in state and local taxation from formerly deductible personal taxes to still deductible business taxes. Zodrow analyzes this question in the context of the median voter model. His results suggest that between 20 and 80 percent of predicted federal revenue gains may be eliminated because of changes in the state and local revenue mix and related general equilibrium effects.

In addition to the authors and discussants, the conference was attended by: Charles L. Ballard, Michigan State University; Daphne Kenyon, Department of the Treasury; Laurence J. Kotlikoff, NBER and Boston University; Therese McGuire, SUNY, Stony Brook; and James M. Poterba. NBER and MIT.

Labor Markets and the Macroeconomy

Nearly 100 economists from the United States and Canada gathered in Cambridge on May 8–9 for an NBER-Universities Research Conference on "Labor Markets and the Macroeconomy." The program, organized by John M. Abowd of NBER and Princeton University, was:

Chairman: Orley C. Ashenfelter, NBER and Princeton University

Jane E. Mather, Dartmouth College, "In Search of Cyclical Wage Differentials"
Discussants: Charles C. Brown, NBER and University of Michigan, and John Kennan, University of Iowa

Michael Keane, Brown University, Robert Moffitt, NBER and Brown University, and David Runkle, Brown University, "Real Wages over the Business Cycle: Estimating the Impact of Heterogeneity with Microdata"
Discussants: Steven G. Allen, NBER and North Carolina State University, and Mark Bils, NBER and University of Rochester

Christopher Ruhm, Boston University, "The Extent and Persistence of Unemployment Following Permanent Quits and Layoffs"
Discussants: Daniel S. Hamermesh, NBER and Michigan State University, and Walter Wessels, North Carolina State University

Chairman: John M. Abowd

Timothy Dunne, Mark Roberts, and Lawrence Samuelson, all of Pennsylvania State University, "Plant Turnover, Employment Growth, and Job Stability in the U.S. Manufacturing Sector 1963–1982"
Discussants: David Card, NBER and Princeton University, and Lori Gladstein Kletzer, Williams College

Michael R. Darby, NBER and U.S. Department of the Treasury, John C. Haltiwanger, Johns Hopkins University, and Mark W. Plant, Princeton University and University of California at Los Angeles, "The Ins and Outs of Unemployment: The Ins Win" (NBER Working Paper No. 1997)
Discussants: Thomas Kniesner, University of North Carolina at Chapel Hill, and Ruth Klinov, The World Bank

Thomas Coleman, SUNY at Stony Brook, "Unemployment Behavior: Evidence from the CPS Work Experience Survey"
Discussants: Alan Harrison, McMaster University, and Eskander Alvi, University of Arizona

Chairman: Joseph G. Altonji, NBER and Northwestern University

Wayne Vroman, The Urban Institute, "Union Wage Settlements, Incomes Policies, and Indexation"
Discussants: Ronald G. Ehrenberg, NBER and Cornell University, and Roger Kaufman, Smith College

George E. Johnson, NBER and University of Michigan, "On the Prediction of Turning Points in the Time Series of the Unemployment Rate"
Discussants: Stephen Nickell, Oxford University, and Carlos Santiago, Wayne State University

Russell Cooper, NBER and University of Iowa, "Optimal Labor Contracts, Imperfect Competition, and Underemployment Equilibria: A Framework for Analysis" (NBER Working Paper No. 2060)
Discussants: Dale T. Mortensen, Northwestern University, and Jon Strand, University of Oslo

Mather uses data on individuals from the Panel Study of Income Dynamics (PSID) for 1969–82 to describe the differences in the cyclical movements of real wages. She regresses real wage growth on ten individual characteristics, a measure of aggregate economic activity, and the interaction of this variable with the individual characteristics. These interaction terms identify differences in cyclical wage variability. There appears to be no difference between workers who change jobs and those who do not. Workers with more job tenure and education have less cyclically sensitive wages. There also appears to be little difference between union and nonunion workers.

Keane, Moffitt, and Runkle study the correlation between the business cycle and the real wage. They find that workers are more likely to lose their jobs during a recession if they have high wages. Particularly in the manufacturing sector, which has rigid wages, those with high permanent and transitory wages are more

likely to be laid off. The true effect of the business cycle on wages is still procyclical but is much smaller than previous estimates have suggested.

Ruhm uses the PSID to analyze the unemployment experiences of workers who have left their jobs. In earlier studies, differences in unemployment among groups of people who have left a job probably have been overstated for older workers, blue collar workers, and those with substantial job seniority, and underestimated for nonwhites. Significant unemployment typically occurs in the five years after a separation: an average of 14 weeks after quitting and 32 weeks after being laid off. The most unemployment, in weeks, occurs among people with lengthy unemployment experiences in the past. This is especially true after an involuntary termination: more than 86 percent are out of work for more than six months, and 54 percent are out of work for more than a year, in the five-year period that follows. Finally, although people who leave their jobs have slightly higher rates of future joblessness than a random individual who stays at a job, the difference is caused by individual differences, not by the fact of leaving.

Dunne, Roberts, and Samuelson use a newly created data set of U.S. manufacturing plants to study the fluctuations in labor demand that arise from the process of plant growth and turnover. The data set includes all U.S. manufacturing plants with more than five employees present in any of the last five Censuses of Manufactures (1963, 1967, 1972, 1977, and 1982). They find substantial job creation through plant openings and expansions in contracting industries and regions, and substantial job loss through plant closings and contractions in growing industries and regions. The primary difference between growing and declining industries or regions arises from differences in the rates of plant expansion and contraction, rather than plant births and closings. The turnover process is characterized by new plants entering, relatively young plants either expanding or failing, and older plants contracting but failing less often than younger plants. This contrasts with the common view that plant turnover is primarily the replacement of outdated plants by new plants with superior technology.

Dunne, Roberts, and Samuelson also examine the composition of manufacturing employment. In each census year, approximately 70 percent of enployment can be attributed to employment that was present in previous years and 30 percent to the addition of new jobs. The proportion of stable jobs in a given cohort increases with the age of the cohort, indicating that jobs in younger plants are less likely to survive in any time period than jobs in older plants are.

Darby, Haltiwanger, and Plant analyze unemployment in terms of variations in the number and distribution of people who become unemployed and an individual's probability of leaving unemployment. They find that the change in the size and distribution of the inflow into unemployment is the primary determinant of the unemployment rate. Instead of falling at the beginning of a recession, the outflow rate rises (with a lag) in response to the increased inflows that drive the recession. In contrast to normal unemployment, cyclical unemployment is concentrated in groups with low normal exit probabilities.

Every March the Current Population Survey (CPS) asks questions about unemployment during the previous year. In analyzing these data, Coleman finds that the incidence of unemployment, and heterogeneity in incidence, are more important than the duration of a spell for explaining unemployment during the year. He also finds inconsistencies between inferences drawn from the data on experience and those drawn from other data sets.

Vroman examines the determinants of union wage changes negotiated in U.S. manufacturing between 1958 and 1984 using a large, longitudinal data base of "major" bargaining agreements. The agreements were reached in 252 separate bargaining situations that affected 2.8 million production workers in 1978. He finds that the most important determinants of negotiated wage changes were the expected rate of price inflation, inflationary surprises (that is, deviations of actual inflation from expected inflation), and the size of key national wage agreements reached in the automobile and steel industries. The national unemployment rate, industry profit rates, and catch-up from unexpected inflation of the lagged contract also had significant but smaller effects. Income policies had a modest restraining effect on negotiated agreements that was not dissipated by unusually large settlements in negotiations reached after they ended.

Johnson tests the hypothesis prominently featured in pre-Keynesian explanations of business cycles that the probability of the occurrence of the end of an economic expansion is positively related to the length of that expansion. There is strong evidence for this type of relationship for contractions: they pretty much burn out on their own. But expansions are more complex. Those that end within three years are most likely terminated by negative monetary shocks. But if an expansion reaches its fourth year (in the absence of a major war), some sort of real disturbance that moves the economy into a recession is likely to occur within two or three years.

Cooper studies the macroeconomic properties of imperfectly competitive economies. He focuses on the coordination failures that might arise in these economies. He also evaluates the role of the labor market in producing these coordination failures and studies certain labor market policies, such as unemployment insurance and alternative compensation schemes.

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 Fall 1987 issue of the *Reporter* is August 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-9163.

August 14, 1987
Issues in the Uruguay Round, NBER

August 17-20, 1987
Annual Meeting, American Statistical Association*

August 24-28, 1987
43rd Congress: Public Finance and Performances of Enterprises, International Institute of Public Finance

September 3-6, 1987
Annual National Conference, Atlantic Economic Society*

September 4-6, 1987
Employment Strategies, Enterprise Management, and Industrial Relations, Center for Economic Policy Research

September 9-12, 1987
18th Bi-Annual Conference, Center for International Research on Economic Tendency*

September 11-12, 1987
Conference on International Migration, NBER

September 21-23, 1987
Conference on Developing Country Debt Policy, NBER

September 29-October 2, 1987
Annual Meeting, International Monetary Fund

October 4-7, 1987
Annual Meeting, National Association of Business Economists*

October 16, 1987
Conference on International Migration, NBER

October 22-23, 1987
Economic Policy Panel, Center for Economic Policy Research

October 29-31, 1987
9th Annual Research Conference, Association for Public Policy Analysis and Management

November 6-7, 1987
Conference on Political Economy, NBER

November 8-11, 1987
80th Annual Conference, National Tax Association-Tax Institute of America*

November 12-13, 1987
Conference on Worldwide Tax Reform, Brookings Institution

November 13, 1987
Program Meeting: Economic Fluctuations, NBER

November 17, 1987
Tax Policy and the Economy, NBER

November 20-22, 1987
Conference, Carnegie-Mellon University-University of Rochester

November 22-24, 1987
Annual Meeting, Southern Economic Association*

December 3-4, 1987
Special Meeting of Brookings Panel on Economic Activity, Brookings Institution

December 3-4, 1987
Annual Conference, International Association of Business Forecasting*

December 4-5, 1987
Universities Research Conference on Risk and Financial Markets, NBER

March 1988
Effects of Taxation on Capital Formation, NBER

March 11-12, 1988
Annual Conference on Macroeconomics, NBER

April 21-24, 1988
The Economics of Aging, NBER

April 22-23, 1988
Public Policy Conference, Carnegie-Mellon University-University of Rochester

April 29-30, 1988
Universities Research Conference on International Studies, NBER

May 12-13, 1988
Income and Wealth: 50th Anniversary Conference, NBER

June 8-10, 1988
International Seminar on Macroeconomics, NBER

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

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

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

August 8-11, 1988
Annual Meeting, American Statistical Association*

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*

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

December 2-3, 1988
Conference on Savings, NBER

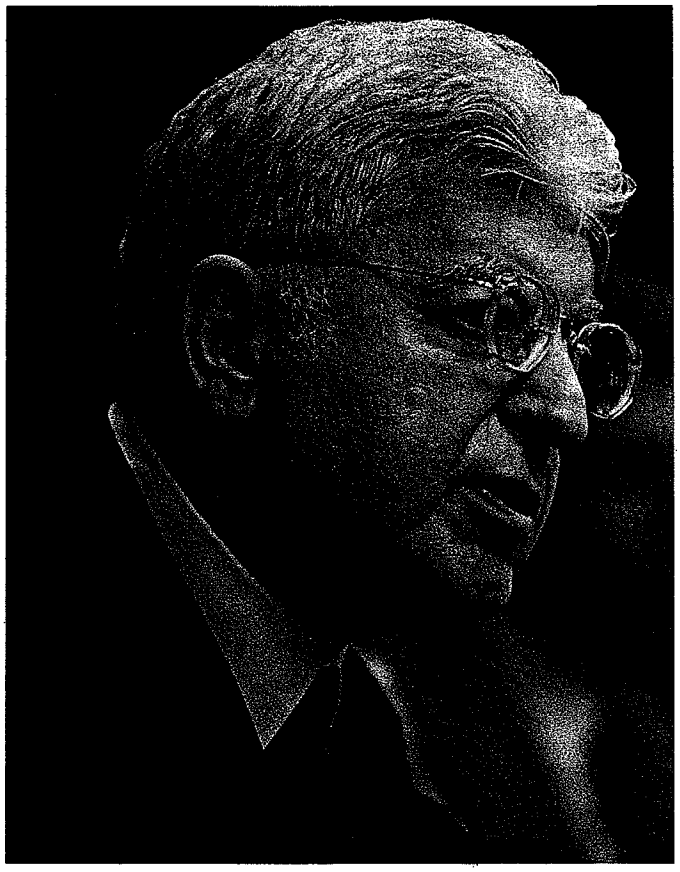
August 14-17, 1989
Joint Statistical Meetings, American Statistical Association*

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*

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



Burns Dead at 83

Arthur F. Burns, one of the major scholarly contributors to the National Bureau of Economic Research, died in June at the age of 83. Burns's affiliation with NBER began in 1930 when he became a research assistant in the Bureau's New York office while doing graduate work in economics at Columbia University. He was a member of the Bureau's research staff from 1933-69 and served as Director of Research from 1945-53, Bureau President from 1957-67, and Chairman from 1967-8. He was also a member of NBER's Board of Directors for more than 30 years and was an NBER Director Emeritus and Research Associate Emeritus at the time of his death.

Burns was born in Stanislau, Austria, in 1904. He received his A.B., A.M., and Ph.D. from Columbia University, where he was Professor of Economics from 1944-58 and Professor Emeritus after 1969. From 1927-44, Burns had taught at Rutgers University.

In addition to his distinguished academic career, Burns was a highly regarded public servant. He served as Chairman of the President's Council of Economic Advisers under Eisenhower in 1953-6, Chairman of the Federal Reserve Board of Governors from 1970-8, and U.S. Ambassador to the Federal Republic of Germany from 1981-5.

From 1978-81, and from 1985 until his death, Burns was a Distinguished Scholar in Residence at the American Enterprise Institute in Washington.

Burns is survived by Helen Bernstein, whom he married in 1930, and by their two sons, David and Joseph.

Heller Dead at 71

Walter W. Heller, former chairman of NBER during 1971-4 and 1981-3 and a member of the Board of Directors since 1960, died suddenly on June 15 at the age of 71.

Born in 1915 in Buffalo, NY, Heller received his A.B. from Oberlin College and his M.A. and Ph.D. from the University of Wisconsin. After completing his graduate studies, he worked at the U.S. Department of the Treasury during World War II and for the U.S. military government in Germany from 1947 to 1948. In 1946 Heller began teaching at the University of Minnesota, where he was chairman of the economics department from

1957 to 1961 and Regents Professor of Economics before becoming professor emeritus last year.

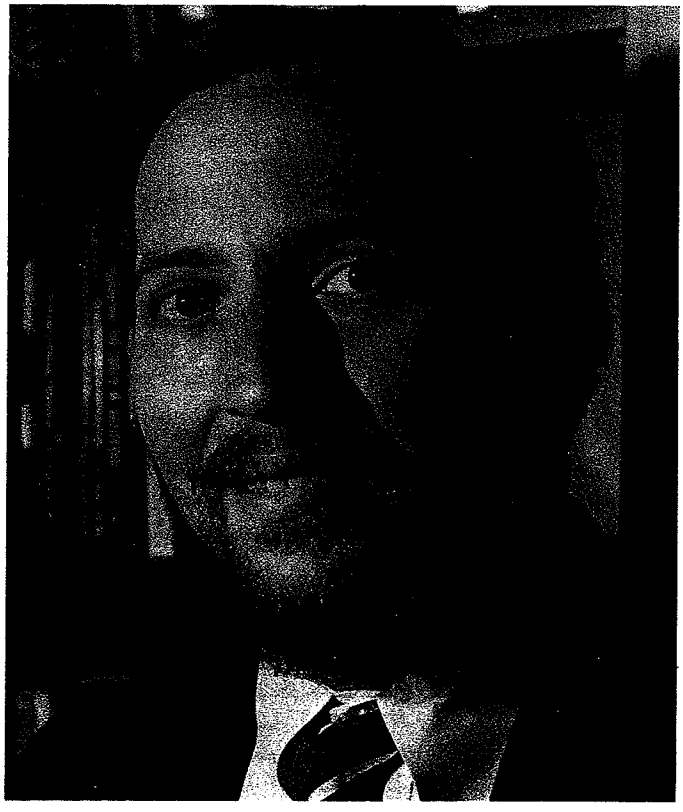
Heller served as chairman of the Council of Economic Advisers (CEA) under Presidents Kennedy and Johnson from 1961 to 1964. He was instrumental in introducing both presidents to Keynesian economics. Heller is often credited with persuading Kennedy to propose the 1963 tax cut and other policies that contributed to the expansion that lasted until the Vietnam buildup in the late 1960s.

Heller continued to advise President Johnson after leaving the CEA. He also served as a consultant to the United Nations, the U.S. Treasury, the Congressional Budget Office, the state of Minnesota, and other organizations. The author of numerous books and articles on economics, Heller was the recipient of several honorary degrees. He was also a Fellow of the American Philosophical Society and the American Academy of Arts and Sciences, and a Distinguished Fellow of the American Economic Association.

Heller will be missed by his many friends for his clear, forthright statements on economic issues and his perceptive advice. NBER benefited from his contributions over many years and owes much to his leadership.

Summers Receives NSF Prize

Lawrence H. Summers, a Research Associate in a number of NBER's programs and a Professor of Economics at Harvard University, is the first social scientist to win the National Science Foundation's Alan T. Waterman Award. The award, a grant of up to $500,000 for three years of research and advanced studies, is given annually to an outstanding young researcher in any field of science, mathematics, or engineering. Summers was chosen ". . . for his outstanding contributions to economic research on unemployment, taxation of capital, savings behavior, and macroeconomic activity. His work combines powerful analytic insights and imaginative econometric methods aimed at subjects of fundamental national importance," according to the NSF.



Summers received his B.S. degree at MIT in 1975 and his Ph.D. from Harvard University in 1982. He was named Professor of Economics at Harvard University in 1983. He recently served as editor of the 1987 NBER tax annual, *Tax Policy and the Economy*.

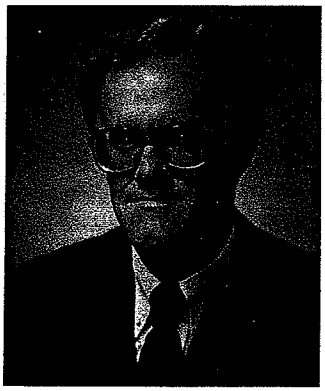
New Olin Fellows Named

The Bureau recently selected six Olin Fellows for 1987–8: Mark Bils, Alberto Giovannini, R. Glenn Hubbard, N. Gregory Mankiw, Peter C. Reiss, and Christina D. Romer. Olin Fellows spend one year at NBER's Cambridge office doing empirical research and are free of all teaching and university responsibilities during that year. The Fellows Program is made possible by a grant from the John M. Olin Foundation.

Bils teaches at the University of Rochester; he will examine pricing policies and economic fluctuations. Giovannini, who teaches at Columbia University, will study prices and exchange rates. Hubbard teaches at Northwestern University; his research topic will be financial markets. Mankiw teaches at Harvard University. He will analyze the relationships among consumption, interest rates, and economic fluctuations. Reiss, who is on the economics faculty at Stanford University, will study the economics of research and development. Romer teaches at Princeton University. She will analyze business cycles.

New Directors Named

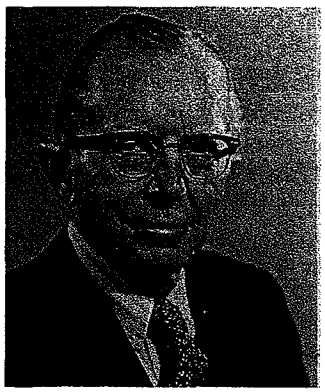
Four new directors-at-large were elected to the NBER Board at its April meeting: John Herron Biggs, Kathleen B. Cooper, George C. Eads, and Paul W. McCracken.



John Herron Biggs

Kathleen B. Cooper

George C. Eads



Paul W. McCracken

Biggs is President and Chief Executive Officer of Centerre Trust Company (St. Louis, MO). He holds an A.B. from Harvard University and a Ph.D. in economics from Washington University. From 1958–77, Biggs was associated with General American Life Insurance Company. From 1977–85, he was a Vice Chancellor at Washington University. He assumed his current position in 1985.

Cooper is Senior Vice President and Chief Economist of Security Pacific National Bank (Los Angeles). Before joining Security Pacific in 1981, she was Corporate Economist and then Chief Economist of the United Banks of Colorado (Denver). Cooper received her B.A. and M.A. from the University of Texas at Arlington and her Ph.D. in economics from the University of Colorado. She is also the immediate past president of the National Association of Business Economists.

Eads is Vice President and Chief Economist of General Motors Corporation. He received a B.A. from the University of Colorado and a Ph.D. in economics from Yale University. Eads has taught at Yale, Harvard, Princeton, and George Washington Universities. He was a member of the President's Council of Economic Advisers in 1979–81 and was a professor and the Dean of the School of Public Affairs at the University of Maryland from 1981 to 1986.

McCracken holds an A.B. from William Penn College and a Ph.D. in economics from Harvard University. He was a member of the faculty of the School of Business Administration at the University of Michigan from 1948 until his retirement in 1986. McCracken also chaired the President's Council of Economic Advisers from 1969–72.

Financial Economists Meet

About 50 members and guests of NBER's Program in Financial Markets and Monetary Economics met in Cambridge on February 27. The agenda was:

Alex Kane, NBER and Boston University, and Stephen Marks, Boston University, "The Measurement of Market Timing Ability" and "Market Structure and the Optimal Dissemination of Information in the Financial Industry"
Discussant: Bruce N. Lehmann, NBER and Columbia University

Terry A. Marsh, NBER and Stanford University, and Robert C. Merton, NBER and MIT, "Corporate Dividend Dynamics at the Firm Level"
Discussant: Kenneth D. West, NBER and Princeton University

Alberto Alesina, NBER and Carnegie-Mellon University, and Guido Tabellini, Stanford University, "A Positive Theory of Fiscal Deficits and Government Debt in a Democracy"
Discussant: Herschel I. Grossman, NBER and Brown University

Ben S. Bernanke, NBER and Brown University, and Mark Gertler, NBER and University of Wisconsin, "Financial Fragility and Economic Performance"
Discussant: N. Gregory Mankiw, NBER and Harvard University

Robert J. Barro, NBER and University of Rochester, "Interest Rate Smoothing"
Discussant: Bennett T. McCallum, NBER and Carnegie-Mellon University

Kane and Marks evaluate the "Sharpe" measure of performance for a portfolio managed by someone engaged in attempting to add value by market timing decisions. They explore the case of a "market timer" with superior information, developing the exact conditions under which the Sharpe measure will completely and correctly order market timers according to their ability. Using the results of empirical estimates of market conditions reported by Merton (1980), they then find that the conditions for failure of the Sharpe measure in fact do occur. They perform the same analysis for the "Jensen" measure of market timing ability and find that it is more robust to market conditions.

In their second paper, Kane and Marks examine the dissemination of market timing information (signals on the overall performance of risky assets relative to the risk-free rate) and its effect on the structural organization of financial markets. Specifically, they investigate two market structures: in one, portfolio managers set up funds to take advantage of their information on market timing by actual trading; in the other, market timers sell their information through newsletters. The authors find that both market structures produce the same result. With restrictions on borrowing, the newsletter market structure is superior. This is one possible explanation for the plethora of market timing newsletters and the paucity of market timing funds.

Marsh and Merton find that, on average across firms, annual dividend changes can be predicted about as well by prioryear changes in "permanent earnings," measured by stock price changes, as they can by con-

temporaneous changes in accounting earnings. However, accounting earnings changes do add significantly to permanent earnings changes in explaining dividend movements for approximately 20 percent of the countries in their sample. Firms' dividend responses to marketwide and firm-specific components of their prior-year stock price changes are comparable. Dividend changes respond approximately in proportion to the unexpected component of contemporaneous changes in aggregate corporate dividends.

Alesina and Tabellini consider an economy in which policymakers with different preferences concerning fiscal policy alternate in office as a result of democratic elections. Government debt becomes a strategic variable used by policymakers to influence the choices of their successors. In particular, if different policymakers disagree about the desired composition of government spending between two different kinds of government-provided goods, the economy exhibits a bias toward budget deficits. Debt accumulation is higher than it would be with a social planner who worked out these conflicts internally. The equilibrium level of government debt is larger as the degree of polarization between alternating governments becomes larger, and the more likely it is that the current government will not be reelected. This paper has empirical implications that help to explain the current fiscal policies in the United States and in several other countries.

Bernanke and Gertler analyze the link between financial variables, such as firms' balance sheet positions, and the determination of investment spending. They develop a model of the process of investment finance in which there is asymmetric information between borrowers and potential lenders about the quality of investment projects. After deriving the optimal form of the financial contract between borrowers and lenders, they show that the cost of external investment finance rises as the borrower's balance sheet position deteriorates (his net worth falls). The authors characterize as "financially fragile" a situation in which balance sheets are sufficiently weak that the economy experiences substantial underinvestment, or possibly even a complete investment collapse. From the policy point of view, they show that "bailouts" of insolvent borrowers by the government may be a reasonable alternative in periods of extreme fragility.

Barro develops a model in which targeting the nominal interest rate is a reasonable guide for monetary policy. He takes expected real interest rates and output to be exogenous with respect to monetary variables, so that the central bank can influence nominal interest rates only by altering expected inflation. In each period, the monetary authority can come arbitrarily close to its (time-varying) target for the nominal interest rate, even while holding down the forecast variance of the price level. The latter objective pins down the extent of monetary accommodation to offsetting shifts in the demand for money and other shocks and thereby determines the levels of money and prices at each date. Empirical evidence for the United States in the post-World War II period suggests that the model's predictions accord reasonably well with observed behavior for nominal interest rates, growth rates of the monetary base, and rates of inflation. Earlier periods, especially before World War I, provide an interesting contrast because smoothing of interest rates did not apply then. The behavior of the monetary base and the price level at these times differed from the post-World War II experience in ways predicted by the theory.

Program Meeting on Productivity

On March 20–21, about 40 members and guests of NBER's Program in Productivity attended a meeting in Cambridge. The agenda was:

Ian Domowitz and R. Glenn Hubbard, NBER, and Bruce C. Petersen, all of Northwestern University, "Market Structure and Cyclical Fluctuations in U.S. Manufacturing" (NBER Working Paper No. 2115)

Timothy F. Bresnahan, NBER and Stanford University, and Valerie Y. Suslow, University of Michigan, "Dynamic Demand and Market Power over the Business Cycle"

Matthew D. Shapiro, NBER and Yale University, "Measuring Market Power in U.S. Industry"

Thomas Abbott, Bureau of the Census, Zvi Griliches, NBER and Harvard University, and Jerry A. Hausman, NBER and MIT, "Productivity at the Plant Level"

W. Erwin Diewert, NBER and University of British Columbia, and Catherine J. Morrison, NBER and Tufts University, "New Techniques for the Measurement of Multifactor Productivity"

Jeffrey I. Bernstein, NBER and Carleton College, and M. Ishaq Nadiri, NBER and New York University, "R and D and Intraindustry Spillovers: An Empirical Application of Dynamic Duality" (NBER Working Paper No. 2002)

Marvin Lieberman, Stanford University, "Patents, Learning by Doing, and Market Structure in the Chemical Processing Industries"

Kim B. Clark, NBER, and Bruce Chew, both of Harvard University, "New Sources of Plant Microdata"

The theme for the first day's sessions was market power and the cyclicality of prices. The paper by Domowitz, Hubbard, and Petersen expands recent work on the importance of market structure for understanding cyclical fluctuations. The authors estimate industry markups of price over cost, and the influence of

market structure on cyclical movements in total factor productivity, for two-digit level industries. They find that price does exceed marginal cost in U.S. manufacturing, and that industry concentration is important in explaining this markup in durable and consumer goods. The effect of unionization is important for almost all industry groups, as are fixed costs related to labor, advertising, and central office expenses.

Bresnahan and Suslow study market power over the business cycle for the primary aluminum industry. They estimate the supply relationship for the industry, taking into account the medium-term fixity of the capital stock. Embodied in this capital stock are both capacity constraints and the short-run input demands for labor, materials, and energy. The authors find that industry price has been substantially above the marginal cost in the cyclical troughs; this can be attributed to market power in the industry. Market power thus provides part of the empirical explanation for strongly procyclical employment, capacity utilization, and output. Further, market power has been declining over time, because of both domestic and worldwide decreases in concentration. Therefore, price now can fall much closer to cost in the troughs of business cycles.

Shapiro also expands on recent work incorporating the importance of market structure for measures of productivity: he considers the relationship between markups and market power. He essentially finds no price-cost markups in agriculture, construction, and services, and very large markups in mining, transportation, communications and utilities, and trade. Shapiro also estimates the market elasticities and develops a measure of noncompetitive conduct based on the ratio of the firm markups to market elasticity. He finds that estimated measures of market power correspond to a wide range of conduct, with tobacco, chemicals, and paper industries close to the monopoly outcome.

Diewert and Morrison consider refinements to productivity growth measures for three types of changes: in capacity utilization; in the terms of trade among countries; and for imperfect competition in output markets. They find the third factor to be the most important for interpreting patterns of productivity growth. They also find that traditional productivity growth estimates have tended to be biased downward and that fluctuations and downward time trends have been exacerbated. Nevertheless, these results do not explain the large fluctuations in productivity growth because the adjustments are small compared to these fluctuations.

Abbott and Griliches reported on various research projects being conducted on productivity at the plant level.

The theme for the second day of the meeting was spillovers of technical and production knowledge. Bernstein and Nadiri estimate a model with intraindustry R and D spillovers and look at the effects of such spillovers on production and investment. In the four industries they analyze—chemical, petroleum, machinery, and instruments—they find that the spillover decreases the rate of R and D investment. Bernstein and Nadiri also estimate the difference between the social and the private returns to R and D capital and find that the social return exceeds the private return in each industry.

Lieberman studies the propensity to patent and the link between patented process innovations and output prices for a sample of 24 chemical products. He distinguishes between three groups of patentees: U.S. producers of each product; U.S. nonproducers; and foreign firms (including both producers and nonproducers). The results show that patent activity is positively related to "learning by doing" as measured by the growth in cumulative output and market size. The effects of concentration vary by the type of patentee.

In the final paper of the meeting, Clark and Chew discuss their work in collecting plant-level microdata, and the possibilities for future research in collecting and using that data. Many questions that cannot be answered with more aggregated data can be addressed by this line of research.

In addition to the authors, participants at the meeting included: Angelo Cardani, Bocconi University; Paul David and Sarah Lane, Stanford University; M. Therese Flaherty and Adam B. Jaffe, NBER and Harvard University; Robert J. Gordon, NBER and Northwestern University; Wayne B. Gray, NBER and Clark University; Bronwyn H. Hall and Michael Whinston, NBER; Charles R. Hulten and Ingmar R. Prucha, NBER and University of Maryland; Paul Joskow and Richard Schmalensee, MIT; Edward Kokkelenberg, SUNY, Binghamton; Pierre Lasserre and Pierre Ouellette, University of Montreal; Jonathan S. Leonard, NBER and University of California, Berkeley; Frank R. Lichtenberg, NBER and Bureau of the Census; Robert S. Pindyck, NBER and MIT; Mark Schankerman and Edward N. Wolff, NBER and New York University; Fabio Schianterelli, Essex University; and Robin Sickles, NBER and Rice University.

Tax Economists Gather in Cambridge

Members and guests of NBER's Program in Taxation met in Cambridge on March 26-27 to discuss recent research. The agenda, arranged by Program Director David F. Bradford of NBER and Princeton University, was:

Daniel R. Feenberg, NBER, and Harvey S. Rosen, NBER and Princeton University, "Promises, Promises: The States' Experience with Income Tax Indexing"
Discussant: Lawrence B. Lindsey, NBER and Harvard University

John C. Haltiwanger, Johns Hopkins University, and Marc S. Robinson, General Motors Research Laboratories, "The Effect of Taxes on Inventories"

Discussant: Alan J. Auerbach, NBER and University of Pennsylvania

R. Glenn Hubbard, NBER and Northwestern University (joint work with Kenneth Judd), "Finite Lifetimes, Borrowing Constraints, and Short-Run Fiscal Policy" (NBER Working Paper No. 2158)

Discussant: Jonathan S. Skinner, NBER and University of Virginia

Martin Feldstein, NBER and Harvard University, "Imputing Corporate Tax Liabilities to Individual Taxpayers"

Discussant: Daniel Frisch, NBER and U.S. Department of the Treasury

Douglas Holtz-Eakin, NBER and Columbia University, "The Effect of the Line-Item Veto on State Budgets"

Discussant: Charles T. Clotfelter, NBER and Duke University

Robert S. Chirinko, NBER and University of Chicago, "Will 'The' Neoclassical Theory of Investment Please Rise?: The General Structure of Investment Models and Their Implications for Tax Policy"

Discussant: Roger Hall Gordon, NBER and University of Michigan

Jerry A. Hausman and James M. Poterba, both of NBER and MIT, "Household Behavior and the Tax Reform Act of 1986" (NBER Working Paper No. 2120)

Discussant: Don Fullerton, NBER and University of Virginia

Between 1978 and 1984, ten states made a commitment to indexing some component of their personal income tax systems; seven of the ten reneged on their commitments. Feenberg and Rosen first describe the various indexing statutes that were enacted and then construct a model to explain indexing. They find that the decisions both to index and to renege depend on the form of the state's tax structure and on the state's debt per capita.

Haltiwanger and Robinson study the interaction between taxes and inventories. Since corporate tax rates have changed little over the last 20 years, inventory accounting rules must be the source of most of the difference in inventory tax incentives. Building on results in the accounting literature, Haltiwanger and Robinson show that firms using the LIFO accounting method should hold higher levels of inventories over the entire business cycle than firms using FIFO. Analysis of annual data on individual firms over 1969–82 support this hypothesis. The inventories of firms using LIFO also appear to be less responsive to sales fluctuations and somewhat more sensitive to financial holding costs.

In their paper, Hubbard and Judd argue that theoretical and empirical emphasis on the importance of finite planning horizons for the analysis of many fiscal policies is misplaced. Most studies of the role of finite horizons in determining the effects of short-run fiscal policies on consumption have assumed perfect capital markets. Hubbard and Judd show that while the marginal propensity to consume (MPC) out of temporary tax changes is not zero in finite-horizon models, it is very small. However, the MPC is quite sensitive to restrictions on borrowing. Shifting the emphasis from the length of the planning horizon to the structure of capital markets is an important step for empirical research.

Feldstein presents a method of studying the distributional consequences of changes in corporate taxes: by imputing the net effect of changes in effective corporate tax rates to individual tax returns. Applying this method to the tax changes enacted in 1986 shows that the actual distribution of the total tax change was very different from the distribution of the change in the personal income tax only. The net imputed corporate tax increase was equivalent to a rise of ten percentage points in the personal income tax for taxpayers with 1988 incomes over $200,000 and six percentage points for taxpayers with incomes between $100,000 and $200,000. The corporate income tax increase also added the equivalent of a 10 percent rise in the income tax for taxpayers with incomes between $10,000 and $20,000. By contrast, for middle-income taxpayers (with incomes between $30,000 and $75,000) the corporate tax increase was equivalent to an income tax rise of only 2 or 3 percent. Feldstein also finds that the higher corporate tax represents a particularly large increase for taxpayers over the age of 65.

Forty-three of the 50 U.S. governors are empowered to veto state budget items on a line-by-line basis. Holtz-Eakin uses data on 48 states for 1967–83 to determine whether line-item veto power has significantly affected tax and nontax revenue and current and capital spending. He finds that the effect of the line-item veto is sensitive to the political party composition of states' legislatures and governorships. Growth of tax collections per capita is significantly lower (0.8 percent) under Republican governors with a line-item veto than under others. Similarly, the growth rate of current expenditures is roughly 1 percent lower when governors are capable of sustaining an item veto in the face of a legislature dominated by the opposition's party. These results suggest that a presidential line-item veto may reduce federal budget growth, but only in a quite limited set of circumstances.

Chirinko studies models of business fixed investment and develops a general neoclassical theory of investment/factor demands to interpret these models. The models are differentiated by the dynamics arising from expectations and by the technology (lags and adjustment costs). Chirinko concludes that the aggregate response of business investment to tax policy is quite low.

Hausman and Poterba ask how individual taxpayers are likely to respond to 1986 tax changes. Using NBER's TAXSIM model, they estimate that changes in the personal exemption and the earned income credit will remove 6 million households from the tax rolls by 1988. Of the 107 million remaining taxpayers, only 11 percent will face marginal tax rates that are more than ten per-

centage points lower than before tax reform. Fourteen percent of taxpayers will see no change in their marginal rates, and many taxpayers will face higher marginal tax rates, even if their total tax bill declines. Over 23 percent will face tax rates that are up to ten percentage points higher than before, and 4 percent will have their marginal rates rise by more than ten percentage points. Because of the increase in the personal exemption, tax bills can fall despite higher marginal tax rates.

Because the majority of taxpayers will experience only a small change in their marginal tax rates, the resulting aggregate change in labor supply and saving is likely to be small. Hausman and Poterba estimate that the marginal tax rate of a typical married man earning $11.15 per hour will fall from 18 percent to 15 percent. As a result, he will increase by less than 1 percent per year the total number of hours he wishes to work. They also estimate that a married man earning $45,000 per year will increase his labor supply by 1.5 percent, while the average married woman will increase her labor supply by 2.6 percent. The aggregate increase in labor supply will be about 1 percent, they calculate.

Other participants in the tax meeting were: Lawrence Goulder, Louis Kaplow, and N. Gregory Mankiw, NBER and Harvard University; Michael Graetz, Yale University; Jane Gravelle, Congressional Research Service; Bruce Greenwald, Bell Communications Research; David G. Hartman, NBER and DRI; James R. Hines, Jr., and Joseph E. Stiglitz, NBER and Princeton University; Laurence J. Kotlikoff, NBER and Boston University; Rosemary Marcuss, Congressional Budget Office; Robert Moffitt, NBER and Brown University; James Nunns, U.S. Department of the Treasury; Davis Reishus, Harvard University; Michael Rothschild, NBER and University of California at San Diego; Joel Slemrod, NBER and University of Minnesota; Emil Sunley, Deloitte Haskins & Sells; Robert Vishny, University of Chicago; Randall Weiss, Joint Committee on Taxation; and Shlomo Yitzhaki and The World Bank.

International Studies Program Meets

Members and guests of NBER's Program in International Studies met in Cambridge on April 24-25. The program, organized by Sweder van Wijnbergen, NBER and The World Bank, and Lars E. O. Svensson, NBER and New York University, was:

Alberto Giovannini, Columbia University, "Exchange Rates and Prices: An Empirical Analysis"

Joshua Aizenman, NBER and University of Chicago, "Monopolistic Competition and Labor Market Adjustment in the Open Economy"

Lars E. O. Svensson and Sweder van Wijnbergen, "Excess Capacity, Monopolistic Competition, and the Transmission of Monetary Policy"

Harold Cole, University of Pennsylvania, "Financial Structure and International Trade"

Jeremy I. Bulow, NBER and Stanford University, and Kenneth Rogoff, NBER and University of Wisconsin, "A Constant Recontracting Model of Sovereign Debt"

Jeremy Greenwood and Stephen Williamson, University of Western Ontario, "International Financial Intermediation and Aggregate Fluctuations under Alternative Exchange Rate Regimes"

Giovannini presents a model of the determination of the prices of traded goods that stresses the role of exchange rate uncertainty. Correlations between prices of individual traded goods and the exchange rate depend on the time-series properties of the exchange rate, and on demand and cost parameters. These correlations, as well as the stochastic properties of deviations from the "law of one price," are crucially affected by the currency of denomination of export prices. Using data on domestic and dollar export prices of Japanese goods, Giovannini finds that deviations from the "law of one price" can be forecast. He shows that this result is caused both by the presence of price staggering and by ex ante price discrimination.

Aizenman explains the adjustment of prices, output, and employment in an open economy characterized by a monopolistic competitive market structure. Goods prices are flexible, while wages are determined by contracts that preset the wage for several periods. He also investigates the adjustment of the exchange rate to nominal and real shocks and asks how prices, output, and the exchange rate adjust for the market power enjoyed by each producer and the substitutability between domestic and foreign goods.

Aizenman finds that unexpected monetary shocks can generate persistent shocks to aggregate output and relative price, depending on the degree of substitutability between domestic and foreign goods. Greater substitutability induces greater output and employment effects and smaller price effects in the short and the intermediate run. On the other hand, greater substitutability reduces the persistence and duration of the adjustment. If the income elasticity of the demand for money is less than unity, the presence of nominal wage contracts tends to magnify the responsiveness of the economy to real shocks, and a larger degree of substitutability will magnify the short-run and the intermediate-run adjustment of prices and output to real shocks and will reduce the needed adjustment of relative prices.

Svensson and van Wijnbergen develop a two-country model with sticky prices, optimally set by monopolistically competitive firms, and possible excess capacity. They use the model to examine the international spillover effects of monetary disturbances on output. Their main result is that spillover effects of monetary policy may be either positive or negative, depending upon whether the *inter*temporal elasticity of substitu-

tion in consumption exceeds the *intra*temporal elasticity of substitution.

Cole discusses how changes in the structure of international financial markets can affect the structure of international trade. The existence of state-contingent securities introduces a channel, in addition to the default-free real interest rate, for cross-country effects of production shocks via the income flows associated with these securities. This reduces the direct income effects of a country's own production shocks at the expense of introducing direct income effects associated with the foreign country's production shocks. In addition, with an incomplete structure of financial markets, the existence of income sources upon which there are no direct trade claims can distort agents' financial portfolios.

Bulow and Rogoff note that few sovereign debtors have repudiated their obligations entirely. But despite the significant sanctions at the disposal of lenders, many borrowers have been able to consistently negotiate for reduced repayments. They present a model of the ongoing bargaining process that determines repayment levels.

Bulow and Rogoff derive a bargaining equilibrium in which countries with large debts achieve a negotiated, partial default. Lenders may not benefit from their ability to threaten more draconian penalties in the event of repudiation. Furthermore, unanticipated increases in world interest rates may actually help the borrowers by making lenders more impatient for a negotiated settlement. Finally, western governments may be induced to make payments to facilitate reschedulings even though efficient agreements would be reached without their intervention,

Greenwood and Williamson construct a two-country model in which financial intermediation is a means of economizing on monitoring costs. Because of the existence of transaction costs, money markets in the two countries are segmented, and investors have differential access to international credit markets. The model predicts the role of international intermediation in economic development and examines the nature of business cycles in different exchange rate regimes. Greenwood and Williamson conclude that the credit allocation mechanism is an essential ingredient in the propagation of aggregate fluctuations in the world economy.

In addition to the authors, other participants at the meeting included: Harry P. Bowen, NBER and New York University; Susan Collins and Kala Krishna, NBER and Harvard University; Bernard Dumas, Richard C. Marston, and Maurice Obstfeld, NBER and University of Pennsylvania; Charles M. Engel, NBER and University of Virginia; Robert P. Flood, Jr., and Robert J. Hodrick, NBER and Northwestern University; Kent Kimbrough, Duke University; Kenneth M. Kletzer, Yale University; Nancy Peregrim Marion, NBER and Dartmouth College; Kiminori Matsuyama and Kevin O'Rourke, Harvard University; and Julio J. Rotemberg, NBER and MIT.

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833. "The Effect of Annuity Insurance on Savings and Inequality," by Laurence J. Kotlikoff, John B. Shoven, and Avia Spivak, 1986 (NBER Working Paper No. 1403)

834. "How Does the Market Value Unfunded Pension Liabilities?" by Jeremy I. Bulow, Randall Mørck, and Lawrence H. Summers, 1987 (NBER Working Paper No. 1602)

835. "Reporting Errors and Labor Market Dynamics," by James M. Poterba and Lawrence H. Summers, 1986 (NBER Working Paper No. 1436)

836. "Do Long-Term Interest Rates Overreact to Short-Term Interest Rates?" by N. Gregory Mankiw and

Lawrence H. Summers, 1986 (NBER Working Paper No. 1345)

837. "Aggregate Output with Variable Rates of Utilization of Employed Factors," by Alan Chung and John F. Helliwell, 1986 (NBER Working Paper No. 1623)

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847. "Ruling Out Divergent Speculative Bubbles," by Maurice Obstfeld and Kenneth Rogoff, 1986 (NBER Working Paper No. 1601)

848. "Targeted Export Promotion with Several Oligopolistic Industries," by Gene M. Grossman and Avinash K. Dixit, 1986 (NBER Working Paper No. 1344)

849. "Public Sector Labor Markets," by Ronald G. Ehrenberg and Joshua L. Schwarz, 1986 (NBER Working Paper No. 1179)

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Feldstein Volume Available

The Effects of Taxation on Capital Accumulation, edited by Martin Feldstein, is now available from the University of Chicago Press for $55.00.

NBER has studied capital formation for a number of years because of the crucial role that capital accumulation plays in economic growth. This volume, based on a 1986 NBER conference, shows how taxes influence the profitability of various investments, and how differences in profitability affect the allocation of the capital stock. Further, it shows that capital formation is quite sensitive to tax rules and, in that way, how tax policy can affect the overall economy.

Feldstein is the George F. Baker Professor of Economics at Harvard and President of NBER.

Public Sector Payrolls

Public Sector Payrolls, edited by David A. Wise, is available from the University of Chicago Press for $40.00.

This volume includes papers presented at an NBER conference that was part of the project studying "The Government Budget and the Private Economy." Several of the papers discuss compensation. Others consider employment of youth, especially by the military. There is also an analysis of how wages and employment in the public sector respond to economic conditions; a detailed study of government pension plans; an analysis of comparable worth in the public sector; and a look at the salaries of public schoolteachers in relation to the quality of American education.

This volume is particularly relevant for policymakers, as well as for academic economists. Wise is the John F. Stambaugh Professor of Political Economy at Harvard University and a Research Associate at NBER.

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Privatization, Information, and Incentives

David E. M. Sappington and **Joseph E. Stiglitz**
Working Paper No. 2196
March 1987
JEL No. 320

This paper considers the choice between public and private provision of goods and services. In practice, both modes of operation involve significant delegation of authority and thus appear quite similar in some respects. We argue that the main difference between the two modes concerns the transactions costs faced by the government when attempting to intervene in the delegated production activities. Such intervention is generally less costly under public ownership than under private ownership. The greater ease of intervention under public ownership can have its advantages; but the fact that a promise not to intervene is more credible under private production can also have beneficial incentive effects. We present the Fundamental Privatization Theorem (analogous to the Fundamental Theorem of Welfare Economics), providing conditions under which government production cannot improve upon private production. We then evaluate the restrictiveness of these conditions.

City Taxes and Property Tax Bases

Katharine L. Bradbury and **Helen F. Ladd**
Working Paper No. 2197
March 1987

This paper investigates the simultaneous relationship between tax rates and city property tax bases using data for 86 large U.S. cities in 1967, 1972, 1977, and 1982. We find that a 10 percent increase in the city's property tax rate decreases the city tax base by about 1.5 percent. In addition, local income taxes and taxes levied by overlying jurisdictions (such as county and state governments) also have negative impacts on the city's property tax base. Local sales taxes, in contrast, appear to have little impact. We conclude that taxes affect local property values more than is typically implied by previous studies that have investigated the impacts of state and local taxes on firms' location decisions.

The Gold Exchange Standard and the Great Depression

Barry J. Eichengreen
Working Paper No. 2198
March 1987
JEL No. 400

A number of explanations for the severity of the Great Depression focus on the malfunctioning of the international monetary system. One such explanation emphasizes the deflationary monetary consequences of the liquidation of foreign exchange reserves following competitive devaluations by Great Britain and her trading partners. Another emphasizes instead the international monetary policies of the Federal Reserve and the Bank of France. This paper analyzes both the exceptional behavior of the United States and France and the shift out of foreign exchange after 1930. While both Franco-American gold policies and systemic weaknesses of the international monetary system emerge as important factors in explaining the international distribution of reserves, the first of these factors turns out to play the more important role in the monetary stringency associated with the Great Depression.

Why Was There Mandatory Retirement? Or, the Impossibility of Efficient Bonding Contracts

Kevin Lang
Working Paper No. 2199
March 1987
JEL No. 821

Lazear has argued that hours constraints in general, and mandatory retirement in particular, form part of an

inefficient labor market contract designed to increase output by inhibiting worker shirking. Since the contract is efficient, legislative interference reduces welfare. However, in any case in which bonding is costly, the hours constraints will not be chosen optimally. Although theoretically bonding may be costless, the earnings profile is indeterminate and monitoring should never be aimed at reducing shirking. Therefore, it appears that bonding should be modeled as having cost. If so, the role of policy depends on the source of bonding costs, the set of feasible contracts, and the policy options that are available to government.

Should Social Security Benefits Increase with Age?

Martin Feldstein
Working Paper No. 2200
March 1987
JEL No. 915

This paper shows that the optimal relationship between Social Security benefits and retiree age depends on balancing the advantage of providing an otherwise unavailable actuarially fair annuity against the lower rate of return earned in a pay-as-you-go Social Security system. The ability of compulsory Social Security programs to provide an actuarially fair annuity implies that benefits should increase with age, while the lower return on Social Security contributions than on private saving implies that a larger fraction of total benefits should be paid during the early years of retirement. In an economy that contains a mixture of rational life-cycle savers and completely myopic individuals who do not save, it is optimal for benefits to decline during the earlier part of the retirement period and then to begin rising. Numerical calculations based on actual macroeconomic parameters and representative survival probabilities suggest that the optimal age for minimum benefits is less than 75.

Imperfect Information and Staggered Price Setting

Laurence Ball and **Stephen G. Cecchetti**
Working Paper No. 2201
April 1987
JEL Nos. 023, 131

Many Keynesian macroeconomic models are based on the assumption that firms change prices at different times. To explain this "staggered" price setting, we develop a model in which firms have only imperfect knowledge of the current state of the economy and can gain information by observing the prices set by others. This gives each firm an incentive to set its price shortly after as many other firms as possible. Staggering can be the equilibrium outcome. In addition, the information gains can make staggering socially optimal, even though it increases aggregate fluctuations.

Successful Adjustment in a Multisectorial Economy

Joshua Aizenman
Working Paper No. 2202
April 1987
JEL No. 400

This study analyzes the adjustment to a fiscal reform in a dependent economy. It evaluates the economic factors that are relevant for making the choice between a cut in employment and a cut in wages as a means of reducing the fiscal wage bill. I demonstrate that in the presence of costly short-run mobility of labor there is a natural advantage to a wage policy over an employment policy. Fiscal deficits can be dealt with successfully by a wage policy and with the corresponding adjustment in government demand. These policies may have only marginal consequences on production of traded goods in the short run in the presence of costs of adjustment. Over time the gain in the production of traded goods is determined by the credibility of the fiscal reform. I show that the absence of credibility may have major consequences on the adjustment, because it will depress the magnitude of the private investment associated with the fiscal reform.

Peso Problems, Bubbles, and Risk in the Empirical Assessment of Exchange Rate Behavior

Maurice Obstfeld
Working Paper No. 2203
April 1987
JEL No. 431

One of the most puzzling aspects of the post-1973 floating exchange rate system has been the apparent-

ly inefficient predictive performance of forward exchange rates. This paper explores some aspects of each of three leading explanations of the behavior of the forward rate. The paper first develops a simple rational expectations model of the "peso problem" that generates some key empirical regularities of the foreign exchange market: seemingly predictable and conditionally heteroskedastic forward forecast errors, with possible directional misprediction by the forward premium. Next I discuss the implications of bubbles for tests of forward rate predictive efficiency. I argue that the existence of bubbles is extremely difficult (if not impossible) to establish empirically. Even though some types of bubbles could distort standard tests on the relationship between spot and forward exchange rates, it seems unlikely that these bubbles have been an important factor. Finally, the paper examines foreign exchange asset pricing under risk aversion and suggests that a convincing account of forward rate behavior should also help explain the results found in testing other asset-pricing theories, such as the expectations theory of the term structure of interest rates.

Country Risk and the Organization of International Capital Transfer

Jonathan Eaton and **Mark Gersovitz**
Working Paper No. 2204
April 1987
JEL No. 433

Foreign portfolio investment is threatened by the risk of default and repudiation, while direct foreign investment is threatened by the risk of expropriation. These two contractual forms of investment can differ substantially in: the amount of capital they can transfer from abroad to capital-importing countries; the shadow cost of capital; and their implications for the tax policy of the host. The interaction of public borrowing from abroad with investments abroad by private citizens of the borrowing country can imply multiple equilibriums with very different welfare consequences. One equilibrium involves private inflows and repayment of public debt. Another is characterized by capital flight and default.

Firm Size and R and D Intensity: A Reexamination

Wesley M. Cohen, Richard C. Levin, and **David C. Mowery**
Working Paper No. 2205
April 1987
JEL No. 620

Using data from the Federal Trade Commission's Line of Business Program and survey measures of technological opportunity and appropriability conditions, this paper finds that overall firm size has a very small, statistically insignificant effect on the R and D intensity of the business unit when either fixed industry effects or measured industry characteristics are taken into account. Business unit size has no effect on the R and D intensity of business units that perform R and D, but it does affect the probability of conducting R and D. Business unit and firm size jointly explain less than 1 percent of the variance in R and D intensity; industry effects explain nearly half the variance.

International Adjustment under the Classical Gold Standard: Evidence for the United States and Britain, 1879-1914

Charles W. Calomiris and **R. Glenn Hubbard**
Working Paper No. 2206
April 1987

Links between disturbances in financial markets and those in real activity have long been the focus of studies of economic fluctuations during the period prior to World War I. We emphasize that domestic autonomy was substantially limited by internationally integrated markets for goods and capital. Such findings are important for studying business cycles during the period; for example, when prices are flexible, observed cyclical movements can be related to a credit market transmission of deflationary shocks.

Recent studies of the classical gold standard have revived interest in the process by which macroeconomic shocks were transmitted internationally during this period. The principal competing approaches—the "price-specie flow" mechanism and the more modern "internationalist" view—differ according to the means by which international equilibrium is reestablished after a disturbance occurs in capital, money, or commodity markets. We present and interpret separate pieces of evidence on gold flows, interest rates, and selected commodity prices, all of which shed light on the alternative assumptions employed in the price-specie flow and modern approaches. We employ a monthly data set for the United States and Britain for the pre-World War I frameworks. Using the "structural VAR" approach of Bernanke and Sims, we compare the actual historical importance of shocks and the observed patterns of short-run adjustment to shocks with the prediction of each of the two models. The evidence supports the "internationalist" view of closed international linkages over the "specie flow" view of circuitous linkages and domestic autonomy in money and capital markets.

Economic Rents Derived from Hospital Privileges in the Market for Podiatric Services

Richard G. Frank, Jonathan P. Weiner, Donald M. Steinwachs, and **David S. Salkever**
Working Paper No. 2207
April 1987
JEL No. 913

This study examines the relative impacts of human capital and market conditions on the economic rents associated with hospital privileges in the market for foot care. We formulate an empirical model of hospital privileges for podiatrists based on the Pauly-Redisch model of hospital behavior. We then incorporate the privilege model into a model of podiatrists' earnings via a selection adjustment as proposed by Heckman and Lee. The results indicate the persistence of economic rents even after we control for unobserved "quality" factors.

U.S. and Foreign Competition in the Developing Countries of the Asian Pacific Rim

Robert E. Baldwin
Working Paper No. 2208
April 1987
JEL No. 421

This paper examines changes since the early 1960s in the export shares of the United States and its major competitors in the markets of the developing countries of the Asian Pacific Rim (APR), defined to include Hong Kong, Korea, Taiwan, Singapore, the Philippines, Malaysia, Thailand, Indonesia, and China. I also use a technique for revealing a country's factor-price advantages or disadvantages in its trade with another country to analyze the U.S. cost position relative to the countries of the region. Among the findings are that the U.S. export share in the APR market has remained roughly constant over the period and that the United States has a relative factor-price advantage with all the developing countries of the region in physical capital and skilled labor and a disadvantage in unskilled labor. For land and natural resources, the picture is mixed.

I also study the competitive performance of these developing countries in the markets of the United States, Canada, Japan, the European Community, Australia, and New Zealand, and in the region itself. The developing countries of the region and Japan have increased their market shares significantly since the 1960s. In addition, I examine the volume and distribution of U.S. and Japanese direct investment in the Asian Pacific Rim.

The Permanent-Income Hypothesis Revisited

Lawrence J. Christiano, Martin S. Eichenbaum, and **David Marshall**
Working Paper No. 2209
April 1987
JEL No. 131

This paper investigates whether there are simple versions of the permanent-income hypothesis that are consistent with the data on aggregate U.S. consumption and output. We conduct our analysis within the confines of a simple dynamic general equilibrium model of aggregate real output, investment, hours of work, and consumption. We study the quantitative importance of two perturbations to the version of our model that predicts that observed consumption follows a random walk: (1) changing the production technology specification that rationalizes the random walk result; and (2) replacing the assumption that agents' decision intervals coincide with the data sampling interval with the assumption that agents make decisions on a continuous-time basis. We find substantially less evidence against the continuous-time models than against their discrete-time counterparts. In fact, neither of the two continuous-time models can be rejected at conventional significance levels. The continuous-time models outperform their discrete-time counterparts primarily because they explicitly account for the fact that the data used to test the models are time-averaged measures of the underlying unobserved point-in-time variables. The net result is that they are better able to accommodate the degree of serial correlation present in the first difference of observed per capita U.S. consumption.

International Capital Flows and Domestic Economic Policies

Jeffrey A. Frankel
Working Paper No. 2210
April 1987
JEL Nos. 441, 431

This paper first traces the history of the capital account in the U.S. balance of payments from 1946 to 1980, when Americans were steadily building up a positive net foreign investment position. It subsequently describes the historic swing of the capital account in the 1980s toward massive borrowing from abroad. Various factors, in addition to expected rates of return, encourage or discourage international capital flows: transactions costs; government controls; taxes; default; and other political risk and exchange risk. I argue that the

increase in real interest rates and other expected rates of return in the United States, relative to other countries, in the early 1980s, was the major factor that began to attract large net capital inflows. I conclude that a large increase in the U.S. federal budget deficit, which was not offset by increased private saving, was the major factor behind the increase in real interest rates and therefore behind the switch to borrowing from abroad.

Negotiator Behavior under Arbitration

David E. Bloom and **Christopher L. Cavanagh**
Working Paper No. 2211
April 1987
JEL No. 830

The emerging empirical literature on the economics of arbitration has focused primarily on the behavior of arbitrators under alternative forms of arbitration. This article suggests that it is natural for empirical economists to expand their focus now to include issues related to the behavior of negotiators. In this connection, we discuss three key aspects of negotiator behavior: (1) the decision to settle a dispute voluntarily or to proceed to arbitration; (2) the strategy for selecting an arbitrator; and (3) the final bargaining position to advance before an arbitrator.

Measuring Market Power in U.S. Industry

Matthew D. Shapiro
Working Paper No. 2212
April 1987
JEL Nos. 611, 226, 227

Noncompetitive conduct can be assessed by estimating the size of the markup (or Lerner index) in a market. The markup implies a price elasticity of demand faced by the representative firm. For a given markup, noncompetitive conduct is greater as the market elasticity of demand rises. The ratio of the firm's to the market's elasticity is a measure of noncompetitive conduct that is insensitive to the value of the monopoly. To implement this measure, both the firm's and the market's elasticities of demand must be estimated. Hall shows how to estimate the markup, and therefore the elasticity faced by the firm, from the cyclical behavior of productivity. To estimate the market elasticity, I use an instrumental variables procedure that exploits a covariance restriction between productivity shocks and demand shocks. Results for broad sectors of private industry and for nondurable manufacturing industries display a wide range of monopoly power.

Dynamic Optimization in Two-Party Models

Warwick J. McKibbin, Nouriel Roubini, and **Jeffrey D. Sachs**
Working Paper No. 2213
April 1987
JEL Nos. 131, 311

This paper considers the problem of optimal dynamic policy formulation with competing political parties. We study a general class of problems, in which the two competing political parties have quadratic intertemporal objective functions, and in which the economy has a linear structure and a multidimensional state space. For the general linear quadratic problem, we develop a numerical dynamic programming algorithm to solve for optimal policies of each party taking into account: the party's objectives; the structure of the economy; the probability of future election results; and the objectives of the other political party.

Anticipated Protectionist Policies, Real Exchange Rates, and the Current Account

Sebastian Edwards
Working Paper No. 2214
April 1987
JEL No. 430

In this paper I develop a general equilibrium intertemporal model with optimizing consumers and producers to analyze how the anticipation of future import tariffs affects real exchange rates and the current account. The model is completely real and considers a small open economy that produces and consumes three goods each period. I show that interesting paths for the equilibrium real exchange rate can be generated without imposing rigidities or adjustment costs. In particular, there can be "equilibrium overshooting." I also derive precise conditions under which an anticipated future import tariff will worsen the current account in period 1. Finally, I discuss in detail several ways in which the model can be extended. The results from this model have important implications for the analysis of real exchange rate misalignment and overvaluation.

Capital Gains Taxes under the Tax Reform Act of 1986: Revenue Estimates under Various Assumptions

Lawrence B. Lindsey
Working Paper No. 2215
April 1987

This paper examines the effect of the Tax Reform Act of 1986 on the level of capital gains realizations

and tax revenue using a variety of behavioral assumptions. Independent investigations—by Feldstein, Slemrod, and Yitzhaki; the Department of the Treasury; Lindsey; Auten and Clotfelter; and Minarik—all point to a large, but highly variable, response of taxpayers to changes in capital gains tax rates. I reparameterize the econometric results of each of these papers and use them in NBER's TAXSIM model. I then model a total of 13 sets of behavioral assumptions.

The results show that the increase in the capital gains tax rate in the new tax bill is unlikely to produce an increase in capital gains tax revenue. Of the 13 simulations, 12 produce lower tax revenue over five fiscal years. The final simulation suggests a virtually unchanged level of revenue. Two of the models predict extremely large levels of capital gains realizations in late 1986 in anticipation of the tax rate increases in the coming years. None of the simulations predicts any significant increase in the permanent level of capital gains tax revenues.

Short-Term and Long-Term Expectations of the Yen/Dollar Exchange Rate: Evidence from Survey Data

Jeffrey A. Frankel and **Kenneth A. Froot**
Working Paper No. 2216
April 1987
JEL Nos. 431, 441

Three surveys of exchange rate expectations allow us to measure the expected rates of return on yen versus dollars directly. Expectations of yen appreciation against the dollar have been consistently large, variable, and greater than the forward premium, implying that investors were willing to accept a lower expected return on dollar assets. At short-term horizons, expectations exhibit "bandwagon effects"; at longer-term horizons, they show the reverse. For example, a 10 percent appreciation of the yen generates the expectation of a further appreciation of 2.4 percent over the following week, but a *depreciation* of 3.4 percent over the following year. At any horizon, investors would do better to reduce the absolute magnitude of expected depreciation. The true spot rate process behaves more like a random walk.

Have IRAs Increased U.S. Saving? Evidence from Consumer Expenditure Surveys

Steven F. Venti and **David A. Wise**
Working Paper No. 2217
April 1987
JEL Nos. 210, 211

The vast majority of Individual Retirement Account (IRA) contributions represent net new saving, according to evidence from the quarterly Consumer Expenditure Surveys (CES). This result is based on an analysis of the relationship between IRA contributions and other saving in financial assets. The data show almost no substitution of IRAs for other saving.

While the core of the paper is based on cross-sectional analysis, the CES panel of independent cross sections that span the period during which IRAs were introduced is also used. Estimates for the post-1982 period, when IRAs were available to all employees, are based on a flexible constrained optimization model with the principal constraint being the IRA limit. The implications of this model for saving in the absence of the IRA option very closely match the actual non-IRA financial asset saving behavior prior to 1982. IRA saving does not show up as other financial asset saving in the pre-IRA period.

The United States and Foreign Competition in Latin America

Sebastian Edwards
Working Paper No. 2218
April 1987
JEL Nos. 400, 410

This paper analyzes the evolution of U.S. trade relations with Latin America and investigates the possible path that these relations will take in the future. The data show that during the last 15 years or so there has been no significant loss in the U.S. aggregate competitive position in Latin America. However, there has been a significant change in the composition of U.S. exports to the Latin American nations.

The paper also deals with issues related to direct foreign investment in Latin America, comparing the importance of the United States to other nations. Finally, I discuss the role of international trade in the solution of the current American debt crisis and in the reassumption of sustained growth in the region.

Discounting Rules for Risky Assets

Stewart C. Myers and **Richard S. Ruback**
Working Paper No. 2219
April 1987
JEL No. 520

This paper develops a rule for calculating a discount rate to use in valuing risky projects. The rule assumes that asset risk can be measured by a single index (for example, beta) but makes no other assumptions about specific forms of the asset pricing model. It treats all projects as combinations of two assets: Treasury bills and the market portfolio. We know how to value each

of these assets under any theory of debt and taxes and under any assumption about the slope and intercept of the market line for equity securities. Our discount rate is a weighted average of the aftertax return on riskless debt and the expected return on the portfolio, where the weight on the market portfolio is beta.

Smuggler's Blues at the Central Bank: Lessons from Sudan

William H. Branson and **Jorge Braga de Macedo**
Working Paper No. 2220
April 1987
JEL Nos. 431, 112

The ineffectiveness of real devaluation as stabilization policy does not imply that the nominal exchange rate should be held constant in the face of a domestic inflation. With domestic inflation, import duties and export subsidies must be raised to counter the potential erosion of the trade balance. This escalation of trade barriers generates a rising black market premium and offers increasing incentives to smuggling, already a pervasive problem in the African countries. As a consequence, the central bank finds it more and more difficult to hold the nominal exchange rate constant. This may require a *passive* exchange rate policy of stabilizing the real exchange rate by moving the nominal rate in line with domestic inflation.

However, if such passive policy is not accompanied by the elimination of trade barriers, the black market premium will not disappear. Unless exchange rate policy and trade policy are consistent, the smuggler's blues will reach the central bank. Indeed, this is not just a theoretical possibility; it is the major lesson from the recent experience of Sudan.

Relative Wage Variability in the United States, 1860–1983

Steven G. Allen
Working Paper No. 2221
April 1987

This paper examines the magnitude of changes in relative wages across industries between 1860 and 1983 and analyzes the macroeconomic determinants of such changes at different intervals during this period. The variance in wage growth across industries was at least four times larger before 1948 than afterward. Except for smaller year-to-year variability in output growth across industries after 1948, macroeconomic factors cannot account for this increased rigidity of relative wages. Increases in average establishment size and improved communication of wage trends are probably partially responsible for the observed increase in relative wage rigidity. No single macroeconomic model was consistent with the year-to-year fluctuations in relative wage rigidity in every historical period examined.

The Effect of Economic Events on Votes for President: 1984 Update

Ray C. Fair
Working Paper No. 2222
April 1987
JEL No. 132

In previous work, I developed an equation explaining votes for president of the United States that seemed to have a remarkable predictive ability. In this paper, I update the equation through the 1984 election and then use it to predict the 1988 election.

Household Saving and Permanent Income in Canada and the United Kingdom

John Y. Campbell and **Richard H. Clarida**
Working Paper No. 2223
April 1987

Recent theoretical research in open-economy macroeconomics has emphasized the connection between a country's current account and the intertemporal saving and investment choices of its households, firms, and governments. In this paper, we assess the empirical relevance of the permanent-income theory of household saving, a key building block of recent theoretical models of the current account. Using the econometric approach of Campbell (1987), we are able to reject the theory on quarterly aggregate data in Canada and the United Kingdom. However, we also assess the economic significance of these statistical rejections by comparing the behavior of saving with that of an unrestricted vector autoregressive (VAR) forecast of future changes in disposable labor income. If the theory is true, then saving should be the best available predictor of future changes in disposable labor income. We find the correlation between saving and the unrestricted VAR forecast to be extremely high in both countries. The results suggest that the theory provides a useful description of the dynamic behavior of household saving in Canada and Britain.

Tax Deductibility and Municipal Budget Structure

Douglas Holtz-Eakin and **Harvey S. Rosen**
Working Paper No. 2224
April 1987
JEL No. 324

This paper investigates the effects of deductibility of local taxes on communities' budgetary decisions. Our focus is on how changes in the tax price of local spending induced by deductibility affect the mix between deductible and nondeductible revenue sources, and affect expenditures. The econometric analysis is based on a rich data set that tracks the fiscal behavior of 172 local governments from 1978 to 1980. We find that the elasticity of deductible taxes with respect to the tax price is in the range -1.2 to -1.6; the tax price has no statistically significant effect on the use of nondeductible revenue sources; and the elasticity of local expenditures with respect to the tax price is about -1.8. Hence, if deductibility were eliminated, we would expect to see a substantial decline in local government spending.

The Financial Impact of Social Security by Cohort under Alternative Financing Assumptions

Michael J. Boskin and **Douglas J. Puffert**
Working Paper No. 2225
April 1987
JEL Nos. 320, 915

This paper analyzes the financial impact of Social Security by age cohort under alternative assumptions about its future financing. We examine the Social Security Administration's intermediate IIB and various combinations of optimistic and pessimistic assumptions about fertility, mortality, and wage growth. We also examine the implications of alternative potential resolutions of the long-term financing deficit and of scenarios of the planned, systematic deviation from pay-as-you-go finance in the retirement and disability funds.

Our results suggest that the Social Security retirement program offers vastly different returns to households in different circumstances, and especially to different cohorts. Most importantly, if Social Security does not maintain the large retirement trust fund surplus currently projected for the next 30 years, then alternative scenarios for the return to pay-as-you-go finance differ dramatically in the taxes, benefits, transfers, and real rates of return that can be offered to different birth cohorts. The implications of cutting taxes, raising benefits, or diverting the surplus to other purposes have a dramatic impact on the overall financial status of the system, the time pattern of taxes, benefits, and surpluses or deficits, and therefore, on the treatment of different age cohorts.

Under the intermediate assumptions, the OASDI surplus is projected to grow to almost as large a fraction of GNP as the current ratio of privately held national debt to GNP. For example, if the OASDI surplus is used to raise benefits, and they remain at higher levels thereafter during the height of the baby-boom generation's retirement, then the long-run actuarial deficit will zoom from $500 billion to over $3 trillion. Correspondingly, if benefits increase, financed by the OASDI surplus over the next 30 years, the expected rate of return on lifetime contributions increases for those currently about 40 years old from 1.9 percent to 2.7 percent, an increase of about 40 percent. If the surplus is dissipated and the subsequent long-run deficit is made up with a tax increase on a pay-as-you-go basis at the time of the projected deficit, then the rate of return relative to the intermediate assumptions for those persons now being born will fall by about 15 percent. In this case, the overall system finances would move from a long-run actuarial deficit of slightly under 0.5 percent of taxable payroll to actuarial balance.

Thus, as Social Security is projected to deviate systematically from pay-as-you-go finance, the potential alternative scenarios with respect to accruing the surplus and/or dissipating it in various ways have potentially large effects on intergenerational redistribution.

Trade and Exchange Rate Policies in Growth-Oriented Adjustment Programs

Jeffrey D. Sachs
Working Paper No. 2226
April 1987
JEL Nos. 420, 430

The search for "growth-oriented adjustment programs" reflects a widespread malaise about IMF stabilization programs in countries suffering from external debt crises. A new orthodoxy emerging from this search links recovery in the debtor countries to a shift to "outward-oriented" development based on trade liberalization. This paper describes many important limitations of this new orthodoxy. The heavy emphasis on liberalization is ahistorical and indeed runs contrary to the experiences of the successful East Asian economies. It also distracts attention from more pressing needs of the debtor economies.

The Postwar Evolution of Computer Prices

Robert J. Gordon
Working Paper No. 2227
April 1987
JEL No. 227

This study constructs new hedonic price indexes for electronic computers covering 1951–84. I estimate regressions for four data sets, two used in previous studies by G. Chow and E. Dulberger and two new data sets used for the first time in this study. Coverage is limited to mainframes until the late 1970s but includes both "supermini" and personal computers (PCs) in the 1980s. The result is a price index that exhibits a 1951 index number, on a base 1984 = 100, of 147,692, implying an annual rate of price change of -19.8 percent over the 33 years.

Price changes for PC processors during 1982–6 appear to have been similar to those for mainframe computers during 1977–84, in the range of -20 to -25 percent per year. Evidence for PC peripheral equipment is limited to 1984–6 and indicates a faster rate of price decline than for processors, particularly if the increasing availability of clones is taken into account.

The paper places considerable emphasis on problems of weighting price indexes for computers with price indexes for other types of "Office, Computing, and Accounting Machinery" (OCA) and other types of producers' durable equipment (PDE). The methodology used to construct the implicit price deflators in the National Income and Product Accounts, with a fixed 1982 base year, leads to a significant downward bias in the implicit OCA and PDE deflators after 1982, and an upward bias prior to 1982. A particularly disturbing aspect of the present national accounts is a spurious rise in the implicit OCA deflator of 157 percent between 1957 and 1971, despite the fact that its computer component exhibits a price decline and its noncomputer component increases by only 8 percent. The paper recommends adoption of a chain-linked Laspeyres index number for any price index aggregate that includes computers. A properly weighted PDE deflator, using our computer price index, declines relative to the official implicit PDE deflator by 0.74 percent per year during 1957–72 and 0.87 percent per year during 1972–84.

Interpreting the Evidence on Money-Income Causality

James H. Stock and **Mark W. Watson**
Working Paper No. 2228
April 1987
JEL Nos. 130, 210

Previous authors have reached puzzlingly different conclusions about the usefulness of money for forecasting real output based on closely related regression-based tests. An examination of this and additional new evidence reveals that innovations in M1 have statistically significant marginal predictive value for industrial production, both in a bivariate model and in a multivariate setting including a price index and an interest rate. This conclusion follows from the trend properties of the data, both stochastic and deterministic, and from inferences that use asymptotic theory which explicitly addresses the implications of these trends for the distributions of the various test statistics.

Stochastic Trends and Economic Fluctuations

Robert G. King, James H. Stock, Charles I. Plosser, and **Mark W. Watson**
Working Paper No. 2229
April 1987
JEL Nos. 210, 226

Recent developments in macroeconomic theory emphasize that transient economic fluctuations can arise as responses to changes in long-run factors—in particular, technological improvements—rather than short-run factors. This contrasts with the view that short-run fluctuations and shifts in long-run trends are largely unrelated. We examine empirically the effect of shifts in stochastic trends that are common to several macroeconomic series. Using a linear time-series model related to a VAR, we consider first a system with GNP, consumption, and investment with a single common stochastic trend; we then examine this system augmented by money and prices and an additional stochastic trend. Our results suggest that movements in the "real" stochastic trend account for one-half to two-thirds of the variation in postwar U.S. GNP.

Real-Financial Linkages among Open Economies

Sven W. Arndt and **J. David Richardson**
Working Paper No. 2230
May 1987
JEL Nos. 423, 431

This paper analyzes and empirically examines linkages between the real and financial variables that themselves link open economies—"linkage" thus has a double meaning. Two types of linkages are discussed. Structural linkages describe differences across economies and among sectors in market structure (competitive/oligopolistic), productivity growth, and openness to trade. Intertemporal linkages describe differences across economies and over time or circumstance in saving

preferences and capital formation, government budgets, portfolio shares of "inside" and "outside" assets, and openness to mobile financial flows. Structural linkages are important chiefly for explaining sustained divergences in national competitiveness as measured by purchasing power parity norms. Intertemporal linkages also account for them, as well as for sustained divergences in current and capital account positions, geographical growth rates, and national incomes of residents.

The Marriage Tax Is Down but Not Out

Harvey S. Rosen
Working Paper No. 2231
May 1987
JEL No. 323

The public debate surrounding the Tax Reform Act of 1986 has paid little attention to the tax consequences of being married. Specifically, there has been virtually no discussion of the possible existence of an implicit "marriage tax"—the increase in the joint income tax liability of a man and woman when they marry. This lack of concern appears to be caused by the perception that the new law has lowered marginal tax rates to such an extent that the magnitudes of marriage taxes (and subsidies) are inconsequential. In this paper, I show that, to the contrary, the new law creates large taxes on being married for some couples, and large subsidies for others. On the basis of a tax simulation model, I estimate that in 1988, 40 percent of all couples will pay an annual average marriage tax of about $1100, and 53 percent will receive an average subsidy of about $600.

One striking result that emerges from the analysis is the relatively large marriage tax that will be borne by some low-income couples with children. For such couples, the marriage tax can amount to 10 percent of joint gross income. Hence, the new tax law appears to be quite "antifamily" for some low-income workers.

Loan Commitments and Monetary Policy

Paul Wachtel, George Sofianos, and **Arie Melnik**
Working Paper No. 2232
May 1987
JEL No. 311

This paper examines the impact of loan commitment agreements on the way in which changes in monetary policy affect the economy. In particular, it studies the empirical relevance of quantity credit rationing in the transmission of monetary policy using VAR models. We find evidence of a differential impact of monetary policy on loans under commitment and not under commitment. Our conclusion is that credit rationing for bank loans does occur, although loan commitments effectively protect borrowers from credit rationing. Thus, loan commitments that insulate borrowers from the effects of quantity rationing force monetary policy to work exclusively through interest rate channels.

Econometric Modeling as Information Aggregation

Ray C. Fair and **Robert J. Shiller**
Working Paper No. 2233
May 1987
JEL No. 132

A forecast produced by an econometric model is a weighted aggregate of predetermined variables in the model. In many models, the number of predetermined variables used is very large, often exceeding the number of observations. This paper proposes a method for testing an econometric model as an aggregator of the information in these predetermined variables relative to a specific subset of them. Called the "information aggregation" (IA) test, this method tests whether the model makes effective use of the information in the predetermined variables or whether a smaller information set carries as much information. The method can also be used to test one model against another.

We use the method to test the Fair model as an information aggregator. The Fair model also is tested against two relatively nontheoretical models: a VAR model and an "autogressive components" (AC) model. The AC model, which is new in this paper, estimates an autoregressive equation for each component of real GNP; real GNP is identically determined as the sum of the components. The results show that the AC model dominates the VAR model, although both models are dominated by the Fair model. The results also show that the Fair model seems to be a good information aggregator.

The Social Security Cost of Smoking

John B. Shoven, Jeffrey O. Sundberg, and **John P. Bunker**
Working Paper No. 2234
May 1987
JEL Nos. 915, 913

This paper examines the Social Security cost of smoking from an individual point of view. Smokers have a

shorter life expectancy than nonsmokers have; this means that by smoking they are giving up potential Social Security benefits. We estimate the cost of these benefits and consider the effects of smoking on the system as a whole.

We use mortality ratios, which relate the annual death probabilities of smokers and nonsmokers, and the percentage of smokers in each age group, to break down the life tables for men and women born in 1920 into approximate tables for smokers and nonsmokers. We then calculate expected Social Security taxes and benefits for each group, using median earnings as a base. We find that smoking costs men about $20,000 and women about $10,000 in expected net benefits.

Therefore, the prevalence of smoking has a direct effect on the financial viability of the Social Security system. Every decrease in the number of smokers increases the system's liability. As a result, it should be recognized that changes in smoking behavior affect the system.

International Competition in Services

Rachel McCulloch
Working Paper No. 2235
May 1987
JEL No. 420

Production of services now dominates economic activity in the United States and in most other nations. Thus it is natural to find that U.S. policymakers pay increasing attention to international competition in services. Yielding to strong pressure from the United States, members of the General Agreement on Tariffs and Trade (GATT) agreed in September 1986 to include services in the new "Uruguay Round" of multilateral trade negotiations. But there remains widespread skepticism regarding the prospects for these negotiations.

This paper surveys the main issues and evidence relating to U.S. international competition in services. It reviews: the forces that have catapulted services to the top of the agenda for the new GATT round; the conceptual issues raised by international competition in services; the growing importance of services in U.S. production and in international transactions; the relationship of services' growth to "deindustrialization" of the U.S. economy; the nature and motivation of barriers to international competition in services and their relationship to nontariff distortions of merchandise trade; and the choices awaiting U.S. officials in forthcoming bilateral and multilateral negotiations.

Country Risk and Contingencies

Joshua Aizenman
Working Paper No. 2236
May 1987
JEL No. 400

This paper studies the role of credit market policies in the presence of country risk from the nationalistic and the global points of view. It addresses the role of endogenous default penalties that are contingent upon the intensity of default on the part of the borrowing nation. It also evaluates the effects of contingency plans that make the interest rate dependent upon variables that are correlated with the default penalty. Consider an economy in which a default will trigger a penalty, in the form of either a trade embargo or effective exclusion of the defaulting nation from future borrowing. Assuming costly enforcement of the penalty, I show that the optimal borrowing tax from the global point of view exceeds the optimal borrowing tax from the nationalistic point of view. The economic principle guiding the borrowing tax is that in the presence of country risk—an activity that changes the probability of default—generates an externality. This principle also applies for investment: if a given investment reduces (increases) the probability of default, it generates positive (negative) externality. Consequently, the social interest rate associated with this activity is lower (higher) than the private one, calling for a subsidy (tax) on borrowing used to finance that investment.

Next, I evaluate the role of endogenous penalties. I design alternative incentive schemes by varying the responsiveness of the penalty to the intensity of default, without changing the total cost applied in the case of a complete default. Then I turn to an assessment of the welfare effect of plans that make the interest rate contingent upon realization of shocks. I conclude by deriving the optimal borrowing plan for an example in which stochastic terms of trade are the source of uncertainty. I show that allowing for contingent payment raises the credit ceiling and the expected income, and stabilizes income across states.

Intergenerational Transfers and Savings

Laurence J. Kotlikoff
Working Paper No. 2237
May 1987
JEL No. 224

In recent years the role of intergenerational transfers in the process of wealth accumulation has been the

subject of substantial empirical and theoretical analysis. The key question stimulating this research is: what is the main explanation for savings? Do we save primarily as accumulation for retirement, as claimed by Albert Ando, Richard Brumberg, and Franco Modigliani in their celebrated life-cycle model of savings? Or, is saving primarily an accumulation intended for intergenerational transfers? Or, is it primarily precautionary, so that much saving is eventually bequeathed because of imperfections in annuity markets?

In this paper, the strong conclusion that emerges is that intergenerational transfers play a very important, if not a key, role in aggregate wealth accumulation. However, the precise motivation for such transfers is unclear: intergenerational altruism may be the most likely explanation, but some stylized facts, such as the equal allocation of bequests among children, are strongly at odds with that theory. Other explanations involving imperfect insurance arrangements, or payments for children's services, do not appear capable of explaining the substantial amounts of transfers actually observed.

Constraints on the Choice of Work Hours: Agency versus Specific Capital

Shulamit Kahn and **Kevin Lang**
Working Paper No. 2238
May 1987
JEL No. 821

Most models of implicit lifetime contracts imply that, at any particular time, workers' wages and the value of marginal product (VMP) will diverge. As a result, the contract will have to specify hours as well as wages, since firms will desire to prevent workers from working more when the wage is greater than VMP and from working less when the wage is less than VMP. Combined with the fact that in efficient contracts the hours are set so that VMP equals the marginal value of leisure, this divergence implies that workers will face binding hours constraints. We show that the two major models of lifetime contracts—the agency model and the firm-specific capital model—make opposite predictions regarding the relationship between work hours constraints and job tenure. We then test these predictions. Our results indicate that neither model of efficient long-term contracts explains the observed pattern of hours constraints. Therefore, we briefly consider other explanations.

A Generic Model of Monetary Policy, Inflation, and Reputation

Herschel I. Grossman
Working Paper No. 2239
May 1987
JEL No. 311

This paper analyzes a reputational equilibrium for inflation under the generic assumption that monetary policy reflects proximate preferences for low expected inflation and positive unexpected inflation. The paper stresses the qualitative implication that, in a reputational equilibrium, the policymaker behaves as if concerned about controlling inflation, even though there is no direct preference for a low actual inflation rate. The analysis also shows how the sovereign's prospects for survival and the private agents' memory process play critical roles in determining whether the reputational equilibrium approximates a hypothetical equilibrium with binding commitments.

Changing Patterns of International Investment In and By the United States

Robert E. Lipsey
Working Paper No. 2240
May 1987

The international investment account of the United States has gone through several cycles. Before World War I, the United States was a borrower most of the time and an international debtor. Between the two world wars, it was first a lender and then a refuge for foreign capital. After World War II, the United States became the world's major lender and creditor; and in the last few years, it has become the world's largest borrower and, according to the official accounts, even a net debtor.

U.S. direct investment abroad began while the United States was still an overall borrower and debtor. The technological leaders among U.S. manufacturing firms pioneered this technique for exploiting their particular knowledge and skills by producing in other countries. The peak in the importance of foreign assets relative to the domestic assets of U.S. companies was probably reached during the early 1970s.

While the flow of direct investment from the United States has slowed, there has recently been a large inflow of foreign direct investment into the United States. That inflow has roughly tripled the share of foreign-owned companies in the United States since 1950.

While foreign-owned firms accounted for only about 3.5 percent of total U.S. employment after all the recent growth in foreign direct investment in the United States, their shares in manufacturing and wholesale trade were considerably higher. Foreign firms account-

ed for almost 40 percent of chemical industry employment, but for less than 10 percent of employment in all the other industries. The foreign shares in service industries, aside from wholesale trade, increased but remained below 3 percent.

Institutional Aspects of High Unemployment in the Federal Republic of Germany

Michael C. Burda and **Jeffrey D. Sachs**
Working Paper No. 2241
May 1987
JEL No. 824

The sustained rise in German unemployment since 1973 poses a problem of critical importance for the world economy. Less than two decades ago, Germany boasted an average unemployment rate of under 1 percent and had to import labor to relieve its chronic labor shortages. By the mid-1980s, unemployment had risen to over 8 percent of the labor force.

This paper investigates some of the reasons for the secular rise in unemployment. We find that while deficient aggregate demand probably can explain some of the current joblessness, the secular rise in unemployment has consisted primarily of an increase in the equilibrium rate of unemployment. We also find little evidence that this increase is caused by changes in frictional unemployment. Rather, after reviewing institutional details of the labor market in Germany, we identify various impediments to the kinds of structural adjustments that have operated to maintain a fairly constant equilibrium rate of unemployment in the United States.

Accounting for Racial Differences in School Attendance in the American South, 1900: The Role of Separate-But-Equal

Robert A. Margo
Working Paper No. 2242
May 1987
JEL No. 042

Everyone knows that public school officials in the American South violated the Supreme Court's separate-but-equal decision. But did the violations matter? Enforcement of separate-but-equal would have narrowed racial differences in school attendance in the early twentieth-century South. But separate-but-equal was not enough. Black children still would have attended school less often than white children did, because black parents were poorer and less literate than white parents were.

Share Repurchases and Acquisitions: An Analysis of Which Firms Participate

John B. Shoven and **Laurie Blair Simon**
Working Paper No. 2243
May 1987
JEL No. 521

Firms can transmit cash to shareholders either by paying dividends or by purchasing shares. Purchases can be either of the firms' own securities or of those of other firms. Recent evidence suggests that there has been a dramatic increase in the use of these nondividend payments to shareholders. This paper reviews the theories behind nondividend payments, including: taxation advantages; adjustment toward optimal debt-equity ratios; antitakeover strategies; free cash flow (agency) considerations; signaling; and habit formation or learning. From these theories, we derive and investigate econometrically the characteristics that predict share purchases for roughly 2000 firms in 1976 and 1984. The theories of free cash flow and habit formation are most consistent with our findings.

International Macroeconomic Policy Coordination

Stanley Fischer
Working Paper No. 2244
May 1987
JEL No. 400

Increasing integration of the world economy, in both trade and capital markets, holds out the promise of mutual gains to countries resulting from the coordination of their macroeconomic policy decisions. In this paper I describe the theoretical case for coordination, evaluate empirical estimates of the potential gains, review the history of macroeconomic policy coordination, and discuss the prospects for increased coordination.

The theoretical argument is seen most clearly in the consideration of fiscal expansion. Any one country that expands will create a current account deficit; this problem is avoided when all countries expand together. In principle, coordination is always better, but empirical estimates suggest that the likely gains are small because the effects of policy in one country on the economies of other countries are small. Further, uncertainties about the effects of policy, reflected in differences among econometric models, mean that countries may have very different views on the likely outcomes of agreements—and therefore that some of them are bound to be disappointed.

Information exchanges and some coordination on trade policy take place in a large number of international organizations and frameworks. But the breakdown of the Bretton Woods system suggests that international differences in policy goals are too large for systematic macroeconomic policy coordination among the major economies to take place anytime soon. Occasional agreements on particular policy packages are possible, and coordination does not take place within the framework of the European Monetary System.

Homeownership and Real House Prices: Sources of Change, 1965-85

Patric H. Hendershott
Working Paper No. 2245
May 1987
JEL Nos. 323, 932

Two phenomena characterized the housing market in the 1970s: a somewhat disguised surge toward homeownership, and a well-publicized sharp increase in the real price of housing. These movements were partially reversed in the first half of the 1980s. In the "standard view," the 1970s changes are attributed to an interaction of the tax system and rising inflation. Given the disinflation of the 1980s, this explanation also seems consistent with the reversals in ownership and real prices.

However, recent work challenges the standard view. It says that inflation disfavors homeownership and that real house prices are determined largely by supply (cost), not demand, factors. This paper considers the data on homeownership and real house prices and evaluates the standard view vis-à-vis its challengers. Data from the 1980s suggest that other factors—probably rising income for ownership and negative productivity growth in construction for real prices—were responsible for at least half of the 1970s increase in ownership and real price.

Implicit Taxation in Lottery Finance

Charles T. Clotfelter and **Philip J. Cook**
Working Paper No. 2246
May 1987
JEL No. 324

State lotteries, as they operate in the United States today, have four distinct aspects: they are legal; the state has a monopoly on their provision; lottery products are marketed; and a portion of the surplus they derive from sales is extracted for state revenue. In this paper, we use conventional tools of applied public finance to examine the implicit tax levied by lottery agencies through this fourth function. We examine the incidence of the implicit lottery tax, focusing on the dominant lottery games used in the 1980s. We find that the implicit tax is regressive in virtually all cases. We then consider whether the implicit tax rate on lotteries is too high, comparing that rate to excise tax rates on alcohol and tobacco.

Intertemporal Constraints, Shadow Prices, and Financial Asset Values

Robert S. Chirinko
Working Paper No. 2247
May 1987
JEL Nos. 130, 300

Hayashi (1982) developed the conditions under which the unobserved shadow price of capital can be equated to the financial value of the firm. Employing a more powerful analytic method, this paper reexamines the shadow price-asset value relationship in a model with a general set of intertemporal constraints. For a model with one capital good, I derive a general relationship between shadow prices and asset values, and highlight the restrictive assumptions implicit in previous work. Of particular importance is the relationship between the marginal and the average survival rates of capital, and the critical role of geometric depreciation. I also explore the impact of a discrete-time framework in specifying and interpreting econometric models.

Self-Selection and the Earnings of Immigrants

George J. Borjas
Working Paper No. 2248
May 1987
JEL No. 823

This paper analyzes how the immigrants' earnings may differ from native Americans' earnings because of the endogeneity of the migration decision. I derive the conditions that determine the nature of the self-selection; they depend on the economic and political characteristics of the sending and receiving countries. The empirical analysis shows that differences in the U.S. earnings of immigrants with the same measured skills, but from different home countries, are attributable to variations in conditions in the country of origin at the time of migration.

Are Exchange Rates Excessively Variable?

Jeffrey A. Frankel and **Richard Meese**
Working Paper No. 2249
May 1987

"Unnecessary variation" is defined as variation not attributable to variation in fundamentals. In the absence of a good model of macroeconomic fundamentals, the question "are exchange rates excessively variable?" cannot be answered by comparing the variance of the actual exchange rate to the variance of a set of fundamentals. The paper notes the failure of regression equations to explain exchange rate movements even using contemporaneous macroeconomic variables. It notes as well the statistical rejections of the unbiasedness of the forward exchange rate as a predictor of the spot rate. It then argues that, given these results, there is not much to be learned from the variance-bounds tests and bubbles tests.

The paper also discusses recent results on variation in the exchange risk premiums arising from variation in conditional variances, both as a source of the bias in the forward rate tests and as a source of variation in the spot rate. It ends with a discussion of whether speculators' expectations are stabilizing or destabilizing, as measured by survey data. The paper concludes that it is impossible that exchange rates have been excessively variable—as, for example, when there are speculative bubbles—but that if policymakers try systematically to exploit their credibility in order to stabilize exchange rates, they may see their current credibility vanish.

Capital Controls and the Timing of Exchange Regime Collapse

Daekuen Park and **Jeffrey D. Sachs**
Working Paper No. 2250
May 1987
JEL Nos. 431, 441

This paper investigates the nature of balance-of-payments crises in regimes with capital controls. We assume that households manage their consumption and asset portfolios to maximize intertemporal utility. Our main result is that capital controls are effective in delaying, but not preventing, a breakdown of a fixed exchange rate regime in the presence of money-financed fiscal deficits.

Efficient "Myopic" Asset Pricing in General Equilibrium: A Potential Pitfall in Excess Volatility Tests

Willem H. Buiter
Working Paper No. 2251
May 1987
JEL Nos. 313, 211

Excess volatility tests for efficiency in the financial market maintain the hypothesis of risk neutrality. This permits the specification of the benchmark-efficient market price as the present discounted value of expected future dividends. By departing from the risk-neutrality assumption in a stripped-down version of Lucas's general equilibrium asset pricing model, I show that asset prices determined in a competitive asset market and efficient by construction nevertheless can violate the variance bounds established under the assumption of risk neutrality. This can occur even without the problems of nonstationarity (including bubbles) and finite samples. Standard excess volatility tests are joint tests of market efficiency and risk neutrality. Failure of an asset price to pass the test may be caused by the absence of risk neutrality rather than by market inefficiency.

The Insensitivity of Consumption to News about Income

Kenneth D. West
Working Paper No. 2252
May 1987
JEL No. 131

This paper uses a variance bounds test to determine whether consumption is so sensitive to news about income that it is inconsistent with a standard permanent-income model. The maintained hypothesis is that income has a unit root.

If anything, consumption turns out to be less sensitive than the model would predict. This finding is robust to the representative consumer who has private information about his future income that the econometrician does not have. It is also robust to wealth shocks and to transitory consumption. Future research on the model probably should allow for factors that tend to make consumption smooth.

Implicit Estimates of Natural, Trend, and Cyclical Components of Real GNP

Charles R. Nelson
Working Paper No. 2253
May 1987
JEL No. 130

Estimates of the natural, or full-employment, level of real GNP usually have been obtained by statistical detrending procedures that assume independence between trend and cycle. This paper presents an alternative approach that says that the natural level should be measured in the context of a macro model. If the quantity equation holds with money exogenous, and if the price level is sticky, then observed real GNP will reflect both nominal observed shocks and real unobserved shocks (shifts in the natural level). The path of the natural level is then implicit in the data, given the model. I calculate paths of the natural level of U.S. real GNP and the resulting business cycle.

The Stochastic Properties of Velocity: A New Interpretation

Michael D. Bordo and **Lars Jonung**
Working Paper No. 2255
May 1987
JEL Nos. 311, 312, 132

A number of recent studies have concluded that velocity for the United States for the past century displays the characteristics of a random walk without drift. In this study, we confirm this result for four other countries for which we have over a century of data: Canada, the United Kingdom, Sweden, and Norway.

One implication of a random walk is that past changes in velocity cannot be used to predict future changes. However, this does not mean that past changes in variables that are important determinants of velocity (according to economic theory) cannot be used to predict future changes. In this study, we find that past changes in the traditional determinants of velocity—permanent income and interest rates, as well as a number of institutional variables—can be used to predict future changes in velocity.

Unions and Efficiency in Private Sector Construction: Further Evidence

Steven G. Allen
Working Paper No. 2254
May 1987

Previous studies that used micro data to estimate the impact of unions on productivity in construction in the early 1970s found that productivity was higher for union than for nonunion contractors in the private sector. The validity of these studies has been questioned in light of the declining market share of union contractors. This study reexamines union-nonunion productivity differences for a sample of retail stores and shopping centers built in the late 1970s. It finds that square footage put in place per hour is 51 percent greater for union than for nonunion contractors.

Without data on wage rates by occupation, I can gauge the impact of unions on efficiency only by looking at how they affect costs, profit rates, and prices. This study finds no difference in mean cost per square foot between union and nonunion contractors and offers mixed econometric evidence on translog cost functions. There is no difference in profit rates or prices between union and nonunion contractors in this sample.

Future Social Security Financing Alternatives and National Saving

Michael J. Boskin
Working Paper No. 2256
May 1987
JEL Nos. 320, 915

While the short-run financial status of Social Security is secure, its long-run financial status is very uncertain. The retirement and disability portion of the system (OASDI) shows a long-run actuarial deficit under the Social Security Administration's intermediate economic and demographic forecasts. Hospital Insurance (HI) is expected to run a large deficit beginning in the 1990s.

OASDI is projected to accrue a very large surplus over the next 30 years, peaking at almost 30 percent of GNP. Social Security has never accrued a surplus this large. It may well be dissipated for other purposes, such as to bail out HI, to fund other programs, to raise benefits, or to cut taxes. These alternatives may affect net national saving directly, because Social Security surpluses or deficits are part of the government sector's saving, or indirectly through their effects on private saving or the non-Social Security part of the federal government budget.

This paper documents how various systematic deviations from, or return to, pay-as-you-go financing of the Social Security system may affect net national saving. Under base case assumptions of the non-Social Security deficit, a constant net private saving rate of 6 percent, and long-run budget balance in the state and local government sector, the Social Security deficit offsets 40 percent of other net national saving over the Social Security Administration's 75-year projection period. In the first 25-year subperiod, the Social Security surplus adds one-sixth to other net national saving; in the second subperiod, it offsets almost one-half of other saving; and in the third 25 years, it offsets five-sixths of other net national saving.

Of course, private saving may respond to changes in Social Security's funding as may the non-Social Security balance in the federal budget. This paper presents several alternative scenarios, such as benefits increasing or taxes falling during the OASDI surplus period, various stylized rules concerning the non-Social Security budget deficit, and separate balancing of HI via outlay reductions or tax increases.

The results indicate that OASDI may affect net national saving substantially. For example, if benefits ratchet up during what would have been the period of the OASDI surplus, the OASDI system subsequently may offset virtually all of remaining net national saving. On the other hand, if HI is brought into balance and the OASDI surplus is allowed to accrue, Social Security will offset only about 4 percent of other net national saving.

Changes in private saving may accentuate or ameliorate the swings in the net national saving rate generated by the future financing of OASDI, but the alternative financing options will be an important determinant of net national saving, and therefore of private domestic investment and international capital flows.

Social Security Benefits: An Empirical Study of Expectations and Realizations

B. Douglas Bernheim
Working Paper No. 2257
May 1987
JEL Nos. 915, 918

I use data from the Retirement History Survey to study the accuracy of preretirement expectations of Social Security benefits. My major findings are: (1) Survey responses to questions about expected benefits are reasonably noisy. However, when one filters out the noise properly, reported forecasts appear to explain roughly 60 percent of the variance in realizations. (2) Consumers do not form expectations on the basis of all available information. Proper adjustment of forecasts for information contained in concurrent Social Security entitlements could reduce the residual forecast error variance by roughly 15 percent. The potential gains from incorporating other information are minimal. (3) Individuals do not ignore or forget information that they have used in the past, and they tend to form all expectations on the basis of the same information. (4) Expectations are highly accurate, given the information that people do use. Extreme optimism is uncommon. Surprisingly, expectations are not abnormally inaccurate during periods of rapid legislative change. (5) Of various population subgroups, widows and single women tend to make both the most conservative and the most accurate forecasts. Married men are the least conservative and least accurate. Accuracy and conservatism are not systematically related to wealth or education. Finally, individual behavior appears to conform more closely to the predictions of theory as retirement approaches.

Testing Ricardian Neutrality with an Intertemporal Stochastic Model

Leonardo Leiderman and **Assaf Razin**
Working Paper No. 2258
May 1987

This paper develops and estimates a stochastic-intertemporal model of consumption behavior and uses it to test a version of the Ricardian-equivalence proposition with time-series data. We specify two channels that may give rise to deviations from this proposition: finite horizons and liquidity constraints. In addition, the model incorporates explicitly the roles of taxes, substitution between public and private consumption, and different degrees of consumer goods' durability. The evidence, based on data for Israel in the first half of the 1980s, supports the Ricardian neutrality specification, yielding plausible estimates for the behavioral parameters of the aggregate consumption function.

Nominally Denominated Sovereign Debt, Risk Shifting, and Reputation

Herschel I. Grossman and **John B. Van Huyck**
Working Paper No. 2259
May 1987
JEL No. 311

This paper analyzes a reputational equilibrium in a model in which nominally denominated sovereign debt shifts risk associated with the unpredictability of tax revenues from the sovereign to its lenders. The analysis answers the following questions: Why would a sovereign refrain from inflating when faced with servicing a large quantity of nominal debt? If a sovereign does not plan to use inflation to repudiate its nominal debts, why would it want to issue nominal debt in the first place? What are the distinguishing features of those sovereigns who are willing and able to issue nominal debts?

Who Should Learn What from the Failure and Delayed Bailout of the ODGF?

Edward J. Kane
Working Paper No. 2260
May 1987

In March 1985, the failure of the Ohio Deposit Guarantee Fund (ODGF) sent shock waves reverberating through the financial world. This episode is popularly interpreted as evidence of the dangers of both private deposit insurance and continuing financial deregulation. This paper argues that policies of financial deregulation played little role in the ODGF insolvency. Instead, the failure of the ODGF was a failure of government regulation, rooted in inadequacies in the ODGF information and enforcement systems.

The ODGF may be conceived of as the Federal Savings and Loan Insurance Corporation writ small. Both agencies share many of the same structural imbalances: large, unresolved losses; explicitly mispriced and underreserved services; inadequate information and monitoring systems; insufficient disciplinary powers; and a susceptibility to political pressures to forbear.

Doctors perform autopsies on dead patients to improve their ability to protect living ones. This paper's autopsy of the institutional corpse of the ODGF focuses on the kinds of disturbances that transform structural imbalances into a full-fledged crisis. The research underscores the way that deceptive accounting and underfinanced insurance funds contain crisis pressures in the short run by setting the stage for more severe problems down the line. As financial markets approach more and more closely the perfect and complete markets beloved by finance theorists, the amount of time that can be bought by policies that merely defer crisis pressures is shrinking and becoming hard to use productively.

Tariffs, Employment and the Current Account: Real Wage Resistance and the Macroeconomics of Protectionism

Sweder van Wijnbergen
Working Paper No. 2261
May 1987

Using a standard, complete specialization model of a small, open economy within a rigorous framework of intertemporal optimization with contract-based wage rigidity, I show that permanent tariffs may lead to a current account (CA) *deterioration* and a *fall* in employment. This contradicts most of the literature on macroeconomic effects of import tariffs. This will always be the case if the economy is strong enough. The crucial factor in this complete reversal of standard results is the impact of tariffs on domestic real product wages via wage indexation. Temporary tariffs will have a less negative impact on the CA, or potentially even a positive impact, because they increase the consumption rate of interest (the terms at which future consumption can be traded for current consumption) and so increase private savings.

I also present extensions of this work directed toward incorporating a more general production structure, investment, and the use of tariff revenues to provide wage subsidies.

Excess Capacity, Monopolistic Competition, and International Transmission of Monetary Disturbances

Lars E. O. Svensson and **Sweder van Wijnbergen**
Working Paper No. 2262
May 1987

We develop a stochastic, two-country, neoclassical rational expectations model with sticky prices—optimally set by monopolistically competitive firms—and possible excess capacity. We use this model to examine international spillover effects on output of monetary disturbances. The Mundell-Fleming model predicts that monetary expansion at home leads to recession abroad. In contrast, we find that spillover effects of monetary policy may be either positive or negative, depending upon whether the *inter*temporal elasticity of substitution in consumption exceeds the *intra*temporal elasticity of substitution. In addition, we use the model to determine nominal and real interest rates, exchange rates, and other asset prices.

Longitudinal Analysis of Strike Activity

David Card
Working Paper No. 2263
May 1987
JEL No. 832

This paper presents evidence on two aspects of strike activity associated with the renegotiation of union contracts: the effects of the characteristics of contracts on probabilities of dispute, and the effects of lagged strike outcomes on the incidence and duration of subsequent disputes. The empirical results show that strike probabilities are higher following a longer contract, and lower in situations of limited reopening. Strike probabilities are also higher in summer and fall than in winter and spring. Finally, strike probabilities are significantly affected by lagged strike outcomes. Relative to a peaceful settlement, strike probabilities are ten percentage points higher following a strike of two weeks or less, and five to seven percentage points lower following a longer dispute.

Investment under Uncertainty: Theory and Tests with Industry Data

Robert E. Hall
Working Paper No. 2264
May 1987
JEL No. 641

Under the assumption of constant returns to scale, there is a very simple and easily tested condition for optimal investment under uncertainty. The test requires no parametric assumptions about technology and no assumptions about the competitiveness of the output market. The condition is that the expected marginal revenue product of labor equals the expected rental price of capital. The condition implies a certain invariance property for a modified version of Solow's productivity residual. Tests of the invariance property for U.S. industry data give very strong rejection in quite a few industries. The interpretation of rejection is either that the technology has increasing returns (possibly because of fixed costs) or that firms systematically overinvest.

Consumption

Robert E. Hall
Working Paper No. 2265
May 1987
JEL No. 131

Macroeconomic research on consumption has been influenced profoundly by rational expectations. First, rational expectations with the hypothesis of constant expected real interest rates implies that consumption should evolve as a random walk. Much of the research of the past decade has been devoted to testing the random walk hypothesis and to explaining its failure. Three branches of the literature have developed:

The first relies on the durability of consumption to explain deviations from the random walk property. The second invokes liquidity constraints that block consumers from the credit market transactions needed to make consumption follow a random walk when income fluctuates. The third branch dispenses with the assumption that expected real interest rates are constant. It attempts to explain deviations from the random walk in terms of intertemporal substitution.

Pensions and Firm Performance

Steven G. Allen and **Robert L. Clark**
Working Paper No. 2266
May 1987

This paper examines how pension plans affect employee behavior and firm performance. Theoretically, the impact of pensions on firm performance cannot be predicted. Firms with pensions should have lower turnover rates and more efficient retirement decisions; their employees should be less likely to shirk. On the other hand, pension compensation is not very closely linked to worker performance, and there is some risk that pension compensation causes turnover at the firm to fall too much.

The evidence indicates that wages do not seem to fall with pension compensation and that profit rates are not affected by pension coverage. This suggests that pension coverage is associated with higher productivity; this proposition is supported by indirect evidence on pensions, turnover, and productivity, but not by direct tests of how pension coverage and productivity are correlated.

The Decline of Unionization in the United States: What Can Be Learned from Recent Experience?

Henry S. Farber
Working Paper No. 2267
May 1987
JEL No. 830

This paper investigates the dramatic decline in unionization over the last decade in the context of a supply/demand model of union status. Data from surveys conducted in 1977 and 1984 are used to decompose the decline into a drop in the demand for union representation and a drop in the supply of union jobs relative to demand. I find that there has been a substantial drop in demand that can be accounted for by an increase in the job satisfaction of nonunion workers and a decrease in nonunion workers' beliefs that unions improve wages and working conditions. I also find that there has been a substantial drop in the supply of union jobs relative to demand that is attributed to an increase in employer resistance to unionization. Increased foreign and increased nonunion domestic competition (particularly in deregulated industries) are cited as the likely key underlying causes of these changes.

Stabilization with Exchange Rate Management under Uncertainty

Allen Drazen and **Elhanan Helpman**
Working Paper No. 2268
May 1987
JEL No. 431

Stabilization programs in open economies typically have two stages. First, the rate of currency devaluation

is reduced, but the fiscal adjustment does not eliminate the fiscal deficit. This causes growth of debt and loss of reserves, making a future policy change necessary. Only later, at a second stage, is there either an abandonment of exchange rate management or a large cut in the fiscal deficit.

We study how different second-stage policy changes affect economic dynamics during the first stage. These policy changes include tax increases, budget cuts on traded and nontraded goods, and increases in the growth rate of money. Under certainty about the timing and nature of a switch, current account developments provide information about which policy instrument is expected to be used for stabilization. Uncertainty about the timing of a stabilization is important in explaining phenomena such as continuous reserve losses and the possibility that a policy change is accompanied by a surprise discrete devaluation rather than a run on reserves.

Regulation and the Provision of Quality to Heterogeneous Consumers: The Case of Prospective Pricing of Medical Services

Robin Allen and **Paul Gertler**
Working Paper No. 2269
May 1987
JEL No. 913

This paper analyzes the welfare implications of fixed price regulation. It uses a model in which consumers are heterogeneous and a firm can endogenously quality-discriminate. The motivation for this analysis is the current move of third party payers (governmental and private insurers) toward prospective pricing of medical services. Our major result is that prospective pricing causes a distributional welfare loss. Specifically, in our model prospective pricing induces a profit-maximizing medical care provider to simultaneously provide a *smaller* than socially optimal level of quality to more severely ill patients and, surprisingly, a *greater* than socially optimal amount of quality to less severely ill patients. Further, the distributional welfare loss does not disappear when ethically motivated deviation from profit maximization is allowed.

The inefficient distribution of quality occurs because prospective payment regulation fixes the price across patients with different severities of illness but allows providers to quality-discriminate. More complicated DRG pricing rules do not avoid this problem completely. Alternatively, vertical integration of third party payers into the direct provision of medical care bypasses the problem completely. This implies that the recent proliferation of vertically integrated health care organizations, such as health maintenance organizations, preferred provider organizations, and managed care plans by self-insuring employers, improve welfare.

The Optimal Collection of Seigniorage: Theory and Evidence

N. Gregory Mankiw
Working Paper No. 2270
May 1987
JEL Nos. 311, 321

This paper presents and tests a positive theory of monetary and fiscal policy. The government chooses the rates of taxation and inflation that minimize the present value of the social cost of raising revenue, given exogenous expenditure and an intertemporal budget constraint. The theory implies that nominal interest rates and inflation are random walks. It also implies that nominal interest rates and inflation move together with tax rates. U.S. data from 1952 to 1985 provide some support for the theory.

Interindustry Wage Differences and Theories of Wage Determination

William T. Dickens and **Lawrence F. Katz**
Working Paper No. 2271
June 1987
JEL Nos. 821, 832

Numerous studies have shown large differences in wages for apparently similar workers across industries. These findings pose a challenge to standard models of labor market behavior. A problem with past studies of industry wage differences is that they have failed to distinguish between union and nonunion workers. Many economists may expect union workers' wages to be set in a noncompetitive fashion but would be surprised if nonunion wages were.

We examine the differences in wages across industries for both union and nonunion workers. We find that even after controlling for a wide range of personal characteristics and geographic location, large wage differences persist for both union and nonunion workers. Furthermore, the premiums of union and nonunion workers are highly correlated. We review past studies that demonstrate that industry wage premiums are also highly correlated across countries and have been very similar over many decades. We present new evidence that the wages of different occupations are highly correlated across industries—that is, if any occupation in an industry is highly paid, all occupations are. We also review the evidence that suggests that people who move from low- to high-paying industries receive a large fraction of the industry wage premium and that those who move from high- to low-paying industries lose the premium. Finally, we review the evidence on the correlates of industry wage differences. Quit rates, human capital

variables, capital-labor ratios, and market power measures are all positively correlated with industry wage differences individually, although the data are not adequate to determine their independent contributions in multiple regression.

On the basis of all the evidence, we conclude that standard labor market clearing models cannot easily explain all the facts. We discuss several alternative models, including efficiency wage and collective action threat models. We find these to be more consistent with the facts, although some troubling problems remain.

Housing Finance Imperfections and Private Saving: A Comparative Simulation Analysis of the United States and Japan

Fumio Hayashi, Takatoshi Ito, and **Joel Slemrod**
Working Paper No. 2272
June 1987
JEL No. 321

This paper presents a life-cycle simulation analysis of the interaction among savings decisions, housing purchase decisions, and the tax system in the United States and Japan. We first document the stylized fact that the typical Japanese household purchases a house later in the life cycle with a higher down payment ratio than its U.S. counterpart. We then construct a life-cycle simulation model that includes the housing purchase decision and uses it to compare the behavior of typical U.S. and Japanese households. The Japanese household is induced to save more early in the life cycle in order to meet the higher down payment requirement. The saving-consumption pattern resulting from a higher growth rate contributes to a higher *aggregate* saving rate in Japan than in the United States. However, the contribution of the early saving induced by the down payment requirement seems to be too small to explain a large differential in the saving rates of the two countries. The model can generate the observed saving rate in Japan only if we introduce a bequest motive. Finally, tax reform concerning deductibility of mortgage interest payments or the tax-exempt status of interest income has a small impact on the aggregate saving rate in either country. For example, the introduction of tax-exempt saving in the United States would increase the saving rate by only 1.5 percent.

The Impact of Firm Acquisitions on Labor

Charles C. Brown and **James L. Medoff**
Working Paper No. 2273
June 1987
JEL Nos. 820, 520

In this paper, we investigate the changes in wages and employment following a firm's involvement in an acquisition, compared with firms not involved in acquisitions. Contrary to the tenor of popular press coverage of acquisitions, which focuses on hostile takeovers of large firms, we find small (and sometimes positive) changes in wages and employment following an acquisition.

Is the United States a Spendthrift Nation?

Robert E. Lipsey and **Irving B. Kravis**
Working Paper No. 2274
June 1987
JEL No. 220

The belief that the United States is a nation of spendthrifts, unwilling to provide for the future, rests on observations of particular narrow definitions of capital formation, on the use of nominal values that ignore international differences in the relative prices of capital goods, and on concentration on the ratio of capital formation to total output rather than on the amount of capital formation per capita.

By a broad definition of capital formation, the United States has been investing a proportion of its gross output in the last decade and a half that is not far below that of other developed countries, even in nominal terms. In world prices, or real terms, U.S. capital formation was a higher proportion of output than in nominal terms.

Real gross capital formation per capita in the United States, even by a narrow definition of capital formation, was above the average for developed countries. By a broad measure of capital formation, few countries surpassed the United States in per capita real capital formation.

On the Definition and Magnitude of Recent Capital Flight

Robert E. Cumby and **Richard M. Levich**
Working Paper No. 2275
June 1987
JEL No. 440

This paper presents a survey of alternative definitions of capital flight and empirically estimates capital flight using a common database. At the conceptual level, we argue that the definition of capital flight requires a somewhat arbitrary distinction between normal capital flows and those representing capital flight. At the empirical level, our results illustrate the range of estimates of capital flight that are possible and how alternative definitions or databases contribute to the dispersion of estimates. Our results show that for some

countries, differences in definitions or databases may have substantial effects, causing some estimates of capital flight to be positive and others negative.

We argue that an appropriate definition of capital flight is one that is consistent with the kinds of economic questions under consideration. In theory, capital flight should be viewed within the context of a general equilibrium model. When this is done, capital flight will appear to be a symptom of underlying economic forces rather than a cause of national welfare losses.

Developing the ECU Markets: Perspectives on Financial Innovation

Richard M. Levich
Working Paper No. 2276
June 1987
JEL No. 430

The European Currency Unit (ECU) was officially introduced in March 1979 and has joined the ranks of innovative financial products that are rapidly appearing. This paper explores the properties of the ECU and analyzes those characteristics of the ECU, and products denominated in ECU, that offer value added. Changes in communications and information technology, changes in the regulatory climate, and changes in the macroeconomic environment have generally encouraged recent financial innovations. We argue that the ECU has gained an edge on its component currencies because of its portfolio properties, its role in reducing transaction costs, the role of the European Monetary System, and trading factors peculiar to the ECU. Private participants should continue to gravitate toward the ECU as a useful vehicle to fulfill the services of money.

Financial Innovations in International Financial Markets

Richard M. Levich
Working Paper No. 2277
June 1987
JEL No. 430

The central theme of this paper is that financial innovation has become a major force affecting the United States and other developed economies. The common features of the process include: product innovation; securitization; liberalization of domestic financial market practices; globalization of markets; and increased competition among financial institutions. The paper offers a review of the product and process changes that have occurred in international financial markets, an analysis of the factors leading to these changes, and an examination of the implications for both financial market participants and macroeconomic policymakers.

Delay in Reporting Acquired Immune Deficiency Syndrome (AIDS)

Jeffrey E. Harris
Working Paper No. 2278
June 1987
JEL No. 910

As of March 31, 1987, the U.S. Centers for Disease Control had reported 33,350 cases of acquired immune deficiency syndrome (AIDS). Yet by that date, physicians actually had diagnosed 42,670 cases. The difference arises from significant delays in the reporting of AIDS cases to public health authorities. An estimated 70 percent of cases are reported two or more months after diagnosis; about 23 percent are reported seven or more months later; and about 5 percent take more than three years to come in. Moreover, the probability distribution of delays has been shifting to the right, with the median delay increasing by 0.6 months since mid-1986. From the data on reported cases and the estimated probability distribution of reporting delays, I reconstruct the actual incidence of AIDS from January 1982 through March 1987. The doubling time of the epidemic fell from about six months in 1982 to 15-16 months in 1986.

The Significance of Tax Law Asymmetries: An Empirical Investigation

Rosanne Altshuler and **Alan J. Auerbach**
Working Paper No. 2279
June 1987
JEL No. 323

This study uses tax return data for U.S. nonfinancial corporations for 1971-82 to estimate the importance of restrictions on the ability of firms to use tax credits and to obtain refunds for tax losses. Our results suggest that the incidence of such unused tax benefits increased substantially during the early 1980s, although these increases were not attributable to increased investment incentives during that period.

Using estimates of a three-state (taxable, not taxable, or partially taxable) transition probability model, we calculate the effective tax rates on various types of investments undertaken by firms with different tax statuses. We confirm previous findings about the marginal tax rate on interest payments and that it is important to distinguish current tax payments from marginal tax rates in estimating the incentive to invest.

Effects of the Changing U.S. Age Distribution on Macroeconomic Equations

Ray C. Fair and **Kathryn M. Dominguez**
Working Paper No. 2280
June 1987
JEL No. 132

This paper examines the effects of the changing U.S. age distribution on various macroeconomic equations. The equations cover consumption, money demand, housing investment, and labor force participation.

We analyze seven age groups: 16–19, 20–24, 25–39, 30–39, 40–54, 55–64, and 65+. There seems to be enough variance in the age distribution data to allow for reasonably precise estimates of the effects of a number of age categories on the macro variables. The results show that, other things being equal, age groups 30–39 and 40–54 consume less than average, invest less in housing than average, and demand more money than average. The 55–64 age group consumes more and demands more money. If these estimates are correct, they imply that consumption and housing investment will be negatively affected in the future as more and more baby boomers enter the 30–54 age group. The demand for money will be positively affected.

If, as Easterlin argues, the average wage that an age group faces is negatively affected by the percentage of the population in that group, then the labor force participation rate of a group should depend on the relative size of the group. If the substitution effect dominates, then people in a large group should work less than average; if the income effect dominates, they should work more than average. Our results indicate that the substitution effect dominates for women 25–54 and that the income effect dominates for men 25–54.

Household Migration, Urban Growth, and Industrialization: The United States, 1850–1860

Richard H. Steckel
Working Paper No. 2281
June 1987
JEL No. 040

This paper uses a national sample of nearly 1600 households linked in the census manuscript schedules to investigate causes and consequences of migration to urban areas during the midst of America's industrial revolution. Although record linkage was limited to the subset of households that had at least one child in 1850, the data are relatively rich in socioeconomic information. A regional analysis of migration and occupational change shows that, while established households were generally mobile, they were extraordinarily reluctant to commit labor to urban-industrial pursuits. The evidence suggests that the presence of children, retraining costs, lack of control over fertility, risk aversion, and an unfavorable view of urban areas by rural residents contributed to their avoidance of cities and towns. The findings also contribute to debates over the compression of the wage structure and the extent of socioeconomic mobility.

The Effect of Family Background on Economic Status: A Longitudinal Analysis of Sibling Correlations

Gary Solon, Mary Corcoran, Roger H. Gordon, and **Deborah Laren**
Working Paper No. 2282
June 1987
JEL Nos. 850, 826

A number of previous studies have used sibling correlations to measure the importance of family background as a determinant of economic status. However, these studies have been biased by several flaws: failure to separate permanent from transitory status variation (including that from measurement error); failure to account for life-cycle stage; and overly homogeneous samples. This paper presents a methodology to address these problems and applies it to longitudinal data from the Panel Study of Income Dynamics. Our main conclusion is that family background appears to exert greater influence on economic status than earlier research has indicated.

Federal Assistance and Local Services in the United States: The Evolution of a New Federalist Fiscal Order

Robert P. Inman
Working Paper No. 2283
June 1987
JEL No. 320

The federalist fiscal structure of the United States has been evolving steadily toward the centralization of the financing of government services and transfers. Revenues are raised centrally and then transferred, via grants-in-aid, to state and local governments. This paper seeks to explain this movement toward centralized financing. It examines two alternative hypotheses. The first—that aid is allocated to correct market or political failures in the local public economy or to

equalize the provision of meritorious local public goods —generally fails to account for the distribution of federal aid over the past 30 years. The second hypothesis —that aid is allocated to ease the fiscal pressure in the state-local sector when, and only when, it is in the political interests of congressional representatives to do so —is supported by the recent data. Our current system of federal grants to state and local governments is a logical outcome of a congressional budget process that rewards the centralized financing and the localized provision of public goods and services.

The Effect of Public Sector Labor Laws on Collective Bargaining, Wages, and Employment

Richard B. Freeman and **Robert G. Valletta**
Working Paper No. 2284
June 1987
JEL No. 832

This paper examines the effect of the different states' legal environments for bargaining faced by public employees on wage and employment outcomes and on the extent of bargaining for union and nonunion employees. We use cross-section, within-city, and longitudinal analyses based on a newly derived data set of public sector labor laws.

We find that: (1) the legal environment is a significant determinant of the probability of collective bargaining coverage; (2) collective bargaining coverage raises wages and employment for covered employees; (3) a more favorable legal environment increases wages for all employees but substantially reduces employment for employees not covered by a contract, while slightly reducing employment for employees who are covered by a contract. We also find evidence of significant spillovers of union wage effects to noncovered departments. We conclude by focusing on the effects of two specific legal provisions—arbitration and strike-permitted clauses—on wages and employment.

Why Does Money Affect Output? A Survey

Olivier J. Blanchard
Working Paper No. 2285
June 1987
JEL Nos. 020, 130

One of the most difficult questions in macroeconomics is why movements in nominal money appear to have strong and lasting effects on real activity. This paper surveys the state of knowledge on the issue, with a focus on recent developments.

The paper starts by reviewing the evolution of thought from Keynes's emphasis on wages to the "wage price mechanism" of the early 1970s, as well as the facts on the relationships among money, prices, and output. From this review, it concludes that the intellectual crisis of the 1970s came not from the inability of the prevailing theory to explain the facts—which it had mostly right—but from the weakness of its theoretical foundations.

The paper then examines the reconstruction effort. Two alternative strategies have been followed. The first breaks with previous research and explores how far models based on perfect competition and imperfect information can go in explaining the effects of money on activity. This strategy has largely fizzled and its proponents have moved away from the money-output issue. On the other hand, the second strategy explores whether the many insights of previous research can be made more rigorous. It focuses on the potential role of imperfect competition in labor and goods markets; substantial progress has been made, but no grand synthesis has emerged, nor is one likely to in the foreseeable future.

The Cost of Capital in the United States and Japan: A Comparison

Albert Ando and **Alan J. Auerbach**
Working Paper No. 2286
June 1987
JEL Nos. 323, 441, 520

This paper uses data from financial statements for large samples of U.S. and Japanese nonfinancial corporations to estimate the return to capital in each country for 1967-83. Interpreting these as measures of the cost of capital, we find that the before-tax cost of corporate capital was higher for U.S. firms than for their Japanese counterparts, with the average gap potentially as high as 5.8 percentage points. The use of alternative measurement techniques alters the gap slightly but does not alter the basic finding. However, market returns in the two countries were much closer during the same period.

Certain potential explanations for the gap in returns are rejected by empirical evidence, including differences in corporate taxation, differences in borrowing, and differences in asset mix. This leaves three potential explanations: differences in risk; differences in the tax treatment of individual capital income; and imperfections in the international flow of capital.

International Policy Coordination: The Case of the Developing Country Debt Crisis

Jeffrey D. Sachs
Working Paper No. 2287
June 1987
JEL Nos. 430, 440

This paper reviews the management of the debt crisis to date and considers several possible alternative approaches for international cooperation in the future. The first part of the paper briefly reviews the scope of the crisis and some of the reasons for its onset. Then the paper describes the internationally coordinated policy responses to the crisis, as well as the conceptual underpinnings of this coordinated response. In the latter part of the paper, I describe some of the reasons for the incomplete success of the policy response and discuss several alternative measures for the future. The discussion emphasizes the possible merits of debt forgiveness in addition to debt reschedulings as an instrument for the future management of the debt crisis.

Intergenerational Altruism and Social Welfare: A Critique of the Dynastic Model

B. Douglas Bernheim
Working Paper No. 2288
June 1987
JEL Nos. 311, 321

In this paper I show that under relatively weak conditions, dynastic equilibriums are never welfare optimal. If a social planner sets policy to maximize a social welfare function, then, except in extreme cases in which the planner cares only about a single generation, successive generations will never be linked through altruistically motivated transfers. This suggests that the dynastic model is unsuited for normative analysis and, to the extent that governments actually behave in this manner, the model is also inappropriate for positive analysis. In addition I show that except in a few special cases, the planner's preferences are dynamically inconsistent. If the planner can resolve this inconsistency successfully, then the central result is somewhat modified.

Understanding the Real Estate Provisions of Tax Reform: Motivation and Impact

James A. Follain, Patric H. Hendershott, and **David C. Ling**
Working Paper No. 2289
June 1987
JEL Nos. 323, 932

Capital investment tax provisions have been changed numerous times in the last decade, with depreciation tax lives shortened in 1981 and lengthened ever since, and capital gains taxation reduced in 1978 and 1981 and now increased. The first part of this paper analyzes these changes and attributes a large part of them, including the 1986 Tax Act, to changes in inflation: tax depreciation schedules and capital gains taxation that look reasonable when the tax depreciation base is being eroded at 10 percent a year and an overwhelming share of capital gains is pure inflation take on a different appearance when inflation is only 4 percent.

The remainder of the paper critiques the typical project model used to compute impacts of tax changes on real estate, and reports simulation results using a modified model.

Pricing Mortgages: An Interpretation of the Models and Results

Patric H. Hendershott and **Robert VanOrder**
Working Paper No. 2290
June 1987
JEL No. 313

Mortgages, like all debt securities, can be viewed as risk-free assets plus or minus contingent claims that can be viewed as options. The most important options are: prepayment, which is a call option giving the borrower the right to buy back the mortgage at par; and default, which is a put option giving the borrower the right to sell the house in exchange for the mortgage. This paper reviews and interprets the large and growing body of literature that applies recent results of option pricing models to mortgages. We also provide a critique of the models and suggest directions for future research.

The Timing of Retirement: A Comparison of Expectations and Realizations

B. Douglas Bernheim
Working Paper No. 2291
June 1987
JEL No. 918

In this paper, I use data from the Social Security Administration's Retirement History Survey (RHS) to study the accuracy of expectations concerning the timing of retirement. The RHS is ideally suited for this purpose, because it collects information on retirement plans and follows respondents through time so that one can identify actual dates of retirement. The data are consistent with the view that, when asked to report an expected date of retirement, individuals name the most likely date (that is, a mode rather than a mean).

Furthermore, these forecasts are highly accurate. There is very little evidence that individuals' expectations were systematically biased during periods in which Congress legislated large real increases in Social Security benefits. This suggests either that the benefit increases were anticipated, or that unanticipated changes in benefits have little effect on retirement. The paper also describes differences in the accuracy of expectations by population subgroup.

Federal Deductibility of State and Local Taxes: A Test of Public Choice by Representative Governments

Lawrence B. Lindsey
Working Paper No. 2292
June 1987

This paper considers the impact of federal deductibility on the level and composition of state and local taxes. It also considers the importance of deductibility in determining the voting of state congressional delegations on the Tax Reform Act of 1986. I place particular emphasis on the mechanism by which voter preferences are translated into public choices and consider alternative measures of tax price: each represents a different model of voter behavior. The paper concludes that tax levels are determined by an equal weighting of voters, not by a planning mechanism that minimizes the cost of revenue statewide. It also concludes that the issue of state and local deductibility played a negligible role in determining congressional votes on the recent tax reform bill.

International Coordination of Trade Policy

J. David Richardson
Working Paper No. 2293
June 1987
JEL No. 420

The General Agreement on Tariffs and Trade (GATT) is a coordination compact. Tariff bindings illustrate a mechanism for making commitments credible. Reciprocity illustrates a means for redistributing cooperative gains. The Most-Favored-Nation (MFN) principle illustrates an attempt to keep coordination "virtuous" (cooperative) rather than "vicious" (collusive).

Yet international trade policy coordination clearly has become more difficult. The postwar hegemonic environment has evolved into a more general strategic environment with several influential governments and blocs. Such coalitions are a natural evolutionary development, yet one that inexorably undermines MFN. Economic developments make a country's comparative advantage increasingly sensitive to sectorial predation by others, especially through subsidies and performance requirements aimed at mobile multinational firms, which are themselves internationally coordinated. Immobile workers and others correspondingly bear the burdens of sharper adjustments and look to government to turn its trade policy narrowly inward in order to ease their load. Such "domestication" of trade policy is the antithesis of international coordination and runs the risk of creating a strategic paralysis of recurring unproductivity.

What changes might restore the liberalizing impetus of trade policy coordination? I consider several in the paper. One is extension of the "Codes" approach to multilateral negotiations under the GATT, especially to Subsidies and Safeguards.

Many reflections in the paper are framed in categories from recent economic thinking about policy coordination in "strategic" environments—those with small numbers of self-consciously interdependent agents. The paper argues that these are the appropriate environments in which to analyze international coordination of trade policy.

Private Saving in the United States: 1950-85

Patric H. Hendershott and **Joe Peek**
Working Paper No. 2294
June 1987

The official personal and private saving statistics contain a number of conceptual measurement errors. In this paper, we develop and analyze personal and private saving measures adjusted for the difference between income tax payments and actual liabilities, saving via net purchases of government pension assets (including Social Security) and consumer durables, and that part of aftertax interest income attributable to inflation.

We find that the adjusted personal and private saving rates in recent years are only slightly below their post-1950 averages, not at all-time lows as reported in the official NIPA statistics. Furthermore, over the past 35 years, personal saving has been more volatile and corporate saving less volatile than the official measures. Also, the inflation premium corrections remove the negative correlation between personal and corporate saving. That is, the often observed negative correlation between the official measures of personal and corporate saving is caused solely by measurement errors in the two series. Finally, the decrease in federal government saving in the 1980s is a continuation of a 30-year trend, not a one-time aberration.

Characteristics of Hostile and Friendly Takeover Targets

Randall Mørck, Andrei Shleifer, and **Robert W. Vishny**
Working Paper No. 2295
June 1987
JEL No. 521

Compared to an average *Fortune* 500 firm, a target of a hostile takeover is smaller, older, and has a lower Tobin's *Q*, invests less of its income, and is growing more slowly. The low *Q* seems to be an industry-specific rather than a firm-specific effect. In addition, a hostile target is less likely to be run by a member of the founding family, and has lower officer ownership, than the average firm does.

In contrast, a target of a friendly acquisition is smaller and younger than an average *Fortune* 500 firm, and has comparable Tobin's *Q*s and most other financial characteristics. Friendly targets are more likely to be run by a member of the founding family, and have higher officer ownership, than the average firm. The decision of a CEO with a large stake and/or with a relationship to a founder to retire often precipitates a friendly acquisition.

These results suggest that the motive for a takeover often determines its mood. Thus, disciplinary takeovers more often are hostile, and synergistic ones more often are friendly.

Uncertainty and Liquidity

Alberto Giovannini
Working Paper No. 2296
June 1987
JEL Nos. 311, 313

This paper studies a model in which money is valued for the liquidity services it provides in the future. These liquidity services cannot be provided by any other asset. Changes in expectations of the value of future liquidity services affect the desired proportions of money and other assets in agents' portfolios. As a result, they change nominal interest rates and real stock prices.

The paper concentrates on the effects of stochastic fluctuations in the distribution of exogenous shocks. I find that changes in dividend risk have effects opposite those in standard dynamic portfolio models without money. Furthermore, shifts between money and other assets that are driven by precautionary liquidity demand make nominal interest rates capture information about the uncertainty in the economy more accurately than any other prices in the asset markets do.

The Efficiency of Investment in the Presence of Aggregate Demand Spillovers

Andrei Shleifer and **Robert W. Vishny**
Working Paper No. 2297
June 1987
JEL No. 131

In the presence of aggregate demand spillovers, an imperfectly competitive firm's profit is positively related to aggregate income, which in turn rises with profits of all firms in the economy. This pecuniary externality makes a dollar of a firm's profit raise aggregate income by more than a dollar, since other firms' profits also rise, and in this way gives rise to a "multiplier." Since such "multipliers" are ignored by firms making investment decisions, privately optimal investment choices under uncertainty will not be socially optimal in general. Under reasonable conditions, private investment is too low.

An Analysis of Fiscal Policy under Operative and Inoperative Bequest Motives

Andrew B. Abel
Working Paper No. 2298
June 1987
JEL Nos. 320, 915

This paper presents a general equilibrium model with logarithmic preferences and technology. If the nonnegativity constraint on bequests is strictly binding, then the bequest motive is characterized as inoperative. After determining the conditions for operative and inoperative bequest motives, the paper examines the effect of pay-as-you-go Social Security on the stochastic evolution of the capital stock. If the nonnegativity constraint on bequests is strictly binding, then an increase in Social Security reduces the unconditional long-run expected capital stock. If the Social Security taxes and benefits are large enough, then the nonnegativity constraint ceases to bind, and further increases in Social Security have no effect. This paper extends previous analyses by examining bequest behavior outside the steady state and by allowing a nondegenerate cross-sectional distribution in the holding of capital.

Are User Fees Regressive? The Welfare Implications of Health Care Financing Proposals in Peru

Paul Gertler, Luis Locay, and **Warren Sanderson**
Working Paper No. 2299
June 1987

In this paper, we derive a discrete model of the demand for medical care from a theoretical model that implies a natural interrelation between price and income. We show that in the context of a discrete choice model, if health is a normal good then the price elasticity of the demand for health care must decline as income rises. This implies that the models in previous discrete choice studies that restrict the price effect to be independent of income are misspecified.

We estimate the model using data from a 1984 Peruvian survey, and a parsimonious flexible functional form. Unlike previous studies, this paper shows that price plays a significant role in the demand for health care and that demand becomes more elastic as income falls. This implies that user fees would reduce the access to care for the poor proportionately more than for the rich. Our simulations show that user fees can generate substantial revenues, accompanied by substantial reductions in aggregate consumer welfare, with the burden of the loss on the poor. These results demonstrate that undiscriminating user fees would be regressive in terms of both access and welfare.

Monetary Policy Lessons of Recent Inflation and Disinflation

William Poole
Working Paper No. 2300
June 1987

The decline of velocity in the 1980s is a surprise that should not have been. Economists unwisely relied on a velocity trend of 3 percent per year when they should have insisted on an economic explanation for rising velocity. An analysis of velocity and interest rates from 1915 to 1986 suggests that the interest elasticity of money demand is substantially higher than previously thought. The postwar increase of rates, followed by a major decline of rates in the 1980s, explains velocity behavior. The large decline in velocity almost certainly would have caused severe economic problems if the Federal Reserve had not accommodated the decline through more rapid money growth.

Federal Reserve policy between October 1979 and October 1982 emphasized control of money growth. Money market behavior during this period, compared to periods before and after, provides strong evidence that the market sets interest rates on the basis of a sophisticated understanding of monetary policy. The evidence makes clear that the monetary authorities cannot use interest rates to provide information on the state of the economy unless they know the extent to which interest rates reflect expectations of future monetary policy.

Breath Testing and the Demand for Drunk Driving

Henry Saffer and **Frank Chaloupka**
Working Paper No. 2301
June 1987
JEL No. 913

This paper presents an empirical investigation of the effect of a preliminary breath test law on drunk driving behavior. A preliminary breath test law reduces the procedural problems associated with obtaining evidence of drunk driving and thus increases the probability that a drunk driver will be arrested. In 1985, only 23 states had a preliminary breath test law. According to the theory of deterrence, increasing the probability of arrest for drunk driving will reduce the future occurrence of this behavior. The data set employed to test the theory is a time series from 1980 to 1985 of cross sections of the 48 contiguous states. Four highway mortality rates are used as measures of drunk driving.

We estimate the effect of the breath test law using four independent variable models and 12 dummy variable models. We also estimate the four independent variable models using Leamer's specification test. The purpose of using these alternative specifications and Leamer's specification test is to examine the breath test coefficients for specification bias. The econometric results show that the passage of a breath test law has a significant deterrent effect on drunk driving. Simulations with these results suggest that if all states had a preliminary breath test law, highway mortality could be reduced by about 2000 deaths per year.

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