nomic Factors," by Patric H. Hendershott, 1988 (NBER Working Paper No. 2375)

1281. "Workers' Trust Funds and the Logic of Wage Profiles," by George A. Akerlof and Lawrence F. Katz, 1989 (NBER Working Paper No. 2548)

1282. "Trade Restrictions as Facilitating Practices," by Kala Krishna, 1989 (NBER Working Paper No. 1546)

1283. "Research and Development and Intraindustry Spillovers: An Empirical Application of Dynamic Duality," by Jeffrey I. Bernstein and M. Ishaq Nadiri, 1989 (NBER Working Paper No. 2002)

1284. "Risk, Uncertainty, and Exchange Rates," by Robert J. Hodrick, 1989 (NBER Working Paper No. 2429)

1285. "Bubbles, Fads, and Stock Price Volatility Tests: A Partial Evaluation," by Kenneth D. West, 1988 (NBER Working Paper No. 2574)

1286. "The Term Structure of Interest Rates and the Effects of Macroeconomic Policy," by Stephen J. Turnovsky, 1989 (NBER Working Paper No. 2902)

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81. "The Influence of Probability on Risky Choice: A Parametric Examination," by Joanna R. Baker, Pamela K. Lattimore, and Ann Dryden Witte, October 1989 (JEL No. 026)

Bureau Books

Understanding the Gender Gap

Understanding the Gender Gap: An Economic History of American Women, by Claudia Goldin, is available from Oxford University Press for $29.95.

Why do women earn less than men and have less opportunity for advancement, despite the fact that they have been entering the labor market in unprecedented numbers and with high skill levels? Goldin uses new data and innovative methods to show that women's economic status has evolved gradually over the last two centuries and that past conceptions of women workers are not easily discarded.

The book should be useful for economists, historians, sociologists, and lay readers who are interested in women's studies.

Goldin is associate director of the NBER's Program in Development of the American Economy. She also is a professor of economics at the University of Pennsylvania.

This volume may be ordered directly from Oxford University Press, 200 Madison Avenue, New York, NY 10016.

Current Working Papers

Individual copies of NBER Working Papers and Historical Factors in Long-Run Growth Working Papers are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies of Working Papers by sending $2.00 per copy to Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please make checks payable to the National Bureau of Economic Research, Inc. Please do not send cash.

Journal of Economic Literature (JEL) subject codes, when available, are listed after the date of the Working Paper. Abstracts of all Working Papers issued since July 1989 are presented below. For previous papers, see past issues of the *NBER Reporter.* Working Papers are intended to make results of NBER research available to other economists in preliminary form to encourage discussion and suggestions for revision before final publication. They are not reviewed by the Board of Directors of the NBER.

Historical Factors in Long-Run Growth

Buying the American Dream: Housing Demand in the United States in the Late Nineteenth Century

Allen C. Goodman and **Michael R. Haines**
Historical Working Paper No. 5
August 1989
JEL No. 042

This paper examines homeownership and housing demand for a sample of approximately 6800 urban industrial workers in the United States for 1889-90. Using data from the Sixth and Seventh Annual Reports of the U.S. Commissioner of Labor, we analyze housing demand as a two-part process: first, the "tenure choice" decision, whether to own or rent; and, second, how much of either type of housing to purchase. We estimate equations for tenure choice and renter demand, using the concept of expected income rather than current income. Data limitations did not permit estimation of owner demand.

The results indicate lower homeownership rates among American workers circa 1890 than later. Income, age of household head, region, industry, occupation, ethnicity, and family size and composition all had significant effects on ownership. Rental prices and value/rent ratios affected ownership in the expected directions. Partial and full elasticities calculated for renter demand reveal downward biases if only current income is used to estimate housing demand. The results indicate that modern housing demand theory performs well with historical data.

Consumer Behavior and Immigrant Assimilation: A Comparison of the United States, Britain, and Germany, 1889-90

Michael R. Haines
Historical Working Paper No. 6
August 1989
JEL Nos. 042, 044, 920

This paper uses household-level budget data from the 1889-90 U.S. Commissioner of Labor Survey to estimate the full Almost Ideal Demand System with demographic and other covariates. Price data are from the Aldrich Report of 1892. The purpose of this study is to make better use of the entire dataset by incorporating demographic variation and then examining whether the consumption patterns of immigrants and the native born were significantly different once the effects of total expenditure, prices, family composition, region of residence, industry, occupation, and age of household head were taken into account. I also compare Engel curves to those of households in Great Britain and Germany. Estimation of Engel curves and the full model (with prices) for six commodity categories (food, housing, clothing, fuel and lighting, liquor and tobacco, and "other" goods and services) revealed that differences across ethnic groups within the United States could be reduced but not eliminated by the effects of the covariates. The foreign born spent relatively more on food and on liquor and tobacco. Although differences by ethnicity existed, both British and German immigrants to the United States were closer in their consumption patterns to workers in the area of destination than to workers in the area of origin. Inclusion of prices did reduce the regional effects (within the United States) found in the Engel curves. Demographic effects were important. Food, housing, and fuel and lighting appeared to be necessities, while clothing, liquor and tobacco, and "other" goods and services were luxuries.

Economic Growth before 1860: Revised Conjectures

Thomas Weiss
Historical Working Paper No. 7
October 1989
JEL No. 042

The current view of U.S. economic growth before 1860 is based on conjectural estimates of output made by Paul David (1967). This paper sets forth new estimates of the farm labor force for 1800–60 and uses them to revise his conjectures about growth of per capita output. I produce an additional conjectural estimate based on recent evidence about manufacturing productivity.

The new estimates of the farm labor forces are lower for the years before 1830 by 10 to 15 percent, but higher for 1840, 1850, and 1860 by 5 to 9 percent. As a consequence, the farm work force grew more rapidly than was previously believed, and farm productivity grew more slowly.

The impact of the revisions varies by subperiod and is concentrated almost entirely in the middle 20 years. Because the advance in farm productivity was the major determinant of change in the conjectural estimates of per capita output, that series grows at a slower rate as well, especially from 1820–40. A refined estimate, which incorporates the recent evidence on manufacturing productivity, alters the picture somewhat, but still shows slower growth and more gradual acceleration of output per capita than is revealed in the David series.

NBER Working Papers

How Elastic Is the Government's Demand for Weapons?

Frank R. Lichtenberg
Working Paper No. 3025
July 1989
JEL No. 322

I make inferences about the elasticity of the government's demand for specific weapons by analyzing the statistical relationship between quantity and cost revisions across the population of major weapons systems, using data contained in the Pentagon's Selected Acquisition Reports. The cost revisions in part are caused by the arrival of technological information generated in the course of research and development. When I standardize the data by program base year, I find that the elasticity of demand is .55 and is significantly different from both zero and unity. Thus, the government's demand for specific weapons is inelastic, but not perfectly inelastic. The estimates also imply that weapons acquisition is characterized by increasing returns: the mean and median values of the elasticity of total cost with respect to quantity are .78 and .72, respectively.

Formal Employee Training Programs and Their Impact on Labor Productivity: Evidence from a Human Resources Survey

Ann P. Bartel
Working Paper No. 3026
July 1989
JEL Nos. 824, 825

Although economic models of training decisions are framed in terms of a company's calculation of the costs and benefits of such training, empirical work never has been able to test this model directly on company behavior. This paper uses a unique database to analyze the determinants of the variation in formal training across businesses and the impact of such training on labor productivity. I find that large businesses, those introducing new technology, and those that rely on internal promotions to fill vacancies are more likely to have formal training programs. Formal training also has a positive effect on labor productivity.

Commodity Trade and International Risk Sharing: How Much Do Financial Markets Matter?

Harold L. Cole and **Maurice Obstfeld**
Working Paper No. 3027
July 1989
JEL No. 431

This paper evaluates the gains from international risk sharing in some simple general equilibrium models with output uncertainty. Under empirically plausible calibration, the incremental loss from a ban on international portfolio diversification is quite small: about 0.15 percent of output per year. Even the theoretical gains from asset trade may disappear under alternative sets of assumptions about preferences and technology. We argue that the small potential gains from trade, coupled with the low costs of cross-border financial transactions, may explain the apparently inconsistent empirical findings on the degree of international capital mobility.

Intertemporal Dependence, Impatience, and Dynamics

Maurice Obstfeld
Working Paper No. 3028
July 1989
JEL Nos. 023, 111, 131

This paper develops simple geometric methods for analyzing dynamic behavior in models with intertemporally dependent consumer tastes. Since the preferences I studied do not assume time-additivity, they allow the marginal utility of consumption on a given date to vary with consumption on other dates. I induce intertemporal dependence by the presence of a variable individual rate of time preference. I easily derive the optimal consumption responses to transitory and anticipated changes in incomes and interest rates and find they are similar in important ways to the responses implied by the standard model with constant time preference. Finally, I provide explanations of the first-order conditions describing optimal paths.

The Employers' Cost of Workers Compensation Insurance: Magnitudes, Determinants, and Public Policy

Alan B. Krueger and John F. Burton, Jr.
Working Paper No. 3029
July 1989
JEL No. 822

This paper estimates the average cost of the workers compensation insurance program for a homogeneous group of employers by state. These estimates reflect the operation, direct nominal costs, and the efficiency of workers compensation. We find that when cost equations are estimated by ordinary least squares, there is a unit elasticity of costs with respect to benefits. Instrumental variable estimates of the effect of benefits yield a greater-than-unit elasticity. The results also indicate that the presence of a state insurance fund is associated with higher average costs to employers, all else equal. Finally, we explore the impact that the minimum standards recommended by the National Commission on State Workmen's Compensation Laws would have on workers compensation costs.

Employment, Wages, and Unionism in a Model of the Aggregate Labor Market in Britain

John H. Pencavel
Working Paper No. 3030
July 1989
JEL No. 824

Two propositions figure prominently in explanations for Britain's comparatively low growth in employment: first, the wage-setting mechanism is insufficiently responsive to the growth of unemployment; second, there exists a well-defined causal relationship from wages to employment with the features of a conventional labor demand function. Using aggregate annual observations from 1953 to 1979, I find the evidence for a conventional labor demand curve to be fragile. I also find little support for the notion that trade union objectives are unaffected by unemployment, as some variations of the "insider–outsider" hypothesis would maintain. In general, the empirical results in this paper emphasize that confident inferences about Britain's employment record cannot be drawn from aggregate data.

Monopsony Power in the Market for Nurses

Daniel Sullivan
Working Paper No. 3031
July 1989
JEL No. 824

I estimate the inverse elasticity of supply of nursing services to the individual hospital, a quantity that is a natural measure of employer market power. The estimates corresponding to employment changes taking place over one year are quite high (about 0.79) and even for changes taking place over three years are substantial (about 0.26). The estimates do not differ significantly for hospitals in major metropolitan areas and do not depend very sensitively on the assumed form of the oligopsony equilibrium.

Copycatting: Fiscal Policies of States and Their Neighbors

Anne C. Case, James R. Hines, Jr.,
and Harvey S. Rosen
Working Paper No. 3032
July 1989
JEL Nos. 324, 321

· This paper formalizes and tests the notion that the expenditures of state governments depend on the spend-

ing of similarly situated states. Even after allowing for fixed state effects, year effects, and common random shocks between neighbors, we find that a state government's level of per capita expenditure is positively and significantly affected by the expenditure levels of its neighbors. Other things equal, a one dollar increase in a state's neighbors' expenditures increases its own expenditure by over 70 cents.

The Role of External Economies in U.S. Manufacturing

Ricardo J. Caballero and **Richard K. Lyons**
Working Paper No. 3033
July 1989
JEL Nos. 131, 630

This paper develops a method for joint estimation of internal returns to scale and external economies. We then estimate returns-to-scale indexes for U.S. manufacturing industries at the two-digit level. Overall, we find that only three of the 20 industries show any evidence of increasing internal returns: (1) primary metals, (2) electrical machinery, and (3) paper products. However, there is very strong evidence of external economies, that is, external to a given two-digit industry and internal to the United States. According to our estimates, if all manufacturing industries simultaneously raise their inputs by 10 percent, aggregate manufacturing production will rise by 13 percent, of which about 5 percent is the result of external economies. Thus, when an industry increases its inputs in isolation by 10 percent, its output rises by no more than 8 percent.

Invariance Properties of Solow's Productivity Residual

Robert E. Hall
Working Paper No. 3034
July 1989
JEL Nos. 620, 131

In 1957, Robert Solow published a paper that provided the theoretical foundation for almost all subsequent work on productivity measurement. Although most applications of Solow's method have measured trends over fairly long time periods, his method also has important uses at higher frequencies. Under constant returns to scale and competition, the Solow residual measures the pure shift of the production function. Shifts in product demand and factor supplies should have no effect on the residual. Tests of this invariance property show that it fails in a great many industries. Although other explanations may deserve some weight, it appears that the leading cause of the failure of invari-

ance is increasing returns and market power. The empirical findings give some support to the theory of monopolistic competition.

An Analysis of the Earnings of Canadian Immigrants

David E. Bloom and **Morley Gunderson**
Working Paper No. 3035
July 1989
JEL No. 821

We estimate simple wage equations fitted to cross-sectional and pseudo-longitudinal data for Canadian immigrants in the 1971 and 1981 Canadian censuses. The estimates are used to assess: the usefulness of cross-sectional analyses for measuring the pace of immigrant earnings growth; the labor market implications of admissions policies that place different weights on the work skills possessed by prospective entrants; and the relative impact of selective outmigration and job-matching on immigrant earnings as their stay in the new country increases.

We find a small to moderate assimilation effect, suggesting that immigrants make up for relatively low entry wages, although the catch-up is not complete until 13 to 22 years after their entry into Canada. These results are revealed clearly in both the pseudo-longitudinal and the cross-sectional analyses.

We also find that the unobserved quality of immigrants' labor market skills declined after changes in Canada's immigration policies in 1974 led to a sharp increase in the proportion of immigrants admitted on the basis of family ties.

Finally, there is no evidence that the variance of immigrant earnings increases with their duration of stay in Canada, and there are no differential immigrant–native changes in higher-order moments of the earnings distribution as duration of stay increases. Thus the results are inconclusive with respect to the importance of selective outmigration and job-matching in the evolution of immigrant earnings distributions over time.

Treasury Bill Rates in the 1970s and 1980s

Patric H. Hendershott and **Joe Peek**
Working Paper No. 3036
July 1989
JEL Nos. 311, 313

As is widely recognized, real interest rates in the early 1980s were at peaks not witnessed since the late 1920s. Less well perceived is the sharp decline in real interest rates since 1984. By 1986–8, real interest rates were back at their average levels of the previous quarter century. This paper seeks to identify the underlying deter-

minants of the major movements in real six-month Treasury bill rates.

Not surprisingly, the rise in real interest rates between the middle 1970s and early 1980s results from a variety of factors. First, rates were unusually low in the middle 1970s because of the first OPEC shock, which lowered investment demand and increased world saving by transferring wealth from the high-consuming developed countries to OPEC. Second, tight money, high inflation, and heightened nuclear fear all contributed to real rates becoming unusually high in the early 1980s. The eventual decline of OPEC surpluses following the second OPEC shock prolonged the period of high real rates. The decline in real rates to more normal levels in 1986-8 is also the result of multiple factors: lower inflation, declining marginal tax rates, and easy monetary policy.

Interest Rates in the Reagan Years

Patric H. Hendershott and **Joe Peek**
Working Paper No. 3037
July 1989
JEL Nos. 311, 313

The Reagan administration entered office in 1981 with one of the clearest and most ambitious agendas in recent times. The new administration advanced five economic/budgetary goals to rebuild America economically and militarily: 1) reduce inflation; 2) deregulate the economy; 3) cut taxes; 4) increase military spending; and 5) reduce nondefense spending sufficiently to balance the budget. Achieving, or not achieving, these economic/budgetary goals likely had a significant impact on interest rates. This paper investigates six specific hypotheses.

During the first Reagan term, the battle to lower inflation helped to maintain the high real interest rates carried over from the Carter years. While the increase in structural deficits did not raise real rates much, the reduction in private saving caused by the second OPEC shock, and an aggressive foreign policy that heightened fear of nuclear war, raised real interest rates to levels not seen since the late 1920s. Moreover, the increased volatility of interest rates during this protracted battle with inflation raised yields on callable fixed-rate mortgages by over a percentage point relative to the already inflated yields on noncallable Treasuries.

By the end of Reagan's second term, inflation, marginal tax rates, nuclear fear, and interest rate volatility were all down. As a result, nominal Treasury rates have plunged (real bill rates since 1986 are below their average values for the previous quarter century) and yields on callable securities have receded to more normal levels relative to noncallable Treasuries. Yields on tax-exempt securities are 1.25 percentage points higher, relative to Treasuries, than in the pre-Reagan years,

and yields on fixed-rate mortgages are up by 0.5 percentage point. These constitute an intended reduction in the previous financial subsidies to state and local and household capital formation.

Optimal Taxation and Optimal Tax Systems

Joel B. Slemrod
Working Paper No. 3038
July 1989
JEL No. 321

For the past two decades, the theory of optimal taxation has been the reigning normative approach to taxation. This paper argues that, in its current state, optimal tax theory is incomplete because it has not yet come to terms with taxation as a system of coercively collecting revenues from individuals who will tend to resist. The coercive nature of tax collection implies a high resource cost of implementing a tax system. Differences in the cost of administering various tax systems have been and will continue to be a critical determinant of appropriate tax policy.

The paper first presents the three cornerstone propositions of optimal tax theory. Then it discusses the influence of these propositions on recent tax policy developments. It concludes by sketching an alternative, called the theory of optimal tax systems, which embraces the insights of optimal taxation but also considers the technology of raising taxes and the constraints placed upon tax policy by that technology. The optimal tax systems perspective sheds light on the choice of tax instruments, the problem of tax evasion, and the appropriate tax treatment of capital income.

Do Firms Care Who Provides Their Financing?

Jeffrey K. MacKie-Mason
Working Paper No. 3039
July 1989
JEL Nos. 310, 320

This paper demonstrates that firms are concerned with who provides their financing, not just with the debt-equity distinction. I document aggregate and industry trends and patterns in the incremental sources of financial capital and econometrically analyze a large sample of incremental corporate financial decisions. There are large and persistent differences in the patterns of internal and external financing, both in the aggregate and across industries. Individual firms have distinct preferences for different providers of funds. Several indicators of potentially costly hidden information

problems are important and significant determinants of choices between private and publicly marketed sources, even after controlling for the type of security (debt or equity).

An Explanation of the Behavior of Personal Savings in the United States in Recent Years

Eytan Sheshinski and **Vito Tanzi**
Working Paper No. 3040
July 1989

A sharp increase in real interest rates in the United States in the 1980s was expected to induce a higher personal saving rate. Actually, between 1981 and 1983, the personal saving rate fell from 7.5 percent to 5.4 percent; for 1985-8, it averaged only 4 percent, even though real interest rates have remained high. We argue that one possible explanation for this is the large fraction of wealth, especially financial wealth, held by persons over 65. This group has received more than 50 percent of all interest income in the United States during this period. As we demonstrate, life-cycle theory suggests that the wealth effect created by an increase in the rate of interest reduces the savings of old persons and raises the savings of the young. Hence the effect on aggregate savings depends on the age distribution in the population.

Dynamic Factor Demand Models, Productivity Measurement, and Rates of Return: Theory and an Empirical Application to the U.S. Bell System

M. Ishaq Nadiri and **Ingmar R. Prucha**
Working Paper No. 3041
July 1989
JEL No. 226

Prucha and Nadiri (1982, 1986, 1988) introduced a methodology for estimating systems of dynamic factor demand that allows considerable flexibility in choosing the functional form of the technology and the expectation formation process. This paper uses the methodology to estimate the U.S. Bell System's production structure, and its demand for labor, materials, capital, and R and D. We provide estimates for short-, intermediate-, and long-run price and output elasticities of the inputs, as well as estimates of the rate of return on capital and R and D. The paper also discusses the measurement of technical change if the firm is in temporary, rather than long-run, equilibrium and the technology is not assumed to be linear homogeneous. We estimate input and output-based technical change, as well as

returns to scale. Further, the paper provides a decomposition of the traditional measure of total factor productivity growth.

Tax Effects on Foreign Direct Investment in the United States: Evidence from a Cross-Country Comparison

Joel B. Slemrod
Working Paper No. 3042
July 1989
JEL No. 323

This paper investigates how the tax system of the United States and a capital-exporting country can combine to affect the flow of foreign direct investment (FDI) into the United States. First, using aggregate data, I corroborate earlier work that suggests that the U.S. effective tax rate influences the amount of FDI financed by transfers of funds but not the amount financed by retained earnings. I then disaggregate the data by major capital-exporting country to see if, as theory suggests, FDI from countries that exempt foreign-source income from taxation is more sensitive to U.S. tax rates than FDI from countries that attempt to tax foreign-source income. The analysis reveals no clear differential responsiveness between these two groups of countries. This suggests either difficulties in accurately measuring effective tax rates or the availability of financial strategies that render the home country tax system immaterial in affecting the return on FDI.

Labor Supply Flexibility and Portfolio Choice

Zvi Bodie and **William Samuelson**
Working Paper No. 3043
July 1989
JEL No. 520

This paper develops a model that shows that people who have flexibility in choosing how much to work prefer to invest substantially more of their money in risky assets than those without such flexibility. Viewed this way, labor supply flexibility offers insurance against adverse investment outcomes. The model provides support for the conventional wisdom that the young can tolerate more risk in their investment portfolios than the old can.

The model has other implications for the study of household financial behavior over the life cycle. It implies that households will take account of the value of labor supply flexibility in deciding how much to invest in their own human capital and when to retire. At the macro level, it implies that people will have a labor supply response to shocks in the financial markets.

Leadership and Cooperation in the European Monetary System: A Simulation Approach

Nouriel Roubini
Working Paper No. 3044
July 1989
JEL No. 431

To assess the importance of economic interdependence and the potential gains from policy coordination in the European area, this paper analyzes the international transmission of policies and disturbances in a rational expectations dynamic general equilibrium simulation model of the world economy and applies the analysis to the European Monetary System (EMS). International spillover effects and potential gains from coordination appear to be small under the assumption of flexible exchange rates in the European area. I compare the implications of a fixed rate EMS with German leadership to those of a cooperative fixed exchange rate regime. Finally, I find that capital controls under fixed rates fail to ensure policy autonomy and insulation from external disturbances for the countries restricting the capital movements.

Does Monetary Policy Matter? Narrative versus Structural Approaches

Ray C. Fair
Working Paper No. 3045
July 1989
JEL No. 311

This paper compares results from the narrative approach of Romer and Romer (1989) to those from the structural approach regarding the effects of monetary policy on real output. The results from both approaches lead to the conclusions that monetary policy does matter and that the effects build slowly following a monetary policy shock. However, the narrative approach leads to larger and more persistent effects than the structural approach does. This paper presents reasons why this might be so.

Is the Extended Family Altruistically Linked? Direct Tests Using Microdata

Joseph G. Altonji, Fumio Hayashi,
and **Laurence J. Kotlikoff**
Working Paper No. 3046
July 1989
JEL No. 010

What is the basic economic decisionmaking unit: the household or the extended family? The question is fundamental to economic analysis and policy design. The answer given by the life-cycle and Keynesian models is that the economic unit is the household. According to these models, members of particular households act selfishly and do not share resources fully with extended family members in other households. Hence, altering the distribution of resources across households within the extended family will alter the consumption and labor supply of those households who acquire or lose resources.

In contrast to the life-cycle and Keynesian models, the altruism model implies that the extended family is linked through altruism and, as a result, acts as if it fully shares resources. In the altruism model, nondistortionary changes in the distribution of resources across households within the extended family will have no effect on the consumption or labor supply of any of its members.

Despite their importance, the boundaries of economic decisionmaking units have not been examined directly with microdata, to our knowledge. Stated differently, the altruism model has not been tested against the life-cycle and Keynesian alternatives with such data. This paper uses matched data on parents and their adult children, contained in the Panel Study of Income Dynamics, to perform such a test. In essence, our test asks whether the distribution of consumption and labor supply across households within the extended family depends on the distribution of resources across households within the extended family.

Our findings provide quite strong evidence against the altruism model. The distribution of resources across households within the extended family is a highly significant (statistically and economically) determinant of the distribution of consumption within the extended family. This finding holds for the entire sample as well as for the subsample consisting of rich parents and poor children.

In addition to showing that the distribution of extended family resources matters for extended family consumption, we test the life-cycle model by asking whether only own resources matter; that is, whether the resources of extended family members have any effect on a household's consumption. Our results indicate that extended family member resources have, at most, a modest effect on household consumption after one has controlled for the fact that extended family resources help predict a household's own permanent income.

Targets, Indicators, and Instruments of Monetary Policy

Bennett T. McCallum
Working Paper No. 3047
July 1989
JEL No. 310

It has become increasingly evident that the Federal

Reserve's official strategy of the past decade, involving the adherence to target paths for monetary aggregates, currently is not being used to any significant extent. While some commentators welcome and others deplore this development, most would agree that there is a need for a more explicit and coherent strategy for the conduct of monetary policy. This paper seeks to advance the strategic discussion in several ways. One involves a comparative consideration of targets for nominal GNP and the price level, with emphasis on robustness of specifications and implications for output variability. A second pertains to various "indicator" variables recently suggested by Fed officials and others. In this regard, it is necessary to be clear and specific about the role of potential indicators. Consequently, a careful review of the relevant conceptual distinctions—concerning instruments, targets, indicators, and so forth—is required. Finally, I give some attention to the proposal that strategy should be conducted so as to place minimal reliance on quantity variables, in the context of evidence concerning the merits of an interest rate instrument.

Tax Policy and International Direct Investment

Joosung Jun
Working Paper No. 3048
July 1989

I investigate the effects of taxes on direct investment capital outflows using a theoretical model that integrates the investment and financial decisions of the parent and subsidiary. The resulting marginal qs and costs of capital show that intrafirm investment allocation and tax neutrality results hinge critically on the marginal financing regime. By identifying a channel or channels through which a specific tax policy affects firm decisions, the model evaluates the combined effects of the home country tax system on direct investment. My analysis suggests that while the 1986 U.S. Tax Reform Act may have an ambiguous effect on the overall level of capital outflows, it may induce more equipment investments to be undertaken abroad.

U.S. Tax Policy and Direct Investment Abroad

Joosung Jun
Working Paper No. 3049
July 1989

The analysis presented in this paper shows that U.S. tax policy can have significant effects on U.S. direct investment outflows through various channels. I stress that a sensible choice of specification and data in an empirical model entails a rigorous examination of the

theoretical underpinnings of the model. In particular, I emphasize the difference between foreign fixed investment undertaken by the foreign subsidiary and direct investment of the entire international firm, and the need to use different theoretical frameworks in each case.

I present estimated equations relating the balance-of-payments direct investment outflows—distinguishing between retained subsidiary earnings and parent transfers—to various measures of the U.S. net rate of return and the cost of funds. The evidence shows that U.S. tax policy toward domestic investment has an important effect on direct investment outflows by influencing the relative net rate of return between the United States and other countries. I estimate that a 16-cent reduction in transfers made by U.S. parent firms occurs for every one dollar increase in U.S. domestic investment. In contrast to previous studies, transfer equations fit much better than retained earnings equations for every net return variable used in the estimation. Of the various specifications tested, the transfer equation containing a marginal, forward-looking and corporate-investor net return variable fits best, a result that is consistent with the predictions of the theoretical framework.

Cyclical Pricing of Durable Goods

Mark Bils
Working Paper No. 3050
July 1989
JEL No. 023

I examine price markups in monopolistically competitive markets with fluctuations in demand caused by cyclical fluctuations in productivity. Markups depend positively on the average income of purchasers in the market. For a nondurable good, average income of purchasers is procyclical, so the markup is procyclical. For a durable good, however, the average income of purchasers is likely to decrease in booms, because low-income consumers of the good concentrate their purchases in boom periods; the markup is likely to be countercyclical. This is particularly true for growing markets. I find that markups make the aggregate economy fluctuate more in response to productivity if goods are sufficiently durable.

Testing for Contracting Effects on Employment

Mark Bils
Working Paper No. 3051
July 1989
JEL No. 023

I test the importance of wage rigidities from long-

term contracts by observing how employment behaves when firms and workers recontract. If rigidities are important then we should observe employment adjusting after recontracting to undo movements in employment during the past contract that were excessive because of rigid wages.

The data are for 12 manufacturing industries that display a strong bargaining pattern. I find that contract rigidities are important, causing considerably larger fluctuations in employment than would occur with flexible wages. By far the most striking case is in the motor vehicle industry in which long-term contracts much more than double the size of fluctuations in employment. I also examine the behavior of wage rates when new contracts are introduced. Wage growth does respond to employment growth during the prior contract in several of the industries, but these responses are not related to the pattern of employment responses across industries.

Alcohol Advertising Bans and Alcohol Abuse: An International Perspective

Henry Saffer
Working Paper No. 3052
July 1989
JEL Nos. 913, 531

This paper empirically examines the effect on alcohol abuse of banning broadcast advertising of alcoholic beverages. The effect of a ban cannot be studied using data from one country because the adoption of new advertising bans is an infrequent event and requires many years for adjustment. However, an international dataset can be used, since there is considerable variation in the use of advertising bans across countries. This study uses a pooled time series from 17 countries for 1970–83. The empirical measures of alcohol abuse are alcohol consumption, liver cirrhosis mortality rates, and highway fatality rates. The cultural factors that influence alcohol use are measured by sets of country dummy variables. The empirical results show that countries with bans on spirits advertising have about 10 percent lower alcohol consumption and motor vehicle fatality rates than countries with no bans. The results also show that countries with bans on beer and wine advertising have about 23 percent lower alcohol consumption and motor vehicle fatality rates than countries with bans only on spirits advertising.

Why Are Stabilizations Delayed?

Alberto Alesina and **Allan Drazen**
Working Paper No. 3053
August 1989
JEL No. 431

When a stabilization has significant distributional implications (as in the case of tax increases to eliminate a large budget deficit), different socioeconomic groups will attempt to shift the burden of stabilization onto other groups. The process leading to a stabilization becomes a "war of attrition," with each group finding it rational to attempt to wait the others out. Stabilization occurs only when one group concedes and is forced to bear a disproportionate share of the burden of fiscal adjustment.

We construct a model of "rational" delay based on a war of attrition and present comparative statics results relating the expected time of stabilization to several political and economic variables. We also motivate this approach and its results by comparison to historical episodes.

Optimal Advice for Monetary Policy

Susanto Basu, Miles S. Kimball, N. Gregory Mankiw, and **David N. Weil**
Working Paper No. 3054
August 1989
JEL Nos. 023, 311

This paper addresses the issue of how to give optimal advice about monetary policy when it is known that the advice may not be heeded. We examine a simple macroeconomic model in which monetary policy has the ability to stabilize output by offsetting exogenous shocks to aggregate demand. The optimal policy rule for such a model is derived easily. But an advisor who knows that his/her advice may not be followed should not recommend the optimal policy rule. This is true because, in giving activist advice, such an advisor increases uncertainty about what monetary policy will be followed. We solve for the rule that such an advisor should use in giving advice.

Synthetic Eurocurrency Interest Rate Futures Contracts: Theory and Evidence

Annie Koh and **Richard M. Levich**
Working Paper No. 3055
August 1989
JEL No. 430

In this paper we develop a theoretical (arbitrage) pricing model for a Eurocurrency interest rate futures contract and measure its effectiveness at hedging. This synthetic Eurocurrency interest rate futures contract combines existing Eurodollar interest rate futures contracts with near-term and far-term currency futures contracts based on the covered interest rate parity relationship. In theory, the cash flows of the synthetic contract perfectly replicate the cash flows of a

Eurocurrency interest rate futures contract. Our empirical results show that the synthetic contracts are relatively efficient in hedging nondollar borrowing rates. These results have implications for the practice of hedging nondollar interest rate risk and for the development of actual Eurocurrency interest rate futures markets.

Taxing International Income: An Analysis of the U.S. System and Its Economic Premises

This paper describes the basic U.S. legal rules governing the taxation of international transactions, and it explores the economic policies or principles they reflect. We pay particular attention to the changes made by the Tax Reform Act of 1986, but it is impossible to understand those changes without placing them in the context of the general taxing system applicable to international transactions. We intend the exposition to be intelligible to readers with either legal or economic training.

Recent Trade Liberalization in the Developing World: What Is Behind It, and Where Is It Headed?

This paper documents recent external sector liberalization in developing countries, evaluates what is behind it, and assesses whether it is likely to persist, accelerate, or reverse itself. I draw heavily on material collected during a recent research project on developing countries and the global trading system (Whalley 1989) supported by the Ford Foundation and covering 11 developing countries: Argentina, Brazil, China, Costa Rica, India, Kenya, Mexico, Nigeria, the Philippines, Republic of Korea, and Tanzania.

Many factors underlie these liberalizations. They include rethinking the basic approach toward trade policy in a number of countries, with less commitment than earlier to import substitution and more interest in outward-oriented development strategies. Conditionality in World Bank and IMF lending programs appears important in Africa, and in some of the Asian and Latin American countries. In some cases, sector-specific liberalization also has been the result of bilateral pressure from the United States and the European Com-

munity. Recent strong macro performance in the developed world also has generated substantial growth in foreign exchange earnings for developing countries and has facilitated this liberalization.

The paper concludes by suggesting that, in the short to medium term, some reciprocal actions by the developed countries in the GATT Uruguay Round would help keep alive domestic political support for these liberalizations.

The Politics of Intergenerational Redistribution

This paper studies the political-economic equilibrium of a two-period model with overlapping generations. In each period, the policy is chosen under majority rule by the generations currently alive. The paper identifies a "sustainable set" of values for public debt. Any amount of debt within this set is fully repaid in equilibrium, even in the absence of commitments. By issuing debt within this set, the first generation of voters redistributes revenue in its favor and away from the second generation. The paper characterizes the determinants of the equilibrium intergenerational redistribution carried out in this way and points to a difference between debt policy and Social Security legislation as instruments of redistribution. The key features of the model are heterogeneity within each generation and altruism across generations.

Judging Factor Abundance

Recent theoretical developments have cast doubt on the reliability of the commonly used cross-industry regression as a method for inferring a country's abundant factors. This paper examines the empirical importance of these theoretical cautions by comparing regression-derived estimates of factor abundance with both revealed and actual factor abundances for 35 countries and up to 12 resources. Trade imbalances affect the regression estimates. Therefore we derive and implement a theoretically consistent trade balance correction. The results indicate that despite theoretical concerns, the regression measures often are reliable indicators of revealed factor abundances. The results thus enhance the credibility of the findings of the numerous regression studies that have been conducted over the past 30 years.

Interest Rate Term Premiums and the Failure of the Speculative Efficiency Hypothesis: A Theoretical Investigation

Carol L. Osler
Working Paper No. 3060
August 1989
JEL No. 431

This paper develops a new parity condition for international financial markets that relates differences between the forward exchange rate and the expected future exchange rate to interest rate term premiums. It begins with the general proposition that uncovered interest parity (UIP) cannot hold for all maturity horizons if interest rate term premiums are imperfectly correlated across countries and expectations are rational. I find the conditions under which UIP could hold for multiple horizons, under these two assumptions, to be very restrictive. I argue that if UIP holds at all under these circumstances, it is likely to hold only at a very short time horizon. Finally, I show that under these assumptions if UIP holds at the shortest time horizon, then the difference between forward exchange rates and expected future spot rates at all other horizons will be the difference in expected term premiums at each maturity.

A Note on Optimal Deterrence When Individuals Choose Among Harmful Acts

Steven Shavell
Working Paper No. 3061
August 1989
JEL Nos. 022, 916

The theory of deterrence has been concerned primarily with situations in which individuals consider whether to commit a *single* harmful act (whether to discharge a pollutant into a lake, whether to steal a car) rather than with situations in which individuals decide which of *several* harmful acts to commit (whether to discharge one pollutant or another pollutant into a lake, whether to engage in car theft or in burglary). In the latter situations, the threat of sanctions plays a role in addition to the usual one of deterring individuals from committing harmful acts: it influences which harmful acts *undeterred* individuals choose to commit. It accomplishes "marginal deterrence."

I show that *sanctions may increase more with harm when individuals choose among harmful acts than when individuals choose only whether to commit single harmful acts.* The reason is that a higher gradation of sanctions encourages undeterred individuals to commit less harmful acts. The assumption necessary for this conclusion is that probabilities of apprehension for different acts are equal, being determined by a *general* level of enforcement effort. If enforcement effort is *specific* to the act, the conclusion does not hold; optimal sanctions for different acts are then equal.

Specific versus General Enforcement of Law

Steven Shavell
Working Paper No. 3062
August 1989
JEL Nos. 022, 916

I examine the problem of optimal public enforcement of law in a model in which I distinguish two types of enforcement effort: *specific enforcement effort* (activity devoted to apprehending and penalizing individuals who have committed a single type of harmful act); and *general enforcement effort* (activity affecting the likelihood of apprehension of individuals who have committed any of a range of harmful acts). For instance, a policeman on the beat is able to apprehend many types of violators of law. If all enforcement effort is specific, then under wide assumptions it is optimal for sanctions to be extreme for all acts. However, if all enforcement effort is general, optimal sanctions are low for acts of small harmfulness, they increase with the degree of harmfulness, and they reach the extreme only for the most harmful acts (the main result of the paper). I also consider the assumption that enforcement effort may be both general and specific.

How Rational Is the Purchase of Life Insurance?

Alan J. Auerbach and Laurence J. Kotlikoff
Working Paper No. 3063
August 1989
JEL No. 921

This paper asks whether middle-aged American households purchase adequate amounts of life insurance. We base the analysis on SRI International's 1980, 1982, and 1984 surveys of the financial positions of American households. Our findings indicate that a significant minority of American wives are very underinsured with respect to the possible deaths of their husbands. Under the assumption that actuarially fair annuities are available, we find that just over 30 percent of wives are inadequately insured: they would suffer a loss in their rate of sustainable consumption of at least 30 percent in the event of being widowed. If one assumes that annuities are not available, the fraction of wives who are inadequately insured is 24 percent.

These findings on inadequate life insurance are even more striking if one focuses on those households in which over half of the couple's present expected value of resources is dependent on the husband's survival.

The fraction of wives in such households who are inadequately insured is 41 percent if one assumes fair annuities are available, and 31 percent if one assumes such annuities are unavailable. The problem of inadequate insurance is even more significant among households of more modest means. Almost half of wives in such households who need life insurance protection are inadequately insured, and this statement holds regardless of whether fair annuities are available.

The results of this paper, together with those of the related literature, strongly suggest that raising the share of Social Security benefits that are paid to surviving spouses and increasing employer-provided group life insurance could have considerable impact on the alleviation of poverty among widows, especially elderly widows.

What Is the Marginal Source of Funds for Foreign Investment?

Joosung Jun
Working Paper No. 3064
August 1989

This paper analyzes the marginal source of funds for foreign investment, using both aggregate data and microdata on the intrafirm transactions of U.S. international firms. Tax arbitrage regarding the form and timing of transactions, combined with risks involved with foreign operations and the desire of the parent to control subsidiaries, suggests that parent transfers provide the marginal source of funds for most foreign investment. Our conclusion is consistent with the seemingly puzzling evidence that some subsidiaries have positive dividends and transfers simultaneously despite the associated tax penalties, and others neither pay dividends nor receive transfers. Our analysis and empirical evidence are in sharp conflict with the widely held tax capitalization view: that retained subsidiary earnings are the marginal source of financing foreign investment.

Firms' Choice of Method of Pay

Charles C. Brown
Working Paper No. 3065
August 1989
JEL No. 821

Three types of pay-setting methods are: piece rates (pay mechanically linked to output), merit pay (pay based on less formal judgments by one's supervisor), and standard rates (pay based on one's job classification and perhaps seniority, but not directly on perfor-

mance). Firms' choice among methods depends on balancing the gains from more precise links between performance and pay against the costs of either precise or judgmental measures of output. Using data from the BLS Industry Wage Study program, I test, and for the most part confirm, hypotheses suggested by this observation.

Endogenous Exchange Rate Regime Switches

Gabriel de Kock and **Vittorio U. Grilli**
Working Paper No. 3066
August 1989
JEL No. 430

We demonstrate that exchange rate regime switching is compatible with optimal government policies. We define nominal exchange rate regimes as equilibrium commitments on future seigniorage policies, and the collapse of an exchange rate peg as an excusable default that allows the government to levy a lump-sum tax on money holdings in the private sector. We demonstrate that a regime in which the exchange rate peg is allowed to collapse when government spending is unusually high is a trigger-strategy equilibrium. Such a regime can be superior to both fixed and flexible exchange rates, because it combines some of the flexibility of the floating exchange rates with some of the benefits of precommitment afforded by fixed rates.

Nominal Exchange Rate Regimes and the Real Exchange Rate: Evidence from the United States and Britain, 1885–1986

Vittorio U. Grilli and **Graciela Kaminsky**
Working Paper No. 3067
August 1989
JEL No. 430

Two propositions are common in the international finance literature: 1) the real exchange rate is a random walk; and 2) the real exchange rate time-series properties essentially depend on the nominal exchange rate regime. The first proposition has been used in support of the claim that purchasing power parity cannot even be considered a long-run relationship, since deviations from it are permanent. The second proposition has been used as evidence of price stickiness. Contradicting the first proposition, this paper shows that the random walk behavior of the real exchange rate is just a characteristic of the post–World War II period; in the prewar period, we observe transitory fluctuations. Also, although real exchange rate volatility appears to be different between fixed and flexible exchange rate regimes, these differences are not as systematic and large as the postwar data suggest.

Managing Exchange Rate Crises: Evidence from the 1890s

Vittorio U. Grilli
Working Paper No. 3068
August 1989
JEL No. 430

This paper investigates the effectiveness of the monetary authority's borrowing policies in resolving exchange rate crises. It shows why obtaining loans or lines of credit in foreign currency may avoid, at least temporarily, the devaluation of a fixed exchange rate. I also discuss the problem of the optimal size of the loan and/or the line of credit. The analysis focuses on a particular episode of foreign exchange rate pressure, during the troubled years between 1894 and 1896. The results suggest that the borrowing policy followed by the U.S. Treasury in those years was effective in avoiding the collapse of the U.S. gold standard, and that the amount of the borrowing undertaken by the Treasury might have been optimal.

The Impact of the Mariel Boatlift on the Miami Labor Market

David Card
Working Paper No. 3069
August 1989
JEL No. 820

This paper presents an empirical analysis of the effect of the Mariel Boatlift on the Miami labor market, focusing on the wages and unemployment rates of less-skilled workers. The Mariel immigrants increased the population and labor force of the Miami metropolitan area by 7 percent. Most of the immigrants were relatively unskilled: as a result, the proportional increase in labor supply to less-skilled occupations and industries was much greater. Nevertheless, an analysis of wages of non-Cuban workers over 1979–85 reveals virtually no effect of the Mariel influx. Likewise, there is no indication that the boatlift led to an increase in the unemployment rates of less-skilled blacks or other non-Cuban workers. Even among the Cuban population, wages and unemployment rates of earlier immigrants were not substantially affected by the arrival of the Mariels.

Taxation of Foreign-Owned Land

James A. Brander
Working Paper No. 3070
August 1989
JEL No. 420

This paper examines the welfare effects of a tax on foreign purchases of domestic land. Using a simple static framework, I show that an appropriately chosen tax generally will be welfare-improving for the domestic home country.

Trade Adjustment Assistance: Welfare and Incentive Effects of Payments to Displaced Workers

James A. Brander and Barbara J. Spencer
Working Paper No. 3071
August 1989
JEL No. 420

We analyze the welfare effects of conditional trade adjustment assistance (that is, assistance that is received only if displaced workers remain unemployed), and compare the conditional program with unconditional assistance. Taking the level of assistance as exogenous, we show that either the conditional or the unconditional program may impose greater efficiency costs, depending on underlying parameters. We then introduce an explicit social welfare function and solve for the optimal level of assistance for each program. Finally, we compare the optimized values of the two programs. If the distribution of wage offers is uniform, then the unconditional program is welfare superior.

Moderation Elections

Alberto Alesina and Howard Rosenthal
Working Paper No. 3072
August 1989

This paper extends the spatial theory of voting to an institutional structure in which policy choices are a function of the composition of the legislative and executive branches. In an institutional setup in which the policy outcome depends upon relative plurality, each voter has incentives to be strategic, since the outcome depends upon how everyone else votes. By applying the refinements of Strong Nash and Coalition Proof Nash to this game among voters, we prove the existence of equilibriums with properties that appear intuitive and realistic. In fact, the model has several testable implications that seem consistent with some observed patterns of voting behavior in the United States, and perhaps in other democracies, in which the executive is elected directly. For instance, the model predicts: 1) split-ticket voting; 2) for some parameter values, a split government with different parties controlling the executive and holding the majority in the legislature; and 3) the mid-term electoral cycle.

Election Polls, Free Trade, and the Stock Market: Evidence from the 1988 Canadian General Election

James A. Brander
Working Paper No. 3073
August 1989
JEL No. 420

This paper examines the relationship between the Toronto Stock Exchange (TSE) and election polls during the 1988 Canadian General Election campaign. I ask first, did polls influence the TSE, and second, if so, did the nature of the influence suggest that investors were reacting to expectations of the effect of the Canada-U.S. Free Trade Agreement (FTA)? I find that the TSE was positively related to Conservative popularity as measured by polls, but that the differential movement of TSE subindexes does not offer additional support to an FTA-based interpretation of events.

Consistent Valuation and Cost of Capital Expressions with Corporate and Personal Taxes

Robert A. Taggart, Jr.
Working Paper No. 3074
August 1989
JEL No. 520

This paper examines three valuation methods, each of which should lead to the same value for a given asset: the adjusted present value, adjusted discount rate, and flows-to-equity. To achieve identical valuations, however, the different methods must be implemented with cost-of-capital expressions that embody a consistent set of assumptions about the tax regime and the time pattern and riskiness of debt tax shields. I group and contrast valuation and cost of capital expressions proposed in the literature according to these assumptions. I also show that the familiar weighted average cost of capital can be consistent with any such set of assumptions, as long as the correct expression is used to estimate the relationship between the levered and unlevered cost of equity.

Israel's Crisis and Economic Reform: A Historical Perspective

Michael Bruno
Working Paper No. 3075
August 1989

This article analyzes the roots of the deep crisis that has afflicted the Israeli economy since 1973 and the attempt at economic reform and recovery since 1985. The background is the long-term evolution in Israel's structure and growth process. At the center of the analysis lie the implications of an oversized government and, especially, the devastating effects on growth and inflation of the large and persistent public sector deficit on top of the growing tax and public expenditure levels. The norm of "living beyond one's means" at the public sector level also has severely affected the norms of behavior of the private, household sector as well as the business sector.

Since 1985 there have been signs of recovery originating from the balancing of the budget and the relative stabilization of the currency. Labor and capital markets gradually are becoming more flexible and real interest rates are coming down. Even so, inflation rates are not yet down to international levels; continued budget balance is not assured; and excessive wage increases have diminished profit rates and investments in the business sector substantially. Structural problems, rooted in economic mismanagement of the crisis years, are surfacing.

Resumption of a sustained growth process requires persistent budget balance and a substantial additional reduction in public expenditure and tax levels. Structural reforms, only barely started, have to be persistently followed in the labor and capital markets, in the fiscal system, and in the further opening of commodity and financial markets to competition from both home and abroad.

Distance, Demand, and Oligopoly Pricing

Robert C. Feenstra and **James A. Levinsohn**
Working Paper No. 3076
August 1989

We demonstrate how to estimate a model of product demand and oligopoly pricing when products are differentiated multidimensionally. We provide an empirical counterpart to recent theoretical work on product differentiation. Using specifications informed by economic theory, we simultaneously estimate a demand system and price-cost margins for products differentiated in many dimensions.

Economic and Financial Determinants of Oil and Gas Exploration Activity

Peter C. Reiss
Working Paper No. 3077
August 1989
JEL Nos. 520, 630

This paper studies the investment activities of 44 independent oil and gas firms from 1978–86. A dynam-

ic model of oil and gas exploration and development predicts less of a decline in exploration activity than actually occurred in 1985-6. I consider the extent to which financial factors may have affected firms' investment plans during the 1985-6 deflation. There is some evidence that credit contracts in this industry did place important limitations on firms' abilities to respond to the energy price deflation. These constraints were imposed because lenders could not distinguish between unfavorable industry developments and poor individual firm performance.

In a 1988 paper, we demonstrated that investment by firms with close bank relationships appears to be less liquidity-constrained than investment by firms without close bank ties. We interpreted this finding as evidence that bank ties tend to mitigate information problems in the capital market. This paper tracks the investment behavior of firms that have recently weakened their bank ties in favor of greater reliance on the bond market. The results suggest that these firms are now more liquidity-constrained. The paper concludes with a discussion of why firms would loosen their bank ties in light of these liquidity costs.

Tax Compliance: An Investigation Using Individual TCMP Data

Kurt J. Beron, Helen V. Tauchen, and Ann Dryden Witte
Working Paper No. 3078
August 1989

This paper analyzes the tax compliance behavior of U.S. taxpayers using a 1979 dataset that combines: information from a random sample of individual tax returns, each of which has been thoroughly audited; IRS administrative records; and sociodemographic data from the Census. We find that both audits and tax code provisions affect compliance. However, the effects are significant only for the low- and high-income groups. Interestingly, previous research has shown that these groups also participate most actively in underground economic activities, the income from which is not reported on any tax returns. Our results for audits suggest that the "ripple," or general deterrent, effect of audits may be many times larger than the direct revenue yield of audits for high-income taxpayers. Our results also imply that the 1986 Tax Reform Act's changes to lower allowable subtractions from income may have encouraged compliance.

Bank Monitoring and Investment: Evidence from the Changing Structure of Japanese Corporate Banking Relationships

Takeo Hoshi, Anil Kashyap, and David Scharfstein
Working Paper No. 3079
August 1989
JEL No. 520

In the 1980s, the structure of corporate finance in Japan has changed dramatically. Japanese firms that once used bank debt as their prime source of financing now rely more heavily on the public capital markets. This trend was facilitated by the substantial deregulation of Japanese capital markets.

Optimal Incentives to Domestic Investment in the Presence of Capital Flight

Assaf Razin and Efraim Sadka
Working Paper No. 3080
August 1989
JEL Nos. 320, 430

This paper develops a model of an open economy with access to the world capital market and that employs distortionary taxes to finance public consumption. We ask how efficient are quantity restrictions on capital exports and the accompanying set of taxes. We distinguish between a benchmark case, in which the government can tax foreign-source income fully, and a more realistic case, in which the government cannot tax foreign-source income effectively.

Wage and Employment Uncertainty and the Labor Force Participation Decisions of Married Women

Francine D. Blau and Adam J. Grossberg
Working Paper No. 3081
August 1989
JEL No. 813

Over the past 30 years, research has concluded virtually without exception that the principal source of growth in the labor force participation rate for married women has been the concurrent growth of women's real wages. The experience of the 1970s suggests, however, that real wage growth cannot account for the increase in participation rates that occurred during that period. This paper argues that an important determinant of married women's current participation decisions is the level of uncertainty associated with expectations of future wages. High levels of uncertainty during the 1970s may have contributed substantially to the growth in participation that occurred during that time. Engle's model of autoregressive conditional heteroskedasticity

(ARCH) is applied to aggregate time-series data covering 1956–86 to measure the level of uncertainty at each point in time. Our estimates support the basic hypothesis that the level of uncertainty is an important determinant of labor force participation decisions for married women.

Health Benefits of Increases in Alcohol and Cigarette Taxes

Michael Grossman
Working Paper No. 3082
August 1989
JEL No. 913

Health taxes on alcohol and cigarettes imposed by the U.S. government have been very stable since 1951. This paper shows that increased taxation, which results in higher prices, would discourage alcohol abuse and cigarette smoking. A policy to raise the federal excise tax on beer in line with the rate of inflation over the last three decades would cut motor vehicle fatalities for 18–20 year olds, many of which are alcohol-related, by about 15 percent, saving more than 1000 lives per year. Also, in the cohort of Americans who were 12 years or older in 1984, over 800,000 premature deaths would be averted if the federal excise tax on cigarettes were restored to its real value in 1951.

Collateral, Rationing, and Government Intervention in Credit Markets

William G. Gale
Working Paper No. 3083
August 1989
JEL No. 321

This paper analyzes the effects of government intervention in credit markets when lenders use collateral, interest, and the probability of granting a loan as potential screening devices. I examine equilibriums with and without rationing. The principal theme is that credit policies operate through their effect on the incentive compatibility constraint, which inhibits high-risk borrowers from mimicking the behavior of low-risk borrowers. Any policy that loosens (tightens) the constraint raises (reduces) efficiency.

Most government credit programs explicitly attempt to fund investors who cannot obtain private financing. In the model presented here, these subsidies increase the extent of rationing and reduce efficiency. In contrast, policies that subsidize the nonrationed borrowers, or all borrowers, enhance the efficiency and reduce the extent of rationing.

Explaining Pension Dynamics

Rebecca A. Luzadis and **Olivia S. Mitchell**
Working Paper No. 3084
August 1989

Will the U.S. labor market fail to adapt smoothly to an aging work force, or will employee pensions play an important role in helping companies induce desired turnover patterns? To answer that question, we undertake a longitudinal examination of pension retirement incentives in several dozen plans observed between approximately 1960 to 1980.

The plans instituted many changes over this period, several of which enhanced the financial payoff to early retirement. These alterations included: increases in benefit levels; reductions in early, normal, and mandatory retirement ages; and cuts in the age at which pension present values peak (with retirement after that age penalized). Simple indicators of pension plans' structural features (for example, the plan's early retirement age) do not adequately summarize the complex financial incentives inherent in pensions, so we direct most of our attention to measures of financial benefit levels.

We empirically evaluate three major explanations for observed pension outcomes. Of special policy interest is an evaluation of pension responses to changes in Social Security benefit rules. Additionally, we discover key differences in behavior between single-employer and multi-employer pension plans. We conclude that pension plan behavior is systematically related to both labor and product market characteristics, and is responsive to retirement income policy.

Evaluating Pension Policies in a Model with Endogenous Contributions

Alan L. Gustman and **Thomas L. Steinmeier**
Working Paper No. 3085
August 1989
JEL Nos. 820, 918

We use a model of the firm and its pension plan to simulate the first-round effects of various pension policies. These pension policies create an imbalance in the pension fund that affects the level of pension contributions and, ultimately, wages. Changes in pension policies affect the differential between compensation and productivity for individual workers, in turn altering the distributions of compensation and of incentives for retirement, mobility, and effort. The policies we investigate regulate: vesting; pension calculations for early leavers, early retirees, and late retirees; maximum service credits; liabilities at termination; and funding practices.

The Stampede Toward Defined-Contribution Pension Plans: Fact or Fiction?

Alan L. Gustman and **Thomas L. Steinmeier**
Working Paper No. 3086
August 1989
JEL Nos. 820, 918

Is the trend toward defined-contribution plans and away from defined-benefit plans caused by increased pension regulation and/or a changing economic environment? Using data from filings of IRS Form 5500 by pension administrators, we find that at least half of the trend is caused by a shifting employment mix toward the type of firms that historically have been associated with lower defined-benefit plan rates because of their industry, size, or union status. Not more than half of the trend can be attributed to a "stampede" toward defined-contribution pension coverage by firms with a given industry, size, and union status.

Changing the Social Security Rules for Workers over 65: Proposed Policies and Their Effects

Alan L. Gustman and **Thomas L. Steinmeier**
Working Paper No. 3087
August 1989
JEL Nos. 820, 915, 918

We simulate the effects of different ways of adjusting the Social Security benefits of those who work beyond normal retirement age. A basic set of policies, currently under consideration, is projected to raise long-run costs by $30 billion, net of taxes; it also is expected to induce an increase of 5 percent in the number of full-time male workers between the ages of 65 and 69. Alternative policies may create very different flows of funds. Especially in the short run, outcomes will vary widely with the timing of the application decision for benefits.

Financial Integration, Liquidity, and Exchange Rates

Vittorio U. Grilli and **Nouriel Roubini**
Working Paper No. 3088
August 1989
JEL No. 430

This paper presents a two-country extension of work (Lucas, 1988) on how cash-in-advance constraints in asset markets affect the pricing of financial assets. In the model, there is some degree of separation between the goods markets and the asset markets, and money is used for transactions in both markets. We find that the equilibrium level of the exchange rate depends on the share of money used for asset transactions: a greater share corresponds to a more appreciated exchange rate. Second, under uncertainty, the liquidity effects of stochastic shocks to bond creation lead to "excess" volatility of nominal and real exchange rates, even when the "fundamental" value of the exchange rate is constant. Third, capital controls—in the form of taxes on foreign asset acquisitions—tend to cause the exchange rate to appreciate. Fourth, the maturity structure of the public debt affects the equilibrium exchange rate. In particular, a move toward a longer maturity structure will tend to cause the exchange rate to depreciate.

Incentive Effects of Workers' Compensation Insurance

Alan B. Krueger
Working Paper No. 3089
August 1989
JEL No. 822

This paper uses data from the Current Population Survey to estimate the determinants of participation in state workers' compensation programs in the United States. The principal finding is that higher workers' compensation benefits are associated with greater participation in the workers' compensation program, after accounting for worker characteristics, state fixed effects, and other aspects of the workers' compensation law. Moreover, this result holds for both manufacturing and nonmanufacturing workers. However, workers' compensation benefits have an insignificant effect on program participation for the sample of women. Overall, a 10 percent increase in benefits is associated with a 6.7 percent increase in program participation. In addition, the waiting period that is required before benefit payments begin has a substantial negative effect on participation in the workers' compensation program. Finally, the growth in workers' compensation claims in the 1970s appears to correspond reasonably well to the growth in real benefits that occurred during that time period.

Consumption Growth Parallels Income Growth: Some New Evidence

Chris Carroll and **Lawrence H. Summers**
Working Paper No. 3090
September 1989
JEL Nos. 130, 400, 850, 110

This paper argues that the versions of both perma-

nent-income and life-cycle theories that have become fashionable recently are inconsistent with the grossest features of cross-country and cross-sectional data on consumption and income. There is clear evidence that consumption and income growth are much more closely linked than these theories would predict. It appears that consumption smoothing takes place over several years, not several decades.

Our results confirm Milton Friedman's (1957) initial view that: "The permanent-income component is not to be regarded as expected lifetime earnings.... It is to be interpreted as the mean income at any age regarded as permanent by the consumer unit in question, which in turn depends on its horizon and foresightedness." We question the usefulness of standard "representative consumer" approaches to the analysis of saving behavior, and call for increased emphasis on liquidity constraints and short-run precautionary saving as determinants of consumption behavior.

Intrinsic Bubbles: The Case of Stock Prices

Kenneth A. Froot and **Maurice Obstfeld**
Working Paper No. 3091
September 1989

Several puzzling aspects of the behavior of U.S. stock prices can be explained by a specific type of rational bubble that depends exclusively on dividends. Such "intrinsic" bubbles derive all of their variability from exogenous economic fundamentals, not from extraneous factors. Unlike the most popular examples of rational bubbles, intrinsic bubbles provide an empirically plausible account of deviations from present-value pricing. Their explanatory potential comes partly from their ability to generate persistent deviations that appear relatively stable over long periods.

Converting Corporations to Partnerships Through Leverage: Theoretical and Practical Impediments

Myron S. Scholes and **Mark A. Wolfson**
Working Paper No. 3092
September 1989
JEL Nos. 323, 521

We explore the degree to which debt financing can reduce the corporate-level tax on income in the United States. Although debt is capable of shielding the competitive rate of return on projects from the corporate-level tax, debt financing cannot shield the positive net present value portion of project returns. Since nontax factors preclude corporate activities from being 100 percent debt financed, a portion of the competitive return to corporate activity also is subject to double taxation.

We also consider alternative mechanisms that convert the corporate tax to a personal tax (or a partnership tax). These include other claims that give rise to tax-deductible payments to the corporation, such as obligations to employees, lessors, and suppliers. All of these alternatives are limited in their ability to eliminate the corporate-level tax.

Decentralized Investment Banking: The Case of Discount Dividend Reinvestment and Stock Purchase Plans

Myron S. Scholes and **Mark A. Wolfson**
Working Paper No. 3093
September 1989
JEL Nos. 313, 314, 421

Discount dividend reinvestment and stock purchase plans allow shareholders to capture part of the underwriting fees incurred in new stock offerings and to save sponsoring firms some of the usual underwriting costs. We test the degree to which individual investors can serve this investment banking function profitably by implementing simple investment/trading strategies designed to capture the discounts and distribute the shares in the market. The large profits earned by our strategies raise serious questions about why it takes firms so long to raise the target level of capital and why many eligible shareholders do not participate in these discount plans.

Employee Stock Ownership Plans and Corporate Restructuring: Myths and Realities

Myron S. Scholes and **Mark A. Wolfson**
Working Paper No. 3094
September 1989
JEL Nos. 323, 521

During the first six months of 1989, U.S. corporations acquired over $19 billion of their own stock to establish employee stock ownership plans (ESOPs). We evaluate the common claims that there are unique tax and incentive contracting advantages to establishing ESOPs. Particularly for large firms, where the greatest growth in ESOPs has occurred, the case is very weak for taxes being the primary motivation to establish an ESOP. The case is also weak for employee incentives being the driving force behind ESOPs. We conclude that the main motivation for the growth of ESOPs is their antitakeover characteristics.

The Effects of Changes in Tax Laws on Corporate Reorganization Activity

Myron S. Scholes and **Mark A. Wolfson**
Working Paper No. 3095
September 1989
JEL Nos. 323, 442, 522

We present evidence that 1980s' changes in tax laws, culminating with the Tax Reform Act of 1986, had a first-order effect on observed merger and acquisition activity in the United States. Also, increased reliance on certain institutional arrangements (unit management buyouts and going-private transactions) used to effect mergers and acquisitions, which were designed to reduce the nontax costs of transacting, enabled tax benefits to be realized in a larger number of mergers and acquisitions than might have occurred otherwise.

We begin with a "closed-economy" perspective, focusing on the effects of changes in tax laws on the demand for mergers and acquisitions of U.S. corporations *by* U.S. corporations. We then broaden the scope of inquiry by modeling and testing the effects of changes in tax laws on the demand for mergers and acquisitions of U.S. corporations by foreign multinationals. We predict and present confirmatory evidence that, while the 1986 Tax Act discouraged transactions among U.S. corporations, it increased the demand for merger and acquisition transactions between U.S. sellers and foreign buyers.

The Capital Levy in Theory and Practice

Barry J. Eichengreen
Working Paper No. 3096
September 1989
JEL No. 430

A capital levy is a one-time tax on all wealthholders with the goal of retiring public debt. This paper reconsiders the historical debate over the capital levy in a contingent capital taxation framework. In theory, a levy can improve welfare when it is adopted to redress debt problems created by special circumstances, even if it cannot be guaranteed that there will be no further levy. If the contingencies leading to the levy are fully anticipated, independently verifiable, and not under government control, then saving and investment should not fall following the imposition of the levy, nor should the government find it more difficult to raise revenues subsequently.

In practice, serious problems stand in the way of implementation. A capital levy has profound distribution consequences. Property owners are sure to resist its adoption. In a democratic society, their objections are guaranteed to cause delay. This provides an opportunity for capital flight, reducing the prospective yield, and allows the special circumstances providing the justification for the levy to recede in the past. The only successful levies occur in such cases as post–World War II Japan, where important elements of the democratic process are suppressed and where the fact that the levy was imposed by an outside power minimized the negative impact on the reputation of subsequent sovereign governments.

The Comparative Performance of Fixed and Flexible Exchange Rate Regimes: Interwar Evidence

Barry J. Eichengreen
Working Paper No. 3097
September 1989

This paper reports on the characteristics of fixed and flexible exchange rate regimes. It contrasts experience under three interwar exchange rate regimes: the free float of the early 1920s; the fixed rates of 1927–31; and the managed float of the early 1930s. A number of important differences across nominal exchange rate regimes emerge. I find that: 1) The variability of nominal exchange rates was associated positively with the freedom of the float. Nominal rates were considerably more variable under free than under managed floating. 2) The reduction in nominal exchange rate variability achieved with the move from free to managed floating was not accompanied by a commensurate fall in exchange rate uncertainty. While government policy succeeded in damping spot rate fluctuations, it seems to have been subject to periodic shifts that heightened risk. 3) There was a strong association between nominal exchange rate predictability and real exchange rate predictability in both the free float of 1922–6 and the managed float of 1932–6. Together with 2), this implies that intervention of stabilized nominal rates did not guarantee a commensurate reduction in real exchange rate uncertainty. 4) There was no direct correspondence between the degree of exchange rate stability and the volume of international capital flows. Real interest differentials were larger under the managed float of the 1930s than under the free float of the 1920s. 5) Capital controls provide a major part of the explanation for differences across regimes in the magnitude of real interest differentials. Controls were considerably more prevalent under managed floating than under either free-floating or fixed rates. Thus, interwar experience provides a counterexample to the popular notion that capital controls tend to be associated with fixed rate regimes.

Increasing Returns and New Developments in the Theory of Growth

Paul M. Romer
Working Paper No. 3098
September 1989

Growth theory always has been faced with technically challenging questions about increasing returns and the way to capture ideas in a model of market exchange. Initially, reliance on perfect competition forced growth theory to narrow its scope. Recently, new tools for studying dynamic equilibriums with nonconvexities, externalities, and imperfect competition have allowed growth theory to address broader questions such as: Why have growth rates tended to increase over time? Why aren't flows of capital sufficient to equalize wages in different countries? How do trade policy, or aggregate research and development expenditure, or the extent of patent protection influence the rate of growth?

Quality Ladders in the Theory of Growth

Gene M. Grossman and **Elhanan Helpman**
Working Paper No. 3099
September 1989
JEL Nos. 111, 621

We develop a model of repeated product improvements in a continuum of sectors. Each product follows a stochastic progression up a quality ladder. Progress is not uniform across sectors, so an equilibrium distribution of qualities evolves over time. But the rate of aggregate growth is constant. The growth rate responds to profit incentives in the R and D sector. We explore the welfare properties of our model. We then relate our approach to an alternative that views product innovation as a process of generating an ever-expanding range of horizontally differentiated products. Finally, we apply the model to issues of resource accumulation and international trade.

The McKibbin–Sachs Global Model: Theory and Specification

Warwick H. McKibbin and **Jeffrey D. Sachs**
Working Paper No. 3100
September 1989

This paper presents the theoretical underpinnings of the MSG2 simulation model of the world economy.

The MSG2 model is a dynamic general equilibrium model of the world economy that pays particular attention to the relationship between stocks and flows and intertemporal constraints. The formation of expectations also plays an important role in the model. In the version presented here, the world is divided into the United States, Japan, Germany, the rest of the European Monetary System, and the rest of the OECD, nonoil developing countries, and OPEC.

Pension Funds and Financial Innovation

Zvi Bodie
Working Paper No. 3101
September 1989
JEL No. 520

Pension funds have played a critical role in the evolution of the markets for debt and equity securities and their derivatives in the United States over the last 15 years. The new securities and markets can be explained largely as responses to the investment demands of pension funds in an environment of increased interest rate volatility and tighter regulation.

Defined-benefit pension plans offer annuities that have a guaranteed floor specified by the benefit formula. In order to minimize the cost to the sponsor of providing this guarantee, there is a strong incentive to invest an amount equal to the present value of the accumulated benefit obligation in fixed-income securities with a matching duration. The pursuit of duration matching and related immunization strategies by pension funds has contributed to the emergence and rapid growth of markets for zero coupon bonds, GICs, CMOs, options, and financial futures contracts. Recent changes in accounting rules (FAS 87) and tax law (OBRA) are likely to reinforce the use of immunization strategies.

Inflationary Expectations and Price-Setting Behavior

Ray C. Fair
Working Paper No. 3102
September 1989
JEL No. 134

This paper tests for the existence of expectational effects in very disaggregated price equations. I estimate price equations using monthly data for each of 40 products. I also test the dynamic specification of the equations, including whether they should be specified in level form or in change form. I use two expectational hypotheses, one in which expectations of the aggregate price level are a function of the past values of the

price level, and one in which expectations are rational. Under the first hypothesis, I estimate the lag length with the other parameters; under the second hypothesis, I estimate the lead length with the other parameters.

The results strongly support the hypothesis that aggregate price expectations affect individual pricing decisions. The results do not discriminate very well between the level and change forms of the price equation, although there is a slight edge for the level form. I do not estimate the lag and lead lengths precisely, but in most cases the lag length is less than 30 months and the lead length is less than five months.

World Integration, Competitive and Bargaining Regimes Switch: An Exploration

Joshua Aizenman
Working Paper No. 3103
September 1989
JEL No. 400

This paper studies the role of an endogenous switch from a competitive to a bargaining international equilibrium. I consider two trading blocs that can engage in a free-market determined trade or a trade dictated by bargaining. Bargaining can be called for by either party, and it may involve a fixed real cost. I propose a framework in order to deal with these issues and apply it to a symmetric global environment. The bargaining equilibrium offers an international diversification of the country-specific shocks, whereas the competitive equilibrium retains the country-specific nature of the shocks. The degree of trade dependency determines the risk diversification achieved via the bargaining process, the frequency of bargaining, and the volume of trade. An increase in the relative importance of the trade-dependent activities is associated with greater international diversification of country-specific shocks, and with a greater frequency of bargaining. I derive the optimal investment—less costly bargaining will move us toward a corner solution, in which trade dependency and local shock diversification are maximized. With positive bargaining costs, there will be an internal solution with smaller diversification of local shocks. In such an environment, the choice of optimal trade dependency, at the margin, balances the expected diversification against the costs of bargaining.

The Fisherian Time Preference and the Evolution of Capital Ownership in a Global Economy

Kyoji Fukao and **Koichi Hamada**
Working Paper No. 3104
September 1989
JEL Nos. 430, 440

Conventionally, economic growth theory was based on the assumption of a constant rate of time preference. Uzawa (1968) and Obstfeld (*Quarterly Journal of Economics*, 1981) introduced the rate of time preference that increases with the utility level. Irving Fisher (*The Theory of Interest*) has a different opinion, however: that people are more time-impatient at the lower level of income.

This paper assumes a nonmonotonic time-preference schedule: people are more patient at the middle-income levels and are less patient when they are either very poor or rich. Based on a nonlinear savings function out of wealth implied by such a time-preference schedule, this paper develops a single-good, multi-country growth model of a global economy with free capital mobility. The long-run property of this system is characterized by three kinds of long-run equilibrium: the *starvation* (fatal attractor) *equilibrium*; the *imperialism equilibriums*, dominated by a nation or by a group of nations; and the *coprosperity equilibrium*, in which the wealth and the income of countries in the system grow proportionately.

This system strongly resembles some models of ecology in which species compete for their survival (May, *Stability and Complexity in Model Ecosystems*). Here we can analyze the transition of a debtor to a creditor country properly from a global perspective , and make a case for the pump-priming foreign aid or debt relief policy.

A Shred of Evidence on Theories of Wage Stickiness

Alan S. Blinder and **Don H. Choi**
Working Paper No. 3105
September 1989

We conducted a small interview survey to see how actual wage-setters would react to the central ideas of several economic theories of wage stickiness. Wage cuts were surprisingly prevalent in recent years, despite the booming economy. The strongest finding in the survey was that managers believe that perceptions of fairness play a major motivational role in labor markets. Also, a "fair" wage policy is a good deal more complicated than simply not cutting wages. We also found substantial evidence for money illusion and against the adverse-selection version of the efficiency wage model.

An Equilibrium Theory of Excess Volatility and Mean Reversion in Stock Market Prices

Alan J. Marcus
Working Paper No. 3106
September 1989
JEL Nos. 313, 311.

Apparent mean reversion and excess volatility in

stock market prices can be reconciled with the efficient market hypothesis by specifying investor preferences that give rise to the demand for portfolio insurance. Therefore, several supposed macro anomalies can be shown to be consistent with a rational market in a simple and parsimonious model of the economy. Unlike other models that have derived equilibrium mean reversion in prices, the model in this paper does not require that the production side of the economy exhibit mean reversion. It also predicts that mean reversion and excess volatility will differ substantially across subperiods.

Liquidity Constraints in Production-Based Asset Pricing Models

William A. Brock and **Blake LeBaron**
Working Paper No. 3107
September 1989

This paper explores the time-series implications of introducing credit constraints into a production-based asset pricing model. The parameter values we chose for the simulations generate reasonable values for aggregate fluctuations. We find that mean reversion in simulated returns series, measured by variance ratio tests, is enhanced when we introduce binding credit constraints. Without these constraints, there is very little evidence of mean reversion. This is consistent with financial market data, in which the weak evidence for mean reversion is stronger in returns of small firms. We run other tests on the simulated series, including checking the standard deviation, skewness, and kurtosis. These tests do not show strong differences between the constrained and the unconstrained firms in the model.

Striking for a Bargain Between Two Completely Informed Agents

Raquel Fernandez and **Jacob Glazer**
Working Paper No. 3108
September 1989
JEL Nos. 026, 830

This paper models the wage-contract negotiation procedure between a union and a firm as a sequential bargaining process in which the union also decides, in each period, whether or not to strike for the duration of that period. We show that there are subgame-perfect equilibriums in which the union engages in several periods of strikes prior to reaching a final agreement, although both parties are completely rational and fully informed. This has implications for other inefficient phenomena such as tariff wars, debt negotiations, and wars in general. We characterize the set of equilibriums, show that strikes can occur in real time, and discuss extensions of the model, such as lockouts and the possibility of multiple recontracting opportunities.

Asset Prices and Interest Rates in Cash-in-Advance Models

Alberto Giovannini and **Pamela Labadie**
Working Paper No. 3109
September 1989

This paper develops a method for solving and simulating cash-in-advance models of money and asset prices. The models are calibrated to U.S. data spanning 1890–1987 and are used to study some empirical regularities observed in the data over this period. This paper focuses on: the average level of stock returns and returns on nominal bonds; the covariation of *realized* real interest rates and real asset returns with inflation; and the ability of nominal interest rates to predict inflation and nominal stock returns.

The Stolper–Samuelson Theorem Reconsidered: An Example of Ricardian Dynamic Trade Effects

Richard E. Baldwin
Working Paper No. 3110
September 1989

Standard trade theory views the capital stock as an endowment. However, trade policy can affect a country's steady-state capital stock. By ignoring the endogeneity of capital, standard analysis is incomplete and can be misleading. For instance, when capital is endogenous, the Stolper–Samuelson theorem incorrectly predicts the long-run impact of a tariff on factor rewards in a 2-by-2 trade model. Moreover, the output effects of a trade policy can be amplified greatly by its indirect effect on the steady-state capital stock. Since this indirect effect may take a very long time to be fully realized, trade policy can have a long-lasting effect on growth. Ricardo first studied this link between trade and steady-state factor supplies.

Corporate Payouts and the Tax Price of Corporate Retentions: Evidence from the Undistributed Profits Tax of 1936–8

R. Glenn Hubbard and **Peter C. Reiss**
Working Paper No. 3111
September 1989

Many provisions of the U.S. tax code affect corporate decisions to pay out or retain earnings. Most studies examined the effects of dividend and capital gains taxes on payouts, but relatively few considered the effects of corporate taxes on retentions. In the early 1900s, the United States experimented with several

corporate taxes on retentions. These taxes increased the price of corporate retentions, thereby encouraging corporate payouts. This paper studies the response of corporations to the most significant of these experiments—the Undistributed Profits Tax of 1936-8.

To the extent that corporate payouts did respond significantly to a change in the *corporate* price of retentions, we can learn more about the implicit prices corporations place on internal funds. These estimates enable us to better understand the effects of government policies designed to encourage corporate reinvestment. Second, our study provides evidence relevant to several recent proposals designed to resolve managerial agency problems. These proposals require managers to pay out their "free" cash flows as a way of promising not to waste financial capital. The Undistributed Profits Tax of 1936-8 had a similar goal. Its maximum marginal tax rate of 27 percent on corporate retentions gave managers strong incentives to pay out retained earnings.

We use a panel dataset on 26 large petroleum companies. These data have a number of advantages, not the least of which is the relative homogeneity of petroleum firms' investment opportunities. We find that, on average, corporate payout policies did respond significantly to the surtax in 1936, the first year of the tax. There was much less response in 1937, and practically none in the last year, 1938. The smaller payouts in 1937 and 1938 suggest that managers were able to find margins other than dividends through which they could reduce their tax burden. These other margins included the short-term manipulation of expenses and delays in recognizing revenues. These responses suggest that managers place a relatively high valuation on internal versus external funds. They also suggest that proposals that would require managers to pay out free cash flows must resolve an important incentive problem—how to get managers to reveal fully what cash flows are "free." Finally, our results document the importance of recognizing behavioral responses to taxes. That is, firms may respond to changes in relative tax prices by finding other margins by which they can reduce their tax burdens.

Capital Controls and International Trade Finance

Alberto Giovannini and **Jae Won Park**
Working Paper No. 3112
September 1989
JEL No. 431

This paper studies the effects of prohibiting individuals from holding foreign assets, and of allowing firms to trade in foreign assets only up to what is needed to finance export and import activities. Although firms can perform arbitrage between domestic and foreign financial markets, the distortions in asset markets are not fully arbitraged away. Instead they are transmitted to domestic goods markets. We discuss the effects of shocks in foreign financial markets and in domestic fiscal policy. We show that both the dynamics and the steady states are affected crucially by capital controls.

Social Security and the Determinants of Full and Partial Retirement: A Competing-Risks Analysis

Glenn T. Sueyoshi
Working Paper No. 3113
September 1989

Empirical analyses of retirement typically assume a single form of retirement. In this paper, I consider the determinants of retirement in a competing-risks model that allows for full and partial retirement. Simulation results indicate that the large increase in Social Security benefits in the early 1970s has had moderate effects upon retirement, increasing the probability of early full retirement (before age 65) by less than 5 percent and reducing the probability of partial retirement by 1-2 percent.

Introducing Risky Housing and Endogenous Tenure Choice into Portfolio-Based General Equilibrium Models

Patric H. Hendershott and **Yunhi Won**
Working Paper No. 3114
September 1989
JEL Nos. 323, 932

Portfolio-based general equilibrium models are useful for analyzing the interaction between the structure of individual tax rates and the way particular assets are taxed; for considering the role of differential tax rules and risk in determining household portfolio choices; and for addressing distributional questions. Unfortunately, current versions of these models give housing short shrift. Owner housing is assumed to be riskless; rental housing is not a separately identifiable asset; and tenure choice, of necessity, is determined exogenously. This paper shows how these models can be extended to incorporate a full housing subsector. We use an extended version of the Galper-Lucke-Toder (GLT) model to analyze the impact of the 1986 Tax Act.

The interest rate impacts of the extended model are similar to those of GLT: a sharp decline in the fully taxable rate (just over one percentage point); a noticeable

fall in the corporate equity rate (two-thirds of a point); and increases in the returns on noncorporate equity and tax-exempt bonds. The capital stock effects are different because of endogenous tenure choice, the riskiness of owner housing, and the smaller initial holdings of owner housing by high-income households. The owner housing stock increases by 3 percent, the increase coming roughly 50/50 from rental housing and state and local capital. The homeownership rate rises by one-half of a percentage point, virtually all of the increase occurring for households with incomes under $30,000. The small utility gains, $14 billion, are roughly comparable to those of the GLT model. While most of the gains go to high-income households, other households also gain. This is different from the results originally reported in GLT, which contained computational errors.

A.I.L. Theory and the Ailing Phillips Curve: A Contract-Based Approach to Aggregate Supply

Roger E. A. Farmer
Working Paper No. 3115
September 1989

Using U.S. data, I find a structurally stable aggregate supply relationship between real and nominal rates of interest and the rate of unemployment. After reviewing theories of contracts based on the twin assumptions of asymmetric information and limited collateral, I argue that these A.I.L. theories provide a strong foundation for a contract-based explanation of aggregate supply. I suggest that the original Phillips curve estimates should be reinterpreted in light of A.I.L. theories that represent alternatives to the Phelps-Friedman interpretation of the Phillips relationship.

Investment, Financial Factors, and Cash Flow: Evidence from U.K. Panel Data

Michael Devereux and **Fabio Schiantarelli**
Working Paper No. 3116
September 1989
JEL Nos. 131, 315

This paper provides some econometric evidence on the impact of financial factors—cash flow, debt, and stock measures of liquidity—on the investment decisions of U.K. firms. We introduce these financial variables through an extension of the Q model of investment, which explicitly includes agency/financial distress costs. We discuss whether the significance of cash flow comes from its being a proxy for output or because it is

a better measure of market fundamentals than Q is. We also investigate the effect of financial factors across different types of firms, which vary by size, age, and type of industry (growing and declining). Finally, we analyze the determinants of the magnitude of the cash flow effect and explain why caution must be exercised in attributing interfirm differences only to differences in the importance of agency or financial distress costs.

Solving Nonlinear Stochastic Growth Models: A Comparison of Alternative Solution Methods

John B. Taylor and **Harald Uhlig**
Working Paper No. 3117
September 1989
JEL Nos. 213, 214, 111

This paper reports on a comparison of several alternative numerical solution techniques for nonlinear rational expectations models. We asked individual researchers to apply their different solution techniques to a simple, representative agent, optimal, stochastic growth model. We then compared decision rules as well as simulated time series. The differences among the methods turned out to be quite substantial for certain aspects of the growth model. Therefore, researchers might want to be careful not to rely blindly on the results of any chosen numerical solution method in applied work.

The Nonoptimality of Optimal Trade Policies: The U.S. Automobile Industry Revisited, 1979–85

Kathleen Hogan, Kala Krishna, and **Phillip Swagel**
Working Paper No. 3118
September 1989
JEL Nos. 420, 422

We examine the sensitivity of simple calibration models of trade in imperfectly competitive industries to changes in model specification, as well as to changes in the calibration parameters. We find that not just the magnitude, but also the sign, of the optimal trade policies is very sensitive to the change in model specification. Indeed, use of policies derived from the "wrong" model can reduce welfare from the status quo. However, the welfare gains that can be obtained from application of the "correct" model remain limited. Calibration models nonetheless provide useful estimates of firm and market behavior over time, as well as of disaggregated elasticities of demand. We conclude that careful empirical work is necessary to guide model selection. For the present, the case for activist trade policy on the basis of calibration models should not be made.

On the Growth Effects of 1992

Richard E. Baldwin
Working Paper No. 3119
September 1989

This paper demonstrates that several types of dynamic trade effects can be quantified easily, at least roughly. These dynamic effects on output are much larger than the static effects measured by existing empirical studies of trade liberalizations. This paper exposits and measures the Ricardian dynamic trade effect (the link between trade and the steady-state level of productive factors). It also exposits and measures the Grossman–Helpman dynamic trade effect (the link between trade and the steady-state rate of accumulation of productive factors) by calibrating two of the "new" growth theory models.

Economic Growth in a Cross Section of Countries

Robert J. Barro
Working Paper No. 3120
September 1989
JEL Nos. 111, 023

In neoclassical growth models with diminishing returns to capital, a country's per capita growth rate tends to be related inversely to its initial level of per capita income. This convergence hypothesis seems inconsistent with the cross-country evidence, which indicates that per capita growth rates for about 100 countries since World War II are not correlated with the starting level of per capita product. However, if one holds constant initial human capital—as measured by primary and secondary school enrollment rates—there is evidence that countries with lower per capita product tend to grow faster. Countries with higher human capital also have lower fertility rates and higher ratios of physical investment to GDP. These results on growth, fertility, and investment are consistent with some recent theories of endogenous economic growth. The cross-country data indicate that government consumption is related inversely to growth, whereas public investment has little relationship to growth. Average growth rates are related positively to political stability, which may capture the benefits of secure property rights. There is also some indication that distortions of the prices of investment goods are bad for growth. Finally, the analysis leaves unexplained a good deal of the relatively weak growth performances of countries in sub-Saharan Africa and Latin America.

Debt Write-Downs and Debt–Equity Swaps in a Two-Sector Model

Linda Goldberg and **Mark Spiegel**
Working Paper No. 3121
September 1989

Debt overhang models have motivated the possibility of Pareto-improving, market-based debt reduction schemes under an assumption of creditor seizure in bad states. These models usually show that pure debt forgiveness is in the interest of debtor nations, but debt repurchase programs are not.

This paper introduces into the debtor nation a safe sector that is not exposed to seizure during default states. Two important results that emerge are that: debt forgiveness is not necessarily in the interest of all debtors, and the potential for Pareto-improving debt-equity swaps is magnified.

The Gold Standard since Alec Ford

Barry J. Eichengreen
Working Paper No. 3122
September 1989
JEL No. 430

This paper surveys studies of the operation of the classical gold standard published after Alec Ford's 1962 book, *The Gold Standard 1880–1914: Britain and Argentina*. These studies either emphasize stock equilibrium in money markets (examples of the so-called "monetary approach") or stock-flow interactions in bond markets.

The paper then asks how the gold standard worked. A central element of the stability of the gold standard is the credibility of the official commitment to gold. Knowing that policymakers would intervene in defense of the gold standard caused markets to respond in the same direction in anticipation of official action. Hence, there was minimal need for actual intervention. Credibility derived from the fact that the commitment to the gold standard was international. Central banks, including the Bank of England, could rely on foreign assistance in times of exceptional stress. Again, there was only minimal need for actual assistance because the commitment to offer it was fully credible. Thus, international cooperation was a central element of how the classical gold standard worked.

The Effects of Immigration on the Labor Market Outcomes of Natives

Joseph G. Altonji and **David Card**
Working Paper No. 3123
September 1989
JEL No. 820

This paper examines the effects of immigration on the labor market success of less-skilled natives. Working from a simple model of a local labor market, we show that the effects of immigration can be estimated from the correlations between the fraction of immigrants in a city and the employment and wages of natives. The size of the effects depends on the fraction and skill level of the immigrants.

We then compute these correlations using city-specific results for individuals in 120 major SMSAs in the 1970 and 1980 Censuses. We also use the relative industry distributions of immigrants and natives to directly assess the degree of labor market competition between them.

We find a modest degree of competition between immigrants and less-skilled natives. A comparison of industry distributions shows that an increase in the fraction of immigrants in the labor force translates to an approximately equivalent increase in the supply of labor to industries that employ less-skilled natives. Based on this calculation, immigrant inflows from 1970–80 generated increases of 1–2 percent in labor supply to these industries in most cities. A comparison of industry distributions of less-skilled natives in high- and low-immigrant share cities between 1970 and 1980 shows some displacement of natives out of low-wage, immigrant-intensive industries.

We find that immigration has little effect on the employment of the four race/sex groups that we consider. Our estimates of the effect of immigration on the wages of less-skilled natives are sensitive to the specification and estimation procedure. However, our preferred estimates, which are based on first differences between 1980 and 1970 and the use of instrumental variables to control for the endogeneity of immigrant inflows, imply that an increase in immigrants of 1 percent of an SMSA's population reduces native wages by roughly 1.2 percent.

International Monetary Instability between the Wars: Structural Flaws or Misguided Policies?

Barry J. Eichengreen
Working Paper No. 3124
September 1989
JEL No. 430

This paper reassesses the history of the international monetary system between the wars. It confirms the generality of several widely held interpretations of recent experience with floating exchange rates. There is a positive association between nominal exchange rate flexibility and nominal exchange rate variability. There is also a positive association between nominal exchange rate variability and real exchange rate variability. But policies of intervention that reduce nominal exchange rate variability do not guarantee a proportionate reduction in nominal exchange rate risk or in real exchange rate variability and unpredictability; for that, a credible commitment to a stable intervention rule is needed.

I then consider four potential explanations for the collapse of the fixed rate regime that prevailed from 1926–31: 1) failure to play by the "rules of the game"; 2) inadequate international economic leadership by the United States; 3) inadequate cooperation among the leading gold standard countries; and 4) structural features of a system in which reserves were comprised of both gold and foreign exchange. I conclude by assessing the role of the international monetary system in the Great Depression.

A Multi-Country Study of the Information in the Term Structure about Future Inflation

Frederic S. Mishkin
Working Paper No. 3125
September 1989
JEL No. 310

This paper provides evidence on what the term structure (for maturities of 12 months or less) tells us about future inflation in ten OECD countries. The empirical results do not suggest that the level of interest rates helps to forecast the future level of inflation. Instead, for the majority of the countries in the sample, the term structure does not contain a great deal of information about the future path of inflation. However, the results for France, the United Kingdom, and Germany tell a different story. In those countries, the term structure contains a highly significant amount of information about future changes in inflation. This paper suggests that central banks in general should be cautious about using the term structure of interest rates as a guide for assessing inflationary pressures in the economy, as is currently under construction by the U.S. central bank. However, for every country studied except the United Kingdom, there is a great deal of information in the term structure of *nominal* interest rates about the term structure of *real* interest rates. This finding is extremely useful, because it suggests that for most countries researchers can examine observable data on the nominal term structure to provide them with information about the behavior of the *real* term structure.

The Information in the Longer Maturity Term Structure about Future Inflation

Frederic S. Mishkin
Working Paper No. 3126
September 1989
JEL No. 310

This paper provides empirical evidence on the information in the term structure for longer maturities about both future inflation and the term structure of real interest rates. There is substantial information in the longer maturity term structure about future inflation: the slope of the term structure has a great deal of predictive power for future changes in inflation. On the other hand, at the longer maturities, the term structure of nominal interest rates contains very little information about the term structure of real interest rates. These results are strikingly different from those found for very short-term maturities (six months or less) in previous work. For maturities of six months or less, the term structure contains no information about the future path of inflation, but it does contain a great deal of information about the term structure of real interest rates.

At longer maturities, the term structure of interest rates can be used to help assess future inflationary pressures: when the slope of the term structure steepens, the inflation rate likely will rise in the future. When the slope falls, it is an indication that the inflation rate will fall. However, we still must remain cautious about using the evidence presented here to advocate that the Federal Reserve should target the term structure in conducting monetary policy. A change in Federal Reserve operating procedures that focuses on the term structure may well cause the relationship between the term structure and future inflation to shift, with the result that the term structure no longer would be an accurate guide to the path of future inflation. If this were to occur, Federal Reserve monetary policy could go far astray by focusing on the term structure of interest rates.

The Evolution of Unjust-Dismissal Legislation in the United States

Alan B. Krueger
Working Paper No. 3127
September 1989
JEL No. 822

In the last decade, state courts in many areas of the United States have ruled in favor of employees who alleged that they were improperly dismissed. Yet many economists contend that any judicial or legislative departure from the employment-at-will doctrine is regressive and inefficient because it restricts employment flexibility and freedom of contract.

This paper advances a theory in which employer groups eventually support unjust-dismissal legislation in response to the threat of large and variable damage awards imposed by the judicial system. Legislation can define property rights clearly and limit employer liability. In contrast to the common law, the unjust-dismissal laws that have been proposed are likely to result in smaller awards, to reduce uncertainty, to resolve disputes rapidly, and to reduce legal and other transactions costs. The proposal of unjust-dismissal legislation thus is a response to court rulings that weaken and obfuscate the employers' right to dismiss employees at will. This is not consistent with the conventional political economy view of unjust-dismissal legislation.

Endogenous Election Timings and Political Business Cycles in Japan

Takatoshi Ito
Working Paper No. 3128
September 1989

This paper presents a theoretical model of political business cycles in a parliamentary system and tests the predictions and hypotheses of that model against postwar Japanese data. In a parliamentary system, unlike a presidential system, the timing of a general election is endogenous. Thus, one of the interesting questions in a parliamentary system is whether elections cause business cycles or, conversely, whether economic expansions trigger elections.

The postwar Japanese experience strongly indicates that the government did not manipulate policies in anticipation of approaching elections. Instead, general elections usually were held during times of autonomous economic expansion. In other words, the Japanese government opportunistically manipulated the timing of elections rather than the economy.

International Differences in Capital Taxation and Corporate Borrowing Behavior: Evidence from the U.S. Withholding Tax

Leslie E. Papke
Working Paper No. 3129
September 1989
JEL Nos. 320, 442, 521

Securities transactions in the United States on a net basis climbed from $19 billion in 1983 to $50 billion in

1985. This rise was caused almost entirely by an increase in foreign purchases of U.S. securities—largely corporate and government bonds. One suggested reason for this phenomenon is foreign investors' perception that the United States is a safe haven: there are strong investment fundamentals in the United States relative to other industrialized countries. Moreover, since the summer of 1984, these instruments have been free from withholding tax on interest paid to foreign holders of notes and bonds issued by U.S. entities.

Recently, there has been discussion of reimposing the withholding tax. A common counter argument is that such a tax is notoriously ineffective at raising revenue. As evidence, opponents point to the U.S. experience with the now-repealed withholding tax on the interest earned by foreigners. This paper explains the reasons that the tax was ineffectual. It is essentially a case study of the earlier U.S. experience with a withholding tax. In particular, the paper focuses on corporate borrowing behavior during the tenure of the tax and the change that took place after repeal.

Unit Roots in Real GNP: Do We Know, and Do We Care?

Lawrence J. Christiano and **Martin S. Eichenbaum**
Working Paper No. 3130
October 1989

No, and maybe not.

Cost and Price Movements in Business Cycle Theories and Experience: Hypotheses of Sticky Wages and Prices

Victor Zarnowitz
Working Paper No. 3131
October 1989
JEL Nos. 131, 134

In the post–World War II period, wage and price levels reacted much less to business contractions than they had earlier. Inflation prevailed and was increasingly persistent. The contractions themselves became relatively short and mild. All of these developments have common roots in the major structural, institutional, and policy changes of the era.

This paper looks at assumptions about wage and price behavior in certain contemporary macroeconomic theories and the implications of those assumptions for the analysis of the business cycle. I relate the various hypotheses of real and nominal "rigidities" to each other and to alternative theories of how markets clear.

Long-term stable wage and price arrangements or contracts have important equilibrium aspects that are consistent with high degrees of competition. To put it differently, there are good reasons for market clearing by nonprice mechanisms. Further, imperfections of competition, information, and markets make some stickiness of wages and prices inevitable. Changes in relative prices and costs, productivity, and profitability play an important role in the propagation of business cycles.

Cost and Price Movements in Business Cycle Theories and Experience: Causes and Effects of Observed Changes

Victor Zarnowitz
Working Paper No. 3132
October 1989
JEL Nos. 131, 134

In this paper, a sequel to NBER Working Paper No. 3131, I reexamine the historical record of prices and wages. What changes in the behavior of prices and wages show up in the data, and how can they be explained? Next, I identify and assess the models that imply that price flexibility may be destabilizing. This requires an analysis of the role of changes in interest rates and price expectations.

In general, money wages and prices were predominantly procyclical before World War II, at least during the major fluctuations, but did not decline in the more recent business contractions. Real wages never conformed closely to business cycles, but most of their weak reactions were procyclical.

Depending on the underlying condition and sources of the shifts in the economy, the departures from flexibility may or may not be destabilizing. However, the main contrast is between the stabilizing potential of flexible relative prices and the destabilizing potential of major general price movements.

Major deflations of the past had strong and adverse expectational and distributional effects. So did the recent inflation as it accelerated and grew increasingly volatile. But moderate fluctuations in the price level or the rate of inflation are not necessarily detrimental to the growth in real economic activity.

Forecasting Aggregate Period-Specific Birth Rates: The Time-Series Properties of a Microdynamic Neoclassical Model of Fertility

James J. Heckman and **James R. Walker**
Working Paper No. 3133
October 1989

This paper demonstrates the value of microdata for understanding the effect of wages on life-cycle fertility

dynamics. Conventional estimates of neoclassical economic fertility models obtained from linear aggregate time-series regressions are criticized widely for not being robust when adjusted for serial correlation. Moreover, the forecasting power of these aggregative models is inferior to conventional time-series models that assign no role to wages. We demonstrate that when neoclassical models of fertility are estimated on microdata using methods that incorporate key demographic restrictions, and when they are aggregated properly, they have considerable forecasting power.

Staggered Price Setting with Endogenous Frequency of Adjustment

David H. Romer
Working Paper No. 3134
October 1989
JEL No. 023

Taylor and Blanchard's classic models of staggered adjustment assume that the frequency of price or wage adjustment is exogenous. This paper develops a model in which the frequency of price of price changes is endogenous. It then uses the model to analyze the effects of changes in the parameters of the economy on the frequency of adjustment and the real effects of monetay shocks.

Public Confidence and Debt Management: A Model and a Case Study of Italy

Alberto Alesina, Alessandro Prati, and **Guido Tabellini**
Working Paper No. 3135
October 1989
JEL No. 310

High-debt countries may face the risk of self-fulfilling debt crises. If the public expects that the government will be unable to roll over the maturing debt in the future, they may refuse to buy debt today and may choose to hold foreign assets. This lack of confidence then may be self-fulfilling. This paper argues that under certain conditions, the occurrence of a confidence crisis is more likely if the average maturity of the debt is short. On the contrary, a long and evenly distributed maturity structure may reduce such a risk. We consider the recent Italian experience from this perspective. In particular we ask whether recent developments in the market for government debt show signs of unstable public confidence and of a risk premium.

Market Forces and the Public Good: Competition among Hospitals and Provision of Indigent Care

Richard G. Frank, Jean Mitchell, and **David S. Salkever**
Working Paper No. 3136
October 1989
JEL No. 913

We focus on the impact of competitive forces on the provision of social or merit goods by nonprofit hospitals. Specifically, we examine the behavior of altruistic nonprofit hospitals in supplying charity care. We also analyze the effects of competitive pressures and past provision of charity care on the supply of philanthropic donations to nonprofit hospitals. Using data on nonprofit hospitals in Florida for 1980-4, we specify and estimate empirical models of the supply of donations and charity care. Our estimates imply strong effects of income on the supply of charity care. This raises the possibility that competitive pressures and limits on hospital payments, under public insurance programs, may reduce the supply of indigent care. Our results also suggest that philanthropic donations will alleviate the competitive pressures to a small degree.

Tax Credits for Debt Reductions

Michael P. Dooley and **Elhanan Helpman**
Working Paper No. 3137
October 1989
JEL Nos. 430, 440

Incentives for domestic investment in debtor countries depend on the terms of their external obligations and on the tax system used to provide government revenue for debt payments. Existing debt contracts could be altered to improve the incentives for investment, but this has been difficult to accomplish, perhaps because individual creditors have incentives not to agree to such changes. This paper shows that a simple tax credit scheme that can be implemented unilaterally by the debtor government can overcome at least some of the inefficiencies caused by existing debt contracts.

On the Sequencing of Structural Reforms

Sebastian Edwards
Working Paper No. 3138
October 1989
JEL Nos. 400, 410

Both OECD and developing economies have embarked on structural reforms aimed at dismantling

regulations and reducing distortions. Despite their differences, both groups also have to deal with the problems of the appropriate sequencing and speed of reforms. This paper critically reviews the literature on sequencing and speed of structural reforms among LDCs, drawing out features that are relevant for OECD economies. It then develops a formal framework, based on a welfare criterion, for evaluating efficiency effects of structural policies, particularly observing the way in which distortions interact, both intra- and intertemporally. I then use the framework to discuss some important issues, including: the sequencing of micro and macro reforms ("competition of instruments"); broad-front versus sequential reforms; and the role of policy credibility.

Promoting Investment under International Capital Mobility: An Intertemporal General Equilibrium Analysis

A. Lans Bovenberg and **Lawrence H. Goulder**
Working Paper No. 3139
October 1989
JEL Nos. 320, 430

This paper uses a dynamic computable general equilibrium model to compare the effects of two U.S. policies intended to promote domestic capital formation in an economy open to international capital flows: 1) the introduction of an investment tax credit (ITC); and 2) a reduction in the statutory corporate income tax rate. These policies differ in their treatment of old (existing) and new capital. The model features: adjustment dynamics; intertemporal optimization by U.S. and foreign households and firms endowed with model-consistent expectations; imperfect substitution between domestic and foreign assets in portfolios; an integrated treatment of the current and capital accounts of the balance of payments; and industry disaggregation in the United States.

We find that the two policies (scaled to imply the same revenue cost) differ in their consequences for foreign and domestic welfare, the balance of payments, international competitiveness, and U.S. industrial structure. The ITC produces larger gains in domestic welfare, because it is more effective at reducing intertemporal distortions. The two policies have similar implications for intersectorial efficiency. From the point of view of domestic welfare, the relative attractiveness of the ITC is enhanced when international capital mobility is taken into account, since international transfers of wealth are associated with foreign ownership of part of the U.S. capital stock. Whereas reducing the corporate tax rate initially improves the trade balance, introducing the ITC causes the trade balance to deteriorate in the short run. Because the real exchange rate is lower, export-oriented sectors perform better relative to nontradable industries under a lower corporate tax rate than in the presence of the ITC, especially in the short run.

What Do Rich Countries Trade with Each Other? R and D and the Composition of U.S. and Swedish Trade

Magnus Blomström, Robert E. Lipsey,
and **Lennart Ohlsson**
Working Paper No. 3140
October 1989
JEL No. 421

A long tradition in international economics explains comparative advantage by differences between countries in their stage of development, or their endowments of land, labor, and capital, and suggests that universal development will reduce the importance of trade. Sweden and the United States possess similar factor endowments and have converged in overall productivity, but their bilateral trade has grown. The example of these two countries suggests that mutual technological progress may promote trade, with the new basis for specialization being the different technology levels, or R and D intensities of the goods being traded, rather than the initial endowments.

Multinational Corporations and Productivity Convergence in Mexico

Magnus Blomström and **Edward N. Wolff**
Working Paper No. 3141
October 1989

This paper examines the impact of the operations of foreign-owned multinational firms on the productivity growth of Mexican manufacturing industries from 1965–84. It investigates the extent to which the penetration of a sector by foreign-owned firms affects the productivity of local firms in that sector, and whether there is any evidence of convergence between that industry's productivity level and that of the United States.

The main results are: 1) productivity levels of locally owned firms in Mexico have converged with those of foreign-owned firms; 2) both the rate of productivity growth of local firms and their rate of catch-up to the multinationals are related positively to the degree of foreign ownership of an industry; 3) the productivity gap between Mexican and U.S. manufacturing has diminished between the mid-1960s and the mid-1980s; and 4) the rate of productivity growth of Mexican industries and Mexico's rate of convergence to the United States are higher in industries with a greater presence of multinationals. We conclude that multinational firms have contributed to a geographical diffusion of technology and have acted as a bridge between advanced and less-advanced countries.

Corporate Taxation and the Efficiency Gains of the 1986 Tax Reform Act

Jane G. Gravelle and **Laurence J. Kotlikoff**
Working Paper No. 3142
October 1989
JEL No. 321

The 1986 Tax Reform Act, while having little effect on the overall effective tax rate on U.S. capital income, did reduce the difference in effective taxation of corporate and noncorporate capital significantly within a number of U.S. industries. The Mutual Production Model, developed in Gravelle and Kotlikoff (1989), can be used to study the efficiency gains from the reduction in corporate tax wedges within industries. Unlike the Harberger Model, the Mutual Production Model permits both corporate and noncorporate firms to produce the same goods and, therefore, to coexist within a given industry.

This paper develops an 11-industry, 55-year dynamic life-cycle version of the Mutual Production Model. We use this model to study the steady-state efficiency gains associated with the new law. While we do not simulate the economy's transition path, our steady-state welfare changes arise from compensating transitional generations for the first-order redistribution of income associated with the tax reform.

We find that the 1986 Tax Reform Act reduces excess burden by 0.85 percent of our model's present value of consumption. This efficiency gain reflects the Tax Reform Act's reduction in corporate/noncorporate tax wedges, particularly in those industries with significant noncorporate production. Measured as a flow, the 1988 estimated efficiency gain from the Tax Reform Act is $31 billion.

Temporal Agglomeration

Robert E. Hall
Working Paper No. 3143
October 1989
JEL No. 131

When economic activity is concentrated over space or time, it is more efficient. Most production occurs in geographic "hot spots" on weekdays between 9 a.m. and 12 noon and between 1 and 5 p.m. The thick-market efficiencies that encourage the concentration of activity at certain times may be internal or external to the firm. When they are internal, the firm can make efficient arrangements to take advantage of the effects. It should marshal all of its forces from time to time in bursts of activity. When thick-market effects are external to the firm, the possibility of indeterminacy can arise. Aggregate fluctuations may occur with either internal or external thick-market effects.

Spontaneous Volatility of Output and Investment

Robert E. Hall
Working Paper No. 3144
October 1989
JEL No. 131

Spontaneous shifts in output originating within the business sector are an important factor in aggregate fluctuations. This paper develops a simple two-component decomposition of the movement of real GNP. One component is the path that GNP would have followed in order to deliver the volume of goods and services actually taken by consumers, government, and the rest of the world. The second component, noise, is the residual between actual GNP and the theoretical calculation. The two components are roughly the same size, but noise has more of its power at higher frequencies.

A Framework for Studying Monetary Nonneutrality

Robert E. Hall
Working Paper No. 3145
October 1989
JEL No. 131

This paper sets forth a simple general structural model of aggregate output, the interest rate, and the price level. The core of the model is the determination of the level of output as a product-market equilibrium, either competitive or oligopolistic, possibly indeterminate because of thick-market externalities. Monetary non-neutrality can affect either product demand or product supply. In either case, monetary policy has leverage over output as well as over the price level. The paper develops a two-diagram analysis intended to replace the aggregate demand-aggregate supply diagram.

Real Wages, Monetary Accommodation, and Inflation

Elhanan Helpman and **Leonardo Leiderman**
Working Paper No. 3146
October 1989
JEL Nos. 310, 130

We analyze the dynamics of inflation in an economy characterized by a forward-looking, staggered price and wage determination process, and by monetary accommodation. In our model, inflation reconciles the conflicting claims of workers and firms. The model is capable of generating a positive association between real wages and inflation, of the type that has been observed in some high-inflation countries. It generates a price-wage spiral but does not result in inflationary inertia.

Measurable Dynamic Gains from Trade

Richard E. Baldwin
Working Paper No. 3147
October 1989

Productive factors, such as human and physical capial, are accumulated. Trade can affect the steady-state levels of such factors. Consequently, as the economy moves to its new steady state, trade liberalization will have dynamic effects on output and welfare, in addition to its usual static effects. The output impact of this dynamic effect is measurable and appears to be quite large. The welfare impact of this dynamic effect is also measurable. The size of this dynamic gain from trade depends on the importance of external scale economies.

The Effects of Human Resource Management Decisions on Shareholder Values

John M. Abowd, John M. Hannon,
and George T. Milkovich
Working Paper No. 3148
October 1989
JEL Nos. 512, 800

We examine the effects of selected human resource (HR) decisions by management on the abnormal change in total shareholder return. We classify announcements of human resources decisions into five types: general; compensation and benefits; staffing; shutdowns and relocations; and miscellaneous. Using an event-study methodology, we investigate whether any of these HR decisions has a discernible effect on the level of, or variation in, abnormal total shareholder return.

We find no consistent pattern of increased or decreased valuation in response to the different types of HR announcements, even after controlling for the likely effect of such announcements on total compensation costs. We do find substantially increased variation in abnormal total shareholder return around the announcement date, which indicates that HR decisions do provide information to the stock market. Increased variation in total shareholder value is permanent staff reductions and shutdown/relocations. The absence of consistent effects on valuation, combined with the evidence of increased variation in shareholder value, may be attributed to uncontrolled firm-specific factors, the categorization of the HR events or, simply, to the unique interpretations the market places upon these events.

Does Performance-Based Managerial Compensation Affect Subsequent Corporate Performance?

John M. Abowd
Working Paper No. 3149
October 1989
JEL Nos. 512, 800

An effective compensation based on performance must increase the probability of high corporate performance in order to justify its incremental expense relative to a straight salary system. If current performance and current compensation are positively related, then the pay system is performance-based in practice, if not explicitly. This study considers whether increasing the sensitivity of current compensation to current performance is associated with higher performance in the future.

For accounting-based measures of performance, there is only weak evidence that higher performance-based compensation is associated with improved future performance. However, for economic and market measures of performance, the evidence is stronger. Payment of an incremental 10 percent bonus for good economic performance is associated with a 30- to 90-basis-point increase in the expected aftertax gross economic return in the next fiscal year. Payment of an incremental raise of 10 percent following a good stock market performance is associated with a 400- to 1200-basis-point increase in expected total shareholder return. These results are comparable in magnitude when compared to the intrinsic variability of the performance measure considered.

Demographics, Fiscal Policy, and U.S. Saving in the 1980s and Beyond

Alan J. Auerbach and Laurence J. Kotlikoff
Working Paper No. 3150
October 1989
JEL No. 840

In this paper we use data from the Consumer Expenditure Surveys of the 1980s to consider the effect of demographic change on past and future U.S. saving rates. We find that demographic change may alter the U.S. rate of national saving and current account position significantly over the next 50 years. The gradual aging of the population is predicted to lead to higher saving rates over the next three decades, with declines in the rate of saving thereafter. Associated with these predicted changes in saving rates is a predicted improvement in the U.S. current account position in the 1990s, with a very gradual deterioration during the subsequent decades. While demographics is potentially very important in explaining saving, it does not appear to explain a drop in the saving rate in the 1980s.

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