

# NBER Reporter

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## Program Report

### Labor Studies

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During the three years since my last article, the NBER's Program in Labor Studies has produced reports on nearly 200 individual studies as working papers and conference papers. These studies dealt with a very wide range of subjects. Fourteen percent of the working papers focused on traditional human capital analyses of earnings and mobility; 13 percent studied trade unionism in the United States; 18 percent examined the effects of government programs on labor markets; 11 percent focused on labor supply behavior; 11 percent were about market determination of wages and employment; and 4 percent dealt with methodology and data. The program's most recent research is slightly different from the earlier work, in that 15 percent of the papers deal with overseas labor market institutions, and another 15 percent concentrate on the behavior of employers and demand-side issues.

### Firm Behavior and Market Outcomes

The growing research on firm behavior, and much of the work on market determination of wages and employment, is more balanced than in the recent past when labor economists tended to focus solely on supply behavior and the effects of individual characteristics on wages. John M. Abowd, Roland G. Ehrenberg, and others have studied how firm policies on compensation and human resources affect economic performance.<sup>1</sup>

<sup>1</sup>J. M. Abowd, J. M. Hannon, and G. T. Milkovich, "The Effects of Human Resource Management Decisions on Shareholder Values," NBER Working Paper No. 3148, October 1989; C. Ichniowski, "Human Resource Management Systems and the Performance of U.S. Manufacturing Businesses," NBER Working Paper No. 3349, September 1990; J. M. Abowd, "Does Performance-Based Managerial Compensation Affect Subsequent Corporate Performance?" NBER Working Paper No. 3149, October 1989; A. P. Bartel, "Formal Employee Training Programs and Their Impact on Productivity: Evidence from a Hu-

### In This Issue

Program Report: Labor Studies	1
Research Summaries	
The Economics of the Elderly	5
Taxation in the Global Economy	9
NBER Profile	11
Conferences	12
Conference Calendar	19
Bureau News	20
Bureau Books	26
Current Working Papers	26

This issue of the *Reporter* highlights the Bureau's Program in Labor Studies. Next, Laurence J. Kotlikoff describes his research into the economics of the elderly. Then, Joel B. Slemrod reports on his work on taxation in the global economy. After biographical sketches, news of NBER conferences, the Conference Calendar, and other NBER news and reports, the *Reporter* concludes with short summaries of recent NBER Working Papers.

Other papers explained industry wage differentials as rent sharing, rather than efficiency wages.<sup>2</sup> Katharine G. Abraham considered employers' strategies for adjusting to shifts in the demand for their product,<sup>3</sup> and Charles C. Brown and James L. Medoff analyzed the relationship between employer size and wages.<sup>4</sup> One

*man Resources Survey*," NBER Working Paper No. 3026, July 1989; and H. J. Holzer, "Wages, Employer Costs, and Employee Performance in the Firm," NBER Reprint No. 1374, April 1990. For the public sector: R. G. Ehrenberg, R. A. Ehrenberg, E. L. Ehrenberg, and D. I. Rees, "School District Leave Policies, Teacher Absenteeism, and Student Achievement," NBER Working Paper No. 2874, March 1989.

<sup>2</sup>W. T. Dickens, L. F. Katz, and L. H. Summers, "Employee Crime and the Monitoring Puzzle," NBER Reprint No. 1309, November 1989.

<sup>3</sup>K. G. Abraham, "Flexible Staffing Arrangements and Employers' Short-Term Adjustment Strategies," NBER Working Paper No. 2617, June 1988.

<sup>4</sup>C. C. Brown and J. L. Medoff, "The Employer Size-Wage Effect," NBER Reprint No. 1327, December 1989.

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trigger for this new research on labor demand has been the widespread recognition that demand-side factors explain much of the sharp rise in education differentials and inequality of earnings in the 1980s.<sup>5</sup>

Several recent NBER studies of firm behavior use new and different datasets. While many labor economists in our program work with CPS files and longitudinal individual files, others have constructed firm datasets and have used them to assess wage behavior, turnover, and modes of adjustment to external shocks.<sup>6</sup> In fact, a joint NBER-Cornell conference (organized by Ehrenberg) brought together NBER researchers, other economists, and corporate personnel managers to discuss the potential for creating datasets on business compensation and personnel policies.

### Comparative Labor Markets

How do labor markets operate in other developed countries? NBER researchers have examined patterns of unionization in different countries. David G. Blanchflower and I found that U.S. unions have a larger effect on wages than unions in other countries.<sup>7</sup> Blanchflower and his colleagues found that unionization in England is highest in areas of high unemployment.<sup>8</sup> Louis N. Christofides and Andrew J. Oswald concluded from data on Canadian labor contracts that collective bargaining is a form of rent sharing in which external unemployment weakens workers' bargaining strength.<sup>9</sup> Jeffrey Pelletier and I examined changes in British union density during 1945-86, and found that the Thatcher government's labor laws caused much of the 1980s

<sup>5</sup>M. L. Blackburn, D. E. Bloom, and R. B. Freeman, "The Declining Position of Less-Skilled American Males," NBER Working Paper No. 3186, November 1989; J. Bound and G. E. Johnson, "Changes in the Structure of Wages during the 1980s: An Evaluation of Alternative Explanations," NBER Working Paper No. 2983, May 1989; and L. F. Katz and A. L. Revenga, "Changes in the Structure of Wages: The United States versus Japan," NBER Reprint No. 1354, February 1990.

<sup>6</sup>A. B. Krueger, "Ownership, Agency, and Wages: An Examination of Franchising in the Fast Food Industry," NBER Working Paper No. 3334, April 1990; D. S. Hamermesh and S. A. Woodbury, "Taxes, Fringe Benefits, and Faculty," NBER Working Paper No. 3455, September 1990; C. C. Brown, "Wage Levels and Method of Pay," NBER Reprint No. 1409, May 1990; H. J. Holzer and E. B. Montgomery, "Asymmetries and Rigidities in Wage Adjustments by Firms," NBER Working Paper No. 3274, March 1990; J. R. Barro and R. J. Barro, "Pay, Performance, and Turnover of Bank CEOs," NBER Working Paper No. 3262, February 1990; and R. G. Ehrenberg, H. Kasper, and D. I. Rees, "Faculty Turnover at American Colleges and Universities: Analysis of AAUP Data," NBER Working Paper No. 3239, January 1990.

<sup>7</sup>D. G. Blanchflower and R. B. Freeman, "Going Different Ways: Unionism in the United States and Other Advanced OECD Countries," NBER Working Paper No. 3342, April 1990.

<sup>8</sup>D. G. Blanchflower, R. Crouchley, S. Estrin, and A. J. Oswald, "Unemployment and the Demand for Unions," NBER Working Paper No. 3251, February 1990.

<sup>9</sup>L. N. Christofides and A. J. Oswald, "Real Wage Determination in Collective Bargaining Agreements," NBER Working Paper No. 3188, November 1989.

fall in rates of unionization.<sup>10</sup> Blanchflower and others also studied the effect of unions on earnings determination,<sup>11</sup> and the effect of different wage-payment mechanisms and institutions on turnover and labor market adjustments.<sup>12</sup>

Further, two of the labor program's research conferences on immigration had significant comparative components.<sup>13</sup> In addition, a joint conference with Japanese economists examined unionization, earnings differentials, and employment responsiveness in the two countries.<sup>14</sup>

## Labor Supply, Government Programs, Human Capital, and Unionism

Labor supply analysis traditionally has focused on hours worked, labor force participation, and mobility, and a substantial number of NBER papers pursued these topics.<sup>15</sup> Much of the research on government

programs was concerned with supply issues, including the effects of: transfer payments and Medicaid on participation;<sup>16</sup> unemployment insurance systems on the duration of unemployment;<sup>17</sup> and workers' compensation and disability insurance on the supply of labor.<sup>18</sup>

Recent NBER research on pensions has shown the effect of "window" plans on retirement, has estimated the cost in lost benefits of changing jobs, and has examined related issues.<sup>19</sup> However, program members also have tackled such nontraditional topics as immigrant location and participation in welfare; queues for federal jobs; the quality of army retentions; self-employment; the underground economy; fertility; and the allocation of time to sleep.<sup>20</sup>

<sup>10</sup>R. B. Freeman and J. Pelletier, "The Impact of Industrial Relations Legislation on British Union Density," NBER Working Paper No. 3167, November 1989.

<sup>11</sup>D. G. Blanchflower, "Fear, Unemployment, and Pay Flexibility," NBER Working Paper No. 3365, May 1990; D. E. Bloom and M. Gunderson, "An Analysis of the Earnings of Canadian Immigrants," NBER Working Paper No. 3035, July 1989; D. G. Blanchflower and A. J. Oswald, "The Wage Curve," NBER Reprint No. 1449, September 1990; D. G. Blanchflower, A. J. Oswald, and M. D. Garrett, "Insider Power in Wage Determination," NBER Reprint No. 1443, August 1990; D. E. Bloom, R. B. Freeman, and S. D. Korenman, "The Labour Market Consequences of Generational Crowding," NBER Reprint No. 1206, June 1989; and L. F. Katz and A. L. Revenga, "Changes in the Structure of Wages . . ."

<sup>12</sup>R. B. Freeman and M. L. Weitzman, "Bonuses and Employment in Japan," NBER Reprint No. 1106, February 1989; K. G. Abraham and S. N. Houseman, "Job Security and Work Force Adjustments: How Different Are U.S. and Japanese Practices?" NBER Reprint No. 1413, June 1990; T. Ito and K. Kang, "Bonuses, Overtime, and Employment: Korea versus Japan," NBER Reprint No. 1391, April 1990; J. A. Mincer and Y. Higuchi, "Wage Structures and Labor Turnover in the United States and Japan," NBER Reprint No. 1101, February 1989; and R. B. Freeman, "Evaluating the European View That the United States Has No Unemployment Problem," NBER Reprint No. 1150, March 1989.

<sup>13</sup>The effects of immigration and trade on American employment and wages, including comparisons with Canada and Australia, were explored in Immigration, Trade, and the Labor Market, J. M. Abowd and R. B. Freeman, eds. Chicago: University of Chicago Press, forthcoming. The effects of immigration on source countries were explored in Immigration in Source and Receiving Countries, G. J. Borjas and R. B. Freeman, eds.

<sup>14</sup>Journal of the Japanese and International Economies 3, 4 (November 1989).

<sup>15</sup>J. D. Angrist, "Does Labor Supply Explain Fluctuations in Average Hours Worked?" NBER Working Paper No. 3312, March 1990; B. Jovanovic and R. Moffitt, "An Estimate of a Sectorial Model of Labor Mobility," NBER Working Paper No. 3227, January 1990; and F. D. Blau and A. J. Grossberg, "Wage and Employment Uncertainty and the Labor Force Participation Decisions of Married Women," NBER Working Paper No. 3081, August 1989.

<sup>16</sup>R. Moffitt and B. Wolfe, "The Effect of the Medicaid Program on Welfare Participation and Labor Supply," NBER Working Paper No. 3286, March 1990; P. de Jong, R. Haveman, and B. Wolfe, "Labor and Transfer Incomes and Older Women's Work: Estimates from the United States," NBER Working Paper No. 2728, October 1988.

<sup>17</sup>L. F. Katz and B. D. Meyer, "The Impact of the Potential Duration of Unemployment Benefits on the Duration of Unemployment," NBER Reprint No. 1435, July 1990; B. D. Meyer, "Implications of the Illinois Reemployment Bonus Experiments for Theories of Unemployment and Policy Design," NBER Working Paper No. 2783, December 1988, and "A Quasi-Experimental Approach to the Effects of Unemployment Insurance," NBER Working Paper No. 3159, November 1989; and A. Alba-Ramirez and R. B. Freeman, "Jobfinding and Wages When Long-Run Unemployment Is Really Long: The Case of Spain," NBER Working Paper No. 3409, August 1990.

<sup>18</sup>J. Bound, "The Health and Earnings of Rejected Disability Insurance Applicants," NBER Reprint No. 1260, August 1989; R. G. Ehrenberg, "Workers' Compensation, Wages, and the Risk of Injury," NBER Reprint No. 1293, October 1989; and A. B. Krueger, "Workers' Compensation Insurance and the Duration of Workplace Injuries," NBER Working Paper No. 3253, February 1990, and "Incentive Effects of Workers' Compensation Insurance," NBER Reprint No. 1466, November 1990.

<sup>19</sup>R. J. Lumsdaine, J. H. Stock, and D. A. Wise, "Efficient Windows and Labor Force Reduction," NBER Working Paper No. 3369, May 1990; A. L. Gustman and T. L. Steinmeier, "Changing the Social Security Rules for Workers over 65: Proposed Policies and Their Effects," NBER Working Paper No. 3087, August 1989; A. L. Gustman and O. S. Mitchell, "Pensions and Labor Market Activity: Behavior and Data Requirements," NBER Working Paper No. 3331, April 1990; S. G. Allen, R. L. Clark, and A. A. McDermed, "The Pension Cost of Changing Jobs," NBER Working Paper No. 2935, April 1989; and O. S. Mitchell, "The Effects of Mandating Benefits Packages," NBER Working Paper No. 3260, February 1990.

<sup>20</sup>G. J. Borjas and S. J. Trejo, "Immigrant Participation in the Welfare System," NBER Working Paper No. 3423, August 1990; A. P. Bartel, "Where Do the New Immigrants Live?" NBER Reprint No. 1395, May 1990; G. J. Borjas and S. G. Bronars, "Consumer Discrimination and Self-Employment," NBER Reprint No. 1269, September 1989; A. B. Krueger, "The Determinants of Queues for Federal Jobs," NBER Reprint No. 1079, December 1988; C. C. Brown, "The Quality Dimension in Army Retention," NBER Working Paper No. 3337, April 1990; B. Fortin, P. Frechette, and T. Lemieux, "An Empirical Model of Labor Supply in the Underground Economy," NBER Working Paper No. 3392, June 1990; J. J. Heckman and J. R. Walker, "Forecasting Aggregate Period-Specific Birth Rates: The Time-Series Properties of a Microdynamic Neoclassical Model of Fertility," NBER Working Paper No. 3133, October 1989; M. L. Blackburn, D. E. Bloom, and D. Neumark, "Fertility, Timing, Wages, and Human Capital," NBER Working Paper No. 3422, August 1990; and J. E. Biddle and D. S. Hamermesh, "Sleep and the Allocation of Time," NBER Working Paper No. 2988, May 1989.

We have studied several government programs' effects on private employers. Alan B. Krueger and John F. Burton, Jr. estimated the cost to employers of workers' compensation,<sup>21</sup> and looked at the growth in unfair dismissal legislation.<sup>22</sup> Wayne B. Gray, in work with Carol Adaire Jones and John T. Scholz, analyzed employers' responses to OSHA health and safety inspections.<sup>23</sup> Other NBER research focused on public sector arbitration mechanisms,<sup>24</sup> and on the effects of public sector laws on wages.<sup>25</sup>

Since the "human capital revolution" in labor economics, a significant part of the NBER's research has focused on the returns to: education, on-the-job training, and total market experience and seniority. Recent research on these issues has made use of *direct* measures of training.<sup>26</sup> David Card and Krueger examined the effect of school quality—based on differences in state resources spent on education—on earnings.<sup>27</sup>

Other research considered the effect of: community influences on labor market outcomes;<sup>28</sup> health and the risk of injury on wages;<sup>29</sup> career plans on male-female earnings differentials;<sup>30</sup> and "schmoozing" on productivity and wages.<sup>31</sup> Jacob A. Mincer and others also have contributed to the debate over the magnitude and interpretation of age-earnings profiles.<sup>32</sup>

Krueger and Joshua D. Angrist used time of birth as an instrument to differentiate the effect on earnings of unobserved earnings potential from those of veteran status.<sup>33</sup> Mincer, Ann P. Bartel, and others studied the effect of technological change on human capital and career patterns,<sup>34</sup> in work that parallels the increasing concern for the effects of demand on market outcomes.

Unionism, the last "traditional topic" for labor economists, has declined in the U.S. private sector. As a result, NBER research on unionism increasingly has focused on: the effects of unions in the public sector, where they remain strong;<sup>35</sup> the reasons for the precip-

<sup>21</sup>A. B. Krueger and J. F. Burton, Jr., "The Employers' Cost of Workers' Compensation Insurance: Magnitudes, Determinants, and Public Policy," NBER Working Paper No. 3029, July 1989.

<sup>22</sup>A. B. Krueger, "The Evolution of Unjust-Dismissal Legislation in the United States," NBER Working Paper No. 3127, September 1989.

<sup>23</sup>W. B. Gray and C. A. Jones, "Longitudinal Patterns of Compliance with OSHA Health and Safety Regulations in the Manufacturing Sector," NBER Working Paper No. 3213, December 1989, and "Are OSHA Health Inspections Effective? A Longitudinal Study in the Manufacturing Sector," NBER Working Paper No. 3233, January 1990; and W. B. Gray and J. T. Scholz, "A Behavioral Approach to Compliance: OSHA Enforcement's Impact on Workplace Accidents," NBER Working Paper No. 2813, January 1989.

<sup>24</sup>R. S. Gibbons, "Learning in Equilibrium Models of Arbitration," NBER Reprint No. 1218, July 1989; O. C. Ashenfelter, J. Currie, H. S. Farber, and M. Spiegel, "An Experimental Comparison of Dispute Rates in Alternative Arbitration Systems," NBER Working Paper No. 3417, August 1990; and H. S. Farber and M. H. Bazerman, "Divergent Expectations as a Cause of Disagreement in Bargaining: Evidence from a Comparison of Arbitration Schemes," NBER Reprint No. 1249, August 1989.

<sup>25</sup>J. Gyourko and J. S. Tracy, "Public Sector Bargaining and the Local Budgetary Process," NBER Working Paper No. 2915, March 1989; J. S. Tracy, "Comparisons of Public and Private Sector Union Wage Differentials: Does the Legal Environment Matter?" NBER Working Paper No. 2755, November 1988; and R. B. Freeman, C. Ichniowski, and H. Lauer, "Collective Bargaining Laws, Threat Effects, and the Determination of Police Compensation," NBER Reprint No. 1190, May 1989.

<sup>26</sup>J. A. Mincer, "Job Training: Costs, Returns, and Wage Profiles," NBER Working Paper No. 3208, December 1989; and L. M. Lynch, "Private Sector Training and Its Impact on the Earnings of Young Workers," NBER Working Paper No. 2872, March 1989.

<sup>27</sup>D. Card and A. B. Krueger, "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States," NBER Working Paper No. 3358, May 1990.

<sup>28</sup>M. Corcoran, R. H. Gordon, D. Laren, and G. Solon, "Effects of Family and Community Background on Men's Economic Status," NBER Working Paper No. 2896, March 1989.

<sup>29</sup>R. H. Haveman, M. Stone, and B. Wolfe, "Market Work, Wages, and Men's Health," NBER Working Paper No. 3020, June 1989; and D. S. Hamermesh and J. R. Wolfe, "Compensating Wage Differentials and the Duration of Wage Loss," NBER Reprint No. 1411, May 1990.

<sup>30</sup>F. D. Blau and M. A. Farber, "Career Plans and Expectations of Young Women and Men: The Earnings Gap and Labor Force Participation," NBER Working Paper No. 3445, September 1990.

<sup>31</sup>D. S. Hamermesh, "Shirking or Productive Schmoozing: Wages and the Allocation of Time at Work," NBER Reprint No. 1375, April 1990.

<sup>32</sup>J. A. Mincer, "Job Training, Wage Growth, and Labor Turnover," NBER Working Paper No. 2690, August 1988; R. H. Topel, "Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority," NBER Working Paper No. 3294, March 1990; L. J. Kotlikoff, "Estimating the Age-Productivity Profile Using Lifetime Earnings," NBER Working Paper No. 2788, December 1988; and K. G. Abraham and H. S. Farber, "Returns to Seniority in Union and Nonunion Jobs: A New Look at the Evidence," NBER Reprint No. 1160, April 1989.

<sup>33</sup>J. D. Angrist and A. B. Krueger, "Why Do World War II Veterans Earn More Than Nonveterans?" NBER Working Paper No. 2991, May 1989.

<sup>34</sup>J. A. Mincer, "Human Capital Responses to Technological Change in the Labor Market," NBER Working Paper No. 3207, December 1989; A. P. Bartel and N. Sicherman, "Technological Change and the Careers of Older Workers," NBER Working Paper No. 3433, September 1990; A. P. Bartel and F. R. Lichtenberg, "Technical Change, Learning, and Wages," NBER Working Paper No. 2732, October 1988; and M. L. Blackburn and D. E. Bloom, "Earnings and Income Inequality in the United States," NBER Reprint No. 1187, May 1989.

<sup>35</sup>S. G. Allen, "Unions and Job Security in the Public Sector," NBER Reprint No. 1257, August 1989; and J. S. Tracy, "Comparisons of Public and Private Sector Union Wage Differentials: Does the Legal Environment Matter?" NBER Working Paper No. 2755, November 1988.

itous fall in union density in America;<sup>36</sup> and unions' effects on firms. In addition, various papers have examined the effects of union activity on the value of firms.<sup>37</sup>

## Methodology and Data

The working papers on methodology reveal a general concern for two issues that had been relatively neglected during the heyday of structural econometric modeling. First, John Bound and others explored measurement error, comparing measures of earnings across different datasets, and investigating the problems with data on retrospective unemployment.<sup>38</sup>

Card and others have attempted to discover better "pseudo-experiments" and more imaginative instruments for econometric analysis. He assessed the effect of immigrants on labor market outcomes by looking specifically at the Mariel boatlift.<sup>39</sup> Bruce D. Meyer estimated the impact of government unemployment programs by concentrating on selected states that have experienced periodic increases in benefit levels.<sup>40</sup> Morris M. Kleiner and I examined union effects in firms that only recently had become unionized.<sup>41</sup> James J. Heckman and Brook S. Payner attempted to determine the effect of government programs on blacks by concentrating specifically on particular sectors in South

Carolina.<sup>42</sup> The underlying theme of these and other studies is that if research finds the "right" experiment (even if it covers only a modest number of workers) or the "right" instrument, it potentially can yield better estimates of behavior than complicated models that treat larger, but arguably less appropriate, samples.

## Future Endeavors

The NBER Program in Labor Studies has begun a major new area of work on comparative labor markets and social insurance programs, contrasting the United States and other advanced OECD countries. Five conferences are planned for the next three years covering a wide range of topics, including: works councils, wage structures, training, social insurance systems, and safety net programs for the very poor. Undoubtedly there will be additional comparative work on the emerging market economies of Eastern Europe.

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<sup>42</sup>J. J. Heckman and B. S. Payner, "Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina," NBER Working Paper No. 2854, February 1989.

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<sup>36</sup>H. S. Farber, "Trends in Worker Demand for Union Representation," NBER Working Paper No. 2857, February 1989, and "The Recent Decline of Unionization in the United States," NBER Reprint No. 1012, June 1988; S. G. Allen, "Declining Unionization in Construction: The Facts and the Reasons," NBER Reprint No. 1103, February 1989; J. M. Abowd and H. S. Farber, "Product Market Competition, Union Organizing Activity, and Employer Resistance," NBER Working Paper No. 3353, May 1990; D. G. Blanchflower and R. B. Freeman, "Going Different Ways . . ."; and R. B. Freeman and M. B. Kleiner, "Employer Behavior in the Face of Union Organizing Drives," NBER Reprint No. 1467, November 1990.

<sup>37</sup>J. M. Abowd, "The Effect of Wage Bargains on the Stock Market Value of the Firm," NBER Reprint No. 1319, November 1989; J. S. Tracy, "Testing Strategic Bargaining Models Using Stock Market Data," NBER Working Paper No. 2754, November 1988; and J. Rosett, "Do Union Wealth Concessions Explain Takeover Premiums? The Evidence on Contract Wages," NBER Working Paper No. 3187, November 1989.

<sup>38</sup>J. Bound and A. B. Krueger, "The Extent of Measurement Error in Longitudinal Earnings Data: Do Two Wrongs Make a Right?" NBER Working Paper No. 2885, March 1989; and J. Bound, C. C. Brown, G. J. Duncan, and W. L. Rodgers, "Measurement Error in Cross-Sectional and Longitudinal Labor Market Surveys: Results from Two Validation Studies," NBER Working Paper No. 2884, March 1989.

<sup>39</sup>D. Card, "The Impact of the Mariel Boatlift on the Miami Labor Market," NBER Working Paper No. 3069, August 1989.

<sup>40</sup>B. D. Meyer, "A Quasi-Experimental Approach to the Effects of Unemployment Insurance," NBER Working Paper No. 3159, November 1989.

<sup>41</sup>R. B. Freeman and M. M. Kleiner, "The Impact of New Unionization on Wages and Working Conditions," NBER Reprint No. 1410, May 1990.

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# Research Summaries

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## The Economics of the Elderly

Laurence J. Kotlikoff

In recent decades, the economic and social position of the elderly has improved in many ways. Poverty has been substantially reduced; the income of the elderly relative to other groups has risen; and they are living longer.<sup>1</sup> However, in some respects, the well-being of the elderly appears to have deteriorated. Over 60 percent of those over age 60, and 57 percent of those over age 85, now live alone, compared with only 25 and 13 percent, respectively, in the 1940s. At the same time, the rate of institutionalization has more than tripled: today, almost a quarter of those over age 85 live in institutions, compared with only 7 percent in the 1940s.

In addition to living in circumstances that potentially are more isolated, the elderly in many ways face great-

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<sup>1</sup>M. L. Boskin, L. J. Kotlikoff, and M. Knetter, "Changes in Age Distribution of Income in the United States," NBER Working Paper No. 1766, November 1985.

er financial risks than existed in the past. The continuing trend toward early retirement, coupled with increases in lifespan, is leaving the aged with more and more years of retirement over which their resources must be rationed. Many married women in particular are at risk of suffering severe declines in their living standards if they become widows. But surely the biggest risk is of institutionalization, which for most elderly holds the prospect of rapid impoverishment.

These facts raise a number of interesting economic and demographic questions that my colleagues and I began to explore in 1984 as part of the NBER's Project on the Economics of Aging. Much of my research has been supported by the National Institute of Aging, to which I am exceedingly grateful.

## Family Support of the Elderly

In order to study family support of the aged, researchers need matched data on the elderly and their children. Unfortunately, as of 1984 there were few datasets with that type of detailed information (particularly on the very old). So John N. Morris, of the Hebrew Rehabilitation Center for the Aged (HRCA), and I designed a survey and administered it to 850 children of elderly residents who were also participating in a ongoing HRCA survey of Massachusetts elderly.

Using both datasets, we learned that over one-fifth of the elderly (over age 60) in Massachusetts have no children. Further, daughters tend to be involved in caregiving more than their sons. But over half of the elderly either do not have a daughter, or do not have one who lives within an hour of them.

We also found that over half of the single elderly, and two-fifths of the vulnerable elderly (defined by needing help with daily living activities), live completely alone. Of the elderly who have children, fewer than 25 percent live with their children. And, in a typical month, over 25 percent of the elderly who have children do not spend any time with them.

Further, children with institutionalized or vulnerable parents spend less time with them than children with healthy parents do. Some of the elderly receive a considerable amount of help and attention from their children, while others receive very little. And, financial assistance from children to their elderly parents, even in cases in which the elderly are quite poor, is extremely rare.<sup>2</sup>

## Living Arrangements

In the past, many studies suggested that the elderly wanted to live alone, and pointed to their rising incomes as the explanation for their increasing propensity to do so. But virtually none of these studies considered the

attitudes and incomes of the children who would have had to house their aged parents.

Morris and I constructed a model of the joint decision of parents and children to live together; it uses data on living arrangements and on the characteristics of children and parents.<sup>3</sup> Based on the NBER-HRCA data, we found that children generally prefer to live alone, and that many agree to share housing with their elderly parents only because it is economically advantageous. Since incomes of parents and children are correlated positively, the earlier findings—that as their incomes rise, the elderly choose to live alone—may really reflect the fact that, as children's incomes rise, they choose not to live with their elderly parents.

Of course, the living arrangement decision can and does change over time.<sup>4</sup> My coauthors and I have found that when changes occur, they are often triggered by deteriorating health or by the death of a spouse. Changes in living arrangements typically occur within a year of the triggering events. Also, indexes of functional ability, but not subjective health reports, tend to be very good predictors of the living arrangements of the elderly.

## Children's Time with Their Elderly Parents

While the elderly may need, and appear to be receiving, less financial help from their children, their need for companionship and for physical assistance may well have increased in the postwar period. The increased longevity of the elderly often means living for years in poor health.<sup>5</sup> Using the NBER-HRCA survey data, my coauthors and I have found that older parents receive more time from their children. Also, younger or healthier children provide more time to their parents than other children do. In contrast to these demographic differences, economic variables, such as children's wage rates and income levels, appear to be unimportant in determining time spent together. In addition, parents do not appear to "purchase time" from their children.

## Altruism and Financial Transfers

While private intergenerational transfers are a very significant determinant of U.S. saving,<sup>6</sup> most of these

<sup>2</sup>L. J. Kotlikoff and J. N. Morris, "How Much Care Do the Aged Receive from Their Children?" in D. A. Wise, ed., *The Economics of Aging*, Chicago: University of Chicago Press, 1990.

<sup>3</sup>A. Börsch-Supan, L. J. Kotlikoff, and J. N. Morris, "The Dynamics of Living Arrangements of the Elderly," NBER Working Paper No. 2787, December 1988, and A. Börsch-Supan, V. Hajivassiliou, L. J. Kotlikoff, and J. N. Morris, "Health, Children, and Elderly Living Arrangements: A Multiperiod-Multinomial Probit Model with Unobserved Heterogeneity and Autocorrelated Factors," NBER Working Paper No. 3343, April 1990, and in D. A. Wise, ed., *Aging*, Chicago: University of Chicago Press, forthcoming.

<sup>4</sup>A. Börsch-Supan, J. Gokhale, L. J. Kotlikoff, and J. N. Morris, "The Provision of Time to the Elderly by Their Children," NBER Working Paper No. 3363, May 1990, and in D. A. Wise, ed., *Aging*, Chicago: University of Chicago Press, forthcoming.

<sup>5</sup>L. J. Kotlikoff, "Intergenerational Transfers and Savings," NBER Reprint No. 1311, November 1989.

<sup>6</sup>L. J. Kotlikoff and J. N. Morris, "How Much Care Do the Aged Receive from Their Children?" in D. A. Wise, ed., *The Economics of Aging*, Chicago: University of Chicago Press, 1989.

transfers occur at discrete points in the lifecycle. There is little evidence of systematic, annual, inter vivos transfers running either from older parents to their adult children or from adult children to their older parents. This pattern does not necessarily contradict the Becker/Barro model of marginal altruism: their model requires only periodic intergenerational transfers. But it also requires that altruistically linked family members share their resources, in terms of consumption, both at a point in time and over time.<sup>7</sup>

To test the implication of marginal altruism—that parents and children share their resources—Altonji, Hayashi, and I use matched data on the consumption and income of parents and their adult children. We find strong evidence against resource sharing: American extended families do not pool resources at a point in time, nor do they appear to share risk by pooling resources over time.

Of course, there are other models of altruism whose predictions are potentially more in accord with the data. In some models, the altruist doesn't know the potential donee's true need. As Razin and I show, in order not to be manipulated, altruists will condition transfers on the donee's earnings or saving behavior.<sup>8</sup> Also, Rosenthal and I argue, donees may try to manipulate altruists by refusing to accept transfers below specified amounts.<sup>9</sup> But their ability to do that depends on their initial resource positions, or their "threat points." My findings with Altonji and Hayashi do not rule out these models of transfers.<sup>10</sup>

## Productivity of the Aged

An inability of firms to cut wages of older workers, because of age-discrimination laws and other reasons, combined with a decline in productivity with age, would explain the strong early retirement incentives of many firms. But one problem in determining how productivity varies with age is that workers are hired on a long-term basis, so that their current productivity is reflected in their future, as well as their current, wages.

I use data on expected future, as well as current, compensation to analyze the age-productivity relationship in a *Fortune* 500 firm. In each of the five occupations that I consider, productivity falls with age, exceeding earnings when workers are young and falling short

<sup>7</sup>J. G. Altonji, F. Hayashi, and L. J. Kotlikoff, "Is the Extended Family Altruistically Linked?" NBER Working Paper No. 3046, July 1989.

<sup>8</sup>L. J. Kotlikoff and A. Razin, "Making Bequests Without Spoiling Children: Bequests as an Implicit Optimal Tax Structure and the Possibility That Altruistic Bequests Are Not Equalizing," NBER Working Paper No. 2735, October 1988, and L. J. Kotlikoff, "Justifying Public Provision of Social Security," in *Journal of Policy Analysis and Management* (Spring 1987).

<sup>9</sup>L. J. Kotlikoff and R. W. Rosenthal, "A Strategic Altruism Model in Which Ricardian Equivalence Does Not Hold," NBER Working Paper No. 2699, September 1988, and *Economic Journal* (December 1990).

<sup>10</sup>J. G. Altonji, F. Hayashi, and L. J. Kotlikoff, "Is the Extended Family ...?"

when they are old.<sup>11</sup> If this finding—that compensation is backloaded—is found to hold more generally, then it may help to explain the low ratios of market-to-replacement values for U.S. firms. Backloaded compensation is an implicit form of debt that will be capitalized into the value of equity.

## Early Retirement and Private Pension Provisions

My research with David A. Wise on early retirement and private pension plan provisions demonstrates that a large number of U.S. firms design their defined-benefit pension plans to provide very significant incentives for their workers to leave their main jobs as early as age 55.<sup>12</sup> The age pattern of pension accrual often exhibits a sizable positive spike at firms' early retirement ages, and is typically small or negative thereafter. Our analysis of workers' departure rates indicates a very substantial effect on the age-accrual profile on retirement decisions.

## Do American Households Have Adequate Life Insurance?

Alan J. Auerbach and I consider how the death of a spouse would impact the living standard of the surviving widow or widower.<sup>13</sup> We find that husbands, in both middle-aged and older couples, are pervasively underinsured. Almost half of wives in households that need life insurance protection are not adequately insured. As a consequence, in the event of early death of their husband, they will suffer declines in their living standards of 30 percent or more.

## Demographics and Saving

Like virtually all developed economies, the United States is projected to experience a dramatic demographic transition over the next 50 years. By 2040, 31 percent of the U.S. population will be 55 and older, compared to 21 percent today. The overall dependency ratio (that is, the ratio of those under age 18 plus those over 65 to those aged 18 to 64) will rise from .62 in the 1980s to .73 in 2040.

Auerbach and I have begun to explore the effects of

<sup>11</sup>L. J. Kotlikoff, "Estimating the Age-Productivity Profile Using Lifetime Earnings," NBER Working Paper No. 2788, December 1988.

<sup>12</sup>L. J. Kotlikoff and D. A. Wise, "The Wage Carrot and the Pension Stick: Retirement Benefits and Labor Force Participation," *W. E. Upjohn Institute for Employment Research*, 1989; "Employee Retirement and a Firm's Pension Plan," in D. A. Wise, ed., *The Economics of Aging*, Chicago: University of Chicago Press, 1989; and "Pension Backloading, Wage Taxes, and Work Disincentives," in L. H. Summers, ed., *Tax Policy and the Economy*, Volume 2, 1988, Cambridge, MA: The MIT Press, 1988.

<sup>13</sup>A. J. Auerbach and L. J. Kotlikoff, "How Rational Is the Purchase of Life Insurance?" NBER Working Paper No. 3063, August 1989, and "Life Insurance of the Elderly: Adequacy and Determinants," NBER Reprint No. 870, May 1987.



these demographics on saving rates, growth, factor prices, and fiscal policy.<sup>14</sup> Using our simulation model, we predict gradual but dramatic declines in U.S. saving rates, and potentially large increases in payroll taxes to sustain the pay-as-you-go Social Security system. On the other hand, the demographic transition will feature significant growth of capital and increases in real wages. Because of different rates of aging of the population and different fiscal policies, demographic transitions will differ dramatically in the United States, Japan, Sweden, and Germany, Auerbach, Robert Haggeman, Giuseppe Nicoletti, and I find.<sup>15</sup>

Auerbach and I asked how U.S. saving would change over time if the relationship between age and earnings remained constant. We predicted somewhat higher savings rates in the 1990s, but steadily declining rates of saving thereafter.<sup>16</sup> Our results also suggest, rather strongly, that demographics cannot explain the low rate of U.S. saving in the 1980s, nor, indeed, the post-war pattern of U.S. saving.

With Jinyong Cai, we also used consumption and earnings data to examine the predictions of three models of saving: the life-cycle model; the representative agent, infinitely lived consumer model; and a simple reduced-form, Keynesian model.<sup>17</sup> Each model predicts substantial long-run declines in U.S. saving, but the timing of the changes is quite different. These different predictions may help us to sort out which model best characterizes U.S. saving behavior.

## Generational Politics

The aging of the American population surely will have important implications for the political process. To better understand the potential effects of generational politics, I have coauthored a number of papers that assume that the political process represents the outcome of selfish bargaining between autonomous generations.

Torsten Persson, Lars E. O. Svensson, and I show how such generational bargaining can lead to social compacts.<sup>18</sup> But if one generation is unable to coerce

the other, then there will be no intergenerational redistribution.<sup>19</sup> While younger generations may pay off the debt issued by older generations, debt policies will have no real effect on the economy, since the young will be compensated fully through the political system for accepting the "burden" of the debt.

Rosenthal and I point out that selfish generations will seek to monopolize their factor supplies by enacting distortionary taxes on their labor supply and saving.<sup>20</sup> This monopolization of factor supplies leads to a marginal tax rate on capital income equal to labor's share of output (roughly 75 percent in the United States), and a marginal tax rate on labor income equal to capital's share of output (roughly 25 percent). We also argue that selfish generations will not supply enough durable public goods, both at the regional and at the national levels. That is, the impact that a state or region's durable public goods have on its land values in general is not enough to ensure adequate state highways and other public facilities.

## Measuring Generational Burdens

From the broad perspective of neoclassical economics, the deficit has no fundamental relationship to the generational stance of fiscal policy; that is, it tells us nothing about the burdens that current generations are foisting on future generations.<sup>21</sup> That is because "the" deficit reflects economically arbitrary decisions about labeling government receipts and payments. But the lack of definition of the term "deficit" is not specific to one type of neoclassical model. Rather, as I show, it exists in essentially all economic settings, including those with uncertain fiscal policy, liquidity constraints, and distortionary policy.

Auerbach, Gokhale, and I estimate the lifetime net payments to the government that current and future generations can expect to make under existing policy.<sup>22</sup> We conclude that unless fiscal policy is changed dramatically, future generations will face at least a 15 percent larger fiscal burden over their lifetimes than existing young generations will.

<sup>14</sup>L. J. Kotlikoff, *Dynamic Fiscal Policy*, Cambridge, England: Cambridge University Press, 1987.

<sup>15</sup>A. J. Auerbach, R. Haggeman, L. J. Kotlikoff, and G. Nicoletti, "The Economic Dynamics of an Aging Population: The Case of Four OECD Countries," NBER Reprint No. 1268, September 1989.

<sup>16</sup>A. J. Auerbach and L. J. Kotlikoff, "Demographics, Fiscal Policy, and U.S. Saving in the 1980s and Beyond," in L. H. Summers, ed., *Tax Policy and the Economy*, Volume 4, 1990, Cambridge, MA: The MIT Press, 1990, pp. 73-101.

<sup>17</sup>A. J. Auerbach, J. Cai, and L. J. Kotlikoff, "U.S. Demographics and Saving: Predictions of Three Saving Models," NBER Working Paper No. 3404, July 1990.

<sup>18</sup>L. J. Kotlikoff, T. Persson, and L. E. O. Svensson, "Laws as Assets: A Possible Solution to the Time Consistency Problem," NBER Reprint No. 1081, December 1988.

<sup>19</sup>L. J. Kotlikoff, "Is Debt Neutral in the Life-Cycle Model?" in L. J. Kotlikoff, *What Determines Savings?* Cambridge, MA: The MIT Press, 1989.

<sup>20</sup>L. J. Kotlikoff and R. W. Rosenthal, "Some Inefficiency Implications of Generational Politics and Exchange," NBER Working Paper No. 3354, May 1990.

<sup>21</sup>L. J. Kotlikoff, "From Deficit Delusion to the Fiscal Balance Rule: Looking for an Economically Meaningful Way to Assess Fiscal Policy," NBER Working Paper No. 2841, February 1989.

<sup>22</sup>A. J. Auerbach, J. Gokhale, and L. J. Kotlikoff, "Generational Accounting—A Meaningful Alternative to Deficit Accounting," NBER Working Paper No. 3589, January 1991.



## Conclusion

The issues addressed thus far in my research on the economics of the elderly are far from settled. Rather than attempt to provide the definitive answer to any single question, I have tried to cut a wide swath through the field in order to raise new issues and, where appropriate, question old conclusions. In the next stage of my research, I intend to focus in more depth on a number of empirical issues to determine whether my initial findings are robust to different datasets and specifications.

# Taxation in the Global Economy

Joel B. Slemrod

As global competitiveness has climbed higher on the policy agenda, it is no surprise that the role of tax policy in the decline of U.S. economic dominance has come under critical review. Tax policy has been blamed for our low saving rate—which leads to a current account deficit; the increase in foreign direct investment in the United States; and the inability of U.S.-based multinationals to compete abroad on a level playing field.

Much of my recent research has been aimed at rethinking the effects and structure of tax policy in an increasingly interdependent world economy. Globalization demands a rethinking of these issues, because it has profound implications for tax systems, raising new questions and changing the answers to old ones.

## The Pitfalls of Myopic Tax Policymaking

Consider tax policymakers who mistakenly believe, or act as if, their country's economy were completely closed. What missteps would they be tempted to make? At least four come to mind.<sup>1</sup> They might:

1. see key sectors and tax revenues dwindle as other countries set their tax systems to compete away capital and the tax revenues from capital income;

2. forgo opportunities to take advantage of foreign investors and governments; large countries can exploit their market power, but all countries can take advantage of the arrangements that their trading partners use to alleviate double taxation;

3. overestimate the ability to place the burden of taxation on capital owners; the apparent progressivity of capital taxation may be illusory, as international capital mobility implies that it ultimately may be borne by owners of relatively immobile factors, such as labor and

land; in that case, taxes levied directly on land and labor have about the same incidence as capital taxes but do not distort the locational efficiency of capital; and

4. underestimate the potential importance of multi-lateral tax agreements that help preserve the efficient functioning of the world economy.

Avoiding these missteps in designing policy requires a clear understanding of how taxes affect economic behavior in an open environment.

## Foreign Direct Investment

Foreign direct investment (FDI) to and from the United States now is more than five times its level of a decade ago. The growing presence of foreign multinationals has prompted concern about the impact of FDI on the economy and the role of the tax system in encouraging it.

Tax policy can affect FDI in complicated ways, because often both the host country (where the FDI is located) and the home country (where the firm is headquartered) assert the right to tax the income from FDI, with limited harmonization of the tax systems. Of the major countries whose firms invest in the United States, some tax the income from FDI—but allow a credit for taxes paid to the United States—while others completely exempt the income from FDI from home country taxation. This raises the interesting possibility that, for investment from the first group of countries (predominantly Japan and the United Kingdom), taxation of inward FDI by the United States would raise revenue but would not be a disincentive to investment, because any taxes paid to the U.S. government would be offset by credits offered by the home country. This is an intriguing possibility; if true, it represents an opportunity to pass the burden of taxation along to nonresidents.

To test for this possibility, I disaggregated the data on inward FDI to the United States by the major capital-exporting countries to see if, as theory would suggest, FDI from countries that do not tax foreign-source income is more sensitive to U.S. tax rates than FDI from countries that attempt to tax foreign-source income but allow a credit for U.S. taxes.<sup>2</sup> The analysis did not reveal a clear differential responsiveness between these two groups of countries. Although this could be in part the result of difficulties in measuring effective tax rates accurately, it suggests the availability of financial strategies that render the home country tax system immaterial in affecting the return on FDI. It implies that the U.S. taxation of inward FDI does provide a disincentive, and that the tax burden is not shifted without cost to foreign governments and, ultimately, to foreign residents.

Immediately after the passage of the Tax Reform Act of 1986 (TRA86), FDI both into and from the United

<sup>1</sup>J. B. Slemrod, "Tax Principles in an International Economy," in M. L. Boskin and C. E. McLure, Jr., eds., *World Tax Reform: Case Studies of Developed and Developing Countries*, San Francisco: ICS Press, 1990.

<sup>2</sup>J. B. Slemrod, "Tax Effects on Foreign Direct Investment in the United States: Evidence from a Cross-Country Comparison," in A. Razin and J. B. Slemrod, eds., *Taxation in the Global Economy*, Chicago: University of Chicago Press, 1990.

States surged. Inward FDI reached an all-time high of \$58.4 billion in 1988, continuing a secular increase that began in the late 1970s. Outward FDI also reached an all-time high of \$44.5 billion in 1987, a sharp turnaround from the downtrend of the early 1980s. In 1988, though, outward FDI fell back to \$17.5 billion, approximately its 1985 level, which, after adjusting for capital gains and tax haven transactions, is lower as a fraction of GNP than it was in the late 1970s.

Was tax reform responsible for this surge in FDI, or was its post-TRA86 performance merely a coincidence? In a recent study, I concluded that the link between tax reform and the FDI boom is difficult to make, both because the net incentive effect of several TRA86 provisions concerning FDI is not clear and because it is impossible, with less than four years of post-TRA86 data, to sort out any tax effect from other influences on FDI.<sup>3</sup> However, several aspects of recent FDI performance are consistent with the effect of TRA86 on incentives. Perhaps most striking is the recent strength of outward FDI to low-tax countries. The drop in the corporate statutory rate from 46 to 34 percent means that, for most U.S. multinationals, taxes paid to foreign governments are no longer offset at the margin by foreign tax credits. This situation makes low-tax host countries an especially attractive outlet for investment. The post-TRA86 data suggest that U.S. multinationals have noticed, with recent FDI favoring low-tax European countries over high-tax European countries.

For inward FDI, the predominance of Japanese and U.K. investment is consistent with a tax story: for multinationals based in these countries, the increased effective tax rate on investment in the United States is offset by increased credits offered by their home countries, giving them a relative advantage over domestic U.S. or other foreign investors. Although this story is consistent with the 1987 and 1988 pattern of inward flows, I believe it is too early to be sure that the tax incentives played a major role in the strength of British and Japanese investment in the United States.

### **The Spillover Effects of Taxation— A Case Study of the United States and Canada**

Tax reform in one country, particularly a large country such as the United States, potentially can affect economic activity in other countries through macroeconomic channels, such as the level of interest rates, and through the relative attractiveness of locales for production, incorporation, and the reporting of tax-

ble income. The high degree of integration between the U.S. and Canadian economies makes Canada a natural place to look for empirical evidence of spillover effects.

In a recent study, I investigated the impact of TRA86 on Canadian business.<sup>4</sup> Tax reform in the United States could spill over and affect the profitability of Canadian business through at least three different channels: 1) by affecting the cost of capital of U.S. competitors to Canadian business; 2) by affecting the future course of Canadian tax reform; and 3) by directly affecting the taxation of U.S. subsidiaries of Canadian multinationals. I assessed the quantitative importance of these avenues of impact by examining the abnormal returns to Canadian stocks during key periods in the legislative history of TRA86. I did find evidence that during these events there was an abnormal negative relationship between the returns of Canadian industries and their U.S. counterparts, suggesting that the first avenue is important. However, I was not successful in relating the abnormal behavior of Canadian stocks to industry characteristics that proxy for the relative importance of the three potential avenues of impact.

### **Tax Policy toward Multinational Corporations.**

How to tax U.S. and foreign-based multinationals is as controversial a question as ever. For decades, U.S. corporations have argued that relatively high U.S. levels of taxation put them at a competitive disadvantage with respect to their foreign competitors. More recently, as FDI in the United States has grown in importance, some have argued that foreign subsidiaries operating in the United States are not paying their fair share of taxation.

My work with James A. Levinsohn begins an analysis of the appropriate tax treatment of domestic multinationals by bringing to bear the lessons of the strategic trade literature.<sup>5</sup> We develop some simple models of optimal tax and tariff policy in the presence of global corporations that operate in an imperfectly competitive environment—that is, where there are excess profits that, from a national standpoint, are better earned by “our” firms than “their” firms. We find that, in cases in which tax policy cannot be industry-specific and tariffs cannot be levied on the foreign output of domes-

<sup>3</sup>J. B. Slemrod, “The Impact of the Tax Reform Act of 1986 on Foreign Direct Investment to and from the United States,” *NBER Working Paper No. 3234*, January 1990, and in J. B. Slemrod, ed. *Do Taxes Matter? The Impact of the Tax Reform Act of 1986*, Cambridge, MA: The MIT Press, forthcoming.

<sup>4</sup>J. B. Slemrod, “The Impact of U.S. Tax Reform on Canadian Stock Prices,” in J. B. Shoven and J. Whalley, eds., *U.S.-Canadian Tax Comparisons*, Chicago: University of Chicago Press, forthcoming.

<sup>5</sup>J. A. Levinsohn and J. B. Slemrod, “Taxes, Tariffs, and the Global Corporation,” *NBER Working Paper No. 3500*, October 1990.

tic firms, the optimal policy may be implemented by a preferential tax on foreign income combined with an export subsidy targeted to the strategic sector.

Here, as in trade policy analysis, the leap from simple models to policy prescriptions is a dangerous one. The modern theories of optimal taxation provide no definite justification for diverging from the traditional prescription that, in the interest of maximizing national income, foreign-source incomes should be fully taxed while allowing the deductibility of taxes paid to foreign governments.<sup>6</sup> Although Levinsohn and I show that, in some situations, preferential taxation of foreign income combined with export subsidies is called for, this result is not general and depends critically on the strategic makeup of industries in particular. Even more importantly, the ability of the political process to correctly identify which industries are "strategic" (that is, appropriate targets for this kind of intervention) remains an open question.

### **Tax Evasion and North-South Capital Flows**

One fact of life in the global economy is that it is more difficult to collect revenue from tax bases that are located outside the country. In fact, most developing countries (the "South") lack the administrative capability to effectively levy any tax on the foreign-source income of their residents. Combining this fact with the move of developed countries (the "North") to abolish their own withholding taxes on income paid to foreigners implies that funds flowing from South to North may be completely untaxed.

In a recent paper, I argue that the result of this state of affairs is excessive tax-induced flows of capital across borders and insufficient investment in the South.<sup>7</sup> Surprisingly, national income of the South under certain conditions actually could be improved if the North would impose a withholding tax on portfolio income, even though the South sacrifices revenues to the North.

### **Tax Systems in a Global Economy**

A critical, but often overlooked, element of the design of a tax system is its enforceability and administrability, which influence both fairness and economic impact.<sup>8</sup>

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<sup>6</sup>J. B. Slemrod, "Competitive Advantage and the Optimal Tax Treatment of the Foreign-Source Income of Multinationals: The Case of the United States and Japan," in *American Journal of Tax Policy*, forthcoming.

<sup>7</sup>J. B. Slemrod, "A North-South Model of Taxation and Capital Flows," *NBER Working Paper No. 3238*, January 1990.

<sup>8</sup>J. B. Slemrod, "Optimal Taxation and Optimal Tax Systems," *NBER Working Paper*, forthcoming, and *Journal of Economic Perspectives* (Winter 1990).

The enforceability of tax rules is especially important in the context of the rapid dismantling of barriers to cross-border transactions. Income that crosses borders is especially difficult for tax authorities to monitor. This difficulty has led some commentators to predict the "erosion of the global fiscal commons," and has led others to question whether capital income taxes can survive at all (an outcome decried by some but applauded by others).<sup>9</sup> The geographical location of the income earned by multinationals is also difficult to pinpoint, and the conceptual basis for such an exercise is even suspect.<sup>10</sup>

One possible response to the erosion of the capital income tax base is increased multilateral cooperation among tax authorities, along the lines of the GATT. From a global perspective, each country pursuing its national interest will not ensure a rational allocation of resources, as each country ignores the repercussions of its actions on the others. Although the potential benefit of multilateral cooperation is arguably large, the likelihood for multilateral action is limited severely by the unwillingness of countries to cede their sovereignty over tax policy. Nevertheless, an agreement to harmonize statutory corporate tax rates and withholding rates and to maintain a common policy toward tax havens has the potential for reducing the incentives for costly tax base competition and cross-border investments motivated solely by tax considerations.

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<sup>9</sup>R. H. Gordon, "Can Capital Income Taxes Survive in Open Economies?" *NBER Working Paper No. 3416*, August 1990.

<sup>10</sup>D. H. Bradford and H. Ault, "Taxing International Income: An Analysis of the U.S. System and Its Economic Premises," in A. Razin and J. B. Slemrod, eds., *Taxation in the Global Economy*, Chicago: University of Chicago Press, 1990.

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## **NBER Profile**

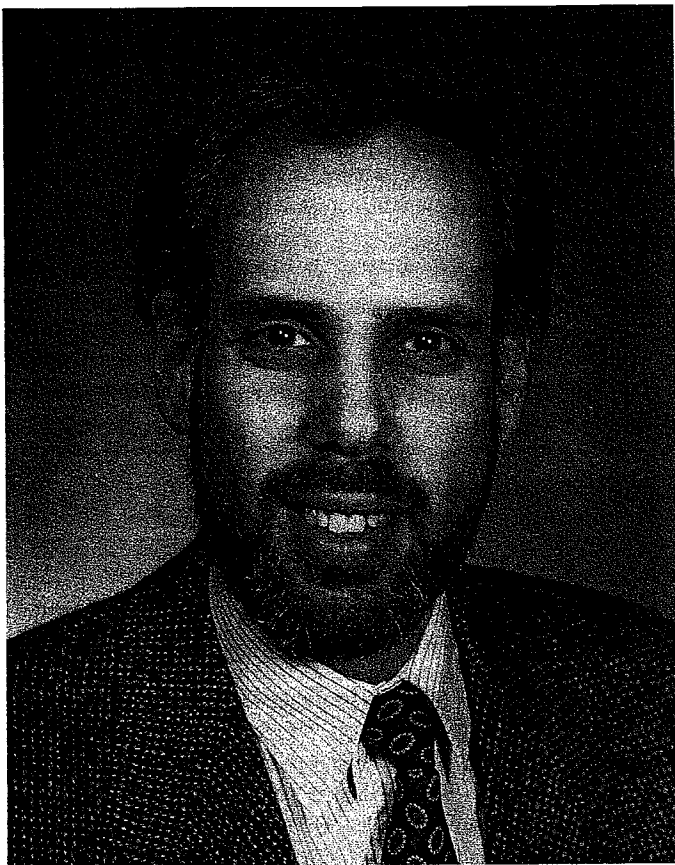
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### **Joel B. Slemrod**

Joel B. Slemrod became an NBER faculty research fellow in 1978 and was promoted to research associate in 1985. Since 1987, he also has been coordinator of

the NBER's Project on the International Aspects of Taxation.

Slemrod received his A.B. from Princeton University in 1973 and his Ph.D. from Harvard University in 1980. From 1979-87, he taught at the University of Minnesota. He has been at the University of Michigan since 1987, where he is currently a professor of economics, business economics, and public policy, and director of the Office of Tax Policy Research.



In addition to his teaching, Slemrod was a senior staff economist at the Council of Economic Advisers in 1984-5. He also has been a consultant to the Canadian Department of Finance (1985-6) and the World Bank (1987 and 1989-90).

Slemrod edited the recent MIT Press book, *Do Taxes Matter? The Impact of the Tax Reform Act of 1986*, and was coeditor of the 1990 NBER volume, *Taxation in the Global Economy*.

He and his wife, Ava, live in Ann Arbor with their six-year-old daughter, Anna, and their three-year-old son, Jonathan. Ava coordinates curriculum development for gifted children at a local school district. Joel's hobbies are playing tennis, reading history, listening to Anna practice the violin, and reading "truck books" to Jonathan.

## Conferences

### Canada-United States Tax Project

An NBER conference on U.S. and Canadian taxes, organized by NBER Research Associates John B. Shoven, Stanford University, and John Whalley, University of Western Ontario, was held on July 26-28. The program was:

Roger H. Gordon, NBER and University of Michigan, "Canada-U.S. Free Trade and Pressures for Tax Harmonization"

Robin Boadway, Queen's University, and Neil Bruce, University of Colorado at Boulder, "Pressures for Harmonization of Corporate and Personal Taxation Between Canada and the United States"

James Davies, University of Western Ontario, "Tax Incidence: Annual and Lifetimes Perspectives in the United States and Canada"

Jonathon Kesselman, University of British Columbia, "Income Security via the Tax System: Canadian and American Reforms"

John B. Shoven, "Cost of Capital in the United States and Canada: Risk and Tax Considerations"

Kenneth McKenzie and Jack Mintz, University of Toronto, "Tax Effects on the Cost of Capital: A Canada-United States Comparison"

Alan J. Auerbach, NBER and University of Pennsylvania, and Laurence J. Kotlikoff, NBER and Boston University, "Tax Aspects of Policy Toward Aging Populations: Canada and the United States" (NBER Working Paper No. 3405)

Joel B. Slemrod, NBER and University of Michigan, "International Spillover Effects of Taxation: A Case Study of the Impact of U.S. Tax Reform"

James M. Poterba, NBER and MIT, "Housing and Taxation: Comparing the U.S. and Canadian Experience"

François Vaillancourt, University of Montreal, "Interstate and Interprovincial Tax Differentials: A Canada-U.S. Comparison"

Charles E. McLure, Jr., NBER and Stanford University, "A North American Destination-Based Value-Added Tax of the Consumption Type"

John Whalley, "Comparing the Canadian and U.S. Experience Under Tax Reform"

Mobility of goods and capital between the United States and Canada already is substantial and will increase as a result of the recent free trade agreement. Gordon explores the specific types of pressures creat-

ed by the mobility of capital and labor, and by unrestricted trade in all outputs. He finds that benefit taxation—in which people pay enough to cover the costs they impose on the public sector—may not be advantageous for both countries; instead, they might gain from explicit or implicit coordination of their tax structures, which might involve equalization of tax rates.

Boadway and Bruce discuss the advantages and disadvantages of tax harmonization, given the broad fiscal differences between the United States and Canada. Taxing capital income, which is highly mobile across the international border, would be difficult; for example, it would require using the corporate and personal income taxes as an integrated system to tax capital income as it accrues. Further, there would still be the problem of how to treat cross-border investments of multinational corporations.

According to Davies, Canada has much less inequality of pretax income than the United States does, and the difference has been expanding steadily since the 1970s. Until the recent reforms, the overall progressivity of U.S. taxes was declining—in part because of the increase in Social Security payroll taxes—and in Canada was roughly constant, or increasing. The recent U.S. tax reform increased progressivity, but not to its level of the early 1970s. Canadian progressivity has not been affected uniformly by tax reform; instead, some middle groups have lost relative to low-income and to very high-income groups. However, “bracket creep,” caused by partial deindexation of the Canadian personal income tax, is likely to lead to declining progressivity in Canada relative to the United States.

Kesselman finds that the income security systems of the United States and Canada are not converging. Canada sets higher thresholds for taxing individuals, although some of the poor are still taxable in both countries. Further, the changes to income security provisions in both countries have complicated, rather than simplified, their tax systems. Effective marginal tax rates on many beneficiaries, and on those in income ranges in which benefits are taxed or subject to drawbacks, are higher now. Kesselman concludes that, while tax-based income security has been enlarged to provide greater benefits to the poor, it has not evolved in a way that can be extended easily to a broader guaranteed income.

Shoven finds that, despite differences in the Canadian and U.S. tax codes, the cost of capital is very similar in the two countries and not likely to be a key factor in investment location decisions. In all cases, the cost of capital with debt finance is less than with equity finance, and the timing of depreciation deductions is a key factor underlying the cost-of-capital schedules. The cost of capital in Japan is substantially lower than in North America, however, despite Japan's higher corporate tax rates. Japanese financial markets have lower interest rates and smaller risk premiums than North America's. Shoven concludes that an integrated U.S.-Canadian capital market, segmented from a Japanese market, would offer far better financial terms for physical investments than the current situation does.

McKenzie and Mintz compare effective corporate income tax rates on capital for companies operating in the United States and Canada. In their “base” case—open-economy arbitrage, absence of risk, fully tax-paying firms, and no multinational investment—Canadian rates are 29 percent while U.S. rates are 20 percent. There are considerable differences across sectors, however. Canadian manufacturing firms are taxed at 31 percent while U.S. manufacturing companies are taxed at 27 percent. Canadian communications firms are taxed at only 18 percent, though; their U.S. counterparts at 25 percent. McKenzie and Mintz also find that the tax measures adopted in the 1980s, as well as lower inflation, have reduced differences in effective tax rates across the countries. For example, in 1974 the aggregate effective tax rate was 25 percentage points higher in Canada than in the United States; in 1990 the difference was 9 percentage points. Finally, McKenzie and Mintz find that tax losses cause the 1990 difference in effective tax rates on capital in Canada and the United States to be virtually eliminated (both are approximately 19 percent).

Auerbach and Kotlikoff compare projected demographic transitions in Canada and the United States. They find that demographics are likely to have significant effects on rates of saving and taxation in both the United States and Canada. However, the more abrupt demographic transition in Canada, combined with the projected maturation of the Canadian social security system, will lead to a more severe long-term decline in Canadian saving rates. Capital deepening is likely to occur in both countries, and the associated increase in real wages is likely to more than offset projected higher tax rates. Thus the growth-adjusted welfare of future generations will be higher than that of current generations.

The Tax Reform Act of 1986 (TRA86) potentially affected Canadian business through: 1) the cost of capital of U.S. competitors; 2) the future course of Canadian tax reform; and 3) the taxation of U.S. subsidiaries of Canadian multinationals. Slemrod examines the abnormal returns to Canadian stocks during key periods in the legislative history of TRA86. During these events, he finds, there is an abnormal negative relationship between the returns of Canadian industries and their U.S. counterparts. However, the abnormal behavior of Canadian stocks cannot be related to industry characteristics that are designed to proxy for the importance of the potential avenues of impact.

How did the tax reforms of the last decade affect homeowners, house prices, and the demand for owner-occupied housing? Poterba finds that, because homeowners in the United States can deduct mortgage interest payments from their taxable income, the U.S. housing market is more sensitive to changes in marginal tax rates, or to changes in inflation that affect the real aftertax cost of borrowing, than the Canadian housing market is.

Vaillancourt describes the subnational tax systems of the two countries—which collect 40 to 50 percent of

overall tax revenues in both countries—and examines the degree of harmonization within and between countries for 1976 and 1986. In those years, there was a greater level of harmonization in Canada than in the United States on a tax-by-tax basis, using either statutory or effective tax rates, but the effective overall tax burden was more harmonized in the United States than in Canada.

McLure discusses lessons for the United States from the Canadian debate on sales tax reform. He describes the basic mechanics of three sales taxes at the retail level and two taxes at the preretail level. He also elaborates on key concerns in the debates: intergovernmental issues; low-income relief; and economic neutrality. In particular, he focuses on the taxation of food, housing, agriculture, financial institutions, nonprofit institutions, and social business.

The 1980s have witnessed major tax changes in both the United States and Canada. These have come both in the form of cumulative change (such as steady increases in the Social Security tax in the United States in the first half of the decade, and several rate increases in the federal sales tax in Canada later in the decade), and in discrete tax change packages (1981 and 1986 in the United States, and 1987 in Canada). Whalley asks to what extent these changes represent evidence of policy convergence between the two economies, or whether increasing interdependence and the asymmetries in size inevitably imply that Canadian tax policies have to follow those in the United States.

Also attending the conference were: William Alpert and Claire Fortier, the William H. Donner Foundation; Charles L. Ballard, Michigan State University; John Bossons and Thomas Wilson, University of Toronto; Sam Bucovetsky, University of Western Ontario; Michael Daly and Al Shortt, Department of Finance, Canada; Peggy and Richard Musgrave, University of California at Santa Cruz; Anwar Shah, World Bank; Wayne Thirsk, University of Waterloo; Aileen Thompson, University of Michigan; and Doug Sherbaniuk, Canadian Tax Foundation.

A conference volume, *Tax Structures: The United States and Canada*, edited by Shoven and Whalley, will be available from the University of Chicago Press in 1992.

## The Uruguay Round

One hundred economists and policy officials met in Washington on October 5 at an NBER-sponsored conference on "The Uruguay Round and Beyond: Problems and Prospects." Research Associates Robert E. Baldwin and J. David Richardson, University of Wisconsin at Madison, organized the following program:

Gary C. Hufbauer and Jeffrey J. Schott, Institute for International Economics, "Scoring the Uruguay Round: Pass, Fail, or Incomplete?"

Discussant: Robert E. Baldwin

C. Michael Aho, Council on Foreign Relations, and Bruce Stokes, *National Journal*, "The Implications of European Integration for U.S. Trade Policy"

Discussant: Ernest Preeg, Center for Strategic and International Studies

Raymond J. Ahearn and Alfred Reifman, Congressional Research Service, and Allan I. Mendelowitz, General Accounting Office, "Congress and U.S. Trade Policy in the Nineties"

Discussant: William Reinsch, Office of Senator John Heinz

Edward M. Graham, Institute for International Economics, "Multilateral Discipline on Foreign Direct Investment: Beyond the TRIMs [Trade Related Investment Measures] Exercise in the Uruguay Round"

Discussant: Rita M. Rodriguez, Export-Import Bank of the United States

Josef C. Brada, Arizona State University, "Integrating Eastern Europe and the Soviet Union into the World Economy"

Discussant: Catherine Mann, Federal Reserve Board

Hufbauer and Schott graded the negotiations on the Uruguay Round on an academic scale from A to F, depending upon whether the negotiators were pursuing current goals and whether those goals were likely to be achieved. They gave the Uruguay Round a B+ overall. The lowest marks went to talks on "retariffication plus adjustment," "market principles at the margin," and "implementation of trade concessions linked to current account conditions," while the negotiations covering trade in services and intellectual property rights got the highest marks. Hufbauer and Schott conclude that extending the talks, rather than rushing to close them without achieving substantial results, would yield greater trade liberalization.

Aho and Stokes assert that European integration in 1992 will challenge U.S. trade policy and the General Agreement on Tariffs and Trade (GATT) more than Japanese trade frictions do. As the EC edges toward unification of its market, the world is moving toward coalitions of countries that trade in blocs. The United States, armed with such unilateral countermeasures as the Super 301 amendment, may widen its divisions with Europe. In order to avert trouble between the United States and Europe, multilateral trade solutions would have to be open. The Uruguay Round is unlikely to arrive at a multilateral solution by December. Thus, Aho and Stokes conclude that continuing negotiations after the deadline might enhance the GATT in areas such as dispute settlement.

Ahearn, Mendelowitz, and Reifman assert that Congress has been moving away from activism on trade policy since the passing of the 1988 trade bill that included the Super 301. The next large trade bill facing Congress will call for ratification of the Uruguay Round

measures for the GATT. Congress probably would be willing to lower sugar subsidies and open the textile market to obtain a comprehensive package with clear improvements in the areas of services, trade-related investment, dispute settlement, and agriculture. On the other hand, if a weak package with little assurance of gains for U.S. interests were presented, the authors believe, Congress likely would push for much stronger bilateral and unilateral trade measures along the lines of Super 301.

Graham traces the present interest in Trade Related Investment Measures to the changing roles played by such countries as the United States in international trade. Once the United States advocated open investment policies abroad because they were advantageous to its multinational corporations. Now, it seeks more control over foreign direct investment because of the large inflows from abroad, particularly from Japan, in the 1980s. Graham describes universally agreed upon rules that would coordinate policies among countries, cover the right of host nations to tax multinationals, and set up penalties strict enough to assure adherence. Such policies clearly would go beyond the scope of the GATT and might require a new World Trade Organization to implement.

Brada discusses the likely scope of Eastern European transition toward a market orientation, and the possible effects this would have on world markets and institutions. The shift to private ownership and open markets will take a long time, and might never be complete. How to deal with these new entrants who still must rely on state trading and central control poses a real problem for such multilateral institutions as the GATT.

It is anticipated that an NBER Conference Report on these proceedings will be published in 1991. Its availability will be announced in the *NBER Reporter*.

## Business History

In a pioneering effort, the NBER is bringing economists and historians together to study business history. The project's first conference focused on the evolution of information within the company. "Getting Inside the Business Enterprise: The Use and Transformation of Information" took place in Cambridge on October 26-27. Naomi R. Lamoreaux, NBER and Brown University; Thomas McCraw, Harvard University; Daniel Raff, NBER and Harvard University; and Peter Temin, NBER and MIT, organized this program:

Daniel Raff and Peter Temin, "Business History and Recent Economic Theory: Imperfect Information, Incentives, and the Internal Organization of Firms"  
Discussant: David Hounshell, University of Delaware

H. Thomas Johnson, Portland State University, "Managing Costs 'By the Numbers': Recent Cost Management Practices in Historical Perspective"

Discussant: Peter Tufano, Harvard University

Margaret Levenstein, University of Michigan, "The Use of Cost Measures: The Dow Chemical Company, 1890-1914"

Discussant: Barry Supple, Cambridge University

Joanne Yates, MIT, "Investing in Information: Supply and Demand Forces in the Use of Information in American Firms, 1850-1920"

Discussant: Bengt Holmstrom, Yale University

Naomi R. Lamoreaux, "Information Problems and Banks' Specialization in Short-Term Commercial Lending: New England in the Nineteenth Century"

Discussant: Charles W. Calomiris, Northwestern University

J. Bradford De Long, NBER and Harvard University, "Did J. P. Morgan's Men Add Value? An Economist's Perspective on Financial Capitalism" (NBER Working Paper No. 3426)

Discussant: Charles Sabel, MIT

Raff and Temin use insights from the economics of choice and control with imperfect information to analyze problems about the organization and operation of business firms. Their examples, selected from the history of American business in the twentieth century, describe choices at three levels: employment of workers; motivation of managers; and financing by private placements.

Since the 1950s, the primary source of cost management information in American business has been the double-entry cost accounting system, originally created to report financial information to external capital markets. According to Johnson, managing costs with accounting information designed for financial reporting—a practice often referred to as "managing by the numbers"—has contributed to the declining competitiveness and profitability of many U.S. manufacturing companies in the past 30 years. He traces the root causes of the practice and explains how businesses managed costs successfully for over a century before they started using numbers from the financial cost accounting system.

Levenstein examines the evolution of the information system of the Dow Chemical Company before World War I. Changes in the method used by the firm to calculate its costs were largely the result of changes in management strategy and in the market structure in which the firm was operating. While operating in a collusive market, the most significant output of the firm's information system was a measure of weekly expenditures. The firm's withdrawal from cartel accords was associated with the production of a measure of average variable costs. Once the firm became multiproduct, average net income on each product became a central concern of management.

Yates looks at demand and supply forces in the generation and use of internal information in U.S. firms from 1850 to 1920. First she describes changes in the



technology for gathering, recording, transmitting, saving, and reading information. Then she uses the example of the Scovill Manufacturing Company to show that the new technology was "lumpy" and was adopted in discrete jumps.

Lamoreaux focuses on nineteenth-century New England banks to explore the interaction between information problems and lending policies. She argues that as credit markets grew increasingly large and impersonal, bankers found it more and more difficult to evaluate the financial standing of potential borrowers and to inform depositors and investors about their own performance. These new difficulties forced banks to alter the way in which they conducted their business and their role in the larger economy. In the early part of the century, banks loaned funds for a variety of purposes, including investments in fixed capital; by the end of the century, they specialized mainly in short-term commercial and brokers' loans, leaving long-term loans to other types of intermediaries. Although banks continued to support collateral of stocks and bonds, they no longer had any direct relationship with the firms that issued the securities. As a result, banking operations became more specialized, and banks lost their ability to monitor and influence the businesses upon whose prosperity their portfolios depended.

According to De Long, the pre-World War I period was the heyday of "financial capitalism" in the United States—the dominance of investment bankers over firm managers. This form of organization had costs: it created conflicts of interest that investment bankers could exploit for their own profit. It also had benefits: investment banker representation on boards allowed bankers to quickly replace managers whose performance was unsatisfactory and to signal to ultimate investors that a company was well managed and sound. In 1911–2, the presence of a partner in J. P. Morgan and Co. on a firm's board of directors added about 30 percent to common stock equity value, and about 15 percent to the total market value of the firm.

Also attending the conference were: Amy Berlin, Steven Tolliday, and Richard Vietor, Harvard University; Geoffrey Carliner, NBER; Sally Clarke, University of Texas, Austin; Stanley L. Engerman, NBER and University of Rochester; Gerald Friedman, University of Massachusetts, Amherst; Claudia Goldin, NBER and Harvard University; Avner Greif and Stephen Haber, Stanford University; Oliver Hart, NBER and MIT; Barry Nalebuff, Yale University; Daniel Nelson, University of Akron; Jean-Laurent Rosenthal, University of California at Los Angeles; and Kenneth L. Sokoloff, NBER and University of California at Los Angeles.

A volume entitled *Getting Inside the Business Enterprise: The Use and Transformation of Information*, edited by Temin, is anticipated from the University of Chicago Press in 1992.

## Workshop on Economic Growth

About 40 members and guests of the NBER's economic growth project held a workshop in Cambridge on November 9–10. NBER Associates Robert J. Barro, Harvard University, and Paul M. Romer, University of Chicago, organized the following program:

Boyan Jovanovic, New York University, and Saul Lach, NBER and New York University, "The Diffusion of Technology and Inequality Among Nations"  
Discussant: Hugo Hopenhayn, Stanford University  
William Easterly, World Bank, "Endogenous Growth in Developing Countries with Government-Induced Distortions"

Discussant: Jess Benhabib, New York University  
Robert J. Barro, and Xavier Sala-i-Martin, Yale University, "Economic Growth and Convergence Across the United States" (NBER Working Paper No. 3419)

Discussant: Steven N. Durlauf, NBER and Stanford University

Costas Azariadis, University of Pennsylvania, and Allen Drazen, NBER and University of Maryland, "Demographic Transitions in a Dual Economy"  
Discussant: Paul David, Stanford University

Daniel Cohen, CEPREMAP, Paris, "Slow Growth and LDC Debt"

Discussant: Barry J. Eichengreen, NBER and University of California at Berkeley

Alwyn Young, MIT, "Invention and Bounded Learning by Doing"

Discussant: Dwight Perkins, Harvard University

Jovanovic and Lach explain the variation in GNP across countries in term of differences in implementing new technology. Countries that are slow to adopt new technology will end up with lower GNP, and their growth rates will be more persistent and less variable, they suggest. Their data suggest that differential rates of implementation of technology are related to world inequality of income.

Easterly analyzes the effects on growth of government policies that distort resource allocation, such as a sales tax, import tariff, or nonmarket allocation of investment, on growth. He predicts that small changes in distortions will not affect growth much if their initial level is either very high or very low; there is a strong effect in between those extremes. Optimal saving behavior would make growth sensitive even to low distortions, however. Easterly confirms a strong negative effect of distortions on growth in developing countries.

Do poor countries or regions tend to grow faster than rich ones? That is, are there automatic forces that lead to convergence over time in levels of per capita income and product? Barro and Sala-i-Martin examine data since 1840 from the U.S. states and find clear evi-

dence of convergence. Two types of existing theories seem to fit the facts: the neoclassical growth model with broadly defined capital and a limited role for diminishing returns, and endogenous growth models with constant returns and gradual diffusion of technology across economies.

In the rural sector of an underdeveloped economy, individuals will bear children as a means of saving and as a source of labor supply in agricultural production. According to Azariadis and Drazen, the absence of well-developed markets further implies that the output that is produced will be divided by bargaining. Thus fertility will be higher in nonmarket sectors than in sectors where markets are well developed. Further, industrialization not only will induce migration to the manufacturing sector, but also will reduce fertility, as it increases the bargaining power of children and thus reduces the incentive to bear children.

Cohen attempts to disentangle the correlation between LDC debt and growth in the 1980s. He shows that a large debt did not unconditionally predict slow growth, nor that investment would be abnormally low when compared to the "financial autarky" rate. But the service of the debt crowded out investment. For the rescheduling countries, 1 percent paid abroad reduced domestic investment by 0.3 percent of GDP. This is identical to the correlation between investment and foreign finance observed in the 1960s.

According to Young, learning depends upon invention. Learning-by-doing is the exploration of the finite productive potential of invented technologies. At the same time, the profitability of continued invention depends on learning, in that production costs depend on society's aggregate historical learning experience. With small markets, the profitability of invention is low; hence, the rate of invention becomes the constraining factor in growth. With large markets, invention is very profitable and tends to pull ahead of the society's learning experience. The consequent growing gap between the technological frontier and the society's industrial maturity squeezes returns, leading to an equilibrium in which the rate of invention (and growth) is paced by the society's rate of learning.

## Tax Policy and the Economy

Over 120 people attended the fifth annual conference on Tax Policy and the Economy in Washington on November 20. The program, organized by codirectors of the NBER's Tax Program, David F. Bradford, Princeton University, and James M. Poterba, MIT, was:

Myron S. Scholes and Mark A. Wolfson, NBER and Stanford University, "The Role of Tax Rules in the Recent Restructuring of U.S. Corporations"

Hans-Werner Sinn, NBER and University of Munich, "Taxation and the Cost of Capital: The 'Old' View, the 'New' View, and Another View" (NBER Working Paper No. 3501)

Alan J. Auerbach, NBER and University of Pennsylvania, Jagadeesh Gokhale, Federal Reserve Bank of Cleveland, and Laurence J. Kotlikoff, NBER and Boston University, "Generational Accounts—A Meaningful Alternative to Deficit Accounting" (NBER Working Paper No. 3589)

Alan B. Krueger, NBER and Princeton University, and Jonathan Gruber, Harvard University, "The Incidence of Mandated Employer-Provided Insurance: Lessons from Workers' Compensation" (NBER Working Paper No. 3557)

James M. Poterba, "Is the Gasoline Tax Regressive?" (NBER Working Paper No. 3578)

Scholes and Wolfson demonstrate that U.S. tax reforms in the 1980s have made substantial changes in the attractiveness of operating in partnership form relative to corporate form. The reforms also have changed the desirability of debt financing relative to equity financing, both for domestic operations and for foreign subsidiaries. Further, while the 1981 Tax Act encouraged mergers and acquisitions among U.S. corporations, the 1986 Act discouraged such transactions. Finally, these acts had the opposite effect on incentives of foreign companies to acquire U.S. businesses.

Sinn considers the effect of tax rules on the pretax rate of return required on corporate investment. Corporate equity is taxed once at the level of the corporation and again at the level of the shareholder, either upon distribution in the form of dividends, or upon realization of capital gains generated by the corporate level investment. Under existing rules, it seems clear that corporations maximize shareholder wealth if they finance almost entirely from debt. However, equity financing may occur because of the historically inherited corporate financial structure, or because a debt finance project pays off more than can be distributed as interest. In this case, shareholders will receive more aftertax income when profits are used to buy back shares or the functional equivalent, to buy other corporations for cash, rather than to pay dividends. Sinn argues that our view of the effect of tax rules has been marked by a set of assumptions about corporate financial behavior that is too restrictive. Mature companies probably can moderate the distorting effects that would be implied by very rigid financial behavior, but the discouragement of new firms may be greater than has been recognized generally.

Auerbach, Gokhale, and Kotlikoff present a "generational accounting system" as an alternative to using the federal budget deficit to gauge intergenerational policy. A set of accounts can be used to assess the financial burden that current generations are placing on future generations. The accounts indicate, in present value, the net amount that current and future generations are projected to pay to the government now and

in the future. The authors estimate that, under current spending policies, the fiscal burden facing the members of future generations over their lifetimes on average will be at least 23 percent larger than that which faced newborns in 1989. This projected discrepancy suggests a much more serious generational problem in the United States than even pessimistic commentators on fiscal policy have foreseen.

Krueger and Gruber examine the incidence of the workers' compensation program. In certain industries, such as trucking and carpentry, workers' compensation insurance costs are quite large, and they vary tremendously within states, over time, and across states at a moment in time. The authors find that changes in employers' costs of workers' compensation insurance largely are shifted to employees in the form of lower wages. In addition, higher insurance costs may have a negative effect on employment.

According to Poterba, households with low expenditures devote a smaller share of their *consumption* to gasoline than their counterparts in the middle of the expenditure distribution, even though low-income households spend a much higher share of their *income* on gasoline than higher-income households do. Although households in the top 5 percent of the total *spending* distribution spend relatively less on gasoline than those who are less well-off, the share of expenditures devoted to gasoline is much more stable across the population than the ratio of gasoline outlays to current income. Thus the gasoline tax appears far less regressive with respect to spending than with respect to income.

*Tax Policy and the Economy, Volume 5*, edited by David F. Bradford, will be available from The MIT Press, Cambridge, later this year.

Sule Ozler, University of California at Los Angeles, and Guido Tabellini, NBER and University of California at Los Angeles, "External Debt and Political Instability"

Discussant: Jonathan Eaton, NBER and Boston University

Allan Drazen, NBER and University of Maryland, "Why Are Deficit Reduction and Inflation Stabilization So Damn Difficult? Political versus Economic Slippage"

Discussant: Dani Rodrik, NBER and Harvard University

Takatoshi Ito, NBER and University Minnesota, "International Impacts on Domestic Political Economy: A Case of Japanese General Elections" (NBER Working Paper No. 3499)

Discussant: Susanne Lohmann, Stanford University  
Stephen Cornell, University of California at San Diego, and Joseph Kalt, Harvard University, "Where's the Glue? Institutional Bases of American Indian Economic Development"

Discussant: Howard Rosenfeld, Carnegie-Mellon University

Elizabeth Hoffman, University of Arizona, and Gary D. Libecap, NBER and University of Arizona, "Institutional Choice and the Development of U.S. Agricultural Policies in the 1920s"

Discussant: John Ferejohn, Stanford University

William P. Rogerson, Northwestern University, "Incentives, the Budgetary Process, and Inefficiently Low Production Rates in Defense Procurement"

Discussant: Linda Cohen, University of California at Irvine

For nearly two decades, while economic regulation of American industry has declined, social regulation has grown. Ladha seeks to explain trends in various regulations by modeling the interactions among political, judicial, and administrative actors and institutions.

Historically, four out of five appointments to the Supreme Court have been confirmed by the Senate, with a confirmation rate of 60 percent even when the White House was controlled by the opposite party. Many commentators have attributed this high confirmation rate to "senatorial deference" to the prerogatives of the executive. However, Lemieux and Stewart show that the constitutional structure within which the nomination "game" is played out usually should result in the appointment of a nominee whom the Senate will accept, even if both the president and key senators pursue their potentially conflicting ambitions to control the future policy direction of the Supreme Court. In other words, the high rate of confirmation may reflect presidential "deference" to the Senate just as much as the reverse.

Spiller uses a rational-choice framework to study the role of agencies, Congress, and the courts in the regulatory process. He then seeks to explain the seeming inaction of Congress and what role the courts played

## Political Economy

About 50 researchers attended an NBER conference on political economy in Cambridge on December 7-8. Alberto Alesina, NBER and Harvard University, Morris Florina, Harvard University, and Roger Noll, Stanford University, organized the following program:

Krishna K. Ladha, Washington University, St. Louis, "The Pivotal Role of the Judiciary in the Deregulation Battle between the Executive and Legislature"  
Discussant: Shep Melnick, Brandeis University

Peter Lemieux and Charles Stewart III, MIT, "A Theory of Supreme Court Nominations"  
Discussant: Susan Rose-Ackerman, Yale University

Pablo Spiller, University of Illinois, "A Rational Choice Analysis of the *Execunet* Decision"  
Discussant: Kenneth A. Shepsle, Harvard University and University of Southern California

in the deregulation of long distance telecommunications, emphasizing the *Execunet* decision.

Why do some developing countries accumulate debt so rapidly over a short time? Ozler and Tabellini find that, from 1972-82, higher political instability led to higher levels of external indebtedness if the borrower did not find that credit was rationed.

According to Drazen, the adoption of deficit reduction programs is hindered not by disagreement over the need to reduce the deficit but by conflict over the distributional implications of how it is done. The ability of groups to block unfavorable programs may mean that only programs with little fiscal austerity will be adopted.

In a parliamentary system such as Japan's, good economic performance tends to trigger elections. International factors, such as foreign exchange reserves and elections in the United States, can influence Japanese economic performance. Ito finds only a limited link between economic performance and international variables, except that upcoming elections in the United States tend to cause a higher rate of growth in Japan.

Using evidence from the Harvard Project on American Indian Economic Development, Cornell and Kalt find that constitutional form is an important determinant of tribes' economic performance. That is particularly true where there is a match between formal constitutions and indigenous cultural norms regarding legitimate political power.

Hoffman and Libecap study U.S. agricultural policy in the 1920s. With falling crop prices, farmers appealed to the federal government, which was large enough and had the resources to intervene in various ways. The policies adopted were influenced by the characteristics of the crop and by broader market conditions.

Weapons production systematically occurs in plants that are too large relative to the rates of output actually produced. Rogerson suggests that this may be caused by the military's encouragement of excess scale in order to lower marginal costs and thus to increase the number of weapons that Congress authorizes for purchase. He shows that the military's projections of future rates of output are inflated before production begins, but not afterward. This suggests that the purpose of inflated projections may be to guarantee that plants of excessive scale are built.

conferences and meetings, to avoid conflicts. **All activities listed should be considered to be "by invitation only," except where indicated otherwise in footnotes.**

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also provide a short (fewer than fifty words) description of the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Spring 1991 issue of the *Reporter* is March 1. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-3900.

**February 21-22, 1991**

Program Meeting: Financial Markets and Monetary Economics, NBER

**March 8-9, 1991**

Sixth Annual Macroeconomics Conference, NBER

**March 10-12, 1991**

North-South Macroeconomic Interactions (with Brookings Institution, Korea Development Institute, and Organization for Economic Cooperation and Development), Centre for Economic Policy Research

**March 15-16, 1991**

Fourth InterAmerican Seminar on Economics, NBER

**March 15-16, 1991**

Program Meeting: Productivity, NBER

**March 22, 1991**

Program Meeting: Labor Studies, NBER

**April 4-5, 1991**

Panel on Economic Activity: Macroeconomics, Brookings Institution

**April 4-6, 1991**

Annual Meeting, Midwest Economic Association\*

**April 5-6, 1991**

Conference on Tax-Exempt Debt, NBER

**April 11-12, 1991**

Program Meeting: Taxation, NBER

**April 18-19, 1991**

Program Meeting: Industrial Organization, NBER

**April 18-19, 1991**

Conference on Japanese Monetary Policy, NBER

**April 18-19, 1991**

Economic Policy Panel, Centre for Economic Policy Research

**April 19-20, 1991**

Carnegie-Rochester Public Policy Conference, Carnegie-Mellon University—University of Rochester

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## Conference Calendar

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Each *NBER Reporter* includes a calendar of upcoming conferences and other meetings that are of interest to large numbers of economists (especially in academia) or to smaller groups of economists concentrated in certain fields (such as labor, taxation, finance). The calendar is primarily intended to assist those who plan

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

**April 22-23, 1991**

Structural Adjustment, Trade Liberalization, and Developing Country Agriculture, Centre for Economic Policy Research

**April 26, 1991**

Workshop on Macroeconomic History, NBER

**April 30-May 2, 1991**

The Establishment of a Central Bank, Centre for Economic Policy Research

**May 3-4, 1991**

Conference on Leading Indicators, NBER

**May 10-11, 1991**

Universities Research Conference on Economic Fluctuations, NBER

**May 17-19, 1991**

Conference on Higher Education, NBER

**May 31-June 1, 1991**

State-Federal Tax Interactions, NBER

**June 13-14, 1991**

Franco-American Seminar, NBER

**June 17-18, 1991**

International Seminar on Macroeconomics, NBER

**June 18-20, 1991**

1991 Meetings, Society for Economic Dynamics and Control

**June 18-21, 1991**

Research on the Low-Income Population, Institute for Research on Poverty

**June 20-22, 1991**

Second Annual Asian Seminar on Economics (with Korea Development Institute), NBER

**June 21-23, 1991**

Labor Statistics of the Late 19th Century, NBER

**June 27-July 1, 1991**

North American Summer Meeting, Econometric Society\*

**June 29-July 3, 1991**

66th Annual Conference: Challenges of the Changing Global Environment, Western Economic Association\*

**July 29-August 2, 1991**

Economic Transformation in Eastern Europe, Centre for Economic Policy Research

**August 19-22, 1991**

Joint Statistical Meetings, American Statistical Association\*

**August 25-29, 1991**

47th Congress: Public Finance in a Changing Political Environment, International Institute of Public Finance\*

**September 12-13, 1991**

Panel on Economic Activity: Macroeconomics, Brookings Institution

**September 22-25, 1991**

Annual Meeting, National Association of Business Economists\*

**September 26-28, 1991**

International Taxation, NBER

**September 27-28, 1991**

Implementing Monetary Policy in Phase Two, Centre for Economic Policy Research

**October 2-5, 1991**

20th (biannual) Conference, Center for International Research on Economic Tendency Surveys\*

**October 3-6, 1991**

Retrospective on the Bretton Woods System: Lessons for International Monetary Reforms, NBER

**October 11, 1991**

Research Meeting: Economic Fluctuations, NBER

**October 11-14, 1991**

International Atlantic Economic Conference, Atlantic Economic Society\*

**October 17-18, 1991**

Economic Policy Panel, Centre for Economic Policy Research

**October 25-26, 1991**

Conference on Economic Growth, NBER

**November 7-8, 1991**

Program Meeting: Taxation, NBER

**November 24-26, 1991**

Annual Meeting, Southern Economic Association\*

**January 3-5, 1992**

Annual Meeting, American Economic Association\*

**March 26-28, 1992**

Annual Meeting, Midwest Economic Association\*

**May 1, 1992**

Conference on Aging, NBER

**September 15-18, 1992**

Annual Meeting, National Association of Business Economists\*

**November 22-24, 1992**

Annual Meeting, Southern Economic Association\*

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## Bureau News

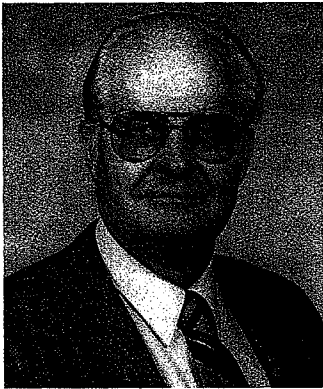
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### New Directors Named

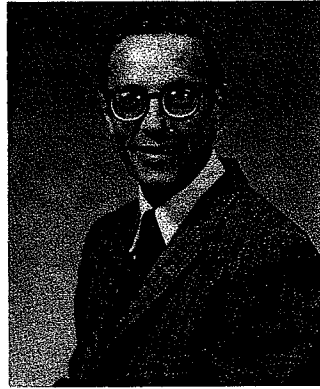
The NBER's Board of Directors elected three new members at its September meeting: Rueben C. Buse,

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



Rueben C. Buse



Glen Cain



Dean P. Phypers

representing the American Agricultural Economics Association; Glen Cain, representing the University of Wisconsin; and Dean P. Phypers, representing the Committee for Economic Development.

## Economics Fluctuations Research Meeting

About 75 members and guests of the NBER's Program in Economic Fluctuations attended a research meeting on October 26 in Cambridge. The program, organized by Richard Rogerson, NBER and Stanford University, Matthew D. Shapiro, NBER and University of Michigan, and Randall Wright, University of Pennsylvania, was:

N. Gregory Mankiw, NBER and Harvard University, David H. Romer, University of California at Berkeley, and David N. Weil, Brown University, "A Contribution to the Empirics of Economic Growth"

Discussant: Robert G. King, University of Rochester V. V. Chari, Lawrence Christiano, and Patrick J. Kehoe, Federal Reserve Bank of Minneapolis, "Optimal Taxation of Capital and Labor Income in a Stochastic Growth Model"

Discussant: Kenneth L. Judd, NBER and Stanford University

Robert B. Barsky, NBER and University of Michigan, and Elizabeth Warner, Hamilton College, "The Timing and Magnitude of Retail Store Markdowns with Reference to Weekends, Holidays, and Business Cycle Fluctuations"

Discussant: Robert E. Hall, NBER and Stanford University

Dale T. Mortensen, Northwestern University, "Search Equilibrium and Real Business Cycles"

Discussant: Olivier J. Blanchard, NBER and MIT

John Laitner, University of Michigan, "Random Earnings Differences, Lifetime Liquidity Constraints, and Altruistic Intergenerational Transfers"

Discussant: Andrew B. Abel, NBER and University of Pennsylvania

Mark W. Watson, NBER and Northwestern University, "Measures of Fit for Calibrated Models"

Discussant: Lars Peter Hansen, NBER and University of Chicago

Mankiw, Romer, and Weil find that the Solow growth model, with physical and human capital included, explains about 80 percent of the international variation in income per capita. Also, holding population growth and capital accumulation constant, countries converge at about the rate predicted by the augmented Solow model.

Chari, Christiano, and Kehoe find that, in a stationary equilibrium of a stochastic growth model, the ex ante tax rate on capital income is approximately zero, and the optimal tax rate on labor income fluctuates very little. This result implies that there is no theoretical presumption that optimal tax rates on labor follow a random walk.

According to Barsky and Warner, data on sales—particularly the sales associated with high demand periods such as weekends and holidays—provide a unique opportunity for studying the interactions between the volume of demand and: the equilibrium markup under imperfect competition; costs of changing nominal prices and the resulting frequency of price adjustments; and the role of nonprice methods of allocation, such as stockout-induced rationing. Barsky and Warner find that instead of raising prices in response to increased demand, as might be expected, firms actually lower them.

Mortensen focuses on the propagation mechanism that links technology shocks with movements in employment and output that are induced by forward-looking recruiting and by search investment decisions. He finds that when the search process is included in a real

business cycle model, simulations of that model match the observed data better.

Laitner describes private saving behavior when households differ in earnings, care about their descendants, and cannot have negative net worth. In his analysis, wealth accumulation easily reaches observed levels. Low-endowment families tend to consume all of their current incomes, and fiscal policies can affect interest rates.

Watson develops a new procedure for assessing how well a given dynamic economic model describes a set of time series. He adds just enough error to the variables in the model so that it can mimic the actual data exactly.

## Financial Markets and Monetary Economics

The NBER's Program in Financial Markets and Monetary Economics met in Cambridge on November 1-2. Program Director Benjamin M. Friedman of Harvard University organized the following program:

Charles R. Nelson, NBER and University of Washington, and Myung Jig Kim, University of Alabama, "Predictable Stock Returns: Reality or Statistical Illusion?" (NBER Working Paper No. 3297)

Discussant: G. William Schwert, NBER and University of Rochester

Zvi Bodie, NBER and Boston University, and William Samuelson, Boston University, "Labor Supply Flexibility and Portfolio Choice" (NBER Working Paper No. 3043)

Discussant: George Constantinides, NBER and University of Chicago

Mervyn A. King, NBER and London School of Economics, and Enrique Sentana and Sushil Wadhvani, London School of Economics, "Volatility and Links Between National Stock Markets" (NBER Working Paper No. 3357)

Discussant: Kenneth French, NBER and University of Chicago

Andrew B. Abel, NBER and University of Pennsylvania, and George Mailath, University of Pennsylvania, "Financing Losers in Competitive Markets"

Discussant: Bruce N. Lehmann, NBER and Columbia University

Alan J. Auerbach, NBER and University of Pennsylvania, Jagadeesh Gokhale, Boston University, and Laurence J. Kotlikoff, NBER and Boston University, "Generational Accounts—A Meaningful Alternative to Deficit Accounting" (NBER Working Paper No. 3589)

Discussant: R. Glenn Hubbard, NBER and Columbia University

Rudiger Dornbusch, NBER and MIT, and Holger Wolf, MIT, "Monetary Overhang and Reforms in the 1940s" (NBER Working Paper No. 3456)

Discussant: Richard H. Clarida, NBER and Columbia University

Recent research suggests that stock returns can be predicted from fundamentals, such as dividend yield, and that the degree of predictability rises with the length of time over which the return is measured. Nelson and Kim investigate two sources of small sample bias in these studies. They present a set of experiments in which data are generated by a version of the present-value model; the discount rate is constant, so returns in fact are not predictable. Nelson and Kim show that a number of the characteristics of the historical results can be replicated simply by the combined effects of the two small sample biases.

Bodie and Samuelson show that people who have flexibility in choosing how much to work prefer to invest substantially more of their money in risky assets than those who have no such flexibility. Viewed in this way, labor supply flexibility offers insurance against adverse investment outcomes. The results support the conventional wisdom that the young can tolerate more risk in their investment portfolios than the old can. Also, 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, people will respond in terms of labor supply to shocks in the financial markets.

King, Sentana, and Wadhvani use data on 16 national stock markets and find that only a small proportion of the variation over time in the covariances between national stock markets can be explained by observable economic variables. The authors also estimate the risk premiums for each country and identify substantial movements in the required return on equity. Their results suggest that, although correlations between markets rose during the 1980s, this is not necessarily evidence of an underlying upward trend.

Projects with negative expected value cannot get financing in competitive capital markets if all potential investors are risk neutral and have identical beliefs about the distribution of the project's net revenue. But Abel and Mailath present a series of examples in which it is possible for a project to obtain financing when differences in beliefs are caused by differences in information, and are not simply arbitrary, unexplained differences in opinions.

Post-1945 Europe had many of the traits observed today in Eastern Europe and the Soviet Union: price controls; shortages; and a monetary overhang. The policy response in most countries was monetary reform: the deliberate immobilization of liquid assets and, in many instances, an outright write-off of deposits. Dornbusch and Wolf review the historical experience, notably the German reform of 1948, identify the policy issues involved, and draw lessons for today.



# Tax Program Meets

About 40 members and guests of the NBER's Program in Taxation met in Cambridge on November 15–16. Program Codirectors David F. Bradford, Princeton University, and James M. Poterba, MIT, organized the following program:

Joseph E. Stiglitz, NBER and Stanford University, and Raaj Kumar Sah, Yale University, "Taxation and Agricultural Pricing in LDCs"

Discussant: Lawrence H. Summers, NBER and Harvard University

Alan J. Auerbach, NBER and University of Pennsylvania, Jagadeesh Gokhale, Federal Reserve Bank of Cleveland, and Laurence J. Kotlikoff, NBER and Boston University, "Generational Accounts—A Meaningful Alternative to Deficit Accounting" (NBER Working Paper No. 3589)

Discussant: James M. Poterba

Oliver Hart, NBER and MIT, and John Moore, London School of Economics, "A Theory of Corporate Financial Structure Based on the Seniority of Claims" (NBER Working Paper No. 3431)

Discussant: B. Douglas Bernheim, NBER and Princeton University

Alan B. Krueger, NBER and Princeton University, and Jonathan Gruber, Harvard University, "The Incidence of Mandated Employer-Provided Insurance: Lessons from Workers' Compensation" (NBER Working Paper No. 3557) (See "Tax Policy and the Economy," in this issue.)

Discussant: Daniel R. Feenberg, NBER

Mervyn A. King, NBER and London School of Economics, and Mark Robson, London School of Economics, "On Tax Rate Dynamics"

Discussant: Douglas Holtz-Eakin, NBER and Columbia University

John B. Shoven, NBER and Stanford University, Scott Smart, University of Indiana, and Joel Waldfogel, Yale University, "Real Interest Rates and the Savings and Loan Crisis: The Moral Hazard Premium"

Discussant: Jeremy I. Bulow, NBER and Stanford University

Lawrence H. Goulder, NBER and Stanford University, and Philippe Thalmann, University of Geneva, "Capital Taxation and Economic Efficiency: Leveling the Playing Field versus Living by the Golden Rule" (NBER Working Paper No. 3559)

Discussant: Don Fullerton, NBER and University of Virginia

Hans-Werner Sinn, NBER and University of Munich, "Taxation and the Birth of Foreign Subsidiaries" (NBER Working Paper No. 3519)

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

Stiglitz and Sah consider a range of tax policy issues that confront less developed countries (LDCs), in par-

ticular the relative treatment of agriculture and industry. They find that the optimal policy depends on such features of LDCs as unemployment in the urban labor markets, sharecropping, migration, and the limited set of available tax policy instruments.

Hart and Moore note that firms give debt and equity different priorities relative to corporate cash payments. A company with high debt will find it difficult to raise new capital, since new securityholders will have low priority relative to existing senior creditors. But the authors argue that there is an optimal debt-equity ratio and mix of senior and junior debt for a corporation whose management may undertake unprofitable, as well as profitable, investments. Profitable firms have low debt. In addition, long-term debt will be high if new investment is risky and, on average, profitable, or if assets in place are risky and new investment on average is unprofitable.

Optimal tax theory predicts only the tax "wedges" between consumption and leisure, and between present and future consumption. King and Robson estimate these wedges for the United States and United Kingdom over 1929–88, and show that consumption taxes play an important role in changes over time in the size of the wedges. They also find that changes in tax wedges are influenced by political considerations, such as the anticipation and outcome of an election.

Shoven, Smart, and Waldfogel document that real interest rates rose to historically high levels in 1980 and remained high throughout the decade. Although tight monetary policy, fiscal deficits, and variable inflation rates were contributing factors, the thrift crisis drove up real interest rates, they find. Deposit insurance, moral hazard, and regulatory forbearance provided the incentives and the means for insolvent thrifts to issue liabilities that compete with Treasury securities in the market for funds. As the magnitude of the thrift crisis grew in the 1980s, so did pressure on Treasury yields. Even if the effect of the S&L crisis on interest rates is small, the increased cost of financing the public debt adds significantly to the total costs associated with the S&L fiasco.

Goulder and Thalmann explore the potential efficiency gains from the Tax Reform Act of 1986 (TRA86) and from reforms aimed at reducing disparities in capital tax rates across business sectors and between business and housing. They find that TRA86 yielded only a small improvement in the *intersectoral* allocation of capital, because the beneficial effects within the business sector were largely offset by the adverse effects of increased disparities between the business and housing sectors. In contrast, TRA86 had significant and negative effects on *intertemporal* efficiency. Hence, its overall impact on efficiency was negative. Goulder and Thalmann also find that integrating the tax treatment of housing and business capital would yield substantial gains in intersectoral efficiency, while generating enough revenue to permit significant reductions in capital income tax rates and related improvements in intertemporal efficiency. Together the intertemporal and inter-

sectoral efficiency gains correspond to a permanent increase in income of about 0.9 percent.

Sinn studies the influence of tax policy on foreign direct investment, emphasizing in particular immature subsidiaries. He shows that taxes on repatriations reduce the subsidiary's "birthweight." Also, lump-sum taxes reduce the subsidiary's cost of capital, and the possibility of deferral increases this cost. Sinn rejects the popular weighted average specification of the subsidiary's cost of capital.

## Labor Economists Meet

About 35 members and guests of the NBER's Program in Labor Studies met in Cambridge on November 30. The program was:

John M. Abowd, NBER and Cornell University, "The Effects of Potential Unionization on Industrial Investment"

Jayendu Patel, Harvard University, John Rizzo, Agency for Health Care Policy and Research, and Richard J. Zeckhauser, NBER and Harvard University, "Union Effects in Public versus Private Enterprise: The Case of the Hospital Industry"

Alfonso Alba-Ramirez, Harvard University, "Self-Employment in the Midst of Unemployment: The Cases of Spain and the United States"

Joseph G. Altonji, NBER and Northwestern University, "The Demand for and Return to Education When Outcomes Are Uncertain"

Using firm and industry level data on investment, collective bargaining, and unionization, Abowd studies two different investment measures—the rate of change of net capital stocks, and the proportion of new gross investment in nonresidential plant, property, and equipment from 1955 to 1986. Both measures are very sensitive to the total payoff to investors and workers. New investment declines significantly in industries in which the unionization environment is more favorable to the employees.

Patel, Rizzo, and Zeckhauser find that unionization has had a stronger effect on earnings and fringe benefits in public than in private hospitals. On the other hand, unionization lowered employment significantly, and by very similar amounts for both public and private hospitals. Thus, there is a trade-off between employment and earnings in both public and private hospitals. Collectively, unionization has led to lower employment cutbacks in public hospitals for a given wage or fringe benefit increase, which is consistent with the view that public sector unions are relatively more successful in their employment negotiations. The union impact on wages and fringe benefits declined markedly in 1970 through 1980. Spillovers played a much more

important role in raising wages and fringes than hospital-level unionization measures did.

Alba-Ramirez studies the relationship between unemployment and self-employment. He finds that for both Spain and the United States, duration of unemployment significantly increases the probability of becoming self-employed. The self-employed also are more likely to work part time and to lack Social Security coverage. In Spain, self-employed workers without employees earn significantly less than other workers do.

Personal characteristics affect the expected rate of return to starting college, both by altering the market payoffs associated with completing particular postsecondary programs of study and by altering the probabilities that the individual will complete the program. Altonji uses data from the National Longitudinal Survey of the High School Class of 1972 to estimate the influence of gender, aptitude, high school curriculum, and family background on the expected return to starting college.

## Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-1440 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to corporate associates. **For all others there is a charge of \$3.00 (\$4.00 outside of the U.S.) per reprint requested. Advance payment is required on all orders. Please do not send cash.** Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

1441. "U.S. Inflation, Labor's Share, and the Natural Rate of Unemployment," by Robert J. Gordon, 1990 (NBER Working Paper No. 2585)

1442. "Inflation and Reputation with Generic Policy Preferences," by Herschel I. Grossman, 1990 (NBER Working Paper No. 2239)

1443. "Insider Power in Wage Determination," by David G. Blanchflower, Andrew J. Oswald, and Mario D. Garrett, 1990 (NBER Working Paper No. 3179)

1444. "Research on the Elderly: Economic Status, Retirement, and Consumption and Saving," by Michael D. Hurd, 1990 (NBER Working Paper No. 3018)

1445. "Foreign Exchange Expectations: Micro Survey Data," by Takatoshi Ito, 1990 (NBER Working Paper No. 2679)

1446. "Coming Home to America: Dividend Repatriations by U.S. Multinationals," by James R. Hines, Jr. and R. Glenn Hubbard, 1990 (NBER Working Paper No. 2931)
1447. "Solving Nonlinear Stochastic Growth Models: A Comparison of Alternative Solution Models," by John B. Taylor and Harald Uhlig, 1990 (NBER Working Paper No. 3117)
1448. "The Policy of Tax-Cut-cum-Base-Broadening: Implications for International Capital Movements," by Hans-Werner Sinn, 1989
1449. "The Wage Curve," by David G. Blanchflower and Andrew J. Oswald, 1990 (NBER Working Paper No. 3181)
1450. "The Political Economy of War Debt and Inflation," by Herschel I. Grossman, 1990 (NBER Working Paper No. 2743)
1451. "How Does Canada Do It? A Comparison of Expenditures for Physicians' Services in the United States and Canada," by Victor R. Fuchs and James S. Hahn, 1990
1452. "Implications of Introducing U.S. Withholding Taxes on Foreigners' Interest Income," by Lawrence H. Goulder, 1990
1453. "Demographics, Fiscal Policy, and U.S. Saving in the 1980s and Beyond," by Alan J. Auerbach and Laurence J. Kotlikoff, 1990 (NBER Working Paper No. 3150)
1454. "Taxation, Corporate Capital Structure, and Financial Distress," by Mark L. Gertler and R. Glenn Hubbard, 1990 (NBER Working Paper No. 3202)
1455. "Sources of Technological Divergence Between Developed and Less Developed Economies," by Raaj Kumar Sah and Joseph E. Stiglitz, 1989
1456. "A Time-Series Analysis of Unemployment and Health: The Case of Birth Outcomes in New York City," by Theodore J. Joyce, 1989 (NBER Working Paper No. 2834)
1457. "Real Wages, Monetary Accommodation, and Inflation," by Elhanan Helpman and Leonardo Leiderman, 1990 (NBER Working Paper No. 3146)
1458. "Product Development and International Trade," by Gene M. Grossman and Elhanan Helpman, 1989 (NBER Working Paper No. 2540)
1459. "Stock Volatility and the Crash of '87," by G. William Schwert, 1990 (NBER Working Paper No. 2954)
1460. "A Theory of Kleptocracy with Probabilistic Survival and Reputation," by Herschel I. Grossman and Suk Jae Noh, 1990 (NBER Working Paper No. 2696)
1461. "Experimental Assessment of the Effect of Vocational Training on Youthful Property Offenders," by Pamela K. Lattimore, Ann Dryden Witte, and Joanna R. Baker, 1990 (NBER Working Paper No. 2952)
1462. "Alternative Models for Conditional Stock Volatility," by Adrian R. Pagan and G. William Schwert, 1990 (NBER Working Paper No. 2955)
1463. "Residual Risk Revisited," by Bruce N. Lehmann, 1990 (NBER Working Paper No. 1908)
1464. "Resolving Debt Crises: A Historical Perspective," by Barry J. Eichengreen, 1989 (NBER Working Paper No. 2555)
1465. "Tariffs with Private Information and Reputation," by Richard Jensen and Marie C. Thursby, 1990 (NBER Working Paper No. 2959)
1466. "Incentive Effects of Workers' Compensation Insurance," by Alan B. Krueger, 1990 (NBER Working Paper No. 3089)
1467. "Employer Behavior in the Face of Union Organizing Drives," by Richard B. Freeman and Morris M. Kleiner, 1990 (NBER Working Paper No. 2805)
1468. "Comparing Information in Forecasts from Econometric Models," by Ray C. Fair and Robert J. Shiller, 1990 (NBER Working Paper No. 2233)
1469. "Empirical Research on Trade Liberalization with Imperfect Competition: A Survey," by J. David Richardson, 1989 (NBER Working Paper No. 2883)

## Technical Papers Series

The following studies in the NBER Technical Working Papers series are now available (see previous issues of the *NBER Reporter* for other titles). **There is a charge of \$3.00 (\$4.00 outside of the U.S.) per paper requested. Advance payment is required on all orders. Please do not send cash.** Send orders to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

91. "Testing for Common Features," by Robert F. Engle and Sharon Kozicki, October 1990 (JEL No. 210)
92. "Testing the Autocorrelation Structure of Disturbances in Ordinary Least Squares and Instrumental Variables Regressions," by Robert E. Cumby and John Huizinga, October 1990 (JEL No. 210)
93. "Sorting Out the Differences Between Signaling and Screening Models," by Joseph E. Stiglitz and Andrew Weiss, November 1990
94. "Heteroscedasticity Diagnostics Based on 'Corrected' Standard Errors," by Edward E. Leamer, January 1991

### Child Mortality in U.S. Past

*Fatal Years: Child Mortality in Late Nineteenth-Century America*, by Samuel H. Preston and Michael R. Haines, is available from Princeton University Press for \$35.00. Based on newly discovered data from the 1900 Census of Population, this work stresses that the high mortality rates of the period—nearly one out of five children died before the age of five—severely hit the upper as well as the lower classes. Improvements came only with increased knowledge about infectious diseases and greater public effort to limit their spread.

Preston and Haines are both research associates in the NBER's Program in Development of the American Economy. Preston is also the Frederick J. Warren Professor of Demography and a professor of sociology at the University of Pennsylvania. Haines is the Banfi Vintners Distinguished Professor of Economics at Colgate University.

This volume may be ordered from: Order Department, Princeton University Press, 3175 Princeton Pike, Lawrenceville, NJ 08648. Their telephone number is 1-800-777-4726; the fax number is (609) 895-1081.

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

### U.S./Japan Productivity

*Productivity Growth in Japan and the United States*, NBER Studies in Income and Wealth, Volume 53, edited by Charles R. Hulten, is available from the University of Chicago Press. It is priced at \$60.

Japan's economy grew at double-digit rates in the 1950s and 1960s. Even when the oil crises of the 1970s slowed growth around the world, Japan's economy remained stronger than that of other industrialized countries. How did Japan do it? This volume explores the connections between output growth and skill/education levels, tax rates, and R and D expenditures, for example, in both Japan and the United States. It should interest both academic and government economists.

Hulten is a research associate in the NBER's Program in Productivity and professor of economics at the University of Maryland.

## Race and Schooling

*Race and Schooling in the South: 1880-1950: An Economic History*, by Robert A. Margo, is available from the University of Chicago Press for \$24.95. Margo uses newly available Census data and school district records to analyze how education affected the black-white earnings ratio, which was stable until 1940 and then increased significantly.

He concludes that increased schooling, combined with the two world wars, the Civil Rights movement, and antidiscrimination laws, led to a higher demand for black labor and to an increase in the earnings ratio.

Margo is a research associate in the NBER's Program in Development of the American Economy, and an associate professor of economics at Vanderbilt University.

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## Current Working Papers

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Individual copies of NBER Working Papers and Historical Factors in Long-Run Growth Working Papers are available free of charge to corporate associates. **For all others, there is a charge of \$3.00 (\$4.00 outside of the U.S.) per paper requested. Advance payment is required on all orders. Please do not send cash.** For further information or to order, please write: Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

*Journal of Economic Literature* (JEL) subject codes, when available, are listed after the date of the Working Paper. Abstracts of all Working Papers issued since October 1990 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

#### Segregated Schools and the Mobility Hypothesis: A Model of Local Government Discrimination

Robert A. Margo

Historical Working Paper No. 17

October 1990

JEL No. 042

Around the turn of the century, southern blacks lost

the right to vote, and discrimination against them by local government officials intensified. This paper argues that, in the case of de jure segregated public schools attended by black children, the ability of southern blacks to "vote with their feet" placed limits on local government discrimination.

### **The Microeconomics of Depression Unemployment**

**Robert A. Margo**

Historical Working Paper No. 18

December 1990

JEL No. 042

Microeconomic evidence reveals that the incidence and duration of unemployment in the 1930s varied significantly within the labor force. Long-term unemployment, which was especially high by historical standards, may have been exacerbated by federal relief policies.

### **Wages and Prices During the Antebellum Period: A Survey and New Evidence**

**Robert A. Margo**

Historical Working Paper No. 19

December 1990

JEL No. 042

This paper surveys recent research on wages and prices in the United States before the Civil War. Its basic conclusion is that, while much progress has been made in documenting regional, temporal, and occupational differentials, further insights will require a large amount of new evidence, particularly on retail prices.

The paper also uses existing regional data on wholesale prices to construct new regional indexes of real wages for artisans and unskilled labor from 1821 to 1856. The new indexes suggest that real wage growth was less than previously thought in the 1930s. By comparison with later periods in American history, growth was also very erratic in the short run because of the persistent effects of real and price shocks.

## **NBER Working Papers**

### **Monetary Overhang and Reforms in the 1940s**

**Rudiger Dornbusch and Holger Wolf**

Working Paper No. 3456

October 1990

JEL No. 134

Post-1945 Europe had many of the traits observed today in Eastern Europe and the Soviet Union: price controls; shortages; black markets; and a monetary overhang. The policy response in most countries was monetary reform: the deliberate immobilization of liquid assets and, in many instances, an outright write-off of deposits. This paper reviews the historical experience, notably the German reform of 1948, identifies the policy issues involved, and draws lessons for today.

### **International Trade and Investment under Different Rates of Time Preference**

**Kyoji Fukao and Koichi Hamada**

Working Paper No. 3457

October 1990

JEL Nos. 411, 441

This paper integrates the theories of trade and capital movements, and studies the two-country world in which each nation has a different rate of time preference. We resolve the indeterminacy problem intrinsic in the Heckscher-Ohlin model, in which trade and factor movements coexist, by assuming that capital movements are infinitesimally more costly than trade in goods. Under certain assumptions, the behavior of asset accumulation can be dichotomized from the dynamic pattern of trade specialization.

Complete specialization most likely will take place in the country with a higher rate of time preference, which specializes in the more labor-intensive sector. A single-commodity model exaggerates the amount of capital movements, but the qualitative nature of asset accumulation patterns in such a model remains intact when the model incorporates trade. We offer another explanation to the Feldstein-Horioka paradox: that domestic investment responds more closely to increased savings than capital outflows do. If an economy is imperfectly specialized, then increased savings will be absorbed in capital deepening, rather than in capital outflow.

### **Pensions and Wages: A Hedonic Price Theory Approach**

**Mary Ellen Benedict, Edward Montgomery,  
and Kathryn Shaw**

Working Paper No. 3458

October 1990

JEL No. 824

Is there a trade-off between the level of pension benefits and wages for comparably skilled workers? We use the 1983 Survey of Consumer Finances to match detailed information on pension plans to detailed personal characteristics of a random sample of the population. We then estimate the pension/wage trade-off using both a lifetime, or contractual, model of the labor market and the spot market model used in previous studies. The results indicate a large negative trade-off in the contractual model, but only a negligible trade-off in the spot market model. We also present results from estimating the underlying structural supply-and-demand equation for pensions.

### **A Cross-Country Comparison of Seasonal Cycles and Business Cycles**

**J. Joseph Beaulieu and Jeffrey A. Miron**

Working Paper No. 3459

October 1990

JEL Nos. 122, 123, 131, 311

Barsky and Miron's 1989 paper examines the seasonal fluctuations in the U.S. economy. It shows that the

key stylized facts about the business cycle also characterize the seasonal cycle. It suggests that the interpretation of many of these stylized facts over the seasonal cycle is easier than their interpretation over the business cycle because the ultimate sources of seasonal cycles are more readily identifiable than those of business cycles.

Our paper uses the cross-country variation in seasonal patterns to pin down the ultimate sources of seasonal variation more precisely than is possible from examination of U.S. data alone. We conclude that the key determinants of the seasonal patterns around the world are a Christmas shift in preferences and synergies across agents. We also establish that, across developed countries, the key observations about aggregate variables that characterize the business cycle also characterize the seasonal cycle. Thus, the similarity of the seasonal cycle and the business cycle, demonstrated by Barsky and Miron for the United States, is a robust, stylized fact.

### **The Politics of 1992: Fiscal Policy and European Integration**

**Torsten Persson and Guido Tabellini**

Working Paper No. 3460

October 1990

JEL Nos. 023, 321, 423

The internal market in Europe will increase the international mobility of resources greatly. How will this affect fiscal policy in different countries?

The first part of this paper considers taxation of capital in a two-country model, where a democratically chosen government in each country chooses tax policy. Higher capital mobility changes the politico-economic equilibrium in two ways. First, it leads to more tax competition between the countries: this "economic effect" tends to lower both countries' tax rates. Second, it alters voters' preferences and makes them elect a different government: this "political effect" offsets the increased tax competition, although not completely.

The second part of the paper considers taxation of labor, in a model in which labor is immobile internationally. Eliminating the remaining barriers to trade in goods changes the distribution of labor earnings in the economy, which again has a political, as well as an economic effect. Again, the economic and political effects push the tax rates in different directions but, in this instance, the political effect can prevail. Thus the tendency for an adapting equilibrium to preserve the status quo emerges as a general result of the paper.

### **The Special Education Costs of Low Birthweight**

**Stephen Chaikind and Hope Corman**

Working Paper No. 3461

October 1990

JEL Nos. 913, 912

This paper investigates the relationship between low birthweight, enrollment in special education, and special education costs in the United States. We use the Child Health Supplement to the 1988 National Health Interview Survey, obtaining a sample of approximately

8000 children aged 6 to 15 who are in school. For these children, we calculate the probability of attending special education programs, holding constant individual, family, and regional variables.

We find that children who weighed less than 2500 grams at birth are almost 50 percent more likely to be enrolled in any type of special education program than children who were of normal weight at birth. Since previous studies have found the incremental cost of special education (1989-90) to be \$4350 per student, low birthweight, holding other characteristics constant, results in an incremental cost of special education of \$370.8 million (1989-90) per year. These costs, which were estimated conservatively, imply that previous studies, which considered only medical expenditures, substantially underestimate the full cost of low birthweight.

### **Down and Out in North America: Recent Trends in Poverty Rates in the United States and Canada**

**Rebecca M. Blank and Maria J. Hanratty**

Working Paper No. 3462

October 1990

The paper documents the striking difference in U.S. and Canadian poverty trends from 1970 to 1986. While U.S. poverty has shown no consistent trend since 1970, Canadian poverty has decreased by 60 percent. This paper examines why U.S. and Canadian poverty trends differed during 1970-9 and 1979-86. We find that the principal reason for declining Canadian poverty rates during the 1970s was higher economic growth. During the 1980s, differences in government transfers were the main cause of relative changes in poverty in the two countries. Virtually all of the 3.5 percentage point difference in changes in U.S. and Canadian poverty from 1979-86 can be attributed to differences in the proportion of families that moved out of poverty because of transfers. This may reflect both the expansion in social assistance levels in Canada and the retrenchment in assistance levels in the United States.

### **Scale and Scope Effects on Advertising Agency Costs**

**Ernst R. Berndt and Alvin J. Silk**

Working Paper No. 3463

October 1990

JEL No. 635

This paper reports on an econometric study undertaken to explain how important economies of scale and scope are in advertising agency operations. We formulate cost models that represent how the principal component of agency costs—employment level—varies according to the mix of media and services that an agency provides and the total volume of advertising it produces. We estimate and test these models cross-sectionally, using data pertaining to the domestic operations of 401 U.S. agencies for 1987.

We find that both scale and scope economies are highly significant in the operations of U.S. advertising agencies. Of the 12,000 establishments comprising the industry in 1987, approximately 200-250 had domestic gross incomes of \$3.4 million or more (or, equivalently, billings of \$20-27 million) and therefore had large enough service mixes and operating levels to take full advantage of all available size-related efficiencies. Furthermore, the overall structure of the industry is one in which these large, fully efficient firms created and produced more than half of all the national advertising used in the United States during 1987. At the same time, as a consequence of these scale and scope economies, vast numbers of very small agencies appear to operate with substantial cost disadvantages compared to large firms.

These findings have important implications for possible future changes in the industry structure. It seems highly doubtful that scale economies could motivate further mergers among the largest 200-250 agencies. On the other hand, for small agencies, mergers and acquisitions might be attractive as means of mitigating their size-related cost disadvantages.

Finally, we demonstrate that scale and scope economies are consistent with the diminishing reliance on fixed rates of media commissions as the principal basis of agency compensation. It is also doubtful that size-related economies in operating costs are a viable explanation for the limited degree of vertical integration of agency services by large advertisers.

### **Stock Prices and Bond Yields: Can Their Comovements Be Explained in Terms of Present-Value Models?**

**Andrea E. Beltratti and Robert J. Shiller**

Working Paper No. 3464

October 1990

Real stock prices seem to overreact to changes in long-term interest rates. That is, real stock prices drop (rise) when long-term interest rates rise (fall) more than would be implied by a rational-expectations, present-value model in which expectations are based on a vector autoregression. This overreaction is not associated with any overreaction to changes in the short-run inflation rate. Over the last century, real stock prices have shown little reaction to changes in inflation rates; according to the model, they should show little reaction. These conclusions are based on an analysis of annual data in the United States for 1871 to 1989, and on the United Kingdom for 1918 to 1989.

### **Investor Sentiment and the Closed-End Fund Puzzle**

**Charles Lee, Andrei Shleifer, and Richard Thaler**

Working Paper No. 3465

October 1990

JEL Nos. 521, 611

This paper examines the proposition that fluctua-

tions in discounts on closed-end funds are driven by changes in individual investor sentiment toward closed-end funds and other securities. The theory implies that: discounts on various funds must move together; new funds get started when seasoned funds sell at a premium or a small discount; and discounts on the funds fluctuate together with prices of securities affected by the same investor sentiment. Our evidence supports these predictions. In particular, we find that discounts on closed-end funds narrow when small stocks do well, as would be expected if closed-end funds were subject to the same sentiment as small stocks, which also tend to be held by individual investors. Thus the evidence suggests that investor sentiment affects security returns.

### **The Foreign Exchange Risk Premium in a Target Zone with Devaluation Risk**

**Lars E. O. Svensson**

Working Paper No. 3466

October 1990

JEL Nos. 431, 432

This study derives the foreign exchange risk premium in an exchange rate target zone regime with devaluation/realignment risks. In contrast to previous literature, it takes into account the exchange rate's heteroskedasticity within the band, as well as a separate devaluation/realignment risk. The risk premium then is the sum of two separate risk premiums, arising from stochastic exchange rate movements within the band and from stochastic devaluations/realignments when the band is shifted. I consider both real and nominal exchange rate premiums. The real and nominal risk premiums from movements within the band are very small for narrow target zones and therefore can be disregarded. The real and nominal risk premiums from devaluations/realignments are larger, but still relatively small proportions of the expected rate of devaluation/realignment.

### **Rational Speculative Bubbles in an Exchange Rate Target Zone**

**Willem H. Buiter and Paolo A. Pesenti**

Working Paper No. 3467

October 1990

JEL Nos. 431, 432

The recent theory of exchange rate dynamics within a target zone holds that exchange rates under a currency band are less responsive to fundamental shocks than exchange rates under a free float, provided that the intervention rules of the central bank(s) are common knowledge. These results assume a priori that excess volatility caused by rational bubbles does not occur in the foreign exchange market. This paper considers the existence of speculative behavior as a datum that the central bank has to deal with. We show that the defense of the target zone in the presence of bubbles is



viable if the central bank accommodates speculative attacks consistent with the survival of the target zone itself, and when expectations are self-fulfilling. These results hold for a large class of exogenous and fundamental-dependent bubble processes. We show that the instantaneous volatility of exchange rates within a band is not necessarily less than the volatility under free float, and we analyze the implications for interest rate differential dynamics.

## **The Predictability of Real Exchange Rate Changes in the Short and Long Run**

**Robert E. Cumby and John Huizinga**

Working Paper No. 3468

October 1990

JEL No. 431

Nominal exchange rates do not move to offset differences in inflation rates on a month-to-month, quarter-to-quarter, or even year-to-year basis, so there are sizable changes in real exchange rates. Are these changes predictable? We address this question in three ways. First, we describe a variety of tests of predictability and explain how the different tests are related. Next, we implement the tests for the U.S. dollar relative to four currencies and find statistically significant evidence that real exchange rate changes are predictable. Finally, we examine whether the predictability is of a magnitude that is economically interesting.

## **Finite Lifetimes and Growth**

**Larry E. Jones and Rodolfo E. Manuelli**

Working Paper No. 3469

October 1990

JEL No. 111

The recent literature on endogenous growth models has emphasized the effect of the rate of return on capital accumulation decisions and, consequently, on the growth rate of the economy. In most cases the basic model is a variant of the representative agent growth model. The key feature of the infinitely lived agent model is that "substitution effects" dominate; that is, in order to induce individuals to accumulate capital, the only requirement is a sufficiently high rate of return.

In this paper we explore long-run behavior in a model with finite lifetimes, a version of Diamond's overlapping-generations model. Because individuals do not live forever (although the economy does), their level of income and the rate of return determine the rate of accumulation. Specifically, for all one-sector convex technologies, the equilibrium limiting growth rate of the economy is zero. In this setting, capital income taxation can have paradoxical effects; if the proceeds are used to redistribute income to the young, then a positive long-run growth rate is possible. The effect of the tax rate on the growth rate is not monotonic: for small tax rates, the effect is positive, while for sufficiently high rates, it is negative. Additionally, income redistribution

to the young normally will have positive effects on the long-run growth rate.

We then study a two-sector growth model and show conditions under which the laissez-faire equilibrium displays long-run growth. Intuitively, the key property is the existence of a sector producing investment goods with the relative price of capital decreasing fast enough to allow the young to purchase ever-increasing quantities along a growth path.

Finally, in an overlapping-generations setting, a one-sector model can generate growth if the technology displays a nonconvexity, because this is similar to the effects of a decrease in the price of capital: it prevents the ratio of the value of capital to the level of wealth of the young from exceeding one.

## **Exchange Rate Forecasting Techniques, Survey Data, and Implications for the Foreign Exchange Market**

**Jeffrey A. Frankel and Kenneth A. Froot**

Working Paper No. 3470

October 1990

JEL No. 430

This paper presents new empirical results that elucidate the dynamics of the foreign exchange market. The first half of the paper is an updated study of the exchange rate expectations held by market participants, as reflected in responses to surveys. It contains the following conclusions: first, the bias observed in the forward discount as a predictor of the future spot rate is not attributable to an exchange risk premium, as is conventionally believed. Second, at short horizons forecasters tend to extrapolate recent trends, while at long horizons they tend to forecast a reversal. Third, the bias in expectations is robust in the samples, based on eight years of data across five currencies.

The second half of the paper abandons the framework in which all market participants share the same forecast to focus on the importance of heterogeneous expectations. Tests suggest that dispersion of opinion, as reflected in the standard deviation across respondents in the survey, affects the volume of trading in the market and in turn, the degree of volatility of the exchange rate. The model of "chartists and fundamentalists" is one example of how conflicting forecasts can lead to swings in the exchange rate. The market weights assigned to the two models fluctuate over time in response to recent developments, leading to fluctuations in the demand for foreign currency. The paper ends with one piece of evidence to support the model: the fraction of foreign exchange forecasting services that use "technical analysis" indeed increased sharply during 1983-5, but declined subsequently.

## **Temporal Variation in the Interest Rate Response to Money Announcements**

**V. Vance Roley and Simon M. Wheatley**

Working Paper No. 3471

October 1990

JEL Nos. 311, 313

A number of studies find significant temporal varia-

tion in the interest rate response to money announcement surprises. An unresolved question, however, is whether the response changes immediately as different policy regimes are adopted, or whether the change is gradual, reflecting the establishment of credibility of the Federal Reserve. This paper tests for both discrete shifts in the interest rate response to money announcements and a gradual evolution in this response. The evidence is consistent with the hypothesis that temporal variation in the interest rate response is limited to discrete shifts in October 1979, October 1982, and February 1984.

### **Wealth Depletion and Life-Cycle Consumption by the Elderly**

**Michael D. Hurd**  
Working Paper No. 3472  
October 1990

Are the consumption data from the six waves of the Retirement History Survey consistent with the life-cycle hypothesis of consumption? How important is a bequest motive for saving? I use 12 data items to cover an estimated 36 percent of total consumption; the most important item is food consumption. My findings support the life-cycle hypothesis: as required, measured consumption among the elderly declines with age. However, a test based on the variation in consumption by extended family structure provides no support for a bequest motive for saving.

### **Marriage, Motherhood, and Wages**

**Sanders Korenman and David Neumark**  
Working Paper No. 3473  
October 1990  
JEL Nos. 824, 826, 850

We explore some of the problems in drawing causal inferences from cross-sectional relationships among marriage, motherhood, and wages. We find that heterogeneity leads to biased estimates of the "direct" effects of marriage and motherhood on wages (that is, the effects net of experience and tenure). Our first-difference estimates reveal no direct effect of marriage or motherhood on women's wages. We also find statistical evidence that experience and tenure may be endogenous variables in wage equations; instrumental variables estimates suggest that both OLS cross-sectional and first-difference estimates understate the direct (negative) effect of children on wages.

### **Labor Supply, Hours Constraints, and Job Mobility**

**Joseph G. Altonji and Christina H. Paxson**  
Working Paper No. 3474  
October 1990  
JEL Nos. 821

If hours can be varied freely within jobs, then the effect of changes in preferences on hours for those who change jobs should be similar to the effect on hours

for those who do not change jobs. Conversely, if employers restrict choices of hours, then changes in preferences should affect hours more strongly when the job changes than when it does not change. For a sample of married women, we find that changes in many of the labor supply preference variables produce much larger effects on hours when the job changes.

### **Monopoly and Trade Policy**

**Carsten Kowalczyk**  
Working Paper No. 3475  
October 1990  
JEL Nos. 411, 422

By presenting a generalization of the offer curve, this paper describes a general equilibrium technique for ranking policies of a nation that trades with a foreign monopoly firm. I demonstrate the existence of a partial welfare ranking between ad valorem rates and specific rates and show that a minimum-import-requirement-welfare dominates other quantitative policies. This paper proves that a recent policy, the voluntary import expansion, has strongly adverse consequences: when trading with a foreign monopoly firm, a nation implementing such a policy will achieve only its autarky level of welfare.

### **Welfare and Customs Unions**

**Carsten Kowalczyk**  
Working Paper No. 3476  
October 1990  
JEL Nos. 411, 423

This paper proposes that Viner's celebrated *trade diversion* and *trade creation* terminology for the customs union problem be abandoned. As an alternative, it offers a welfare calculus based upon the *terms-of-trade* and *volume-of-trade* taxonomy from the theory of tariffs. By applying this calculus, the paper discusses the two outstanding controversies in the theory of customs unions.

### **Fiscal Paradise: Foreign Tax Havens and American Business**

**James R. Hines, Jr. and Eric M. Rice**  
Working Paper No. 3477  
October 1990  
JEL Nos. 320, 440

The offshore tax haven affiliates of American corporations account for more than a quarter of U.S. foreign investment, and nearly a third of the foreign profits of U.S. firms. This paper analyzes the origins of this tax haven activity and its implications for the United States and foreign governments. Based on the behavior of U.S. firms in 1982, it appears that American companies report extraordinarily high profit rates on both their real and their financial investments in tax havens. We calculate from this behavior that the tax rate that maximizes

tax revenue for a typical haven is around 6 percent. The revenue implications for the United States are more complicated, since tax havens ultimately may enhance the ability of the U.S. government to tax the foreign earnings of American companies.

### **Political Cycles in OECD Economies**

**Alberto Alesina and Nouriel Roubini**

Working Paper No. 3478

October 1990

JEL Nos. 300, 025

This paper asks whether the dynamic behavior of GNP growth, unemployment, and inflation is affected systematically by the timing of elections and by changes in governments. Our sample includes the last three decades in 18 OECD economies. We explicitly test the implication of several models of political cycles, both "opportunistic" and "partisan." Also, we confront the implication of recent "rational" models with more traditional approaches.

Our results can be summarized as follows: 1) The "political business cycle" hypothesis, as formulated in Nordhaus (1975) on output and unemployment, generally is rejected by the data. With the exception of Japan, we also reject the extension of the "political business cycle" model, with endogenous timing of elections. 2) Inflation tends to increase immediately after elections, perhaps as a result of pre-electoral expansionary monetary and fiscal policies. 3) We find evidence of temporary partisan differences in output and unemployment, and of long-run partisan differences in the inflation rate as implied by the "rational partisan theory" by Alesina (1987). 4) We find virtually no evidence of permanent partisan differences in output and unemployment.

### **Recursive Linear Models of Dynamic Economies**

**Lars Peter Hansen and Thomas J. Sargent**

Working Paper No. 3479

October 1990

JEL Nos. 023, 212

This paper describes a class of dynamic, stochastic, linear quadratic equilibrium models. We specify a model by naming lists of matrixes that determine preferences, technology, and the information structure. We compute aggregate equilibrium allocations and prices by solving a social planning problem in the form of an optimal linear regulator. We permit heterogeneity among agents and compute several examples.

### **Learning and the Value of the Firm**

**Nobuhiro Kiyotaki**

Working Paper No. 3480

October 1990

JEL Nos. 023, 313

This paper studies the conditions under which a firm

increases for a while before it suddenly drops, like a "bubble." I consider an environment in which the trend of net cash flow from a firm's production depends on an uncertain quality of a manager, and the manager occasionally is replaced by a new manager. People know whether the manager is replaced, but they do not know the exact quality of the manager, so that they learn about it gradually.

I show that if the current manager is good, then the value of the firm tends to increase more rapidly than the net cash flow, because people become more and more optimistic about the current manager until that optimism disappears with the manager's sudden retirement. The value of the firm appears to contain a bubble, because it gradually deviates from the present value of the current net cash flow until the deviation disappears. I extend the basic model to allow the firm to replace unsuccessful managers endogenously and show that the value of the firm more frequently deviates upward from the present value of the current net cash flow than downward.

### **Asset Returns with Transactions Costs and Uninsured Individual Risk:**

#### **A Stage III Exercise**

**S. Rao Aiyagari and Mark L. Gertler**

Working Paper No. 3481

October 1990

JEL Nos. 023, 310

We attempt to construct models that are consistent with the following features of asset returns and turnover in the postwar U.S. economy: 1) the risk-free real interest rate is very low; 2) there is a large spread between returns on liquid assets (government debt, liquid accounts at depository institutions, and money market funds) and stocks; and 3) transaction velocities are much higher for liquid assets than for stocks. Specifically, we explore the extent to which incorporating an explicit motive for holding liquid assets can explain these observations. We introduce a demand for liquid assets by adding uninsured individual risk together with differential costs of trading securities. We then parameterize a class of such models and compute the stationary equilibriums. The simulations indicate that attempting to match the return data generates a ratio of liquid assets to income that is considerably below observed levels. We then explore some possible reasons for this discrepancy.

### **Search for a Theory of Money**

**Nobuhiro Kiyotaki and Randall Wright**

Working Paper No. 3482

October 1990

JEL Nos. 023, 311

The classical and early neoclassical economists knew that the essential function of money was its role

as a medium of exchange. Recently, this idea has been formalized using search-theoretic, noncooperative equilibrium models of the exchange process. This paper uses a simple model of this class to analyze four substantive issues in monetary economics: the interaction between specialization and exchange; dual fiat currency regimes; the welfare-improving role of money; and the susceptibility of monetary economies to extrinsic uncertainty.

### **Auctions with Endogenous Valuations, the Snowball Effect, and Other Applications**

**Kala Krishna**

Working Paper No. 3483

October 1990

JEL Nos. 422, 611, 026

In most of the literature on auctions, the valuations of agents are specified exogenously. This assumption may not be appropriate in a number of cases: endogenous valuations are appropriate when there are many units being auctioned and their value is determined in a secondary market that is imperfectly competitive. Thus the model is appropriate for studying the sale of quota licenses and scarce resources used in production when product markets are imperfectly competitive.

I develop a series of examples to show how these models work. Particular models cast light on a number of issues in applied microeconomics, including the evolution of market structure (in particular, the "snowball effect"); the effect on market structure of selling quota licenses; and the relationship between increasing returns to scale and monopolization of markets. The models also provide another resolution of the "transponder puzzle."

### **The Success of Acquisitions: Evidence from Divestitures**

**Steven N. Kaplan and Michael Weisbach**

Working Paper No. 3484

October 1990

This paper focuses on a sample of large acquisitions completed between 1971 and 1982. By the end of 1989, the acquirers had divested almost 44 percent of the target companies. Using the accounting gain or loss recognized by the acquirer, along with press reports and the sale price, we characterize the ex post success of the divested acquisitions; we find that only 34 to 50 percent of the classified divestitures were unsuccessful.

Acquirer returns and total (that is, acquirer and target) returns at the acquisition announcement are significantly lower for unsuccessful acquisitions than for divestitures not classified as unsuccessful and for acquisitions not divested. These results suggest that market reactions to acquisition announcements reflect expectations of future profits, and that unprofitable acquisitions are recognized as such when initiated. Diversifying acquisitions are almost four times more likely to be divested than related acquisitions are. However, we do not find strong evidence that diversifying acquisitions were less successful than related ones.

### **Trade, Knowledge Spillovers, and Growth**

**Gene M. Grossman and Elhanan Helpman**

Working Paper No. 3485

October 1990

JEL Nos. 111, 411, 621

This paper examines one channel through which the trade regime might affect growth in the long run. We model endogenous technological progress that results from profit-maximizing investments by farsighted entrepreneurs. Productivity in the research lab depends upon the "stock of knowledge capital," a variable reflecting the state of scientific, engineering, and industrial know-how in the local economy. We argue that local knowledge capital is likely to vary positively with the extent of contact between domestic agents and their counterparts in the international research and business communities. The number of such contacts increases with the level of commercial exchange. We derive the implications of these results for the relationship between trade and growth.

### **On the Predictive Power of Interest Rates and Interest Rate Spreads**

**Ben S. Bernanke**

Working Paper No. 3486

October 1990

JEL No. 310

A number of interest rates and interest rate spreads are useful in predicting the course of the economy. I compare the predictive power of some of these interest rate variables for nine indicators of real activity and the inflation rate. My results are consistent with Stock and Watson (1989) and Friedman and Kuttner (1989), who found that the spread between the commercial paper rate and the Treasury bill rate has been a particularly good predictor. This spread is informative not so much because it is a measure of default risk (which has been the usual presumption), but because it is an indicator of the stance of monetary policy; for example, during the "credit crunches" of the 1960s and the 1970s, the commercial paper—Treasury bill—spread typically rose significantly. Also, possibly because of changes in monetary policy operating procedures and in financial markets, this spread now appears to be a less reliable predictor than it used to be.

### **The Federal Funds Rate and the Channels of Monetary Transmission**

**Ben S. Bernanke and Alan S. Blinder**

Working Paper No. 3487

October 1990

JEL No. 310

First, we show that the interest rate on federal funds is extremely informative about future movements of

real macroeconomic variables, more so than monetary aggregates or other interest rates. Next, we argue that the reason for this forecasting success is that the funds rate sensitively records shocks to the *supply* of (not the demand for) bank reserves; that is, the funds rate is a good indicator of monetary policy actions. Finally, using innovations to the funds rate as a measure of changes in monetary policy, we present evidence consistent with the view that monetary policy works at least in part through "credit" (that is, bank loans) as well as through "money" (that is, bank deposits)—even though bank loans fail to Grangercause real variables.

### **The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison**

**Ben S. Bernanke and Harold James**

Working Paper No. 3488

October 1990

JEL No. 040

Recent research has provided strong circumstantial evidence for the proposition that sustained deflation—the result of a mismanaged international gold standard—was a major cause of the Great Depression of the 1930s. Less clear is the mechanism by which deflation led to depression. In this paper we consider several channels, including effects operating through real wages and through interest rates. Our focus, however, is on the disruptive effect of deflation on the financial system, particularly on the banking system. Theory suggests that falling prices, by reducing the net worth of banks and borrowers, can affect flows of credit and thus real activity. Using annual data for 24 countries, we confirm that countries that (for historical or institutional reasons) were more vulnerable to severe banking panics also suffered much worse depressions, as did countries that remained on the gold standard. We also find that there may have been a feedback loop through which banking panics, particularly those in the United States, intensified the worldwide deflation.

### **Fiscal Policy, Capital Accumulation, and Debt in an Open Economy**

**Partha Sen and Stephen J. Turnovsky**

Working Paper No. 3489

October 1990

This paper analyzes the effects of changes in government expenditures on both a domestically produced and an imported good in an open economy with intertemporal optimizing behavior. We characterize the dynamic adjustment in detail and highlight the critical role played by the accumulating capital stock. The evolution of the current account mirrors the evolution of capital. We also assess the welfare of such policies in terms of the intertemporal utility of the representative agent. We consider both permanent and temporary policy changes, showing that the latter have a permanent effect on the economy.

### **On the Accuracy of Producer Indexes for Pharmaceutical Preparations: An Audit Based on Detailed Firm-Specific Data**

**Ernst R. Berndt, Zvi Griliches, and Joshua G. Rosett**

Working Paper No. 3490

October 1990

JEL No. 227

This paper reports the preliminary results of a detailed audit of one component of the Producer Price Index (PPI). Using BLS and alternative index number procedures, and data from a large multiproduct company, we compare price indexes constructed in a variety of ways from the *universe* of products of a large pharmaceutical manufacturer in the United States with price indexes constructed from the particular products of this firm *sampled* by the BLS. We find that price indexes based on the BLS sample of this firm grow similarly to the published PPIs for SIC 28341. In contrast, price indexes computed using the universe of products manufactured by the firm grow much more slowly. Some variations emerge, depending on how one undertakes the calculations. Our typical finding is that, employing monthly data from January 1984 through December 1989, the BLS sample price index rises at nearly the same rate as the PPI, but at roughly twice the rate of indexes based on the universe of products shipped by this pharmaceutical firm.

We also report the results of a preliminary attempt to uncover the source of this disparity, provide some evidence of the "new goods" problem, and implement a procedure to mitigate the problem of "drift" associated with the Tornqvist approximation to the Divisia chained index.

### **Sectoral Shifts and Cyclical Unemployment Reconsidered**

**S. Lael Brainard and David M. Cutler**

Working Paper No. 3491

October 1990

JEL Nos. 131, 823

This paper examines the importance of sectoral allocation and cyclical unemployment in the postwar U.S. economy. We develop a new measure of reallocation shocks, termed cross-section volatility, based on the variance of industry stock market excess returns over time. Using data on unemployment and vacancies, we establish that the cross-section volatility series is effective in isolating reallocation shocks. We then use the series to measure the contribution of reallocation shocks to aggregate unemployment and to unemployment of varying durations. On average, about 40 percent of aggregate unemployment is explained by reallocation, but much of the variance of unemployment through time is explained better by cyclical shocks. Reallocation shocks account for a relatively larger share of long-duration unemployment.

## **The Effect of Veterans' Benefits on Veterans' Education and Earnings**

**Joshua D. Angrist**

Working Paper No. 3492

October 1990

The majority of armed forces veterans use the subsidized training and educational benefits provided by the Department of Veterans Affairs. Using the Census Bureau's 1987 Survey of Veterans, this paper estimates the effect of veterans' benefits on educational attainment and civilian earnings. To control for unobserved characteristics that are correlated with educational attainment and benefit usage, I use two identification strategies. First, a fixed-effects strategy exploits information on educational attainment at the time of entry into the service. Second, estimates of instrumental variables exclude interactions between the period of service and educational attainment at the time of entry into the service.

I decompose the return to education into a return to the grade completed at entry into service and a return to the post-entry grade increment. Veterans' benefits increase schooling by roughly 1.4 years; the grade increment is worth about 4.3 percent, so that veterans' benefits raise annual earnings by approximately 6 percent. The premium appears to accrue primarily to the 77 percent of benefit users who attend college or graduate school.

## **Explaining Fiscal Policies and Inflation in Developing Countries**

**Sebastian Edwards and Guido Tabellini**

Working Paper No. 3493

October 1990

This paper empirically investigates the determinants of inflation, seigniorage, and fiscal deficits in developing countries. First we test the optimal taxation theory of inflation for a group of 21 LDCs. We find that the implications of this theory are rejected for all of these countries. Then we implement a number of tests based on the new political economy approach to macroeconomic policies: we deal with some of the implications of a model of credibility and reputation, and of a model of strategic government behavior.

We find that the data support the most important predictions of the political economy view of fiscal policy. Our measures of political instability and political polarization play an important role in explaining cross-country differences in seigniorage, inflation, government borrowing, and fiscal deficits.

## **Workers' Compensation and Injury Duration: Evidence from a Natural Experiment**

**David L. Durbin, Bruce D. Meyer, and W. Kip Viscusi**

Working Paper No. 3494

October 1990

JEL No. 820

This paper examines the effect of workers' compensation on the time that an injured worker is out of work.

We focus on Kentucky and Michigan, where there were two large increases in the maximum weekly benefit. The increases raised the benefit for high-earning individuals by over 60 percent; low-earning individuals, who did not earn enough to be eligible for the old maximum benefit, had no change in their incentives.

Comparing the behavior of people injured the year before the benefit increases to those injured in the year after the increases allows us to estimate the effect of higher benefits on "injury duration." This natural experiment also allows us to separate the effect of the level of the benefits from the effect of previous earnings, which usually is difficult in the analysis of social insurance programs. We use individual records from a large number of insurance companies and find that time out of work increases dramatically for those groups eligible for the higher benefits, but not for those whose benefits do not change. Our estimates suggest that higher benefits have large moral hazard effects. The estimated elasticity of the duration of a spell with respect to benefits is approximately 0.3 to 0.4.

## **Interest Rate Spreads, Credit Constraints, and Investment Fluctuations:**

### **An Empirical Investigation**

**Mark L. Gertler, R. Glenn Hubbard, and Anil Kashyap**

Working Paper No. 3495

October 1990

JEL No. 310

We present a simple framework that incorporates a role for "interest rate spreads" in models of investment fluctuations. We formally develop a simple model of investment and financial contracting under asymmetric information that can be used to generate an Euler equation describing firms' intertemporal decisions about investment. Then we estimate the Euler equation using data on U.S. producers' investment in durable equipment.

We find that during certain periods—because of agency-cost problems—the basic Euler equation is violated and shifts in interest rate differentials help to predict investment. Thus, the empirical results support models that emphasize how: 1) movements in agency costs of external finance can amplify investment fluctuation; and 2) changes in the interest rate spread may signal movements in these agency costs.

## **The Globalization of Information and Capital Mobility**

**William H. Branson and Dwight M. Jaffee**

Working Paper No. 3496

October 1990

JEL Nos. 026, 313, 441

This paper provides a framework for analyzing the effects of symmetric and asymmetric changes in information about risk on equilibrium real interest rate spreads across countries. Following the literature on parameter

uncertainty, we model improvements in information as reductions in estimated variances. We determine the equilibrium interest differential in a two-country setting. We show the effects of changes in information on the differential in cases in which: 1) all investors have the same information; 2) home investors have superior information about home assets; and 3) all investors experience an improvement in information about one asset. We conclude that an improvement in information on European assets in "Europe 1992" will raise the interest differential on U.S. assets relative to European assets as investors shift toward European assets.

### **Capital Flows, Foreign Direct Investment, and Debt-Equity Swaps in Developing Countries**

**Sebastian Edwards**

Working Paper No. 3497

October 1990

One of the most serious consequences of the debt crisis of 1982 was the reduced accessibility to the world capital market for most developing countries. This situation has proved to be particularly serious for Latin American nations. At this juncture, a key question is how to improve the LDCs' attractiveness for foreign capital flows. In this paper, I explore the role of two potential sources of additional private capital inflows: increased direct foreign investment (DFI), and the debt-conversion mechanisms. I present the results of an econometric analysis of the determinants of the cross-country distribution of the OECD DFI into the LDCs. In particular, I emphasize the relative importance of political variables of the recipient countries. I also investigate the role of the debt-equity swaps as investments for reducing the extreme debt burden, using the recent Chilean experience as a case study.

### **New Trading Practices and Short-Run Market Efficiency**

**Kenneth A. Froot and Andre F. Perold**

Working Paper No. 3498

October 1990

We document a large decrease in autocorrelation and an increase in variance in recent short-run returns on several broad stock market indexes. Over 1983-9, 15-minute returns went from being highly (positively) serially correlated to virtually uncorrelated. Over the past 20 years, daily and weekly autocorrelations also have fallen. We use transactions data to decompose short-run index correlation into three components: bid-ask bounce; nontrading effects; and noncontemporaneous cross-stock correlations in specialists' quotes. The first two factors do not explain the decline in autocorrelation. We argue that new trading practices have improved the processing of marketwide information, and that the recent decreases in autocorrelation and increases in volatility simply reflect these improvements.

### **International Impacts on Domestic Political Economy: A Case of Japanese General Elections**

**Takatoshi Ito**

Working Paper No. 3499

October 1990

JEL Nos. 130, 430

In a parliamentary system, like Japan's, the timing of elections can become endogenous, in that good economic performance tends to trigger elections. Further, international factors such as foreign exchange reserves and elections in the United States can affect domestic economic performance.

This paper finds only a limited link between economic performance and international variables, except that upcoming elections in the United States do tend to cause a higher rate of growth in Japan. The evidence suggests that although blatant policies, such as a beggar-thy-neighbor policy, have not been adopted, there was a more subtle international cooperation, in the form of Japanese expansion, designed to pull up the U.S. economy.

### **Taxes, Tariffs, and the Global Corporation**

**James A. Levinsohn and Joel B. Slemrod**

Working Paper No. 3500

October 1990

JEL No. 321

We develop some simple models of optimal tax and tariff policy in the presence of global corporations operating in an imperfectly competitive environment. The models emphasize two important differences in the practical application of tax and tariff policy: tax, but not tariff, policy can apply to offshore output; and tariff, but not tax, policy can be industry specific. Recognizing that multinationals' production decisions are endogenous to the tax and tariff policies that they face, we investigate optimal trade policy and optimal tax or subsidy policies for domestically owned firms.

### **Taxation and the Cost of Capital: The "Old" View, the "New" View, and Another View**

**Hans-Werner Sinn**

Working Paper No. 3501

October 1990

JEL No. 320

This paper critically surveys the recent literature on the effects of taxes on corporate finance and investment decisions. It corrects a common misinterpretation of the "new" view; emphasizes the cushion effect of financial optimization; dismisses the view that optimizing firms behave as if they maximized their cost of finance; studies the role of immature firms; questions the alleged support of the "old" view by the occurrence of share repurchases; comments on a potential U.S. budget compromise; and suggests the possibility of a political Miller Equilibrium.



## **Efficient Contracting and Market Power: Evidence from the U.S. Natural Gas Industry**

**R. Glenn Hubbard and Robert J. Weiner**

Working Paper No. 3502

October 1990

Economists recognize that long-term contracting under an array of price and nonprice provisions may be an efficient response to small-numbers bargaining problems. There has been little empirical work to distinguish such issues from predictions of models of market power and bargaining, though, principally because the necessary data on individual transactions are seldom publicly available. However, the U.S. natural gas industry is well suited for such tests, both because of the small number of buyers (pipelines) and sellers (producers) in each market, and because of the large capital commitments required of transacting parties at the beginning of the contract.

We present a model of the bilateral bargaining process in natural gas field markets under uncertainty. We identify the "initial price" as the outcome of bargaining over a fixed payment for pipeline to producer, and describe "price-escalator provisions" as a means of making the contract responsive at the margin to changes in the valuation of gas over the term of the agreement. Our econometric work uses a large, detailed dataset on the 1950s. The empirical evidence from models of price determination and the use of most-favored-nation clauses supports the theoretical model.

## **Procyclical Labor Productivity and Competing Theories of the Business Cycle: Some Evidence from Interwar U.S. Manufacturing Industries**

**Ben S. Bernanke and Martin L. Parkinson**

Working Paper No. 3503

October 1990

JEL No. 130

Each of the main explanations of procyclical labor productivity, or short-run increasing returns to labor (SRIRL), is associated closely with a competing theory of the business cycle: real business cycle theorists attribute SRIRL to procyclical technological shocks; proponents of recent theories based on nonconvexities believe that SRIRL reflects true increasing returns; and Keynesians favor labor hoarding as an explanation. Thus, evidence on the sources of SRIRL may be important for discriminating among alternative theories of the cycle.

This paper studies the sources of SRIRL in a sample of ten interwar U.S. manufacturing industries. Our main findings are that SRIRL was common in the interwar period, and that the pattern of SRIRL across industries was similar to that observed in the postwar period. We argue that, under the presumption that the Great Depression was not caused by large negative technological shocks, these findings are inconsistent with the "technological shocks hypothesis" and provide evidence against real business cycle theory in general. We propose tests for discriminating between the increasing returns and labor hoarding explanations, but find that our conclusions differ by industry.

## **Where Does the Meteor Shower Come From? The Role of Stochastic Policy Coordination**

**Robert F. Engle, Takatoshi Ito, and Wen-Ling Lin**

Working Paper No. 3504

October 1990

JEL Nos. 423, 430, 431

This paper examines the intradaily volatility of the yen/dollar exchange rate over three different regimes from 1979 to 1988 corresponding to different degrees of international policy coordination. We test for heat wave versus meteor shower effects in each regime. The heat wave hypothesis assumes that volatility has only country-specific autocorrelations, while the meteor shower hypothesis allows volatility spillovers from one market to the next. Meteor showers can be caused by: stochastic policy coordination; gradual release of private information; or market failures, such as fads, bubbles, or bandwagons. The rejection of the heat wave model over the first half of the 1980s discredits the stochastic policy coordination interpretation, because there was little policy coordination among industrial countries prior to the Plaza Agreement in 1985.

## **A General Equilibrium Model of Housing, Taxes, and Portfolio Choice**

**James Berkovec and Don Fullerton**

Working Paper No. 3505

November 1990

JEL No. 323

We describe a model in which: rental and owner housing are risky assets; tenure choice is endogenous; and each household is constrained to consume the same amount of owner housing as it has in its investment portfolio. At every iteration in the search for an equilibrium, we determine the new taxable income for each of 3578 households (from the Survey of Consumer Finances); we also use statutory schedules to find the marginal tax rate and tax paid. Equilibrium net rates of return are major determinants of the amount of owner housing, but demographic factors are the main determinants of ownership rates, according to a logit model.

A simulation of taxes on owner housing raises welfare, not only by reallocating capital, but also because government takes part of the risk from individual properties and diversifies it away. Measures to disallow deductions for property tax or mortgage interest do not help to share this risk. Simulations of actual tax reforms indicate a small shift from rental to owner housing, and welfare gains from reallocating risk.

## **Wage Tax Distortions and Public Good Provision**

**Charles L. Ballard and Don Fullerton**

Working Paper No. 3506

November 1990

JEL No. 323

When the marginal costs and benefits of a public project are compared, most economists add the margi-

nal costs of production to the marginal costs of additional distortionary taxation. This paper clarifies how the first, or "revenue effect," offsets the second, or "distortionary effect." For Cobb-Douglas utility, with a marginal increase in a proportional wage tax, the two effects exactly offset each other, and the Samuelson rule is not affected. Also, with a preexisting wage tax, an incremental lump-sum tax has only this "revenue effect": it increases labor supply, increases tax revenue from the preexisting wage tax, and thus makes the project easier to fund. In our numerical example, the incremental lump-sum tax costs taxpayers only 77¢ per dollar raised.

### **Inputs to Tax Policymaking: The Supply Side, the Deficit, and the Level Playing Field**

**Don Fullerton**

Working Paper No. 3507

November 1990

JEL No. 323

Although supply-side theory may have been obvious to economists, it represented a major change in the nature of tax policymaking through cuts in marginal rates both in the Economic Recovery Tax Act of 1981 and in the Tax Reform Act of 1986. The 1981 bill was also the culmination of an era in which policymakers could use expected increases in revenue to enact rate cuts and special tax provisions. The deficit became a force in tax policymaking not only because of revenue losses from the 1981 bill, but also because the indexation of rate brackets turned projected future surpluses into projected future deficits. Finally, starting in 1982, the legacy of special tax provisions led to cries for a level playing field that would treat similar taxpayers more equally and improve efficiency in the allocation of resources.

### **Public Sector Dynamics**

**Alan J. Auerbach**

Working Paper No. 3508

November 1990

JEL No. 320

Using Musgrave's *The Theory of Public Finance* as a starting point, this paper reviews the scholarly developments in public sector dynamics during the past three decades, emphasizing not only accomplishments but also areas that need additional research.

The review is organized into sections covering: research on the public debt, its measurement, and impact; the fiscal determinants of savings and the choice of tax base; the effects of taxation on investment and risktaking; dynamic tax incidence; and dynamic inconsistency and public choice. Among the specific research topics considered are: the Ricardian equivalence proposition; the incidence of the corporation income tax; the choice between income and consumption taxes; and political business cycles.

### **Immigration and the Family**

**George J. Borjas and Stephen G. Bronars**

Working Paper No. 3509

November 1990

JEL No. 800

This paper studies the role of the family in determining the skill composition and labor market experience of immigrants in the United States. Our theoretical framework, based on the assumption that family migration decisions maximize household income, shows that the family attenuates the selection characterizing the skills of the immigrant population. The empirical analysis uses the 1970 and 1980 Public Use Samples of the U.S. Census, and reveals that an immigrant's skills and labor market performance are influenced greatly by the composition of the household at the time of migration and by his placement in the immigration chain.

### **Recursive and Sequential Tests of the Unit Root and Trend Breakdown Hypotheses: Theory and International Evidence**

**Anindya Banerjee, Robin L. Lumsdaine, and James H. Stock**

Working Paper No. 3510

November 1990

JEL No. 210

This paper investigates the possibility, raised by Perron (1989, 1990a), that aggregate economic time series are stationary around broken trend lines. Unlike Perron, we treat the break date as unknown a priori. We develop asymptotic distributions for recursive, rolling, and sequential tests for unit roots and/or changing coefficients in time-series regressions. We base the recursive and rolling tests on a time series of recursively estimated coefficients, computed with increasing subsamples of the data; and we compute the sequential statistics using the full dataset and a sequence of regressors indexed by a break date. When applied to data on real postwar output from seven OECD countries, these techniques fail to reject the unit root hypothesis for five countries (including the United States), but suggest stationarity around a shifted trend for Japan.

### **Riding the Yield Curve: Reprise**

**Robin Grieves and Alan J. Marcus**

Working Paper No. 3511

November 1990

JEL No. 313

We investigate the efficacy of "riding the yield curve." This strategy dictates holding longer-term Treasury bills when the yield curve slopes upward, and we find that it is surprisingly effective. Stochastically, this strategy is more profitable than buying and holding shorter-term bills for large subperiods, and is nearly the most effective strategy for the entire 1949-88 period. Our empirical results suggest that abnormal profit opportunities are available from selectively increasing the maturity of a short-term portfolio.

## **Comparative Advantage, Geographic Advantage, and the Volume of Trade**

**James E. Rauch**

Working Paper No. 3512

November 1990

JEL Nos. 411, 441

This paper establishes a functional relationship between the degree of a country's comparative advantage in any good and the volume of its net exports of that good to its trading partner, using a model with per-unit-distance transportation costs between countries' coasts and their interiors. The greater a country's comparative advantage, the greater the transportation cost it can overcome and, hence, the deeper its exports can penetrate geographically into its trading partner. I model the internal spatial structure of a country using cities as the basic units. I show that the city closest to the coast will be the largest and will have the highest wage rate and residential rental rates. Population sizes, wage rates, and residential rental rates of cities all fall as one moves inland.

## **A Simple Model of Useless Speculation**

**Murray C. Kemp and Hans-Werner Sinn**

Working Paper No. 3513

November 1990

JEL No. 430

This paper presents a general equilibrium model of a pure exchange economy with stochastic endowments in which speculation is profitable and stabilizes prices, but is useless from a welfare point of view. Reconciling the Siegel paradox with the theory of incomplete markets, we show that banning speculation by closing the forward exchange market may increase social welfare.

## **The Draft Lottery and Voluntary Enlistment in the Vietnam Era**

**Joshua D. Angrist**

Working Paper No. 3514

November 1990

JEL No. 824

A combination of voluntary enlistment, armed forces eligibility criteria, and the failure of draftees to avoid conscription jointly determined the racial composition of the Vietnam era armed forces. Administrative data show that men with draft lottery numbers that put them at high risk of conscription are overrepresented among men who voluntarily enlisted in the military, but that the effect of the lottery on enlistment is stronger for whites than for nonwhites. Minimum chi-square estimates of enlistment models for the 1971 draft lottery suggest that nonwhites were more likely than whites to prefer enlistment to a civilian career. This finding appears to explain racial differences in the effect of the lottery on enlistment. Contrary to the findings of a re-

cent congressional study, estimates presented here from the Vietnam era suggest that conscription of a relatively small number of whites and nonwhites in a manner proportional to their prevalence in the population might substantially reduce nonwhite representation in the armed forces.

## **Equipment Investment and Economic Growth**

**J. Bradford De Long and Lawrence H. Summers**

Working Paper No. 3515

November 1990

JEL Nos. 220, 420, 440, 321, 110

Using data from the United Nations Comparison Project and the Penn World Table, we find that investment in machinery and equipment is strongly associated with growth: over 1960-85, each percent of GDP invested in equipment is associated with an increase in GDP growth of one-third of a percentage point per year. This association is much stronger than those between growth and any of the other components of investment. A variety of considerations suggest that: this association is causal; higher equipment investment drives faster growth; and the social return to investment in equipment in market economies that function well is on the order of 30 percent per year.

## **Municipal Labor Demand in the Presence of Uncertainty: An Econometric Approach**

**Douglas Holtz-Eakin and Harvey S. Rosen**

Working Paper No. 3516

November 1990

JEL Nos. 324, 824

We specify a model of the demand for municipal labor when it is uncertain what resource flows are available to the municipality. The model allows us to ask whether employment decisions are rational, in the sense that they incorporate all available information at the time that they are made.

We find that, for our sample of communities on the whole, labor demand is consistent with intertemporal maximization of utility under uncertainty. However, small and large communities behave differently. The employment decisions of small communities are consistent with the model, while those of large communities are not.

## **British and French Finance during the Napoleonic Wars**

**Michael D. Bordo and Eugene N. White**

Working Paper No. 3517

November 1990

JEL Nos. 044, 311, 321

The Napoleonic Wars offer a unique experiment in the history of wartime finance. While Britain was forced off the gold standard and endured a sustained inflation, France remained on a bimetallic standard for the duration of the war.

This apparent paradox may be explained by the literature on tax smoothing, time consistency, and credibility in macroeconomics. We argue that these contrasting war finance regimes were the consequence of each nation's credibility as a debtor. Given its long record of fiscal probity, coupled with its open budgetary process in Parliament, Great Britain could continue to borrow a substantial fraction of its war expenditures at what were relatively low interest rates. British tax rates did not vary much over most of the eighteenth century as peacetime surpluses offset wartime deficits to pay off the accumulated war debts. In addition, because of its long-standing record of maintaining specie convertibility, Britain had access to the inflation tax, although in practice it was not a major source of wartime finance.

France, on the other hand, had squandered her reputation in the last decade of the "ancien régime" and the Revolution. Her dependency on taxation reflected no superior fiscal virtues but rather the opposite. Borrowing would have been exceedingly costly and the public very skeptical of the Empire's fidelity. Moreover, the recent experience of assignat hyperinflation ruled out the inflation tax as a source of revenue. Inherited credibility resolves this paradoxical pairing of fiscal regimes.

### **High Inflation and the Nominal Anchors of an Open Economy**

**Michael Bruno**

Working Paper No. 3518

November 1990

A high inflation process usually is caused by a real imbalance and cannot be cured without a correction of real fundamentals. Yet it can be characterized as a quasi-stable nominal process that gets divorced from the real system. This paper extends the existing seigniorage model approach to multiple inflationary equilibria by rationalizing a high inflation equilibrium, as well as its stability, as the outcomes of suboptimization by a "soft" government. I consider the advantages as well as the weaknesses of using the exchange rate as the key nominal anchor in the various stages of stabilization to low (or zero) inflation. Finally, I discuss the rationale for using multiple nominal anchors, and I illustrate applications of the theoretical arguments from recent high inflation and stabilization experience.

### **Taxation and the Birth of Foreign Subsidiaries**

**Hans-Werner Sinn**

Working Paper No. 3519

November 1990

JEL Nos. 320, 440

This paper studies the influence of tax policy on foreign direct investment with particular emphasis on immature subsidiaries. Among other things, it shows that: taxes on repatriations reduce the subsidiary's "birth-weight"; lump-sum taxes reduce its cost of capital; and the possibility of deferral increases this cost. I reject the popular weighted average specification of the subsidiary's cost of capital.

### **Stock Prices, News, and Business Conditions**

**Grant McQueen and V. Vance Roley**

Working Paper No. 3520

November 1990

JEL No. 313

Previous research has found that fundamental macroeconomic news has little effect on stock prices. This study shows that, after allowing for different stages of the business cycle, there is a stronger relationship between stock prices and news than was found previously. In particular, the empirical results suggest that the effect of news about real economic activity depends on the varying responses of expected cash flows relative to equity discount rates. When the economy is strong, for example, the stock market responds negatively to good news about real economic activity, reflecting the large effect on discount rates relative to expected cash flows.

### **Postwar Economic Growth in the Group-of-Five Countries: A New Analysis**

**Michael J. Boskin and Lawrence J. Lau**

Working Paper No. 3521

November 1990

We estimate an intercountry aggregate production function using annual data for the postwar period from the Group-of-Five (G-5) countries: France, West Germany, Japan, United Kingdom, and United States. We assume that all countries have the same underlying production function, in terms of efficiency-equivalent, unmeasured, units of outputs and inputs. The measured outputs and inputs of each country can be converted into efficiency-equivalent quantities by multiplying country- and commodity-specific, and time varying, augmentation factors. We estimate these augmentation factors simultaneously with the parameters of the aggregate production function.

Within this framework, we test and reject all of the traditional assumptions for the measurement of productivity: constant returns to scale; neutrality of technical progress; and profit maximization. We also test additional hypotheses about the nature of technical progress and find that it may be represented as purely capital-augmenting. In particular, the rate of augmentation is between 14 and 16 percent per annum for France, West Germany, and Japan, and between 8 and 10 percent for the United Kingdom and the United States for the period under study. Also, technical progress is capital-saving rather than labor-saving and therefore is unlikely to cause structural unemployment.

Using the estimated production function parameters, we carry out a growth-accounting exercise and compare the results with those from the conventional approach. Technical progress is the most important source of growth, we find, accounting for more than 50 percent, followed by the growth of capital input. Together the two factors account for more than 75 percent of the growth of real output in the G-5 countries during the period under study.

We also compare the productive efficiencies both internationally and intertemporally. We find that the United States had the highest level of overall productive efficiency for the period we study. However, the productive efficiencies of France, West Germany, and Japan rose rapidly, from less than 40 percent of the U.S. level in 1949 to two-thirds of the U.S. level in 1985. Thus there is some evidence of convergence.

## **The Economics of Seasonal Cycles**

**Jeffrey A. Miron**

Working Paper No. 3522

November 1990

JEL Nos. 131, 024

Since macroeconomists first began the systematic study of aggregate data, they have grappled with the fact that most economic time series exhibit substantial seasonal variation. In general, macroeconomists abstract from this seasonal variation, both in their models of cyclical behavior and in their empirical testing of these models. This standard practice is a useful simplification if two key conditions hold: 1) there are no interactions between seasonal cycles and business cycles—they result from different exogenous factors and different economic propagation mechanisms; and 2) there are no important welfare issues attached to seasonal fluctuations per se—in other words, optimal government policy toward seasonals is simply to leave them alone.

This paper has a dual purpose. First it summarizes recent work demonstrating that seasonal cycles and business cycles are related intimately, displaying similar stylized facts and driven by similar economic propagation mechanisms. Then it discusses the possible welfare implications of seasonal cycles, suggesting that they are interesting from a welfare or a policy perspective. Taken together, these results imply the need for a significant reorientation in economists' treatment of seasonal fluctuations. Rather than a component of the data to be adjusted away and treated as noise, seasonal fluctuations represent a key topic of economic analysis. They contain significant information about the nature of business cycles, and they require analysis in their own right, because they may induce significant welfare losses.

## **The Bubble of 1929: Evidence from Closed-End Funds**

**J. Bradford De Long and Andrei Shleifer**

Working Paper No. 3523

November 1990

JEL Nos. 313, 042

Closed-end mutual funds provide one of the few cases in which economists can observe "fundamental" values directly and compare them to market values: the fundamental value of a closed-end fund is simply the net asset value of its portfolio. We use the difference between prices and asset values of closed-end funds at the end of the 1920s to measure investment sentiment. In the

late 1920s, closed-end funds sold at large premiums: at the peak, investors were willing to pay 60 percent more for closed-end funds than the post-World War II norm. Such substantial overpricing of closed-end funds—in which fundamentals are known and observed—suggests that other assets were selling at prices above fundamentals as well. The association between movements in the medium closed-end fund discount and movements in broad stock price indexes leads us to conclude that the stocks making up the S&P composite were priced at least 30 percent above fundamentals in the summer of 1929.

## **Job Vacancy Rates in the Firm: An Empirical Analysis**

**Harry J. Holzer**

Working Paper No. 3524

December 1990

JEL No. 820

This paper presents some evidence on the determinants and magnitudes of job vacancy rates at the firm level. The data come from a survey of firms in 1980 and 1982, as well as from 1980 Census data on industry and local area characteristics.

The results show that overall job vacancy rates are low, but that there is substantial variation across firms, occupations, industries, and local areas. Unemployment rates, either local or aggregate, have negative effects on vacancy rates; average industry skill levels have positive effects, thus indicating the importance of the firm's demand for skills. Large and/or unionized firms have relatively low vacancy rates, as do high-wage firms. Firms with high turnover and recent sales growth have higher vacancy rates. Thus, a variety of market conditions and firm characteristics influence vacancy rates at the firm level.

## **Pension Portability and Labor Mobility: Evidence from the Survey of Income and Program Participation**

**Alan L. Gustman and Thomas L. Steinmeier**

Working Paper No. 3525

December 1990

JEL No. 820

This paper casts doubt on the proposition that pension backloading is responsible for the low job mobility rates observed for workers covered by pensions. We corroborate our earlier findings, based on different data, that jobs covered by pensions offer higher levels of compensation than workers can obtain elsewhere; it is this compensation premium, rather than nonportability, that accounts for lower turnover among covered workers. Further, we find that defined-contribution plans, which are not backloaded, and defined-benefit plans are similarly negatively related to mobility.

## **Hysteresis in the Trade Pattern**

**Gene M. Grossman** and **Elhanan Helpman**

Working Paper No. 3526

December 1990

JEL Nos. 411, 422, 621

We study a world economy with two countries that may differ only in their prior experience in the research lab. Entrepreneurs in each country develop new technologies for varieties of a differentiated product whenever expected profits justify the up-front research costs. Research productivity depends upon national stocks of knowledge capital, which accumulate in proportion to local research activity. The countries produce and trade their unique varieties of the differentiated good, as well as a homogeneous, "traditional" product. In this context, we ask whether a country can overcome a late start in research to develop a comparative advantage in the high technology sector. We also examine the welfare properties of the equilibrium trajectory, and of policies that might be used to reverse a country's fate.

## **The Benefits of Crises for Economic Reforms**

**Allan Drazen** and **Vittorio U. Grilli**

Working Paper No. 3527

December 1990

JEL No. 130

This paper presents a model in which economic crises have positive effects on welfare. Periods of very high inflation create an incentive for the resolution of social conflict and thus facilitate the introduction of economic reforms and the achievement of higher levels of welfare. Policies to reduce the cost of inflation, such as indexation, raise inflation and delay the adoption of reforms, but have no effect on expected social welfare.

## **Time-Consistent Policy and Persistent Changes in Inflation**

**Laurence M. Ball**

Working Paper No. 3529

December 1990

JEL Nos. 134, 023

This paper presents a model of dynamically consistent monetary policy that explains changes in inflation over time. In the model—as in the postwar United States—adverse supply shocks trigger persistent increases in inflation, and disinflation occurs when a tough policy-maker creates a recession. This paper also proposes an approach to selecting a unique, plausible equilibrium in infinite-horizon models of monetary policy.

## **The Allocation of Talent: Implications for Growth**

**Kevin M. Murphy**, **Andrei Shleifer**, and **Robert W. Vishny**

Working Paper No. 3530

December 1990

JEL No. 111

A country's most talented people typically organize production by others, so that they can spread their ability advantage over a larger scale. When they start firms, they innovate and foster growth, but when they become rent seekers, they only redistribute wealth and reduce growth. Occupational choice depends on returns to ability and scale in each sector, on market size, and on compensation contracts. In most countries, rent seeking rewards talent more than entrepreneurship does, leading to stagnation. Our evidence shows that countries with a higher proportion of college engineering majors grow faster, whereas countries with a higher proportion of concentrators in law grow more slowly.

## **Tax Policy, Investments in Human and Physical Capital, and Productivity**

**Marc Nerlove**, **Assaf Razin**, **Efraim Sadka**, and **Robert K. von Weizsäcker**

Working Paper No. 3531

December 1990

JEL Nos. 323, 111

This paper analyzes the implications of tax policy for the accumulation of human and physical capital and for the overall productivity level of the economy. A comprehensive income tax, applying to both labor income and capital income, discriminates against investments in physical capital. Hence, it has an adverse effect on human capital accumulation. Taking into account a positive external effect of investments in human capital on overall productivity, the adverse effect of income taxation on human capital investments is magnified significantly.

## **Economic Integration and Endogenous Growth**

**Luis A. Rivera-Batiz** and **Paul M. Romer**

Working Paper No. 3528

December 1990

JEL Nos. 110, 410

In a world with two similar, developed economies, economic integration can cause a permanent increase in the worldwide rate of growth. Starting from a position of isolation, an economy can achieve closer integration by increasing trade in goods or by increasing flows of ideas. We consider two models with different specifications of the research and development sector that is the cause of growth. Either form of integration can increase the long-run rate of growth if it encourages the worldwide exploitation of increasing returns to scale in the research and development sector.

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## **American Economic Policy and the International Debt Crisis**

**Hans-Werner Sinn**

Working Paper No. 3532

December 1990

JEL No. 440

This paper advances the hypothesis that the world debt crisis was induced mainly by the dramatic rise in U.S. interest rates during the first half of the 1980s, primarily resulting from tight U.S. monetary policy and excessively large investment incentives in the 1981 U.S. tax reform. A welfare analysis shows that these policies could have increased the U.S. advantage from lending its capital abroad, had they been designed more moderately. However, the actual policies were far too strong to produce this result.

## **Macroeconomic Models with Equity and Credit Rationing**

**Bruce C. Greenwald and Joseph E. Stiglitz**

Working Paper No. 3533

December 1990

JEL No. 023

This paper presents a simple, general equilibrium macroeconomic model incorporating financial constraints, including both credit and equity rationing, and other informational imperfections in labor and product markets, such as efficiency wage effects. We derive a formulation somewhat analogous to the standard IS-LM model, but not suffering from its well-known defects. We then describe the mechanisms by which monetary policy affects the economy and investigate dynamics, including implications for long-run growth.

## **Cyclical Markups: Theories and Evidence**

**Julio J. Rotemberg and Michael Woodford**

Working Paper No. 3534

December 1990

If changes in aggregate demand were an important source of macroeconomic fluctuations, then real wages would be countercyclical, unless markups of price over marginal cost were countercyclical themselves. Thus we examine three theories of markup variation at cyclical frequencies.

The first assumes only that the elasticity of demand is a function of the level of output. In the second theory, firms face a trade-off between exploiting their existing customers and attracting new customers. Markups then also depend on rates of return and frequent expectations of sales; a high rate of return, or expectations of low sales growth, lead firms to assign a lower value to future revenues from new customers. Thus firms raise prices and markups.

In the third theory, markups are chosen to ensure that no one deviates from an (implicitly) collusive understanding. Increases in rates of return or pessimistic expectations then lead firms to be less concerned with future punishments, so that markups fall. Aggregate postwar data from the United States are generally consistent with the predictions of the implicit collusion model.

## **The Effect of Illicit Drug Use on the Wages of Young Adults**

**Robert Kaestner**

Working Paper No. 3535

December 1990

This paper examines the effects of cocaine and marijuana use on the wages of a sample of young adults drawn from the National Longitudinal Surveys Youth Cohort. The rather surprising results suggest that, for this sample, increased use of marijuana or cocaine is associated with higher wages. The positive relationship between drug use and wages does not diminish with age, but remains substantially positive.

We also investigate whether systematic differences in the return to measures of investments in human capital can explain the observed positive relationship between drug use and wages. The results do not support that hypothesis.

## **Maternal Labor Supply and Children's Cognitive Development**

**Francine D. Blau and Adam J. Grossberg**

Working Paper No. 3536

December 1990

JEL Nos. 820, 840

This paper analyzes the relationship between maternal labor supply and children's cognitive development. We use a sample of three- and four-year-old children of female respondents from the 1986 National Longitudinal Surveys Youth Cohort. The respondents were aged 21 to 29 in 1986, so our sample consists of children of relatively young mothers.

For this group, the impact of maternal labor supply depends upon when it occurs. Maternal employment has a negative impact during the first year of the child's life, and a potentially offsetting positive effect during the second and subsequent years. We find some evidence that boys are more sensitive to maternal labor supply than girls, although the gender difference is not significant. The negative effect in the first year is not mitigated to any great extent by the increased maternal income that accompanies it, although that increased income does appear to play an important role in producing the positive effect in the second and later years.

## **Why Are There So Few Black Entrepreneurs?**

**Bruce D. Meyer**

Working Paper No. 3537

December 1990

JEL Nos. 810, 610

Black entrepreneurship has not been successful in the United States. The fraction of employed blacks who work in their own businesses is only about one-third that of whites. Other measures of success, such as net income, number of employees, and form of organization, also show large differences between blacks and whites.

This paper tries to explain these differences, focusing particularly on liquidity constraints and consumer discrimination. My estimates suggest that net worth is not an important determinant of the racial differences in self-employment. Little capital is needed to start most small businesses, and beginning entrepreneurs do not usually borrow. Further, I do not find a greater relative representation of blacks in industries that require less starting capital than other industries. Nor do I find that black businesses are relatively more common in industries that white customers patronize more frequently. I conclude that cultural differences may explain black/white differences in self-employment, but that explanation requires further study.

### **The Transfer Pricing Problem: Where the Profits Are**

**James R. Hines, Jr.**

Working Paper No. 3538

December 1990

JEL No. 320

Much of the world's international trade every year is transactions between related affiliates of multinational companies. These transactions, and the prices at which they take place, have important tax consequences for firms and governments, since tax rates often differ significantly between countries. The transfer pricing problem is the government's choice of a rule for pricing traded intermediate goods; the rule affects not only the taxes that firms pay to governments but also the incentives that firms face in allocating resources. This paper describes a new method of choosing transfer prices to allocate profits between producing centers. It is consistent with simple concepts of income in the tax system, unaffected by arbitrary labeling of goods and firms, and offers firms efficient incentives.

### **The Making of Exchange Rate Policy in the 1980s**

**Jeffrey A. Frankel**

Working Paper No. 3539

December 1990

JEL No. 431

This paper discusses the dollar, not from the standpoint of what moved the exchange rate nor what policies might have been better, but rather of why the political system adopted the policies that it did. The first half is a chronology of major exchange rate developments during the decade. The second half analyzes the actors and interest groups involved, their views on exchange rate policy, and the system within which they interacted.

The strong dollar policy of the first Reagan administration was less the result of the power of a particular economic ideology or interest group than it was the re-

sult of Treasury Secretary Donald Regan's tenacious defense of the desirability of the side effects of the president's economic program. The more pragmatic response of his successor, James Baker, to the problems of the trade deficit was to sanction the depreciation of the dollar from 1985-7. But here again, the success of the Plaza strategy was less the result of a skillful and deliberate manipulation of policy tools to satisfy important interest groups than it was the outcome of a mutually reinforcing convoy of three bandwagons: the markets; the media; and the policymakers.

### **Basic Concepts of International Taxation**

**Jacob A. Frenkel, Assaf Razin, and Efraim Sadka**

Working Paper No. 3540

December 1990

JEL Nos. 423, 433

Free movements of goods and capital across national borders have important implications for both direct and indirect taxation. This paper discusses the implications of different treatments of: resident capital income originating abroad and nonresident capital income originating at home; and exports and imports under the indirect tax system. It also considers what an economically efficient international tax structure would be.

### **A Contribution to the Empirics of Economic Growth**

**N. Gregory Mankiw, David H. Romer, and David N. Weil**

Working Paper No. 3541

December 1990

JEL Nos. 110, 120

This paper examines whether the Solow growth model is consistent with the international variation in the standard of living. It shows that an augmented Solow model that includes accumulation of human as well as physical capital provides an excellent description of the cross-country data. The model explains about 80 percent of the international variation in income per capita, and the estimated influences of physical capital accumulation, human capital accumulation, and population growth confirm the model's predictions.

The paper also examines the implications of the Solow model for convergence in standards of living—that is, for whether poor countries tend to grow faster than rich countries do. The evidence indicates that, holding population growth and capital accumulation constant, countries converge at about the rate predicted by the augmented Solow model.

### **Contracts and the Market for Executives**

**Sherwin Rosen**

Working Paper No. 3542

December 1990

JEL No. 820

This paper reviews empirical findings on executive compensation in light of marginal productivity and



contract theories. The executive labor market performs three functions. First, it distributes and assigns control among executives. The most talented executives are assigned efficiently to control positions in the largest firms when talent and the marginal product of control are complements. These gains, or rents, are partially captured in larger earnings. In fact, the elasticity of top executive pay lies within a tight band around .25 among industries, time periods, and countries where it has been estimated.

Second, executive contracts must provide incentives for managers to act in the interests of shareholders. Potential loss of reputation, bonding, and takeovers probably substitute for direct monetary incentives in this task. Nevertheless, the elasticity of top executive pay with respect to accounting rates of return lies near 1.0. The elasticity with respect to stock market returns is much smaller—although precisely estimated—near 0.1. Differences of opinion remain on whether the market provides enough incentives to align interests between ownership and control.

Third, the market must identify new talent and reassign control over careers from older to younger generations. Competition among executives for top positions, and the diminishing incentive effect of future rewards with age, imply that compensation increasingly should tilt rewards to current performance over the course of a career. Available evidence supports this prediction.

### **An Empirical Exploration of Exchange Rate Target Zones**

**Robert P. Flood, Donald J. Mathieson, and Andrew K. Rose**

Working Paper No. 3543

December 1990

JEL Nos. 430, 431, 432

In the context of a flexible price, monetary exchange rate model with the assumption of uncovered interest parity, we obtain a measure of the fundamental determinant of exchange rates. We use daily data for the European Monetary System to explore the importance of nonlinearities in the relationship between exchange rates and fundamentals. We test many implications of existing "target zone" exchange rate models and find little support for existing nonlinear models of limited exchange rate flexibility.

### **The Political Economy of American Protection in Theory and in Practice**

**Anne O. Krueger**

Working Paper No. 3544

December 1990

JEL No. 112

The results of recent empirical research show that the actual determinants of the form and substance of

protection have little to do with the implicit classroom model of benevolent social guardians intent upon maximizing a Benthamite social utility function. This has led to efforts to understand the political bureaucratic process through which commercial policy is determined, and to the creation of a positive theory of protection, sometimes referred to as the "political economy of protection."

In this paper, I contrast the theoretical cases in which protection might be warranted with the actual pattern of protection, and the mechanisms by which protection is decided upon in one open economy—the United States. I also survey the various models attempting to explain the observed pattern of protection and the mechanisms that generate it.

### **Impact of Government on Growth and Trade**

**Anne O. Krueger and David Orsmond**

Working Paper No. 3545

December 1990

JEL No. 110

We test the development economists' perceptions of the negative contributions of governmental activities, and the positive contributions of other activities, to growth. This paper shows how important government behavior is for economic growth. In so doing, it attempts to start building a bridge between the literature on development economics and the new growth theory. The focal point is the recognition that governments do more than spend and tax in manners that maximize social welfare functions: they influence incentives and regulate in ways that affect private behavior; and their spending, even on infrastructure, is not always optimal.

### **"Liquidation" Cycles: Old-Fashioned Real Business Cycle Theory and the Great Depression**

**J. Bradford De Long**

Working Paper No. 3546

December 1990

JEL Nos. 131, 133, 311, 042

During the 1929–33 slide into the Great Depression, the Federal Reserve took almost no steps to keep the money supply or the price level stable. Instead, the Federal Reserve acted—disastrously—as if the gathering Great Depression could not be avoided, and was best endured. Such a "liquidationist" theory of depressions in fact was common before the Keynesian Revolution, and was held and advanced by such economists as Hayek and Schumpeter.

This paper tries to reconstruct the logic of the "liquidationist" view. It argues that the perspective was carefully thought out (although not adequate to the Depression); may hold some truth in other times and places; and could be the core of a more productive research program than "real" business cycle theories that are currently popular.

## **Aging and the Income Value of Housing Wealth**

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

Working Paper No. 3547

December 1990

JEL Nos. 918, 932

We analyze the potential of reverse annuity mortgages for increasing the current income of the elderly. We conclude that most low-income elderly also have little housing equity, although this is not always the case. In general, a reverse annuity mortgage would affect substantially the income only of the single elderly who are very old, that is, whose life expectancy is short. On the other hand, if the transfer were in the form of a lump sum rather than an annuity, then the payment would increase the liquid wealth of most elderly families by a large fraction. Thus, legislation that would facilitate the market for reverse mortgages could substantially improve the financial status of a small proportion of the elderly. The specter of a large number of poor widows with vast amounts of "locked-in" housing equity does not reflect the reality, though. Most low-income elderly have relatively little housing wealth.

## **The Market for Home Mortgage Credit: Recent Changes and Future Prospects**

**Patric H. Hendershott**

Working Paper No. 3548

December 1990

JEL Nos. 313, 315

Three major changes occurred during the 1980s in the market for home mortgage credit: the securitization of fixed-rate mortgages; the development of a national primary market for adjustable-rate mortgages; and the decimation of the savings and loan industry. This paper examines these changes and their impacts on various financial industries and homebuyers. I also speculate briefly about likely future changes in this market.

## **Self-Selection, Prenatal Care, and Birthweight among Blacks, Whites, and Hispanics in New York City**

**Theodore J. Joyce**

Working Paper No. 3549

December 1990

JEL No. 913

Most research on birth outcomes has found a direct relationship between appropriate prenatal care and increased birthweight. Researchers concede, however, that without a randomized design, which clearly is unethical, one cannot determine how much of the association is caused by medical intervention and how much is a product of the characteristics of the women

receiving care. In short, the degree of selection bias is unknown and potentially substantial.

This paper tests for selection bias and estimates its direction and magnitude. I find that adjusted mean differences in birthweight between women who obtain intermediate, as opposed to inadequate, prenatal care substantially underestimate the effects of care that would be observed under random assignment. In particular, ordinary least squares estimates indicate that the gains to intermediate care are: 113 grams for black infants; 76 grams for white infants; and 92 grams for Hispanic infants. Under random assignment, black infants would experience gains of 130 grams, whites 234 grams, and Hispanics 183 grams. The gains for adequate, as opposed to intermediate, care are relatively minor. The results point to adverse selection in the demand for prenatal care.

## **Yield Curve**

**Frederic S. Mishkin**

Working Paper No. 3550

December 1990

JEL No. 310

This paper provides a brief survey of the relationship between the yield curve and future changes in interest rates and inflation. The expectations hypothesis of the term structure indicates that when the yield curve slopes upward, future short-term and long-term interest rates are expected to rise. Empirical evidence finds that, as predicted by the expectations hypothesis, yield spreads are correlated positively with future changes in short-term interest rates, particularly at long horizons. However, yield spreads are correlated negatively with next period's change in long-term interest rates, the opposite prediction of the expectations hypothesis. Empirical evidence also suggests that the yield curve has almost no ability to forecast changes in inflation for short horizons. However, at horizons of a year or greater, the yield curve contains a great deal of information about the future path of inflation.

## **Banks and Loan Sales: Marketing Nonmarketable Assets**

**Gary Gorton and George Pennacchi**

Working Paper No. 3551

December 1990

JEL No. 312

A defining characteristic of bank loans is that, once created, they are not resold. Yet, in 1989, about \$240 billion of commercial and industrial loans were sold, compared to trivial amounts five years earlier. Selling loans without explicit guarantee or recourse is not consistent with theories of the existence of financial intermediation. What has changed to make bank loans marketable? We test for the presence of implicit contractual features of bank loan sales contracts that could explain this inconsistency. In addition, we consider the effect of technological progress on the reduction of information asymmetries between loan buyers and loan sellers. The paper tests for the presence of these features and effects using a sample of over 800 recent loan sales.

## **The Aggregate Implications of Machine Replacement: Theory and Evidence**

**Russell Cooper and John C. Haltiwanger**

Working Paper No. 3552

December 1990

JEL Nos. 023, 131

This paper studies an economy in which producers must incur resource costs to replace depreciated machines. The process of costly replacement and depreciation creates endogenous fluctuations in productivity, employment, and output of a single producer. We also explore the spillover effects of machine replacement by multiple, independent producers. The implications of our model generally are consistent with observed monthly fluctuations in output and productivity in automobile plants and with monthly variations in employment and production in the manufacturing sector.

## **Last One Out Wins: Trade Policy in an International Exit Game**

**S. Lael Brainard**

Working Paper No. 3553

December 1990

JEL Nos. 411, 612

This paper examines the effect of government intervention on the order and timing of firm exit in an international industry with fixed costs and demand that has declined. A dynamic inconsistency arises when the government is unable to precommit to a path of policy: it always intervenes to prolong the viability of the firm located in its market, even when the firm's survival is not the socially optimal outcome. In all cases, tariff intervention terminates market operation prematurely; in many cases, it reverses the order of firm exit. Intervention in the absence of precommitment is never "first-best" and actually reduces welfare relative to the free market equilibrium when the differential among firms' fixed costs is large.

## **Public Goods in Trade: On the Formation of Markets and Political Jurisdictions**

**Alessandra Casella and Jonathan S. Feinstein**

Working Paper No. 3554

December 1990

JEL Nos. 320, 420

The current debate in Western Europe centers on the relationship between economic and political integration. To address this problem, we construct a simple general equilibrium model in which the returns to trading are affected directly by the availability of a public good. In our model, heterogeneous agents choose both a club and a market to join. In the club, agents vote about the public good, pay taxes to finance this good, and receive access to it when they trade. In the market, they are matched randomly with a partner. If a match between traders of different clubs occurs, they both suffer a transactions cost.

We show that, in general, the political boundaries established by the clubs can be distinct from market borders, leading to international trade between members of different clubs. Further, as the region develops, markets become wider (eventually leading to a common

market), and the desire to avoid transaction costs initially leads to political unification. At still higher levels of development, however, where transaction costs are less important, traders prefer the diversity offered by multiple clubs.

## **Credible Disinflation with Staggered Price Setting**

**Laurence M. Ball**

Working Paper No. 3555

December 1990

JEL Nos. 023, 131, 134

This paper determines the real effects of credible disinflation when price setting is staggered. The results are surprising: a fairly quick disinflation causes a boom. This suggests that nominal price rigidity alone does not explain why disinflation is costly in actual economies.

## **Labor Hoarding and the Business Cycle**

**Craig Burnside, Martin S. Eichenbaum, and Sergio T. Rebelo**

Working Paper No. 3556

December 1990

JEL Nos. 130, 200

Procyclical productivity traditionally has been regarded as inconsistent with neoclassical theories of the business cycle. Existing real business cycle (RBC) models solve this puzzle by assuming that the key impulses to business cycles are stochastic technology shocks that shift the frontier of aggregate production possibilities. To provide evidence in favor of such shocks, RBC analysts have examined the univariate time-series properties of the Solow residual under the null hypothesis that they represent exogenous technology shocks.

This paper assesses the sensitivity of inference based on Solow residual accounting to labor hoarding behavior. In addition, we investigate whether our model is capable of accounting for certain aspects of the data that seem anomalous from the perspective of existing RBC theory.

We find first that the quantitative implications of RBC models are very sensitive to the possibility of labor hoarding. Allowing for such behavior reduces our estimate of the variance of technology shocks by 50 percent. Depending on the sample period investigated, this reduces the ability of technology shocks to account for aggregate output fluctuations by 30 percent to 60 percent.

Second, our labor hoarding model is capable of accounting quantitatively for the observed correlation between government consumption and the Solow residual. This is true despite various conjectures to the contrary in the literature.

Third, our model is qualitatively consistent with three important features of the joint behavior of average productivity and hours worked: 1) average productivity and hours worked do not display any marked contemporaneous correlation; 2) average productivity leads the cycle, in the sense that it is positively correlated with future hours worked; and 3) average productivity also is negatively correlated with lagged hours worked. The benchmark RBC model is inconsistent with all three of these properties.

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