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Program Report

Labor Studies

Richard Freeman*

Labor economists like numbers. With datasets containing tens of thousands or hundreds of thousands of observations readily available on the NBER website **(www.nber.org/data/)** and from numerous other sources, and with increasingly powerful computers to crunch the numbers, there is no shortage of numbers to examine economic issues large or small.

When I began this review, I intended to write about the major topics and ideas that have emerged in the four years since I last examined how the Labor Studies Program was doing (NBER Reporter Winter 1997/8). But I quickly realized that my labor colleagues would squirm in their chairs at any exclusively qualitative review of ideas. The more aggressive labor economists would demand "Where are the numbers?" To assuage this potential critical audience, I examined the data in the NBER Labor Studies archives and listings of NBER papers in Labor Studies and did some statistical calculations.

The Quantitative

Like the rest of the U.S. economy, the Labor Studies Program expanded in the late 1990s to early 2000s. From 1999 to 2001, the program averaged over 103 papers per year and it is on pace to produce some 120-130 papers in 2002. By contrast, from 1981, when the program began to take form, through 1989, there were 60 papers per year, and from 1990 to 1998, the program produced 75 papers a year. In part, the growth reflects increased numbers of people in the program. But even these figures do not fully represent the expansion of the labor research. For example, the NBER has a new Program on Children, a Working Group on Higher Education, and a new project on the science work force, all of which deeply involve labor-oriented specialists.

In any case, having established that this review is empirical, I turn next to some of the topics and ideas that have characterized Labor Studies research in the past several years. Because of the plethora of papers, this review is necessarily limited.

* *Freeman is the Director of the NBER's Program on Labor Studies and is the Herbert Ascherman Professor of Economics at Harvard University.* *The NBER Working Papers cited in brackets by number throughout this report are available at www.nber.org/papers/*

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Education

A substantial number of NBER researchers have been examining issues related to education. Some have continued the long-standing human capital interest in estimating returns to education, largely by examining the effects of different econometric procedures on earnings (7444, 7457, 7769, 7820, 7950, 7989). Going a step toward assessing the impact of education beyond earnings, Lance J. Lochner and Enrico Moretti have documented the strong negative link between education and crime; this can increase the social returns to schooling by 14-26 percent above the individual returns.

Much recent work has focused on the higher education market. Orley C. Ashenfelter and David Card provide evidence that the end of forced mandatory retirement of faculty will increase the number of older faculty (8378). John Bound and co-authors find that U.S. states awarding more BA degrees in a cohort tend to have higher concentrations of college-educated workers (8555). Ronald G. Ehrenberg finds that collective bargaining coverage raises staff salaries in colleges and universities (8861); he has examined the growing dispersion of faculty salaries across institutions in terms of dispersion in endowments and appropriations for public institutions (8965); and he shows that the widely reported *US News and World Report* rankings of colleges in fact affect how colleges do in the market for students (7227). Card and Thomas Lemieux analyze the link between cohort wage differentials and supplies in higher education over time (7655,7658), while Daron Acemoglu and Jorn-Steffen Pischke find that changes in the distribution of family income have had substantial effects on enrollments (7986). Focusing on one of the most striking developments in higher education — the increased proportion of women among graduates — Kerwin K. Charles and Ming-Ching Luoh argue the expected future earnings dispersion helps explain the data (9028).

An additional body of work has explored the determinants of educational outputs, finding for the most part that increased expenditures (8269) or other reforms, ranging from voucher systems in Colombia (8343) to compulsory attendance laws (8563) to smaller class size (7656, 8875), all affect outcomes. But Joshua D. Angrist and Victor Lavy (7424) report that classroom computers did little for educational performance in Israel; while Julian R. Betts and Jeffrey T. Grogger report that grading standards improved educational achievement but lowered attainment (7875).

Peter Temin (8898) argues that failure to raise teacher pay has produced low-quality teachers, with adverse effects for outcomes, while Eric A. Hanushek and co-authors report that teacher mobility is more related to the characteristics of students than to salary (8599). Caroline M. Hoxby uses a new survey of charter school teachers and other data to show that greater school choice could improve the quality of the teaching work force (7866) and provides evidence that peer effects are important in classrooms (7867). In an analysis of Dartmouth College roommates, Bruce Sacerdote finds that peer effects are very important in determining levels of academic effort and in decisions to join social groups such as fraternities, but not in choice of college major (7469). Finally, in a series of papers (7217, 7126, 6439, 6537) Claudia Goldin and Lawrence F. Katz have studied the returns to education and inequality from 1914 through 1999, concentrating on the U.S.'s development of universal and publicly funded secondary school education. They argue that the social capital embodied in relatively homogeneous small mid-Western towns fueled this expansion (three cheers for Iowa!).

Labor Institutions Around the World

NBER labor researchers also have studied labor markets in countries outside the United States. They do this for the sake of learning about the strengths and weaknesses of the American labor market and the strengths and weaknesses of our economic models, and, as Daniel S. Hamermesh argues, to take advantage of the greater variation in institutions across countries and of larger or better datasets in some other countries than in the United States (8757).

Among these international projects, Card and I, working with Richard Blundell, directed a major investigation of the British economy in conjunction with the Centre for Economic Performance of the London School of Economics and the Institute of Fiscal Studies. We found that the Thatcher and ensuing economic reforms increased market freedoms and flexibility, improving employment rates, and ending the U.K.'s downward slide in GDP per capita, but with the cost of higher inequality (8801, 8253, 8448, 8413). But in the United Kingdom, real wages grew more rapidly than did inequality, so that the standard of living of even those at the bottom of the earnings distribution improved during this period. Several researchers have examined German institutions and markets in some detail [7564, 7697, 7611, 8051, 8797] while others have looked at Japanese employment practices (7965, 7939). Others have examined labor market institutions in Latin America; and still others have studied how the Canadian labor market and social insurance system have performed (7371, 7370, 8658). Going from empirical work to theory, Steven J. Davis examined the relationship between the compression of wages under centralized bargaining and the distribution of employment in Sweden; he then proposed a search equilibrium model in which centralized bargaining improves productivity and welfare (7502, 8434). Marianne Bertrand and Francis Kramarz have shown that entry regulation to the French retail industry reduced employment in the sector by about 10 percent (8211). Nina Pavcnik has found that increases in the price of rice in Vietnam were a major factor in reducing child labor (8760). Overall, the main theme that emerges from this stream of work is that labor market institutions have substantial effects on inequality and employment, and thus must be part of any empirical analysis, along with the two blades of Marshall's scissors.

Several researchers have used cross-country data to compare labor market outcomes around the world. Remco H. Oostendorp and I developed the Occupational Wages Around the World data file (8058, and at "NBER Data") to provide better information on levels and structures of pay. Francine D. Blau and her co-authors have examined gender pay differences across countries (8200) and differences in employment patterns among OECD countries (8526, 9043); Paul Beaudry and co-authors have also worked on this topic (8149, 8754). Using the International Adult Literacy Survey, Blau and Lawrence Kahn (8210) and Daniel Devroye and I (8140) have tested and rejected the claim that differences in inequality in cognitive skills explain cross-country differences in income inequality. Alan B. Krueger has explored the belief that investing in education is critical for macroeconomic growth, pointing out the importance of measurement error in schooling-across-countries in affecting results (7190). Acemoglu argued that one can explain differential patterns of change in inequality across countries in terms of the effect of labor institution-induced wage compression on the basis of technological change (8287, 8832).

Building on the interest in markets in other advanced countries, Edward P. Lazear has organized a new working group that seeks to exploit datasets in other countries that match employers and employees or have other advantages over U.S. datasets.

Social Policies and Supply Responses

Economists in the Labor Program have examined the economic impact of U.S. institutions and policies as well. Katz, Jeffrey R. Kling, and Jeffrey Liebman (7973) studied the impacts of the Moving-to-Opportunity program through which a random lottery gave some inner city residents eligibility for housing vouchers. They found improvements in children's social behavior but no effects on the labor market performance of parents. Bound and Sarah E. Turner (9044) found that the availability of G. I. benefits had a substantial and positive impact on the educational attainment of both white and black men born outside the South, but did not help Southern black GIs go to college; the result was exacerbation of the educational differences between black and white men from southern states. Jonathan Guryan (8345) found that the 1954 Supreme Court decision desegregating schools benefited the black students for whom the plans were designed, reducing their high school dropout rates, while having no

effect on the dropout rates of whites. He suggests that peer effects explain at least some of the decline in the dropout rates of blacks attributable to desegregation plans.

Much work on economic programs and policies focuses on intended or unintended responses of the labor supply. In general, we would like to identify a single labor supply elasticity that we could apply to all problems. However, the specifics of programs and the contexts in which incentives change appear to rule out such an efficient solution to actual programs and decisions. Reviewing estimates of labor supply elasticities, Krueger and Bruce D. Meyer (9014) show that elasticities of lost work time that incorporate both the incidence and duration of claims for unemployment insurance and workers' compensation are substantially larger than the labor supply elasticities typically found for men in studies of the effects of wages or taxes on hours of work. Jeffrey Smith and co-authors (8825) show that the Worker Profiling and Reemployment Services, which "profiles" UI claimants to determine their probability of benefit exhaustion (or expected spell duration), affects behavior through its administration. The estimated treatment effect differs dramatically across the population. In a review of the relationship between health insurance, labor supply, and job mobility, Jon Gruber and Brigitte Madrian (8817) find that health insurance is a central determinant of retirement decisions; also, the labor supply of secondary earners has some impact on job mobility but is not a major determinant of the labor supply and welfare exit decisions of low income mothers.

Tools and More

Simon Kuznets did not need much in the way of econometric tools to get the numbers to speak, but most economists rely on formal statistics to help interpret data. In the past several years, some labor analysts have begun to use regression discontinuity models (8993, 8269, 8441) to deal with imperfect data. Bertrand, Esther Duflo, and Sendhil Mullainathan (8841) have examined the effect of serial correlation in outcomes variables on difference-in-difference estimates and find that in realistic CPS-based data the standard errors are severely biased. The basic theme of much of the statistical analysis has been toward applying less a priori structure and finding tools that better mimic experiments. On the notion that economists can do more than just mimic experiments, Alvin E. Roth and co-authors have been analyzing the matching market for physicians, auction sites, and the market for gastroenterologists, using data from the actual events or natural experiments and tests of hypotheses from laboratory experiments (6963, 7729, 8616).

Finally, since my last Labor Studies report, one of the early members of the program, James J. Heckman, received a Nobel Prize. Although the prize was for his contribution to econometrics, we know that it is his grounding in labor issues and data that has spurred his creativity and prolificness. Jim's first paper in the Labor Program series was in 1978, while his first NBER paper was in 1974, before the NBER categorized papers by programs. More striking, perhaps, Jim's latest paper in the series as of this writing is dated July 2002. Who said scientific productivity falls with age? Sadly, over the same period, the Labor Program and economics more broadly lost an outstanding economist: Sherwin Rosen, one of the deepest thinkers and creative theorists in our midst, died in 2001. Sherwin's first paper in the labor series was in 1979, his first NBER paper was in 1977, and his last NBER paper in 2000 was on labor markets in professional sports (7573), where he pondered alternative institutional ways to organize property rights and incentives.

*

Research Summaries

Raising Incomes by Mandating Higher Wages

David Neumark*

A number of policy proposals and initiatives have been used in the United States in an attempt to reduce poverty, or more generally to assist low-income families, by increasing the incomes of families at the bottom end of the income distribution. My research over the recent past has focused on studying the effectiveness of two such policies that mandate higher wages for low-wage workers: minimum wages and living wages.[1]

Minimum wages first were established on a national level with the Fair Labor Standards Act of 1938. While initial coverage was originally quite restrictive, coverage is now nearly universal. The federal minimum currently stands at $5.15. Numerous states have at times imposed higher minimum wages, typically for the same workers covered by the federal minimum, but with some exceptions. The highest state minimum wages currently are in California and Massachusetts ($6.75) and Washington ($6.90).

Living wage ordinances are a much more recent innovation. Baltimore was the first city to pass such legislation, in 1994, and approximately 50 cities and a number of other jurisdictions have followed suit. Living wage laws have three central features. First, they impose a wage floor that is higher — and often much higher — than traditional federal and state minimum wages. Second, living wage levels are often explicitly pegged to the wage level needed for a family to reach the federal poverty line. Third, coverage by living wage ordinances is highly restricted. Frequently, cities impose wage floors only on companies under contract (generally including non-profits) with the city. Other cities also impose the wage floor on companies receiving business assistance from the city, in almost every case in addition to coverage of city contractors. Finally, a still smaller number of cities also impose the requirement on themselves and pay city employees a legislated living wage.

It is fair to say that the goal of both minimum wages and living wages is to raise incomes of low-wage workers so as to reduce poverty. Senator Edward Kennedy, a perennial sponsor of legislation to increase the minimum wage, has been quoted as saying "The minimum wage was one of the first — and is still one of the best — anti-poverty programs we have."[2] Similarly, the Economic Policy Institute, while noting that other anti-poverty tools are needed, argues that "the living wage is a crucial tool in the effort to end poverty."[3] Thus, while there is generally no single measure with which the distributional effects of a policy can be assessed unambiguously, and while overall welfare effects are much more complicated, evaluating the impact of mandated wage floors on poverty is quite relevant to the policy debate.

While mandating higher wages for low-wage workers would appear to a non-economist as a natural way to fight poverty, there are two reasons why it may not help to achieve this goal. First, standard economic theory predicts that a mandated wage floor will discourage the use of low-skilled labor, essentially operating as a tax on the use of such labor. Thus, whatever wage gains accrue to workers whose employment is not affected must be offset by the potential earnings losses for some other workers. Second, mandated wage floors may target low-income families ineffectively. Broadly speaking, low-wage workers in the United States belong to two groups. The first is very young workers who have not yet acquired labor market skills, but who are likely to escape low-wage work as skills are acquired. The second is low-skilled adults who are likely to remain mired in low-wage work,[4] and who — as adults — are much more likely to be in poor families. To the extent that the gains from mandated wage floors accrue to low-wage adults and the losses fall on low-wage, non-poor teenagers, mandated wage floors may well reduce poverty. But there is no theoretical reason to believe that this outcome is more likely than the reverse, with concomitant adverse outcomes for low-income families. The distributional effect of mandated wage floors is a purely empirical question.

Minimum Wages

Labor economists have written innumerable papers testing the prediction that minimum wages reduce employment. Earlier studies used aggregate time-series data for the United States to estimate the effects of changes in the national minimum wage. The consensus view from these "first generation" studies was that the elasticity of employment of low-skilled (young) workers with respect to minimum wages was most likely between -0.1 and -0.2; that is, for every ten-percent increase in the minimum wage, employment of low-skilled individuals falls by one to two percent.[5]

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More recent studies have used panel data covering multiple states over time, exploiting differences across states in minimum wages. This approach permits researchers to abstract from aggregate economic changes that may coincide with changes in the national minimum wage and hence make difficult untangling the effects of minimum wages in aggregate time-series data.[6] Evidence from these "second generation" studies has spurred considerable controversy regarding whether or not minimum wages reduce employment of low-skilled workers, with some researchers arguing that the predictions of the standard model are wrong, and that minimum wages do not reduce and may even increase employment. The most prominent and often-cited such study uses data collected from a telephone survey of managers or assistant managers in fast-food restaurants in New Jersey and Pennsylvania before and after a minimum wage increase in New Jersey.[7] Not only do these data fail to indicate a relative employment decline in New Jersey, but rather they show that employment rose sharply there (with *positive* employment elasticities in the range of 0.7).

On the other hand, much recent evidence using similar sorts of data tends to confirm the prediction that minimum wages reduce employment of low-skilled workers;[8] so does earlier work with a much longer panel of states.[9] Moreover, an approach to estimating the employment effects of minimum wages that focuses more explicitly on whether minimum wages are high relative to an equilibrium wage for affected workers reveals two things: first, disemployment effects appear when minimum wages are more likely to be binding (because the equilibrium wage absent the minimum is low); second, some of the small or zero estimated disemployment effects in other studies appear to be from regions or periods in which minimum wages were much less likely to have been binding.[10] Finally, a re-examination of the New Jersey-Pennsylvania study that I conducted, based on payroll records collected from fast-food establishments, finds that the original telephone survey data were plagued by severe measurement error, and that the payroll data generally point to negative employment elasticities.[11]

Across this array of more recent evidence, the estimated effects often parallel the earlier time-series research indicating that the elasticity of employment of low-skilled workers with respect to the minimum wage is in the -0.1 to -0.2 range, with estimates for teenagers (who have often been the focus of minimum wage research) closer to -0.1. As further evidence, a leading economics journal recently published a survey including economists' views of the best estimates of minimum wage effects. Results of this survey, which was conducted in 1996 — after most of the recent research on minimum wages was well-known to economists — indicated that the median "best estimate" of the minimum wage elasticity for teenagers was -0.1, while the mean estimate was -0.21.[12] Thus, although there may be some outlying perspectives, economists' views of the effects of the minimum wage are centered in the range of the earlier estimates, and many of the more recent estimates, of the disemployment effects of minimum wages.

While the research on disemployment effects appears to settle (for many, at least) a question regarding the labor demand effects of mandated wage floors, it does not answer the question of whether minimum wages raise incomes of low-wage workers, or more importantly of poor or low-income families.[13] Turning first to low-wage workers, I recently examined the effects of minimum wages on employment, hours, wages, and ultimately labor income of workers at different points in the wage distribution.[14] This research indicates that workers initially earning near the minimum wage are on net adversely affected by minimum wage increases while, not surprisingly, higher-wage workers are little affected. While wages of low-wage workers increase (although by considerably less than pure contemporaneous effects indicate), their hours and employment decline, and the combined effect of these changes is a decline in earned income.[15]

Finally, while there are few poor or low-income families with high-wage workers, there are many high-income families with low-wage workers.[16] Thus, knowing the effects of minimum wages on low-wage workers does not lead to any firm prediction regarding the effects of minimum wages on poor or low-income families. However, evidence from my recent research utilizing a non-parametric approach to estimating the impact of the minimum wage on the distribution of family income indicates that raising the minimum wage does not reduce the proportion of families living in poverty and, if anything, instead increases it, thus raising the poverty rate.[17] Thus, the combined evidence indicates that minimum wages do not appear to accomplish their principal policy goal of raising incomes of low-wage workers or of poor or low-income families.

One qualification to keep in mind is that this research tends to focus on the short-run effects of minimum wages, typically looking at effects at most a year after minimum wage increases. I am presently working on estimating the longer-run distributional effects of minimum wages. But two sets of existing findings point to some potentially longer-lasting adverse effects of minimum wages — effects that extend beyond disemployment effects, to those who work. First, minimum wages tend to reduce school enrollments of teenagers, at least where these enrollments are not constrained by compulsory schooling laws.[18] Second, extending earlier research on the relationship between minimum wages and on-the-job training, I find in a recent study that minimum wages reduce training that is intended to improve skills on the current job.[19] Thus, minimum wages may reduce the human capital accumulation that leads to higher wages and incomes.

Living Wages

I have recently completed a monograph and a set of papers that analyze many of these same questions with regard to living wage laws.[20] In these papers, paralleling the strategy used in much of the new research on mini-

mum wages, I identify the effects of living wages by comparing changes in labor market outcomes in cities that pass living wages with changes in cities that do not pass such laws.

I begin by asking whether living wage laws may lead to detectable increases in wages at the lower end of the wage or skill distribution. While such effects are readily detectable with respect to minimum wages, the question arises with respect to living wages because of the low fraction of workers covered, and because of questions about enforcement.[21] The evidence points to sizable effects of living wage ordinances on the wages of low-wage workers in the cities in which these ordinances are enacted. In fact, the magnitudes of the estimated wage effects (elasticities of approximately 0.07 for workers in the bottom tenth of the wage distribution) are much larger than would be expected based on the apparently limited coverage of city contractors by most living wage laws. Additional analyses that help reconcile these large effects indicate that the effects are driven by cities in which the coverage of living wage laws is more broad, that is, cities that impose living wages on employers receiving business assistance from the city.[22]

As with minimum wages, the potential gains from higher wages may be offset by reduced employment opportunities. Overall, evidence of disemployment effects is weaker than the evidence of positive wage effects. Nonetheless, disemployment effects tend to appear precisely for the type of living wage laws that generate positive wage effects, in particular, for low-skill workers covered by the broader laws that apply to employers receiving business assistance. Thus, as economic theory would lead us to expect, living wage laws present a trade-off between wages and employment.

This sets the stage for weighing these competing effects, in particular examining the effect of living wage laws on poverty in the urban areas in which they are implemented. Overall, the evidence suggests that living wages may be modestly successful at reducing urban poverty in the cities that have adopted such legislation. In particular, the probability that families have incomes below the poverty line falls in relative terms in cities that pass living wage laws.[23] Paralleling the findings for wage and employment effects, the impact on poverty arises only for the broader living wage laws that cover employers receiving business assistance from cities.

In interpreting this evidence, it is important to keep two things in mind. First, while economic theory predicts that raising mandated wage floors will lead to some employment reductions, it makes no predictions whatsoever regarding the effects of living wages on the distribution of family incomes, or on poverty specifically. The distributional effects depend on both the magnitudes of the wage and employment effects, and on their incidence throughout the family income distribution. Second, and following from this same point, there is no contradiction between the evidence that living wages reduce poverty and that minimum wages increase poverty. The gains and losses from living wages may be of quite different magnitudes, and fall at different points in the distribution of family income than do the gains and losses from minimum wages; this depends in part on the types of workers who are affected by these alternative mandated wage floors. Obviously, though, an important area for future research is to parse out the wage and employment effects of minimum wages and living wages at different points in the distribution of family incomes.

Of course a finding that living wage laws reduce poverty does not necessarily imply that these laws increase economic welfare overall (or vice versa). Living wage laws, like all tax and transfer schemes, generally entail some inefficiencies that may reduce welfare relative to the most efficient such scheme. Finally, there is another reason to adopt a cautious view regarding living wages. As already noted, the effects of living wages appear only for broader living wage laws covering employers receiving business or financial assistance. The narrower contractor-only laws have no detectable effects. This raises a puzzle. Why, despite the anti-poverty rhetoric of living wage campaigns, do they often result in passage of narrow contractor-only laws that may cover a very small share of the workforce?

One hypothesis I explore is that municipal unions work to pass living wage laws as a form of rent-seeking.[24] Specifically, by forcing up the wage for contractor labor, living wage laws reduce (or eliminate) the incentive of cities to contract out work done by their members, and in so doing increase the bargaining power and raise the wages of municipal union workers. There is ample indirect evidence consistent with this, as municipal unions are strong supporters of living wage campaigns. As further evidence, I explored the impact of living wage laws on the wages of lower-wage unionized municipal workers (excluding teachers, police, and firefighters, who do not face competition from contractor labor). The results indicate that these workers' wages are indeed boosted by living wages. In contrast, living wages do not increase the wages other groups of workers whose wages — according to the rent-seeking hypothesis — should not be affected (such as other city workers, or teachers, police, and firefighters). Thus, even if living wage laws have some beneficial effects on the poor, this last evidence suggests that they may well be driven by motivations other than most effectively reducing urban poverty. While this does not imply that living wages cannot be an effective anti-poverty policy, it certainly suggests that they deserve closer scrutiny before strong conclusions are drawn regarding their effectiveness.

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[1] *Most of my research on minimum wages was done in collaboration with William Wascher, and more recently with Mark Schweitzer as well. Most of my work on living wages was done in collaboration with Scott Adams.*

[2] *A. Clymer,* Edward M. Kennedy: A Biography, *New York: William Morrow & Co, 1999.*

[3] *See www.epinet.org/Issueguides/livingwage/livingwagefaq.html.*

[4] *See W. J. Carrington and B. C. Fallick, "Do Some Workers Have Minimum Wage Careers?"* Monthly Labor Review, *(May 2001) pp. 17-27.*

[5] *For a review of the earlier time-series stud-*

ies, see C. Brown, C. Gilroy, and A. Kohen "The Effect of the Minimum Wage on Employment and Unemployment," Journal of Economic Literature, *20 (2) (June 1982), pp. 487-528. Results extending this research through the mid-1980s and finding more modest effects are reported in A. J. Wellington, "Effects of the Minimum Wage on the Employment Status of Youths: An Update,"* Journal of Human Resources, *26 (1) (Winter 1991), pp. 27-46. A more recent time-series study using data through 1993 and employing more sophisticated tools of time-series analysis finds stronger disemployment effects; see N. Williams and J. A. Mills, "The Minimum Wage and Teenage Employment: Evidence from Time Series,"* Applied Economics, *33 (3) (February 2001), pp. 285-300.*

[6] *See, for example, D. Card, "Using Regional Variation in Wages to Measure the Effects of the Federal Minimum Wage," NBER Working Paper No. 4058, April 1992, and in* Industrial and Labor Relations Review, *46 (1) (October 1992), pp. 22-37; D.Card, "Do Minimum Wages Reduce Employment? A Case Study of California, 1987-1989," NBER Working Paper No. 3710, May 1991, and in* Industrial and Labor Relations Review, *46 (1) (October 1992), pp. 38-54; N. Williams, "Regional Effects of the Minimum Wage on Teenage Employment,"* Applied Economics, *25 (12) (December 1993), pp. 1517-28; and D. Neumark and W. Wascher, "Employment Effects of Minimum and Subminimum Wages: Panel Data on State Minimum Wage Laws," NBER Working Paper No. 3859, October 1991, and in* Industrial and Labor Relations Review, *46 (1) (October 1992), pp. 55-81.*

[7] *See D. Card and A. B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," NBER Working Paper No. 4509, October 1993, and in* American Economic Review, *84 (4) (September 1994), pp. 772-93.*

[8] *See R. V. Burkhauser, K. A. Couch, and D. C. Wittenburg, "A Reassessment of the New Economics of the Minimum Wage Literature with Monthly Data from the Current Population Survey,"* Journal of Labor Economics, *18 (4) (October 2000), pp. 653-80; and M. Zavodny, "The Effect of the Minimum Wage on Employment and Hours."* Labour Economics, *7 (6) (November 2000), pp. 729-50.*

[9] *See D. Neumark and W. Wascher, "Employment Effects of Minimum and Subminimum Wages: Panel Data on State Minimum Wage Laws." See also the exchange on the evidence in this paper in D. Card, L. F. Katz, and A. B. Krueger, "Comment on David Neumark and William Wascher, 'Employment Effects of Minimum and Subminimum Wages: Panel Data on State Minimum Wage Laws'," "* Industrial and Labor Relations Review, *47 (3) (April 1994), pp. 487-96; and D. Neumark and W. Wascher, "Employment Effects of Minimum and Subminimum Wages: Reply to Card, Katz, and Krueger," NBER Working Paper No. 4570, December 1993, and in* Industrial and Labor Relations Review, *47 (3) (April 1994), pp. 497-512.*

[10] *D. Neumark and W. Wascher, "State-Level Estimates of Minimum Wage Effects: New Evidence and Interpretations from Disequilibrium Methods,"* Journal of Human Resources, *37 (1) (Spring 2002), pp. 35-62.*

[11] *See D. Neumark and W. Wascher, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Comment,"* American Economic Review, *90 (5) (December 2000), pp. 1362-96; and the reply in D. Card and A. B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Reply,"* American Economic Review, *90 (5) (December 2000), pp. 1397-420.*

[12] *V. R. Fuchs, A. B. Krueger, and J. M. Poterba, "Economists' Views About Parameters, Values, and Policies: Survey Results in Labor and Public Economics,"* Journal of Economic Literature, *36 (3) (September 1998), pp. 1387-425.*

[13] *It is often argued that an employment elasticity as small as -0.1 or -0.2 implies that raising minimum wages raises incomes of low-wage workers, because the elasticity is much smaller (in absolute value) than -1. However, these elasticity estimates do not necessarily capture the relevant parameter, which is the elasticity of the demand for minimum wage labor with respect to the minimum. For example, these estimates ignore the possibility that the employment effects are sharpest for those at the minimum wage, pay no regard to possible hours effects, and use the legislated minimum wage change — rather than the typically smaller actual change — in the dominator. In the other direction, this calculation also ignores possible wage increases for workers above the minimum wage.*

[14] *D. Neumark, M. Schweitzer, and W. Wascher, "Minimum Wage Effects Throughout the Wage Distribution," NBER Working Paper No. 7519, February 2000.*

[15] *For minimum wage workers, the hours elasticities are in the range of -0.2 to -0.25, the employment elasticities in the range of -0.12 to -0.17, and the earned income elasticity is approximately –0.6. Whatever one makes of the precise estimates, clearly the evidence does not support the conclusion that minimum wage increases raise the earnings of minimum wage workers.*

[16] *R.V. Burkhauser, K. A. Couch, and D. C. Wittenburg, 1996, "Who Gets What' from Minimum Wage Hikes: A Re-Estimation of Card and Krueger's Distributional Analysis in* Myth and Measurement: The New Economics of the Minimum Wage," Industrial and Labor Relations Review, *49 (3) (April 1996), pp. 547-52.*

[17] *The estimated elasticity of the proportion poor with respect to the minimum wage is approximately 0.4. See D. Neumark, M. Schweitzer, and W. Wascher, "The Effects of Minimum Wages on the Distribution of Family Incomes: A Non-Parametric Analysis," NBER Working Paper No. 6536, April 1998. For a recent complementary parametric approach, see A. Golan, J. M. Perloff, and X. Wu, "Welfare Effects of Minimum Wage and Other Government Policies," (mimeo) University of California, Berkeley (2001).*

[18] *See D. Neumark and W. Wascher, "Minimum Wages and Skill Acquisition: Another Look at Schooling Effects," forthcoming in* Economics of Education Review; *D. Chaplin, M. D. Turner, and A. D. Pape, "Minimum Wages and School Enrollment of Teenagers: A Look at the 1990s," forthcoming in* Economics of Education Review; *and D. Neumark and W. Wascher, "Minimum-Wage Effects on School and Work Transitions of Teenagers,"* American Economic Review, *85 (2) (May 1995), pp. 244-9.*

[19] *D.Neumark and W. Wascher, "Minimum Wages and Training Revisited," NBER Working Paper No. 6651, July 1998, and in* Journal of Labor Economics, *19 (3) (2001) pp. 563-95.*

[20] *See D. Neumark,* How Living Wages Affect Low-Wage Workers and Low-

Income Families, *San Francisco: Public Policy Institute of California, 2002; D. Neumark and S.Adams, "Do Living Wage Ordinances Reduce Urban Poverty?" NBER Working Paper No. 7606, March 2000, forthcoming in* Journal of Human Resources; *and D. Neumark and S. Adams, "Detecting Effects of Living Wage Laws," forthcoming in* Industrial Relations.

[21] *For preliminary information on enforcement of living wage laws, see R. Sander and S. Lokey, "The Los Angeles Living Wage: The First Eighteen Months," (mimeo) UCLA and the Fair Housing Institute, Los Angeles (1998).*

[22] *For these business assistance living wage laws, the estimated elasticity of wages with respect to living wages in the bottom decile of the wage distribution is approximately 0.1, while for contractor-only living wage laws the estimated elasticity is indistinguishable from zero. While the 0.1 elasticity may suggest a small impact, it is an average wage increase experienced by low-wage workers, whereas the actual consequence would most likely be a much larger increase concentrated on a smaller number of workers directly affected by the living wage law.*

[23] *The estimates imply an elasticity of the proportion of poor families with respect to the living wage of about -.19 This seems like a large effect, given a wage elasticity for low-wage workers of approximately 0.1. Of course no one is claiming that living wages lift a family from well below the poverty line to well above it. But living wages may help nudge a family over the poverty line, and we have to recall that these average wage effects will in fact be manifested as much larger gains concentrated on a possibly quite small number of workers and families. Thus, even coupled with some employment reductions, living wages can lift a detectable number of families above the poverty line.*

[24] *See D. Neumark, "Living Wages: Protection For or Protection From Low-Wage Workers?" NBER Working Paper No. 8393, July 2001.*

Monetary Policy

Christina D. Romer*

Actions by the Federal Reserve are commonly thought to be a key determinant of short-run macroeconomic fluctuations. Much of my recent research analyzes this crucial link between monetary policy and economic activity. Some of the papers look directly at the effects of Federal Reserve actions on output, prices, and interest rates. Other papers look at the motivation behind Federal Reserve actions — why has the Federal Reserve done what it has done at various times? In all of the papers there is an element of economic history. Some of the papers look specifically at monetary policymaking in the past. However, even the papers with a modern focus use some of the techniques of economic history, such as an analysis of narrative evidence and other non-standard sources.

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Federal Reserve Information and the Behavior of Interest Rates

In one paper with my co-author, David Romer, I analyze the response of interest rates to Federal Reserve actions.[1] In particular, we investigate why interest rates at all horizons typically rise when the Federal Reserve tightens and fall when the Federal Reserve loosens. While simple portfolio theory can explain why short-term rates rise when the Federal Reserve sells bonds, the similar behavior of longer-term rates documented in a number of studies is more puzzling. A tightening by the Federal Reserve presumably should lower inflation in the future; therefore longer-term nominal rates plausibly should fall rather than rise. Our research suggests that interest rates at all horizons respond to Federal Reserve actions because the Federal Reserve has private or superior information about the future behavior of inflation and output which is revealed by monetary policy actions.

Our evidence that the Federal Reserve possesses private information is the most important finding of the paper. This analysis uses the Federal Reserve's internal forecasts: the "Greenbook" forecasts. These forecasts have been produced by the staff of the Board of Governors for every meeting of the Federal Open Market Committee since the mid-1960s. We think of a person with access to several private forecasts and the Federal Reserve's internal forecast trying to

form the best prediction of future inflation. Our empirical analysis suggests that such a person could minimize his forecast error by putting a large amount of weight on the Federal Reserve's forecast and essentially no weight on the other forecasts. That is, once one knows the Federal Reserve's forecast, other available forecasts provide virtually no useful information. We find that the most likely source of this informational advantage on the part of the Federal Reserve is not inside information about government statistics or future policy. Rather, it is simply that the Federal Reserve devotes many more resources to forecasting than any private forecaster. The finding that the Federal Reserve possesses private information about future economic developments suggests that asymmetric information between the monetary authority and private economic agents is a fundamental feature of modern economies.

Our empirical analysis also suggests that changes in the Federal Reserve's target for the federal funds rate, our measure of monetary policy actions, reveal some of this private information. The Federal Reserve tends to raise interest rates when its own forecast of inflation is higher than private forecasts. We also find that private forecasters tend to raise their forecasts of inflation when the Federal Reserve tightens. This behavior is consistent with the notion that private forecasters feel they learn something about future inflation from the Federal Reserve's behavior. The bottom line is that the revelation of the Federal Reserve's private information through its actions can explain much of the puzzling behavior of interest rates. Understanding why interest rates throughout the term structure rise when the Federal Reserve tightens is important because it may provide insight into why monetary policy packs such a powerful punch in the postwar United States.

Monetary Policy, Output, and Prices

In a new paper, David Romer and I look in more depth at the effects of monetary policy on output and prices. Economists are always searching for a better measure of monetary policy shocks. Conventional measures, such as changes in the federal funds rate or in the money supply, have the problem that the Federal Reserve adjusts its conduct of policy on the basis of its information about likely economic developments. As a result, if one observes, for example, no correlation between these measures of policy and subsequent economic developments, then one cannot conclude that monetary policy does not matter; it may be that the Federal Reserve is using policy effectively to offset movements that would occur otherwise. Because of this difficulty, considerable uncertainty remains about the effects of monetary actions.

We use the Federal Reserve's internal forecasts as a crucial control variable.[2] To derive a new measure of monetary shocks, we regress the change in the intended federal funds rate on the Federal Reserve's own forecasts of inflation and output growth, as well as real-time estimates of the contemporaneous and lagged values of these variables. This regression captures how this key short-term interest rate typically moves in reaction to these actual and forecasted values of economic fundamentals. We then take as our measure of monetary policy shocks the residuals of this regression. By this measure a monetary shock is a movement in the intended funds rate that cannot be explained by the usual reaction of interest rates to output or prices or to the Federal Reserve's own forecasts of those variables. As a result, the new shock series should be much freer of responses to prospective economic developments than other existing measures.

A crucial step in the derivation of the new measure is the creation of an intended federal funds rate series. In some eras, such as the second half of the 1970s and most of the period since 1985, the Federal Reserve has targeted the federal funds rate closely. In these periods, it is easy to deduce the intended funds rate from the FOMC's *Record of Policy Actions*. However, in other eras, the Federal Reserve was focusing less closely on the funds rate, so their intentions for the funds rate are less readily available. For these eras, we examine the narrative record closely and use internal Federal Reserve memos to deduce an implicit target series. The result is a consistent indicator of Federal Reserve actions from the late 1960s on that we can use as an input into the rest of our derivation.

Once we have our new measure of monetary policy shocks, we look at the behavior of output and inflation in response to monetary policy. The results are exceedingly strong. A monetary shock of 100 basis points (a substantial tightening of policy) is associated with a maximum drop in industrial production relative to what it otherwise would have been over the next fours years of 4.8 percent. The same shock also reduces the price level relative to what it otherwise would have been over the same period by 5.9 percent. The results using the new measure are both much stronger and less anomalous than those using conventional measures of monetary policy, such as the simple change in the intended funds rate. For example, many studies have found that inflation tends to rise for a while following an increase in the funds rate. This "price puzzle" virtually disappears when the new measure of monetary policy shocks is used.

Monetary Policy Over Time

The papers just described concern the effects of monetary policy. Another strand of my recent research concerns the conduct of monetary policy. Why has the Federal Reserve done what it has done at various points in the past? How has monetary policy evolved over time?

This strand of recent research in some ways is both a continuation of an earlier research agenda and the start of a new one. In the 1980s, I wrote a series of papers that showed that short-run fluctuations had not moderated noticeably between the pre-1929 and post-1947 eras.[3] This finding is surprising because it is typically thought that the United States and other industrial economies began using both monetary and fiscal policies to stabilize the

economy after World War II. In a recent revisiting of this finding, I found that as the postwar era has lengthened, a more noticeable trend toward stabilization has emerged.[4] However, that progression has not been linear. While recessions were somewhat frequent in the 1950s and early 1960s, they were typically mild. Then between the late 1960s and early 1980s, the United States experienced a number of severe recessions. Since 1983 business cycles have become both less frequent and less severe.

Given the profound effects that monetary policy has on output, prices, and interest rates, it is natural to wonder if the evolution of monetary policy can account for the evolution of macroeconomic performance. Therefore, another paper with David Romer looks at monetary policy in the first decade of the postwar era.[5] Even though economic performance was quite good in the 1950s, monetary policy in this era typically is characterized as somewhat inept: unsophisticated and directed toward the potentially misleading indicator of free reserves. We use both narrative and statistical evidence to suggest that this characterization is incorrect.

A detailed reading of the *Minutes of the Federal Open Market Committee* suggests that the Federal Reserve of the 1950s had an overarching aversion to inflation. This dislike of inflation was reinforced by a model of the macroeconomy that posited no long-run positive trade-off between inflation and output growth and held that inflation quite possibly could lead to recessions and slower long-run growth. This deep-seated dislike of inflation prevented the Federal Reserve of the 1950s from making gross mistakes. While crude forecasting and some emphasis on faulty indicators led to a certain amount of volatility, inflation in the 1950s never was allowed to get seriously out of hand. As a result, the Federal Reserve in the 1950s and early 1960s never had to engineer a recession of a magnitude like that of 1974-5 or 1981-2 to bring inflation down.

An empirical analysis of a simple monetary policy rule confirms the picture of a reasonably astute and sensible Federal Reserve in the 1950s that emerges from the narrative record. We examine the response of the federal funds rate to expectations of the deviation of output from trend and inflation in various eras: the 1950s, the late 1960s and 1970s, the Volcker years, and the Greenspan era. We find that, as in the Volcker and Greenspan eras, monetary policymakers in the 1950s normally raised nominal rates enough in response to expected inflation that the real rate also rose. In the late 1960s and 1970s, in contrast, monetary policymakers allowed real rates to fall in response to expected inflation.

This analysis of monetary policy in the 1950s raises an obvious question: if monetary policy was basically sound in the 1950s, what happened in the 1960s and 1970s? Given that the Federal Reserve had a quite sensible model of the economy in the 1950s, our paper suggests that the temporary triumph of a less sensible macroeconomic framework may have been key. This is a possibility that we are pursuing in our current research.

A final paper in this research agenda returns to the more distant past. Chang-Tai Hsieh and I examine the motivations of the Federal Reserve during one of the most dramatic failures of American monetary policy: the Great Depression of the 1930s.[6] Beginning in late 1929, output and prices plummeted in the United States and, indeed, throughout the world. In late 1930 the United States experienced the first of four waves of banking panics which would cripple the American financial system and cause devastating declines in the money supply. A key question about the Great Depression is why the Federal Reserve did not do more to stem the financial panics. Friedman and Schwartz's classic NBER study *A Monetary History of the United States* attributed Federal Reserve inaction to incompetence and a power vacuum within the System.[7] More recently, Barry Eichengreen and Peter Temin have argued that the U.S. adherence to the gold standard prevented the Federal Reserve from responding to deteriorating economic conditions.[8] Aggressive monetary expansion would have brought the U.S. commitment to the gold standard into question and led to a speculative attack on the dollar.

To test whether the Federal Reserve really was constrained by the gold standard in this way, Hsieh and I examine in detail the one time in the early 1930s when the Federal Reserve did expand aggressively. Under pressure from Congress, in the spring of 1932 the Federal Reserve undertook an open market purchase program that more than doubled Federal Reserve holdings of government bonds over a four-month period. We look for both empirical and narrative evidence that this monetary expansion led to a loss of credibility of the U.S. commitment to the gold standard.

Empirically, a loss of credibility should reveal itself in the relationship between spot and forward exchange rates. If market participants fear devaluation, the forward exchange rate (expressed as dollars per unit of foreign currency) should rise relative to the spot rate. We find little evidence of a rise in this indicator of devaluation expectations in the spring of 1932. Indeed, in the first month of the program, when open market purchases were largest, the behavior of forward and spot exchange rates suggests that expectations of devaluation actually fell. Interest rates also tell a similar story. Fears of devaluation should cause U.S. interest rates to rise relative to those of countries viewed as firmly wedded to the gold standard. In the spring and summer of 1932, such interest rate differentials did not rise. Thus, we find no empirical evidence that the dramatic monetary expansion of 1932 led to a loss of credibility.

We bolster our empirical findings with a detailed reading of Federal Reserve documents and newspapers from this period. We examine internal correspondence and minutes of Federal Reserve meetings to see if Federal Reserve officials worried that the monetary expansion could cause a speculative attack. We find no evidence of such concerns. Indeed, the gold standard is mentioned only rarely and when it is, the tone is that it is not a constraint on Federal Reserve actions. We look at key newspapers of the time to see if they report fears of devaluation or an imminent speculative attack. Once again, we find no such fears or speculations.

The combination of the empirical evidence and the analysis of contemporaneous documents leads us to conclude that more aggressive monetary policy was certainly possible in the early 1930s. The Federal Reserve could have done much more to counter the spiraling decline without running into limitations imposed by the gold standard. This suggests that much of the blame for the Great Depression rests where Friedman and Schwartz placed it 40 years ago — at the doorstep of the Federal Reserve.

[1] *C. D. Romer and D. H. Romer, "Federal Reserve Information and the Behavior of Interest Rates," NBER Working Paper No. 5692, July 1996, and in* American Economic Review, *90 (2000), pp. 429-57.*

[2] *C. D. Romer and D. H. Romer, "A New Measure of Monetary Policy Shocks: Derivation and Implications," unpublished manuscript, July 2002.*

[3] *C. D. Romer, "Spurious Volatility in Historical Unemployment Data,"* Journal of Political Economy, *94 (1986), pp. 1-37; C. D. Romer, "Is the Stabilization of the Postwar Economy a Figment of the Data?"* American Economic Review, *76 (1986), pp. 314-34; and C. D. Romer, "The Prewar Business Cycle Reconsidered: New Estimates of Gross National Product, 1869-1908," NBER Working Paper No. 1969, July 1986, and in* Journal of Political Economy, *97 (1989), pp. 1-37.*

[4] *C. D. Romer, "Changes in Business Cycles: Evidence and Explanations," NBER Working Paper No. 6498, February 1999, and in* Journal of Economic Perspectives, *13 (1999), pp. 23-44.*

[5] *C. D. Romer and D. H. Romer, "A Rehabilitation of Monetary Policy in the 1950s," NBER Working Paper No. 8800, February 2002, and in* American Economic Review, *92 (2002), pp. 121-7.*

[6] *C-T Hsieh and C. D. Romer, "Was the Federal Reserve Fettered: Devaluation Expectations in the 1932 Monetary Expansion," NBER Working Paper No. 8113, February 2001.*

[7] *M. Friedman and A. J. Schwartz,* A Monetary History of the United States, 1867-1960, *Princeton University Press for NBER, 1963.*

[8] *B. Eichengreen,* Golden Fetters: The Gold Standard and the Great Depression, 1919-1939, *Oxford University Press and NBER, 1995; and P. Temin,* Lessons from the Great Depression, *Cambridge, MA: MIT Press, 1989.*

The New Comparative Economics

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The traditional field of "Comparative Economics," which deals with comparisons of socialism and capitalism, died with the collapse of socialism in Eastern Europe and the Soviet Union a decade ago. But from its ashes, and from the challenging experiences of transition and the Asian financial crisis, emerged a new field. This field, the "New Comparative Economics," shares with its predecessor the notion that by comparing alternative economic systems, we can better understand what makes each of them work. But this new field sees the key comparisons as being of alternative capitalist models prevailing in different countries.

Every capitalist economy has many public and private institutions. These institutions' function is to choose political leaders, to maintain law and order, to secure property rights, to redistribute wealth, to resolve disputes, to govern firms, to allocate credit, and so on. Political economy over the last two centuries, as well as recent empirical research, demonstrate that these institutions differ tremendously and systematically among countries, and that these differences have significant consequences for economic and political performance. The comparison of these institutions and of their effectiveness, with a focus on understanding which ones are appropriate in what circumstances, is the subject of the New Comparative Economics.

The New Comparative Economics shares with institutional economics the recognition that the pure competitive model is not a useful way to think about capitalist economies, and that political and economic institutions crucially shape performance. Unlike institutional economics, however, which stresses the common achievements of capitalist economies, such as protection of private property, the New Comparative Economics focuses on institutional diversity. The New Comparative Economics also shares with the field of public choice its emphasis on politics. Most crucial institutional differences among countries — whether regulating markets or regulating politics — are governmental. It is impossible to understand the formation of institutions, their consequences for performance, or their appropriateness for the circumstances without understanding the political forces that drive institutional evolution.

In thinking about institutional diversity and its consequences, it is best to start from first principles. Since the days of the Enlightenment, economists agreed that good economic institutions must secure property rights, enabling people to keep the returns on

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their investment, enter into contracts, and resolve disputes. Such security encourages people to invest in themselves and in physical capital, and thus fosters economic growth. But there are two sides to the security of property rights. On the one hand, investment must be secured from expropriation by one's neighbors, be they thieves, competitors, or other violators. For this, effective *public* enforcement of property rights is required, sometimes termed law and order. On the other hand, a strong government — one capable of protecting property against private infringement — can itself become the thief. To contain such a government, institutions restricting its power are necessary, sometimes referred to as the rule of law.

Accordingly, it is useful to distinguish two aspects of institutional design. The first concerns restrictions on private expropriation: law and order. The second concerns restrictions of public expropriation: the rule of law. In both of these areas, recent research has greatly expanded our understanding. I cannot survey this research, but can illustrate some of the recent findings largely using the papers I wrote with several colleagues, including Simeon Djankov, Edward L. Glaeser, Simon Johnson, Rafael La Porta, Christian Pop-Eleches, and Robert W. Vishny.

Law and Order

The tremendous diversity of the security of property rights among *capitalist* economies, with its profound consequences for economic growth, raises two related questions. First, are the existing institutions efficient, and if not, why not? Second, are the factors that shape institutions endogenous to the geographic, ethnic, or political conditions of a country, or are they alternatively exogenously determined by a country's history of institutional adoption? From the efficiency perspective, a crucial determinant of law and order is the effectiveness of enforcement of rules by the government. Such enforcement cannot be taken for granted — it is an economic activity generally performed by the agents of the state, and as such is limited in its effectiveness by incentives and resources. A country's circumstances might determine the government's capacity to enforce different rules, and thus indicate which rules are appropriate.

In a series of papers, Glaeser and I argue that an important property of a successful institution is its invulnerability to subversion by powerful citizens. People will attempt to influence any system to their own advantage, thereby benefiting themselves at the expense of others, making property rights insecure in the process. Controlling such subversion is necessarily costly, and may require different approaches in different circumstances. Peaceful, relatively equal societies can adopt decentralized, community rules in areas such as dispute resolution, because local justice is more efficient and there is relatively little risk of it being subverted. Less orderly, more unequal societies, in contrast, could not rely on enforcing community rules, because local justice is likely to be subverted by powerful interests. Instead, they must rely on the more centralized rules promulgated by the sovereign, which can withstand attempts at subversion, even when such rules contradict the community's ideas of justice and fairness.

Glaeser and I[1] use this theory to explain why, starting in the 12th and 13th centuries, the jury-based common law system developed in relatively peaceful England, while the state-employed-judge civil law system developed in the warring France. Glaeser and I[2] present a related theory to explain why, during the Progressive era at the beginning of the 20th century, the United States replaced litigation with government regulation in many areas of social control of business. The reason was the vulnerability of courts to subversion by the newly powerful economic interests — the robber barons. The perception that regulatory bodies — like the royal courts in 13th century France — would be less vulnerable to subversion was a key argument for regulation.

The efficiency perspective has much to recommend it, especially in the long run. But we cannot discuss the variety of capitalist institutions without recognizing that many of them are inefficient and detrimental to growth. There are two prominent sources of inefficiency. First, because most governments in the world are far from perfect, so are the institutions they design and perpetrate. Second, many institutions in developing countries are not indigenous, but rather have been transplanted during colonization. Although many transplanted institutions improve the security of property rights, there is no reason to think that colonial transplantation is automatically efficient.

Much of the evidence on institutions — both within and across countries — suggests that politics and not just efficiency shapes them. Besley and Burgess[3], for example, examine the differences in the legislation concerning workers' rights among the Indian states. They find that pro-worker amendments to the Industrial Disputes Act are associated with lowered investment, employment, productivity, and output in registered manufacturing. The evidence suggests that attempts to redress the balances of power between capital and labor can end up hurting the poor.

Djankov, La Porta, Lopez-de-Silanes and I[4] collect data on the regulations faced by entrepreneurs trying to officially open a business in 85 countries. We find that entry regulation is extremely heavy in most countries in terms of both the time and the number of procedures that an entrepreneur must complete. Moreover, heavier entry regulation is not associated with superior quality of products, but rather with greater corruption and larger unofficial economies. Last but not least, heavier regulation of entry is pursued by the less democratic and less limited governments. All of these results support the public choice view that regulation of entry benefits bureaucrats and politicians rather than consumers.

A second cause of institutional inefficiency is colonial transplantation. As European powers conquered most of the world in the 19th century, they brought with them their institutions, including their laws. England brought the common law tradition to its colonies in South Asia, East Africa, Australia, and the New World, includ-

ing the United States and Canada. France brought its civil law through Napoleonic conquest to much of continental Europe, including Spain and Portugal, and from Europe it was transplanted to Latin America, North and West Africa, and many other places around the world. The spread of German civil law is more limited, with East Asian countries being the most important adopters. It appears that a significant portion of institutional variation among countries is explained by transplantation.

Legal origin determines a broad range of institutions. For example, La Porta, Lopez-de-Silanes, Vishny, and I[5] identify legal origin as a crucial determinant of the laws governing the protection of outside investors from expropriation by corporate insiders, with common law providing better protection than civil law. We measure the laws protecting outside shareholders and creditors from expropriation in 49 countries. We find that better investor protection is strongly associated with broader and more valuable capital markets, higher pace of public offerings, more dispersed ownership structure, and other indicators of financial development. Subsequent research shows that civil law countries exhibit heavier government intervention in economic activity, including more burdensome regulation and red tape[6], higher government ownership of banks[7], and more burdensome regulation of new business entry[8]. The evidence identifies no benefits of the more interventionist institutions for economic or social outcomes. To the contrary, French legal origin typically is associated with worse public sector outcomes, as well as greater corruption.

Recent research points to another important aspect of transplantation. Acemoglu and his co-authors[9] show that settlers suffered very different rates of mortality in different colonies, and accordingly were more likely to stay and develop their institutions where survival rates were higher. The transplantation of Western institutions, with its benefits for the security of property rights and economic development, consequently was more effective in the places where the settlers survived than where they did not. This theory, like legal origin, accounts for some exogenous variation in institutions among countries. It also suggests that, at least where the colonists settled themselves, institutional transplantation has been highly beneficial. The United States, Canada, and Australia did not have to invent their laws from scratch; they inherited them from England. On the other hand, when the colonists did not settle, transplantation may account for institutional inefficiency.

The fact that many institutions in developing countries have taken their shape through transplantation rather than an organic (and perhaps efficient) response to local conditions raises a concern. Institutions that are appropriate for democratic countries, with their limited and constrained governments, might not work well when transplanted to a different political environment. Indeed, as Glaeser and I[10] show, centralized regulation and law enforcement are least efficient when the interests of the sovereign diverge the most from those of the public, and when the rules are most subject to subversion. Our theory might explain why the centralized institutions of civil law, while working reasonably well in democratic France and Germany, can become a tool of oppression in the hands of a "bad" government.

Rule of Law

Governments successful in delivering law and order may be so powerful as to escape the rule of law. This is not to say that such powerful governments are never sought after. History is replete with episodes of public demand for dictatorship in the periods of massive deterioration of law and order. Nevertheless, on average, unlimited government is associated with less security of property rights. Long-term historical evidence shows that, over the last millenium, countries have grown faster under limited government than under autocracy.[11]

Weak rule of law comes in part from politicians pursuing policies and designing institutions that serve primarily to keep them in power. Glaeser and I[12] argue, for example, that some of the worst policies pursued by politicians ranging from American mayors to African dictators aim to encourage the emigration of voters who oppose them, and thus to improve the re-election chances of the incumbents.

But the differences among countries in the regulation of politics are highly systematic as well, and transplantation is again crucial to understanding the existing variation. One important area deals with constitutional design, particularly with respect to the judiciary. According to Hayek,[13] there are two very distinct ways in which the judiciary secures freedom. The first is the English common law idea of judicial independence: once laws are passed by Parliament, they are enforced by courts without political interference. According to this idea, the courts cannot interfere with Parliament, and the Parliament cannot intervene in courts except by passing laws. The second is the American constitutional idea of checks-and-balances: the courts themselves have the power to check the decisions and laws passed by the legislature against the constitution. Unlike in the English conception, here the courts can very much interfere with legislative choices.

Both the English and the American constitutional ideas were transplanted throughout the world in the last 200 years, as most countries wrote their own constitutions. But these ideas spread differently. The institution of judicial independence spread to Britain's colonies along with other elements of common law; it generally did not get adopted in the civil law countries. The American idea of constitutional review spread to countries influenced by the U.S. Constitution — especially those in Latin America — but after World War II to many other parts of the world, including Continental Europe, as constitutional courts became common.

La Porta, Lopez-de-Silanes, Pop-Eleches, and I[14] examine the recent constitutions of 71 countries, and measure whether these constitutions adopted either (or both) of the two ideas about the judiciary. We find significant but highly systematic variation among countries, generally following the patterns of transplantation described

above. Specifically, judicial independence is prevalent in common law, but not in civil law countries. Constitutional review, on the other hand, is more typical of countries influenced by the United States. La Porta and his co-authors[15] also consider the relationship between these constitutional rules and measures of political and economic freedom around the world. In the data, an independent judiciary is associated with greater economic and political freedom, whereas constitutional review is associated with greater political, but not economic freedom. This evidence identifies significant benefits of transplantation of judicial institutions for both "law and order" and "rule of law."

Djankov, La Porta, Lopez-de-Silanes, and I[16] examine a related dimension of regulation of politics: the operation of courts in 109 countries. We focus on the formalism of judicial procedure: the extent to which the law regulates dispute resolution. To this end, we examine in detail the procedures that need to be followed to take each of two cases — the eviction of a non-paying tenant and the collection of a bounced check — through a nation's court. From this examination, we construct indexes of procedural formalism — or regulation of dispute resolution — for each country. We find that French civil law countries exhibit much greater levels of procedural formalism than do common law countries, just as appears to be the case with other kinds of regulation. We also find that greater procedural formalism is associated with significantly longer delays in bringing cases through courts, but *not* with greater measures of efficiency, consistency, fairness, or accessibility of the legal system. The evidence on the regulation of dispute resolution mimics that on other kinds of state intervention: legal origin is a strong predictor of greater interventionism, and there is no evidence that such interventionism improves social outcomes.

The papers I summarized point to some patterns in the nature of institutions regulating both markets and politics. Specifically, in many instances, legal origin appears to shape both. Civil law countries are more centralized and interventionist than common law countries across a range of institutions; they exercise tighter central control of new entrepreneurs and banks, but also courts. In the mother countries — England and France — this difference in institutional design may have been a response to the different law-and-order conditions. But in colonies, these institutional features often were transplanted, and thus do not have such apparent efficiency justifications. This does not mean that the consequences of transplantation are necessarily adverse — there are significant benefits of common law in both rich and poor countries. A central conclusion for the New Comparative Economics is that legal origin is an important factor pervasively shaping the institutions of capitalist economies.

Appropriate Institutions

The New Comparative Economics has made great strides in the last decade. I have focused on three forces (and there may be others) shaping institutional diversity: efficiency, politics, and transplantation. This research teaches that there is nothing inevitable about the existing institutions. Although some are efficient and appropriate, many are not. The fact that many institutions are designed to serve the interests of the incumbent rulers and the political interests that support them, combined with the crucial role of colonial transplantation, are the two key sources of inefficiency. In the years ahead, institutional reform may become one of the key strategies for improving human welfare.

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[2] *E. L. Glaeser and A. Shleifer, "The Rise of the Regulatory State," NBER Working Paper No. 8650, December 2001.*

[3] *T. Besley and R. Burgess, "Can Labor Regulation Hinder Economic Performance? Evidence from India," (mimeo), London School of Economics (2002).*

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[8] *S. Djankov, R. La Porta, F. Lopez-de-Silanes, and A. Shleifer, "The Regulation of Entry."*

[9] *D. Acemoglu, S. Johnson, and J. Robinson, "The Colonial Origins of Comparative Development: An Empirical Investigation," NBER Working Paper No. 7771, June 2000, and in* American Economic Review, *91 (5) (2001), pp. 1369-401.*

[10] *See E. Glaeser and A. Shleifer, "Legal Origins"; and E. Glaeser and A. Shleifer, "The Rise of the Regulatory State."*

[11] *J. B. De Long and A. Shleifer, "Princes and Merchants: European City Growth Before the Industrial Revolution," NBER Working Paper No. 4274, February 1993, and in* Journal of Law and Economics, *36 (2) (1993), pp. 671-702.*

[12] *E. L. Glaeser and A. Shleifer, "The Curley Effect," NBER Working Paper No. 8942, May 2002.*

[13] *F. A. Hayek,* The Constitution of Liberty, *South Bend, In: Gateway Editions Ltd, 1960.*

[14] *See R. La Porta, F. Lopez-de-Silanes, C. Pop-Eleches, and A. Shleifer, "The Guarantees of Freedom."*

[15] *See R. La Porta, F. Lopez-de-Silanes, C. Pop-Eleches, and A. Shleifer, "The Guarantees of Freedom."*

[16] *S. Djankov, R. La Porta, F. Lopez-de-Silanes, and A. Shleifer, "Courts: The Lex Mundi Project," NBER Working Paper No. 8890, April 2002.*

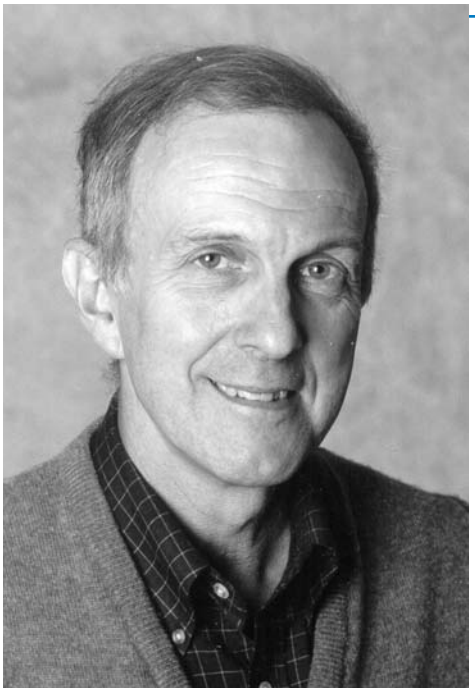
NBER Profile: *Josh S. Weston*

Josh S. Weston has represented the Committee for Economic Development on the NBER's Board of Directors since 1994. Weston is the retired chairman of Automatic Data Processing, Inc. (ADP), which provides paychecks for more than 30 million workers worldwide, processes securities transactions for clients in 26 countries, delivers computing solutions to 16,000 auto/truck dealers, and estimates over 14 million auto damage claims annually. He served for 14 years as the company's chief executive officer and for five years as chief operating officer. In addition to being an honorary chairman of ADP, Weston serves on the boards of ADP, Russ Berrie & Co., J. Crew, Gentiva Health Services, and Aegis Communications Inc.

He is also active with the International Rescue Committee, the United Nations Association (UNA), and several other pro bono boards. A Fulbright scholar, he holds a bachelor's degree in economics from the City College of New York, a master's degree from the University of New Zealand, several honorary doctorates, and has served in the U.S. Navy.

Married to Judy for 48 years, Weston resides in Montclair, NJ. Recreational travel, skiing, and a wide network of friendships account for any spare time not earmarked for eight grandchildren and four children.

NBER Profile: *Gavin Wright*



Gavin Wright is the William Robertson Coe Professor of American Economic History at Stanford University. Wright chaired the Stanford Economics Department for the past two years, having previously served as chair from 1989 to 1993. He also is a past president of the Economic History Association, which he has represented on the NBER's Board of Directors since 1998.

Wright received his B.A. in Economics from Swarthmore College and his M.A. and Ph.D. in Economics from Yale University. He taught at the University of Michigan from 1972 until 1982. His research uses the tools of economics to interpret historical developments. One focus of this work has been the economic history of the American South: *The Political Economy of the Cotton South* (1978) dealt with slavery and the cotton economy, while *Old South New South* (1986) analyzed the problems of development in a low-wage region within a larger national economy. The latter work received the Owsley Prize as the best book in southern history that year.

In the past decade, Wright has turned to the question of the historical sources of American economic performance, with particular attention to the rise of a national technology. Among his recent publications are "Increasing Returns and the Genesis of American Resource Abundance" (with Paul A. David), *Industrial and Corporate Change* (1997); "Can a Nation Learn? American Technology as a Network Phenomenon," in *Learning by Doing in Markets, Firms and Countries* (NBER, 1998); and "The Civil Rights Revolution as Economic History," *Journal of Economic History* (June 1999).

Gavin and Cathe Wright have been happily married since 1965, perhaps because they both pronounce their names with a long "a." They have two grown sons, Anders and Nicholas.

Frontiers in Health Policy Research

The NBER's sixth annual conference on "Frontiers in Health Policy Research," organized by David M. Cutler and Alan M. Garber, took place on May 29 in Bethesda, Maryland. The program was:

Opening Remarks:
Alan M. Garber, NBER and Stanford University

Gabriel Picone, University of South Florida, and **Frank A. Sloan**, NBER and Duke University, "Smoking Cessation and Lifestyle Changes"

Julie Donohue, **Arnold Epstein**, and **Meredith Rosenthal**, Harvard University; **Ernst R. Berndt**, NBER and MIT; and **Richard Frank**, NBER and Harvard University, "Direct-to-Consumer Marketing of Prescription Drugs: Impact on Product and Therapeutic Class Demand"

John Cawley and **Kosali I. Simon**, NBER and Cornell University, "The Impact of Economic Recession on the Health Insurance Coverage of Americans"

Sherry A. Glied, NBER and Columbia University, "Health Insurance Expansions and the Content of Coverage"

David M. Cutler, NBER and Harvard University, "Employee Costs and the Decline in Health Insurance Coverage"

Picone and **Sloan** show that smoking cessation is negatively correlated with alcohol consumption and positively correlated with weight gain. These conclusions do not change after the authors account for the endogeneity of smoking cessation. The negative association between smoking cessation and alcohol consumption may be evidence of a change in lifestyle associated with quitting smoking. The mechanisms of the weight gain associated with quitting are not fully understood; fortunately, the effect appears to be limited to persons who were not obese prior to smoking cessation. These results suggest that policies that encourage smoking cessation may have unintended positive externalities in terms of reduced alcohol consumption; the negative impact on weight gain is limited.

Berndt, **Donohue**, **Epstein**, **Frank**, and **Rosenthal** examine the effects of direct-to-consumer-advertising (DTCA) and detailing for brands in six therapeutic classes of drugs, using monthly aggregate U.S. data from August 1996 through December 1999. In terms of the impact of DTCA on demand, the authors ask: 1) Do increases in DTCA increase the market size of an entire therapeutic class? And 2) Does DTCA increase within-class market share of advertised drugs? They find that for these classes of drugs, DTCA primarily has been effective through increasing the size of the entire class. Overall, the authors estimate that 9 percent to 22 percent of the recent growth in prescription drug spending is attributable to the effects of DTCA.

Cawley and **Simon** find that a 10 percent increase in the local unemployment rate is associated with a 3.1 percent increase in the probability that an adult lacks health insurance. Further, the authors find large gender differences in the impact of macroeconomic conditions on health insurance coverage. High local unemployment lowers the probability that one is covered through one's own employer among men but not among women. In contrast, high local unemployment lowers the probability that one is covered through the spouse's employer for women but not for men. Being in a national recession seems to have little impact on health insurance coverage, although this may be because the author's model controls for unemployment and gross state product. What does appear to matter is the local unemployment rate; results for per capita gross state product are mixed. Finally, Cawley and Simon find that 10 percent higher unemployment is associated with a 7 percent higher probability that a child is on the Medicaid rolls. Despite this shift onto Medicaid, the net effect of a rise in local unemployment is to decrease the number of children with health insurance coverage.

Prior research on health insurance expansions has ignored the content of coverage. Yet the nature of coverage offered is likely to affect both take-up by the uninsured and the public policy-relevant consequences of the expansion. **Glied** uses the Medical Expenditure Panel Survey, the Survey of Program Dynamics, and the Rand Health Insurance Experiment to show that uninsured people are likely to value certain types of coverage more than other types. Using a simulation model of the value of coverage expansions, she shows that front-end coverage with a low benefit maximum is likely to be perceived as more valuable than catastrophic coverage by low income uninsured people. Some high deductible coverage may make uninsured people subjectively worse off.

Cutler examines why health insurance coverage fell despite the lengthy

economic boom of the 1990s. He shows that insurance coverage declined primarily because fewer workers took up coverage when offered it, not because fewer workers were offered insurance or were eligible for it. The reduction in take-up is associated with the increase in employee costs for health insurance. His estimates suggest that increased costs to employees can explain the entire decline in take-up rates in the 1990s.

These papers will be published by the MIT Press in an annual conference volume. They are also available at "Books in Progress" on the NBER's website under the title *Frontiers in Health Policy Research*, Volume 6.

International Seminar on Macroeconomics

The NBER's 25th Annual International Seminar on Macroeconomics (ISOM), organized by James A. Stock, NBER and Harvard University, and Lars E.O. Svensson, NBER and Princeton University, was held on June 14-15 at the European Central Bank in Frankfurt. Jeffrey A. Frankel, NBER and Harvard University, and Francesco Giavazzi, NBER and Bocconi University, serve as co-chairs of ISOM. The following papers were discussed at the conference:

Roel M. W. J. Beetsma, University of Amsterdam, and **Henrik Jensen**, University of Copenhagen, "Monetary and Fiscal Policy Interactions in a Micro-Founded Model of a Monetary Union"
Discussants: Peter Ireland, NBER and Boston College, and Volker Wieland, Goethe University of Frankfurt

Roberto Perotti, European University Institute, "Estimating the Effects of Fiscal Policy in OECD Countries"
Discussants: Zvi Eckstein, Tel Aviv University, and Jon Faust, Federal Reserve Board

Frank Smets, European Central Bank, and **Raf Wouters**, National Bank of Belgium, "An Estimated Stochastic Dynamic General Equilibrium Model of the Euro Area"
Discussants: Jordi Gali, Universitat Pompeu Fabra, and Noah Williams, Princeton University

Alexei Onatski, Columbia University, and **Noah Williams**, "Modeling Model Uncertainty"
Discussants: Glenn Rudebusch, Federal Reserve Bank of San Francisco, and Ulf Söderström, Bank of Sweden

Katherine S. Neiss and **Edward Nelson**, Bank of England, "Inflation Dynamics, Marginal Cost, and the Output Gap: Evidence from Three Countries"
Discussants: Mark Gertler, NBER and New York University, and Kai Leitemo, Bank of Norway

N. Gregory Mankiw, NBER and Harvard University, and **Ricardo Reis**, Harvard University, "What Measure of Inflation Should a Central Bank Target?"
Discussants: Ignazio Angeloni, European Central Bank, and William Dupor, University of Pennsylvania

Charles Engel and **Kenneth D. West**, NBER and University of Wisconsin, "Taylor Rules and the Deutschmark-Dollar Real Exchange Rate"
Discussants: Jeffrey A. Frankel, and Helene Rey, NBER and Princeton University

Jon Faust, **Eric Swanson**, and **Jonathan Wright**, Federal Reserve Board, "Identifying the Effects of Monetary Policy Shocks on Exchange Rates Using Fed Funds Futures Data"
Discussants: Ilian Mihov, INSEAD, and Christopher Sims, NBER and Princeton University

Beetsma and **Jensen** focus on the interactions between monetary and fiscal policy in a micro-founded model of a monetary union. They allow for idiosyncratic supply shocks with any degree of correlation and for demand shocks. By extending a standard two-country New-Keynesian model with fiscal policy, they find that the forward looking Phillips-curves depend on deviations from their stochastic natural levels in consumption, terms-of-trade, and public spending. The authors compare the performance of combinations of various types of monetary policy rules and fiscal policy rules for the stabilization of the union economy in the presence of the aforementioned shocks, and investigate the extent to which these rules can approximate the optimal cooperative solution.

Perotti studies the effects of fiscal policy on GDP, prices, and interest rates in five OECD countries, using a structural Vector Autoregression approach. He finds that the effects of fiscal policy on GDP and its components have become substantially weaker in the last 20 years. Further, the estimated effects of fiscal policy on GDP tend to be small: in the pre-1980 sample, positive government spending multipliers larger than one tend to be the exception; after 1980, significantly negative multipliers of government spending are the norm; the tax multipliers

are even smaller. Once plausible values of the price elasticity of government spending are imposed, the negative effects of government spending on prices that have been estimated frequently become positive, although usually small. It is difficult to estimate large and significant positive effects of government spending on the nominal or real interest rates. The United States is an outlier in many dimensions; responses to fiscal shocks estimated on U.S. data are often not representative of the average OECD country included in this sample.

Smets and **Wouters** develop and estimate a stochastic dynamic general equilibrium (SDGE) model with sticky prices and wages for the euro area. The model incorporates various other features such as habit formation, costs of adjustment in capital accumulation, and variable capacity utilization. It is estimated with Bayesian techniques using seven key macroeconomic variables: GDP, consumption, investment, prices, real wages, employment, and the nominal interest rate. The introduction of ten orthogonal structural shocks (including productivity, labor supply, investment, preference, cost-push, and monetary policy shocks) allows for an empirical investigation of the effects of such shocks and of their contribution to business cycle fluctuations in the euro area. Using the estimated model, the paper also analyzes the output (real interest rate) gap, defined as the difference between the actual and model-based potential output (real interest rate).

Onatski and **Williams** develop methods to analyze different sources of uncertainty in one coherent structure, which is useful for policy decisions. They show how to estimate the size of the uncertainty based on time-series data, and how to incorporate this uncertainty in policy optimization. In particular, they propose two different approaches to modeling model uncertainty. The first, model error modeling, imposes additional structure on the errors of an estimated model and builds a statistical description of the uncertainty around a model. The second, set membership identification, uses a deterministic approach to find a set of models that are consistent with the data and prior assumptions. The center of this set becomes a benchmark model, and the radius of the set is a measure of the model uncertainty. Using both approaches, the authors compute the robust monetary policy under different specifications of model uncertainty in a small model of the U.S. economy.

Recent studies have argued that the New Keynesian Phillips curve (Calvo pricing model) is empirically valid if real marginal cost rather than detrended output is used as the variable that drives inflation. One interpretation of these results is that real marginal cost is not closely related to the output gap, and thus models of monetary policy need to include labor market rigidities. An alternative interpretation is that marginal cost and the output gap are closely related, but that the latter needs to be measured in a manner consistent with dynamic general equilibrium models. To date, there has been little econometric investigation of this alternative interpretation. **Neiss** and **Nelson** estimate the New Keynesian Phillips curve for the United States, the United Kingdom, and Australia using theory-based estimates of the output gap. Using theory to measure the output gap leads to a considerable improvement in the empirical performance of output-gap-based Phillips curves.

Mankiw and **Reis** first assume that a central bank commits to maintaining an inflation target and then ask what measure of the inflation rate the central bank should use to maximize economic stability. They formalize this problem and then examine its microeconomic foundations. Then they show how the weight of a sector in the stability price index depends on the sector's characteristics, including size, cyclical sensitivity, sluggishness of price adjustment, and magnitude of sectoral shocks. When they calibrate a numerical illustration of the problem to U.S. data, one tentative conclusion is that the central bank should use a price index that gives substantial weight to the level of nominal wages.

Engel and **West** explore the link between an interest rate rule for monetary policy and the behavior of the real exchange rate. In conjunction with some standard assumptions, the real exchange rate is the present value of inflation and output gap differentials. An initial look at German data yields some support for this model.

Faust, **Swanson**, and **Wright** bring high frequency financial market information to bear in identifying the reaction of financial market variables to a policy shock. Essentially, they require that the impulse response of the Vector Auto Regression match the high frequency response of financial market variables around the time of Federal Open Market Committee announcements. Using this new approach, they find support for the general characteristics of the impulse response of the system to policy shocks. Next they drop all recursiveness assumptions and instead use different restrictions coming from financial market data. The basic pattern of most of the responses is little changed in the face of such large changes in the approach to identification. However, the effect of the U.S. policy shock on foreign output and interest rates lasts longer than with the recursive identification. There is a price puzzle in the recursive identification, which is avoided with the new identification. The authors also find that the peak timing of the exchange rate effect is estimated quite imprecisely: it may come nearly immediately, as in Dornbusch overshooting, or come several years later.

These papers will be published in a special issue of the *European Economic Review*. Many of them are also available at "Books in Progress" on the NBER's website.

East Asian Seminar on Economics Focuses on Productivity

The NBER's Thirteenth Annual East Asian Seminar on Economics (EASE), sponsored jointly with Hong Kong University of Science and Technology (HKU), Korea Development Institute (KDI), Tokyo Center for Economic Research (TCER), Chung-Hua Institution for Economic Research (CIER), and the Australian Productivity Commission, took place in Melbourne, Australia on June 20-22. The organizers were NBER Research Associates Takatoshi Ito, of Tokyo University, and Andrew K. Rose, of University of California, Berkeley. The theme of the meeting was "The determinants of productivity in different countries within the region." The following papers were discussed:

Steve Dowrick, Australian National University, "Ideas and Education: Level or Growth Effects? Lessons from the Cambridge Counter-Revolution and Implications for Australian Economic Growth"
Discussants: John Leahy, NBER and Boston University, and Andrew K. Rose

David D. Li and **Changqi Wu**, HKU, "Economic Growth, Investment, and Productivity after GATT/WTO Accessions: Evidence from the World"
Discussants: Simon Johnson, NBER and MIT, and Epictetus Patalinghug, University of the Philippines

Keiko Ito, ICSEAD, "Foreign Ownership and Productivity: A Micro-Dynamic Analysis of the Indonesian Automobile Industry"
Discussants: Muhammad Chatib Basri, University of Indonesia, and Francis Lui, HKU

Chin Hee Hahn and **Youngjae Lim**, KDI, "Micro Evidence on the Effect of Bankruptcy Policy Reform on Post-Crisis Productivity Growth in Korea"
Discussants: Chong-Hyun Nam, Korea University, and Epictetus Patalinghug

Assaf Razin, NBER and Cornell University, and **Efraim Sadka**, Tel Aviv University, "FDI Flows, Portfolio Flows, and Domestic Investment: The Role of Information"
Discussants: Kyoji Fukao, Hitotsubashi University, and Dean Parham, Australia Productivity Commission

Andrew Caplin, NBER and New York University, and **John Leahy**, "On the Relationship between Representative Agent and (S, s) Models"
Discussants: Jong-il Kim, Dongguk University, and Assaf Razin

Kyoji Fukao; **Tomohiko Inui**, Nihon University; **Hiroki Kawai**, Keio University; and **Tsutomu Miyagawa**, Gakushuin University, "Sectoral Productivity and Economic Growth in Japan: 1970-1998"
Discussants: Peter Drysdale, Australia-Japan Research Centre, and Andrew K. Rose

Dean Parham, "Australia's 1990s Productivity Surge and Its Determinants"
Discussants: Chin Hee Hahn and Francis Lui

Hiroki Kawai, "The Sources of Inefficiency in Current Japanese Economy"
Discussants: Takatoshi Ito and Jungho Yoo

Daron Acemoglu and **Simon Johnson**, NBER and MIT, and **James Robinson**, University of California, Berkeley, "Institutions, Volatility, and Crises"
Discussants: Thida Intarachote, Thailand Development Research Institute, and Dipinder Randhawa, National University of Singapore

Jong-Il Kim, Dongguk University, "Impact of Information Technologies on Firm Performance in Korea"
Discussants: Chong-Hyun Nam, Korea University, and Dipinder Randhawa

Kuen-Hung Tsai and **Jiann-Chyuan Wang**, CIE Research, "Productivity Growth and R&D Expenditure in Taiwan's Manufacturing Firms"
Discussants: Tsutomu Miyagawa and Jungho Yoo

Dowrick looks at theory and evidence from recent studies into the contributions to economic growth of expenditures on education and R and D. Investments in human capital — in the form of skills and ideas — have fundamentally different economic attributes from physical investments, including complementarity, positive feedback, and non-rivalry. These attributes imply that raising investment in human capital has the potential to enhance economic growth over a long time period. In the case of education, there are debates over whether changes in educational attainment ultimately affect the long-run growth rate of the economy, or only the long-run level of output. It appears, however, that there are significant effects on long-term growth: the more educated is the workforce, the better it is able to implement technological advances. There is also consistent evidence of high social rates of return on R and D in both commercial areas of research and in more fundamental research, implying that R and D is under-resourced. A number of studies have emphasized the importance of interna-

tional technology spillovers, particularly for smaller economies such as Australia. Feasible increases in Australian investment in education and R and D could be expected to boost annual growth rates by around one half of a percentage point. Furthermore, concerns about the economic implications of the aging of the population are misplaced to the extent that the underlying decline in fertility is driven by parents choosing to invest more in the human capital of fewer children.

Li and **Wu** examine the impact of GATT/WTO accession on various aspects of economic performance of an economy. They put together a panel data set of all economies that joined the GATT/WTO from 1965 to 1998. Fifteen years of data on each of the economies around the time of accession were collected, and an endogenous economic growth framework adopted to study the GATT/WTO accession. The authors divide the accession economies into three groups with per capita income below $1000, between $1000 and $3000, and over $3000 respectively; they are called low-, medium-, and high-income developing economies. Somewhat surprisingly, the authors do not find positive and statistically significant increases in the growth rate of FDI and the capital stock after the GATT/WTO accession for any of the income groups. For low-income economies, the growth rates of import, export, and GDP all increased significantly after the accession. For low-income and high-income economies (but not for medium-income economies), the total factor productivity of the economy increased significantly, by around 2-3 percent a year, after the GATT/WTO accessions.

Ito investigates the productivity differentials between foreign and local establishments and the determinants of productivity in the Indonesian automobile industry, using establishment-level data for 1990-9 collected by the Central Bureau of Statistics (BPS) of Indonesia. According to the traditional theory of multinational corporations (MNCs), foreign-affiliated establishments are expected to have higher productivity than local establishments because MNCs have several ownership-specific advantages, including superior production technology and managerial resources. Ito's results suggest that the labor productivity of foreign-affiliated establishments is higher than that of local ones, as expected. However, a comparison of total factor productivity (TFP) levels in foreign and local establishments reveals no significant evidence that foreign plants have high TFP that can be attributed to their ownership-specific advantages. Moreover, Ito finds that both foreign and local establishments exhibit increasing returns to scale and that the capital utilization is extremely inefficient in the foreign establishments. Most of the TFP growth rate is explained by the scale effect and the capital utilization effect; the technological change effect is negligibly small for both foreign and local establishments. Thus Ito concludes that the small size of the Indonesian automobile market prevents both the foreign and the local plants from exploiting scale economies.

Hahn and **Lim** examine the effects of structural reforms on aggregate total factor productivity growth (TFPG) in the Korean economy, focusing specifically on bankruptcy policy reform. They seek to understand the nature of post-crisis bankruptcy policy reform and then ask whether those reforms affected the productivity dynamics of distressed firms in such a way that the efficiency of resource reallocation improved. As one way of illustrating the importance of bankruptcy policy in determining the rate of aggregate TFPG, they examine how aggregate TFPG would be affected by the resource reallocation process from exiting to entering plants. After discussing the nature of the 1998-9 institutional reforms in the corporate bankruptcy system, Hahn and Lim note that one of the most critical changes in the corporate bankruptcy system was the shift in criteria from high social value to economic efficiency for target firms of in-court rehabilitation programs. After the 1998-9 bankruptcy reforms, inefficient failing firms were not likely to be accepted into in-court rehabilitation programs. Then, using firm-level data for 1992-2000, the authors compare the productivity dynamics of the distressed firms that were accepted into in-court settlements before and after the 1998-9 bankruptcy policy reforms, respectively. They find that the reforms had a positive effect on the way resources were allocated between inefficient failing firms and normal firms. Based on plant-level data from the Korean manufacturing sector from 1990-8, Hahn and Lim further find that plant turnovers reflect underlying differences in productivity dynamics. That is, the selection, learning, and "shadow of death" effects are all found in the Korean manufacturing sector. In addition, the role of entry and exit in aggregate TFPG is substantial: about 45 to 65 percent of manufacturing TFPG is attributable to the process of entry and exit, depending on business cycle conditions. Thus, the evidence from plant-level data suggests that policies that hinder the process of entry and exit potentially could be very costly and that cost might grow over time. Exit barriers, for example, will induce inefficient firms or industries to produce a growing share of output and lower the rate of aggregate productivity growth.

The purpose of **Razin** and **Sadka's** paper is to explore some unique features of foreign direct investment (FDI) that make it stand out among the various forms of capital flows. They develop a simple information-based model, interpreting the industry specialization in the source country as providing a comparative advantage to the potential foreign direct investors in eliciting good investment opportunities in the destination country, relative to domestic investors in the latter country. This advantage may stem, for instance, from the ability of FDI investors to apply better industry-specific micro-management standards. In the model, this element is captured by assuming a lower cost of cream (high-productivity firms) — skimming on the part of foreign direct investors. The second category of variables underscores the role of information as a determinant of FDI inflows. Because banks are the main providers of debt capital and they usually conduct rigorous scrutiny of the credit worthiness of their debtors, the authors conjecture that firms with a

high debt-equity ratio tend to be more transparent. In this case, the advantage of FDI investors in their cream-skimming skills is less pronounced; therefore, FDI inflows are less abundant. In this model, the gains from FDI are reflected in a more efficient sized stock of domestic capital and its allocation across firms. FDI firms are typically the "cream" (high productivity firms). Also, FDI inflows enhance (under plausible assumptions) the size of the aggregate stock of domestic capital. This result is consistent with empirical evidence. The effect of FDI on GDP growth is higher than the effect of other inflows, after controlling for the effect of capital accumulation on GDP growth.

Individual actions, such as the purchase of a machine or the changing of a price, are often discrete and infrequent. However, macroeconomic models tend to ignore this intermittent behavior. Is this a problem? **Leahy** and **Caplin** present conditions under which a representative agent model, which ignores discrete adjustment on the individual level, is observationally equivalent to a model that takes discrete adjustment into account. They also provide a mapping between the preference and technology parameters of the two models and present conditions under which this mapping is an identity.

The new Japan Industrial Productivity (JIP) database contains annual information on 84 sectors, including 49 non-manufacturing sectors, from 1970 to 1998. These sectors cover the entire Japanese economy. The Keio Database (KDB) is the best known database on Japan's sectoral productivity; it only covers 42 sectors (including 20 non-manufacturing sectors). Compared with the KDB, the JIP database contains information on a detailed sectoral basis, especially in the case of non-manufacturing sectors. In their paper, **Fukao**, **Inui**, **Kawai**, and **Miyagawa** analyze Japan's sectoral TFP (total factor productivity) growth over the last three decades. Because the JIP database includes information on sectoral capital stock, by detailed type of capital and R and D stock, they can also examine how IT investments and R and D expenditures have affected Japan's sectoral TFP growth. The authors first decompose changes in output prices into TFP growth, changes in factor prices, and changes in the mark-up rate. Then they check whether the sectoral distribution effects had negative impacts on Japan's TFP growth in recent years. They show that the reallocation effect became negative, and this negative effect reduced macro-TFP growth rates by 0.15 percent per year since 1985.

There has been a marked improvement in Australia's productivity performance since the early 1990s. Underlying labor productivity and multifactor productivity (MFP) growth both accelerated by at least one percentage point. Three major explanations for this have emerged: a response to policy reforms designed in large part to improve Australia's productivity performance; increases in workforce skills; and the use of more advanced information and communications technologies (ICTs). Although increases in skills since the 1980s may have had indirect and long-term productivity benefits, it seems there was no acceleration in the demand for skills in the 1990s to directly match the productivity acceleration. **Parham** examines the contribution of ICTs in a productivity growth accounting framework. Using the United States as a benchmark and accepting the growing evidence that there are some MFP gains associated with ICT use, he attributes 0.2 or at most 0.3 of a percentage point of the MFP acceleration to use of ICTs. Australia does not produce sufficient ICT for productivity gains from ICT production to show up at the aggregate level. This leaves 0.8 of a percentage point or more of Australia's productivity acceleration to be attributed to policy reforms.

The Japanese economy is suffering from a severe depression and low TFP growth that began in 1990. **Kawai** shows the importance of the drastic demand decline and the oligopolistic trends of market structure in explaining the low TFP growth in Japan's manufacturing sectors. His main results suggest that: 1) the principal reason for low TFP growth was low capacity utilization through demand fluctuation; and 2) the adjusted TFP is much higher than the traditional TFP. By his estimates, average firms in manufacturing sectors could receive two or three times the efficiency gain if they operated their capacity effectively. Firms tend to settle instead for excess capital and thus produce fewer outputs than their optimal level. This implies that the current trend toward oligopolistic markets might have a negative effect on TFP growth. Oligopolistic firms tend to receive more profits and to accelerate the true TFP. This might be a source of dynamic efficiency. Finally, the relationship of market concentration and TFP growth is a composite of positive and negative factors. TFP decomposition would be useful in separating those opposite effects.

Countries that inherited more "extractive" institutions from their colonial past have experienced greater output volatility, more severe output collapses, and worse exchange rate, banking, and political crises over the past 30 years. Colonial institutions were determined largely by European colonization strategies. In particular, where European colonists faced higher mortality rates 150-400 years ago, they were less likely to settle in large numbers and more likely to establish institutions designed primarily to extract resources from the majority population. **Acemoglu**, **Johnson**, and **Robinson** find that the effects of extractive colonial institutions persist and continue to be of first-order importance for macroeconomic outcomes. However, the precise mechanisms through which institutions affect short- and medium-run macro dynamics require further research.

Kim analyzes the effect of information technology (IT) investments on Korean firm performance from 1996-2000. His empirical findings support the hypothesis that IT investments enhance productivity by increasing value added and saving ordinary capital and labor. Installed IT capital is valued much higher in the financial market than its purchase price. This implies that investments in IT accompany the creation of unmeasurable intangible assets through reorganization of a firm's operation. Taking this into account, the contribution of IT investments to economic growth after

an economic crisis could be greater than the figures suggested by traditional growth accounting. Korean firms could not help but undertake strong structural reforms after the economic crisis in 1997. This might also have helped IT investments to have a substantial impact on firm performance.

Tsai and **Wang** estimate the impact of R and D on productivity in the private sector, further analyzing the different impacts of R and D within high-tech and conventional firms. Their study also aims to estimate total factor productivity (TFP) at the firm level, while testing the hypothesis that the impact of R and D is an increasing function of firm size. Based on a sample of 136 large manufacturing firms listed in the Taiwan Stock Exchange (TSE) over 1994-2000, the authors find that Taiwan's R and D investment had a significant impact on firm productivity growth in the second half of the 1990s, with output elasticity standing at around 0.18. When the sample is divided into high-tech and conventional firms, there are statistically significant differences in R and D elasticity between the two categories: the R and D output elasticity for high-tech firms (0.30) is significantly greater than that of conventional firms (0.07). The results also show that there was a dramatic decline in TFP in 1998 for all selected industries, but this started to climb again in 1999. The most likely explanation is that Taiwan's economy had been damaged seriously by the Asian financial crisis during that particular period.

These papers will be published by the University of Chicago Press in an NBER Conference Volume. Many of them are also available at "Books in Progress" on the NBER's website.

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NBER Conference in Beijing

The fifth annual NBER-CCER Conference on China and the World Economy, jointly sponsored by the National Bureau of Economic Research and the China Center for Economic Research at Beijing University, took place in Beijing on June 30-July 2. This conference marked the twentieth anniversary of the first NBER trip to China in 1982. The topics for the conference were: overviews of the Chinese and the U.S. economies; banking and taxation; monetary policy and financial crisis; labor and inequality; education and health; development strategy; the WTO and China; the security market and executive compensation; and lessons from Russia and East Asia.

In addition to these presentations and discussions, a visit to a newly privatized company in Beijing, an electric power company in Datong, and an agricultural village in Shanxi province rounded out the program. U.S. participants at this year's conference were: NBER President Martin Feldstein of Harvard University and Professor Shang-Jin Wei, currently on leave from the NBER at the IMF, who served as the U.S. conference organizers; NBER Research Associates Ben S. Bernanke of Princeton University, Charles T. Clotfelter, Duke University, Richard B. Freeman and Benjamin M. Friedman of Harvard University, and Victor R. Fuchs, Stanford University. NBER Faculty Research Fellow Brian Hall of Harvard Business School, NBER Director Jagdish Bhagwati of Columbia University, and Padma Desai, also of Columbia, were conference participants as well.

The entire conference program with links to other related information is available on the NBER's web site at www.nber.org/china.

The Argentina Crisis

A conference on Argentina's financial and currency crisis, organized by NBER Research Associates Jeffrey A. Frankel, Harvard University, and Sebastian Edwards, University of California at Los Angeles, took place in Cambridge on July 17. This gathering was the eighth in a series of country-specific meetings of the NBER Project on Economic and Financial Crises in Emerging Market Countries, directed by Frankel and NBER President Martin Feldstein. Like earlier meetings on Mexico, Thailand, Brazil, Korea, Indonesia, Malaysia, and Turkey, this occasion brought together academics, former officials from the country in question, international bankers, and Washington officials, in the hopes of developing an in-depth understanding of the origins of Argentina's crisis and lessons for the future.

The one day meeting was divided into four sessions. In Session 1, a panel consisting of Guillermo Mondino, formerly Secretary of Finance, Argentina, Miguel Sebastian, Grupo BBVA, Allan Meltzer, Carnegie Mellon University, and Eduardo Levy-Yeyati, until recently of the Central Bank of Argentina, analyzed the crisis in Argentina's banking system.

In Session 2, the experts discussed the experience of the 1991-2001 hard peg to the U.S. dollar. The panel consisted of Pedro Pou, former head of Argentina's central bank, Alberto Ades, Goldman Sachs, Kristin Forbes, NBER and MIT, and recently at the U.S. Treasury, and Ted Truman, Institute for International Economics and formerly U.S. Treasury and Federal Reserve System.

In Session 3, panelists Roque Fernandez, former Argentine finance mininster, Ricardo Hausmann of Harvard's Kennedy School of Government and former chief economist of the InterAmerican Development Bank, Arturo Porzecanski, ABN Amro, and Michael Mussa, Institute for International Economics and formerly of the IMF, took up the topic of the Argentine debt and deficits.

In the fourth session, Ricardo Lopez Murphy, former Argentine Economics Minister, Randall Kroszner, currently a Member of President Bush's Council of Economic Advisers, Anoop Singh, IMF, and Mario Blejer, until recently head of the Central Bank of Argentina, discussed desperation remedies undertaken to avoid devaluation and default.

The meeting also featured a luncheon speech by Anne Krueger, Deputy Managing Director of the IMF, and a dinner speech by Domingo Cavallo, formerly Economy Minister of Argentina and presidential candidate.

The background papers are available at http://www.nber.org/crisis/argentina_bg.html. A complete summary of the meeting, including the extensive discussion by all participants following the panel members' remarks, will also be provided at that site. Agendas, papers, and discussion summaries of the other meetings of this project appear on the NBER's web site at http://www.nber.org/crisis/.

College Decisions, How Students Actually Make Them, and How They Could

An NBER conference on higher education, organized by Caroline M. Hoxby, took place on August 14 and 15. Hoxby directs NBER's Program on Education and teaches at Harvard University. The topic of the conference was "College Decisions, How Students Actually Make Them, and How They Could." These papers were presented and discussed:

Susan Dynarski, NBER and Harvard University, "The Consequences of Merit Aid"
Discussant: Charles T. Clotfelter, NBER and Duke University

Sarah Turner, NBER and University of Virginia, "Going to College and Finishing College: Explaining Different Educational Outcomes"
Discussant: Christopher R. Taber, NBER and Northwestern University

Christopher Avery and **Caroline M. Hoxby**, NBER and Harvard University, "Do and Should Financial Aid Packages Affect Students' College Choices?"
Discussant: Michael Rothschild, NBER and Princeton University

Bridget T. Long, Harvard University, "The Impact of the Federal Tax Credits for Higher Education Expenses"
Discussant: Michael McPherson, Macalester College

Jennifer Ma, TIAA-CREF Institute, "Education Saving Incentives and Household Saving: Evidence from the 2000 TIAA-CREF Survey of Participant Finances"
Discussant: Harvey S. Rosen, NBER and Princeton University

Michael Rizzo, Cornell University, and **Ronald G. Ehrenberg**, NBER and Cornell University, "Resident and Nonresident Tuition and Enrollment at Flagship State Universities"
Discussant: Michelle White, NBER and University of California, San Diego

Thomas J. Kane, NBER and University of California, Los Angeles, "Student Perceptions of College Opportunities"
Discussant: Bruce Sacerdote, NBER and Dartmouth College

Gordon Winston and **David Zimmerman**, Williams College, "Peer Effects in Higher Education"
Discussant: Thomas Dee, NBER and Swarthmore College

Eric Bettinger, Case Western Reserve University, "How Financial Aid Affects Persistence"
Discussant: Jon Guryan, NBER and University of Chicago

Dynarski asks: Does merit aid increase college attendance, or do the new programs simply transfer funds to students who would have attended college anyway? Further, does merit aid affect the choice of college? She studies the impact of merit aid by evaluating the Georgia HOPE Scholarship, the namesake and inspiration for many of the new state programs. She then extends the analysis to the other dozen states that also have broad-based, HOPE-like programs. In particular, Dynarski focuses on how the effect of merit aid has varied by race and income. She shows that the merit aid programs are often regressive (they primarily benefit middle- and upper-income families but are paid for by taxes and lotteries that affect lower-income families), but she also demonstrates that Georgia's Hope Scholarship is much more regressive than other states' programs. She also demonstrates that merit aid programs typically raise the enrollment rate by only 1.4 percentage points (an amount that is not statistically significant), suggesting that the vast majority of the merit aid goes to students who attend college anyway. However, merit aid does induce about 3 percent of college students to "upgrade" from two-year colleges to four-year colleges. Finally, Dynarski explains the political popularity of merit aid programs, and she speculates on what will happen when many states try to keep their "best and brightest" students at home.

Turner documents the changing dynamic between college enrollment and college completion and then provides a framework for assessing the factors responsible for this shift. On the demand side, she presents empirical evidence on compositional changes in the preparation of potential college students and changes in the labor market return to investments in postsecondary education that may have differential effects on enrollment and completion. On the supply side of the market, she examines adjustments to the level and distribution of higher education resources, among other things. Of particular interest is the extent to which changes in the distribution of students across institutions with different characteristics, as well as changes in the availability of educational resources within institutions, affect college completion. Finally, Turner considers the role of policy variables — such as portable financial aid and state appropriations — in affecting changes in enrollment and completion. She focuses especially on explanations of why students are progressing through college at slower and slower rates: although many students who have not completed college by age 23 eventually do complete, they do so late enough in life that they (and employers) miss up to a decade of a college graduate's career. Because of the large number of possible explanations, Turner does not attempt to conduct a definitive study of each. However, she

does exclude some explanations; for instance, changing U.S. socio-demographics do not account for falling completion rates. She also finds evidence for several explanations that are not mutually exclusive. For instance, some of the decrease in completion rates is caused by the marginal college enrollee having lower college aptitude or academic preparation than his earlier counterpart. Some of the decrease in completion is caused by government financial aid being increasingly focused on marginal enrollees. In addition, completion is falling because states are increasingly focusing their resources on providing inexpensive two-year colleges, as opposed to four-year colleges.

Avery and **Hoxby** find that high aptitude students are nearly indifferent to a college's distance from their home or whether it is in state or public, but they do care about less superficial college characteristics. They are sensitive to tuition, room, and board costs (in the expected direction — lower is better), and they prefer to attend the most selective colleges to which they are admitted. They are attracted by grants, loans, and work-study commitments. Although students from different backgrounds do exhibit somewhat different college choice behavior, the differences are generally not dramatic; much college choice behavior is shared by the entire array of high aptitude students. The main exceptions to this rule are students whose parents have high incomes or who themselves graduated from very selective colleges: those students are less sensitive to variables that affect college costs. In the authors' sample, the students are excessively attracted by loans and work-study, given the value of these types of aid compared to grants. They are also attracted by the superficial aspects of a grant, like its being called a scholarship (with a name) and its being front-loaded. They are far more sensitive to a grant's share of the college's comprehensive costs than they are to the amount of the grant. All of these are deviations from the expected behavior of a rational investor in human capital. However, the majority of students (and a slim majority of actual aid recipients) respond as rational investors would in the presence of aid. They improve their lifetime present value by accepting only aid offers more than generous enough to offset the reductions in college consumption and human capital investment associated with the aid.

The 1997 passage of the Hope and Lifetime Learning Tax Credits (LLTC) significantly increased federal support for higher education. The distinctive features of this program set it apart from other financial aid programs, both in terms of its broadly defined eligibility requirements and the timing of the support in relation to attendance. As a result, the distribution of the credits, their impact on enrollment, and their influence on the behavior of postsecondary institutions and states are unique when compared to other federal initiatives. What was intended to be a transfer to the middle class has indeed benefited middle-income families. However, the delivery of financial aid through the tax system suffers from some of the same information problems that plague other programs, such as the Pell Grants. Usage during the first three years was far below projections, although participation continues to climb. One goal of the tax credits was to increase access to higher education, but **Long** finds no evidence of increased postsecondary enrollment among eligible students. Still, the credits may have encouraged students to attend more expensive colleges. On the other hand, in many states the price of colleges increased because of the tax credits. The exception were states with large financial aid programs and presumably strong preferences for college access. In those states the colleges raised relative prices in order to capture some of the federal funds, but the increases do not appear to have occurred at the least expensive colleges.

Ma examines the effects of education saving incentives on the level of private saving by households. Because education saving incentives are relatively new, data on education saving are not readily available. Using wealth data from a survey of TIAA-CREF participants, the author attempts to estimate whether saving in education saving programs offsets other household saving. In her paper, savers are distinguished from non-savers by whether households have an IRA or a supplemental pension plan. Her results suggest that education saving incentives do not offset other household saving.

Ehrenberg and **Rizzo** analyze why state need-based grant aid per student, in-state and out-of-state tuition levels, and nonresident enrollment shares differ across flagship public research universities at a point in time and how each changes over time. Most of the differences that the authors observe in these outcomes come from the wide disparities across states in political persuasion, demographic characteristics, income, the availability of private college alternatives, historical factors, university governance, and funding priorities. But four specific insights can be drawn from the empirical work. First, apart from the higher quality institutions, public universities cannot (or do not) use nonresident enrollment as a revenue generating strategy. Rather nonresident enrollments are used to augment academic quality and/or to take advantage of cost efficiencies achieved through participation in tuition reciprocity agreements. Second, while it first appears that institutions attempt to capture additional revenues through higher tuition when the maximum real Pell grant level increases, it may be instead that the maximum Pell grant level and public tuition levels (on average) are determined simultaneously. When the authors make a statistical adjustment for the Pell grant variable, all evidence of the "Bennett hypotheses" goes away. Third, enrollment pressure from high school graduates in a state affects state need-based grant aid per student, in-state and out-of-state tuition levels, and nonresident enrollment shares. Public universities in states with a large number of available public higher education seats relative to the number of high school graduates provide higher levels of need-based grant aid, charge higher levels of out-of-state tuition, and enroll a greater share of nonresidents. Finally, quality plays an important role in public higher education. An institution's quality, as measured by its *Barron's* ranking, influences the in-state and out-of-state tuition levels that

it can charge and the share of its undergraduates who come from out-of-state.

Kane notes that the U.S. system for financing higher education is at least as misunderstood today as the health care finance system was twenty years ago. In 2003, it will have been three decades since the Pell Grant program was established, yet differences in college-going by family income remain wide and, according to some recent evidence, appear to be widening. Usually we think about higher education policy as merely responding to the labor market — as if the price of college labor were dictated exogenously by technological factors. As a result, despite a brief flourishing during the 1970s, the economics of higher education typically has been viewed as a quiet backwater in the larger field of labor economics, of interest primarily to college administrators and financial aid specialists. However, recent evidence suggests that higher education policy may have played a role in contributing to the rise in the payoff to educational attainment in the first place. It is a field of vital importance, not only to those seeking to understand the rise in the payoff to educational attainment, but also to policy-makers formulating a national response to the change in the payoff to a college degree.

Evidence on peer effects in colleges and universities now exists at the most basic level for six colleges and universities — some 12,000 students — with interactions measured for randomly assigned roommates and participants in psychology lab experiments. It is clear that peer effects exist: students' characteristics and behavior do, indeed, influence other students' behavior; conventionally measured academic characteristics (like SAT scores) influence conventionally measured academic performance (like GPAs). **Winston** and **Zimmerman** present new evidence that confirms the existence of peer effects. However, the results are often different by gender, even in the data on individual interactions. And, as to whether peer influences operate equally and symmetrically across characteristics, the evidence is puzzling: homogeneous groupings sometimes perform significantly better than those with peers of different abilities, and students of middling ability apparently are more susceptible to peer influence than those at either extreme of ability. The authors conclude that evidence on the existence of peer effects in higher education is strong, supporting an understanding of its economic structure that relies on them, but that there remains a rich set of questions on how and how broadly peer effects operate among students in colleges.

Bettinger estimates the effects of Pell grants on student retention, using panel and cross-sectional variation as sources of identification. While the panel results suggest that the effects of Pell grants are likely negative, the regression-discontinuity results are less compelling and do not provide any conclusive result. The author demonstrates that, even with superior data, the effects of Pell grants are difficult to quantify. On the one hand, results showing positive relationships between Pell grants and drop-out behavior suggest that Pell grants may have been ineffective; however, the results also may be caused by failure to control adequately for heterogeneity among Pell students.

These papers and their discussion will be published by the University of Chicago Press in an NBER Conference Volume. Its availability will be announced in a future issue of the NBER Reporter. They are also available at "Books in Progress" on the NBER's website.

Bureau News

New Directors and Officers Elected by NBER Board

At its annual meeting in September, the NBER's Board of Directors elected a new Chair and Vice Chair, Michael H. Moskow and Elizabeth E. Bailey. Moskow is President of the Federal Reserve Bank of Chicago and first joined the NBER's Board in 1979. Bailey is a professor at the Wharton School of the University of Pennsylvania; she has been on NBER's Board since 1995.

Two new at-large Board members were elected as well: Laurence H. Meyer and Jacob A. Frenkel. Meyer is a former governor of the Federal Reserve System and the co-founder of Laurence H. Meyer and Associates, an economic forecasting firm. He holds a B.A. from Yale University and a Ph.D. in economics from MIT, and taught economics at Washington University in St. Louis from 1969-96.

Frenkel is currently Chairman of Merrill Lynch International and Chairman and CEO of the Group of Thirty. Born in Tel Aviv, Israel, he holds a B.A. from Hebrew University and a Ph.D. from the University of Chicago. Frenkel taught at the University of Chicago and Tel Aviv University for many years before serving as Economic Counsellor and Director of Research of the International Monetary Fund in 1987-91. He was then appointed Governor of the Bank of Israel and served from 1991-2000. He joined Merrill Lynch in 2000.

Economic Fluctuations and Growth

Roughly one hundred academic macroeconomists from all over the world gathered in Cambridge on July 20 to attend the summer research meeting of NBER's Program on Economic Fluctuations and Growth. The meeting was organized by Lawrence Christiano, NBER and Northwestern University, and James Stock, NBER and Harvard University. These papers were discussed:

Jordi Galí, NBER and Universitat Pompeu Fabra; **Mark Gertler**, NBER and New York University; and **J. David López-Salido**, Bank of Spain, "Markups, Gaps, and the Welfare Costs of Business Fluctuations" (NBER Working Paper No. 8850)
Discussant: Robert E. Hall, NBER and Stanford University

V. V. Chari, University of Minnesota, and **Patrick J. Kehoe** and **Ellen R. McGrattan**, Federal Reserve Bank of Minneapolis, "Business Cycle Accounting"
Discussant: Olivier J. Blanchard, NBER and MIT

Andrew B. Abel, NBER and University of Pennsylvania, and **Janice C. Eberly**, NBER and Northwestern University, "Q for the Long Run"
Discussant: Boyan Jovanovic, NBER and New York University

Ricardo J. Caballero, NBER and MIT, and **Mohamad L. Hammour**, Delta-Ens, "Speculative Growth"
Discussant: Franklin Allen, University of Pennsylvania

Neville Francis, Lehigh University, and **Valerie A. Ramey**, NBER and University of California, San Diego, "Is the Technology-Driven Real Business Cycle Hypothesis Dead? Shocks and Aggregate Fluctuations Revisited" (NBER Working Paper No. 8726)
Discussant: Harald Uhlig, Humboldt University

Ariel Burstein, Northwestern University, and **Martin Eichenbaum** and **Sergio T. Rebelo**, NBER and Northwestern University, "Why is Inflation So Low After Large Devaluations?" (NBER Working Paper No. 8748)
Discussant: Alan C. Stockman, NBER and University of Rochester

Galí, **Gertler**, and **López-Salido** present a simple, theory-based measure of the variations in aggregate economic efficiency associated with business fluctuations. They decompose this indicator, which they refer to as "the gap," into two constituent parts — a price markup and a wage markup — and show that the latter accounts for the bulk of the fluctuations in their gap measure. They also demonstrate the connection between their gap measure and the gap between output and its natural level, a more traditional indicator of aggregate inefficiency. Finally, they derive a measure of the welfare costs of business cycles that is related directly to their gap variable. Their welfare measure corresponds to the inefficient component of economic fluctuations, and thus should be interpreted as a lower bound to the costs of the latter. When applied to postwar U.S. data, for some plausible parametrizations, their measure indicates non-negligible welfare losses of gap fluctuations. The results, however, hinge critically on some key parameters, including the intertemporal elasticity of labor supply.

Chari, **Kehoe**, and **McGrattan** propose a simple method for guiding researchers in developing quantitative models of economic fluctuations. They show that a large class of models, including models with various frictions, are equivalent to a prototype growth model with time-varying wedges that, at least on face value, look like time-varying productivity, labor taxes, and capital income taxes. They label the time-varying wedges as efficiency wedges, labor wedges, and investment wedges. They then use data to measure these wedges and feed them back into the prototype growth model. After assessing the fraction of fluctuations accounted for by these wedges during the great depressions of the 1930s in the United States, Germany, and Canada, they find that the efficiency and labor wedges together account for essentially all of the declines and subsequent recoveries. Investment wedges play, at best, a minor role.

Traditional Q theory relates a firm's investment to its value of Q at all frequencies; weekly or even daily fluctuations in Q should be just as informative for investment decisions as quarterly or annual data. **Abel** and **Eberly** develop a model in which investment is more responsive to Q at long horizons than at short horizons; at short horizons, investment is most responsive to cash flow. These effects arise because a firm's value depends on both its existing capital and its available technologies, even if they are not yet installed. In contrast, the firm's current investment depends only on the currently installed technology. Thus, the value of the firm, and hence Tobin's Q, are "too forward-looking" relative to the investment decision. Cash flow, on the other hand, reflects only current technology and demand. The excessively forward-looking information in Tobin's Q, while extraneous to high frequency investment decisions, does predict future adoptions of the frontier technology. In this way, it is a better predictor of long-run investment than of short-run investment. Short-run investment is better predicted by the firm's cash flow.

Caballero and **Hammour** propose a framework for understanding recurrent historical episodes of vigorous economic expansion accompanied by extreme asset valuations, as occurred in Japan in the 1980s and the

United States in the 1990s. They interpret this phenomenon as a high-valuation equilibrium with a low effective cost of capital based on optimism about the future availability of funds for investment. Key to the sustainability of such an equilibrium is a feedback from increased growth to an increase in the supply of funding. They show that such a feedback naturally arises when the expansion is concentrated in a "new economy" sector and when it is supported by sustained fiscal surpluses — which together would constitute an integral part, as cause and consequence, of a "speculative growth" equilibrium. The high-valuation equilibrium they analyze may take the form of a *stock market bubble*. In contrast to classical bubbles on non-productive assets, bubbles in their model *encourage* real investment, boost long-run savings, and may appear in dynamically *efficient* economies.

Francis and **Ramey** re-examine the recent evidence that technology shocks do not produce business cycle patterns in the data. They first extend Galí's (1999) work, which uses long-run restrictions to identify technology shocks, by examining whether the identified shocks plausibly can be interpreted as technology shocks. They do this in three ways. First, they derive additional long-run restrictions and use them as tests of overidentification. Second, they compare the qualitative implications from the model with the impulse responses of variables such as wages and consumption. Third, they test whether some standard "exogenous" variables predict the shock variables. They find that oil shocks, military build-ups, and "Romer dates" do not predict the shock labeled "technology." They then show ways in which a standard DGE model can be modified to fit Galí's finding that a positive technology shock leads to lower labor input. Finally, they re-examine the properties of the other key shock to the system.

Burstein, **Eichenbaum**, and **Rebelo** study the behavior of inflation after nine large post-1990 contractionary devaluations. A salient feature of the data is that inflation is low relative to the rate of devaluation. The authors argue that distribution costs and substitution away from imports to lower quality local goods can account quantitatively for the post-devaluation behavior of prices.

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In the summer of 2002, the NBER held its twenty-third annual Summer Institute. More than 1200 economists from universities and organizations throughout the world attended. The papers presented at dozens of different sessions during the four-week Summer Institute covered a wide variety of topics. A complete agenda and many of the papers presented at the various sessions are available on the NBER's web site by clicking Summer Institute 2002 on our conference page, www.nber.org/confer.

Bureau Books

Preventing Currency Crises in Emerging Markets

Preventing Currency Crises in Emerging Markets is available from the University of Chicago Press this fall for $100.00. This NBER conference report, over 700 pages in length, was edited by Sebastian Edwards and Jeffrey A. Frankel.

In this timely and important volume, academics, officials of multilateral organizations, and economists from the public and private sectors explore the causes of international currency crises and the policies that can reduce the likelihood of such crises. The topics discussed include exchange rate regimes, contagion (that is, transmission of currency crises across countries), the role of private sector investors and speculators, the reaction of the official sector, bank supervision and weaknesses, and the roles of cronyism, corruption, and large players (including hedge funds). The volume includes detailed case studies, cross-country comparisons, and theoretical concerns.

Edwards is a Research Associate in the NBER's Programs on International Finance and Macroeconomics and International Trade and Investment. He is also the Henry Ford II Professor of International Economics at the Anderson Graduate School of Management, University of California, Los Angeles. Frankel directs the NBER's Program on International Finance and Macroeconomics and is the James W. Harpel Professor of Capital Formation and Growth at Harvard University's Kennedy School of Government.

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