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Program Report

The Business Cycle Peak of March 2001

Business Cycle Dating Committee, National Bureau of Economic Research*

The NBER's Business Cycle Dating Committee has determined that a peak in business activity occurred in the U.S. economy in March 2001. A peak marks the end of an expansion and the beginning of a recession. The determination of a peak date in March is thus a determination that the expansion that began in March 1991 ended in March 2001 and a recession began. The expansion lasted exactly 10 years, the longest in the NBER's chronology.

A recession is a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail trade. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough. Between trough and peak, the economy is in an expansion. Expansion is the normal state of the economy; most recessions are brief and they have been rare in recent decades.

Because a recession influences the economy broadly and is not confined to one sector, the committee emphasizes economy-wide measures of economic activity. The traditional role of the committee is to maintain a monthly chronology, so the committee refers almost exclusively to monthly indicators. The committee gives relatively little weight to real GDP because it is only measured quarterly and it is subject to continuing, large revisions.

The broadest monthly indicator is employment in the entire economy. The committee generally also studies another monthly indicator of economy-wide activity, personal income less transfer payments, in real terms, adjusted for price changes. In addition, the committee refers to two indicators with coverage of manufacturing and goods: 1) the volume of sales of the manufac-

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turing and trade sectors stated in real terms, adjusted for price changes, and 2) industrial production. The Bureau of Economic Analysis of the Commerce Department compiles the first and the Federal Reserve Board the second. Because manufacturing is a relatively small part of the economy, the movements of these indicators often differ from those reflecting other sectors.

Although the four indicators described above are the most important measures considered by the NBER in developing its business cycle chronology, there is no fixed rule about which other measures contribute information to the process.

A recession involves a substantial decline in output and employment. In the past 6 recessions, industrial production fell by an average of 4.6 percent and employment by 1.1 percent. The Bureau waits until the data show whether or not a decline is large enough to qualify as a recession before declaring that a turning point in the economy is a true peak marking the onset of a recession.

Figure 1 shows the recent movements of employment superimposed on the average movement over the past six recessions. Employment reached a peak in March 2001 and declined subsequently. The figure for October is the first to reflect the effects of the attacks of September 11. Through October, the decline in employment has been similar to the average over the first 7 months of recessions. The cumulative decline is now about 0.7 percent, about two-thirds of the total decline in the average recession.

Figure 2 shows industrial production. A peak occurred in September 2000 and the index declined over the next 12 months by close to 6 percent, surpassing the average decline in the earlier recessions of 4.6 percent. Figure 3 shows real manufacturing and trade sales. This measure reached

a peak almost a year ago. Figure 4 shows the movements of real personal income less transfers. This measure has continued to rise in recent months and has not yet reached a peak.

The data continue to show substantial declines in real activity in manufacturing, the sector reflected in the industrial production index, and in real manufacturing and trade sales. Aggregate employment has fallen substantially as well. Among the four indicators, only income has behaved differently over the past 7 months from recession averages.

The committee is satisfied that the total contraction in the economy is sufficient to merit the determination that a recession is underway. The committee makes this determination by asking itself hypothetically what decision it would make if a turnaround in the economy started just after the most recently observed data. If, despite such a turnaround, the episode would qual-

ify as a recession, the committee moves ahead to the second step, the determination of the date of the peak. Prior to the arrival of the data for October 2001, the committee was not sure that the contraction met the criterion. With a cumulative decline in employment approaching one percent and the very large decline in industrial production, the committee has concluded that the criterion has been met now.

The determination of the date of the peak in economic activity was as challenging as usual. In every episode, the major indicators peak in different months. The following table shows the number of months earlier (minus sign) or later (plus sign) that the peak of the indicator occurred relative to the NBER's business-cycle peak date.

Though manufacturing often leads other sectors, the lead in the current turning point was a little larger than normal. Industrial production peaked in October 2000. For five months, until March, the economy outside of manu-

facturing was expanding faster than manufacturing was shrinking, so that total employment continued to grow. Though the committee considered earlier dates to reflect the divergent paths of manufacturing and the rest of the economy, we determined that the peak should track the behavior of the overall economy.

The committee also determined that the continued growth of real personal income after March 2001 was consistent with the finding of that date as the peak in economic activity. Real income is not precisely a measure of activity—rather, it measures the command of households over resources. During the relevant period, continuing fast growth in productivity and sharp declines in the prices of imports especially oil raised purchasing power while employment was falling.

The committee also maintains a quarterly chronology of the U.S. business cycle. The committee deter-

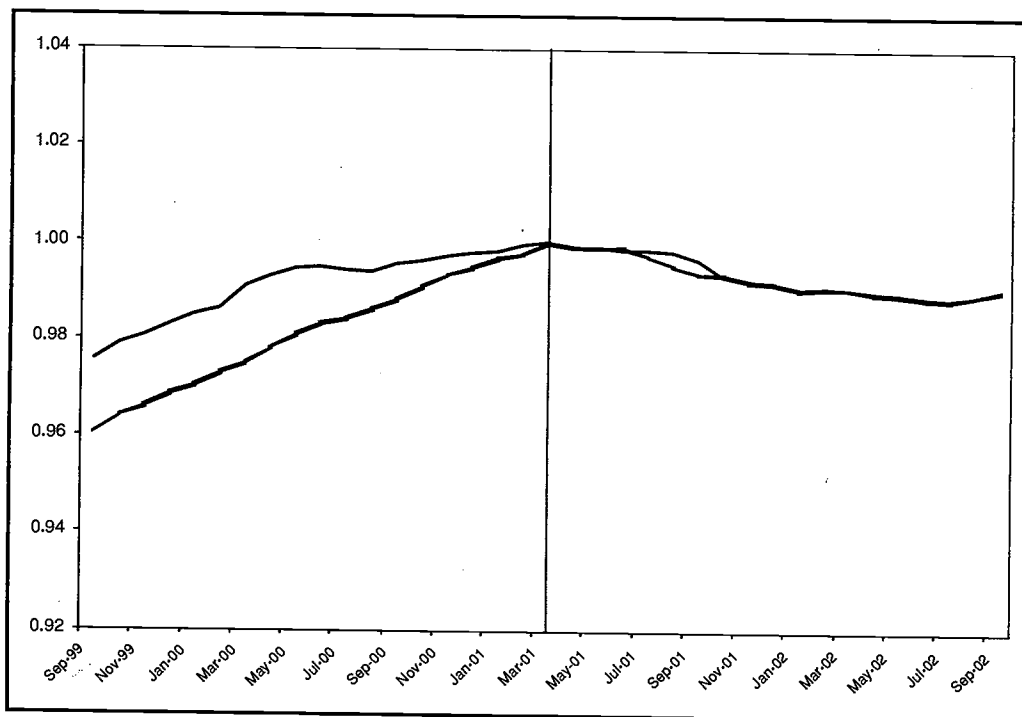


Figure 1. Current Employment

The dark line shows the movement of employment in 1999-2001 and the shaded line the average over the past 6 recessions.

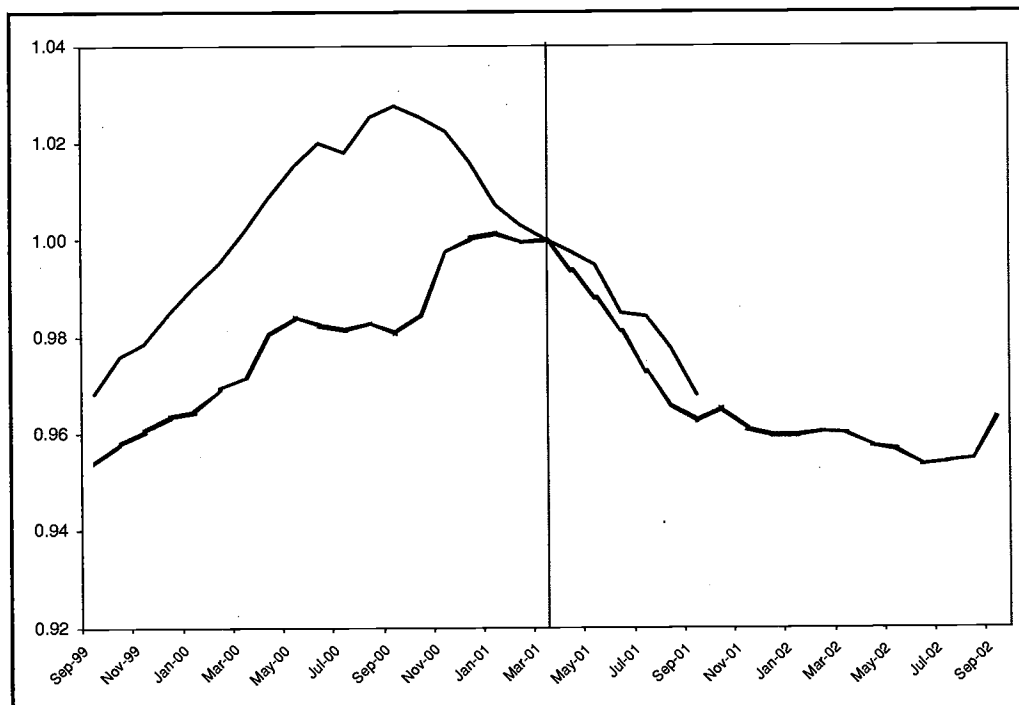


Figure 2. Current Industrial Production

The dark line shows the movement of industrial production in 1999-2001 and the shaded line the average over the past 6 recessions.

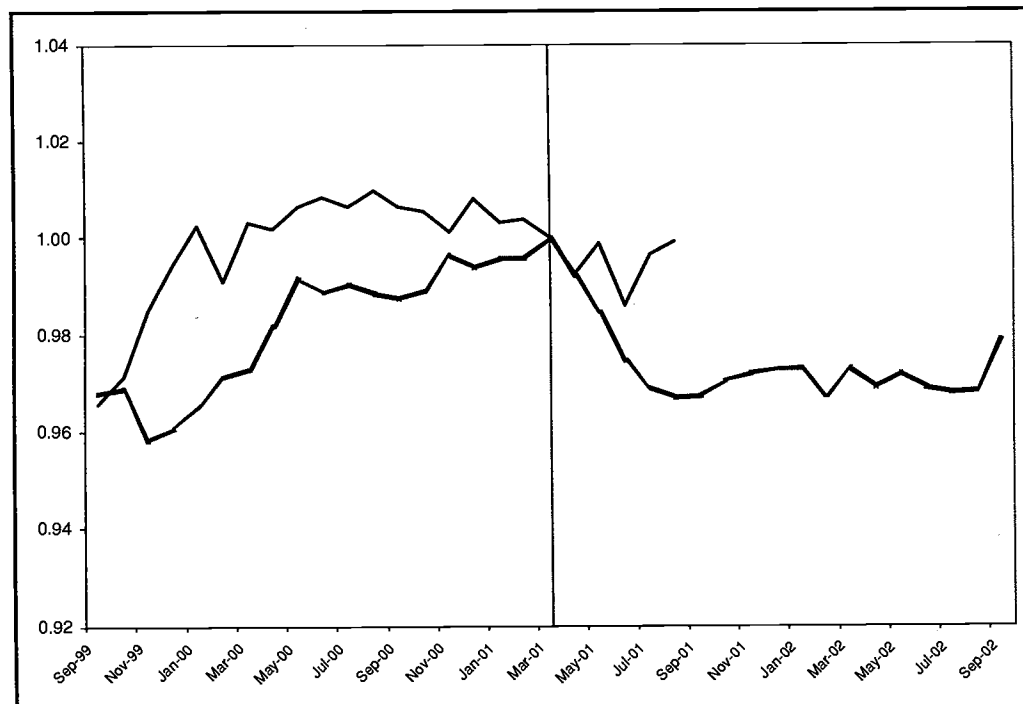


Figure 3. Real Manufacturing and Trade Sales

The dark line shows the movement of manufacturing and trade in 1999-2001 and the shaded line the average over the past 6 recessions. Source: The Conference Board (<http://www.globalindicators.org>)

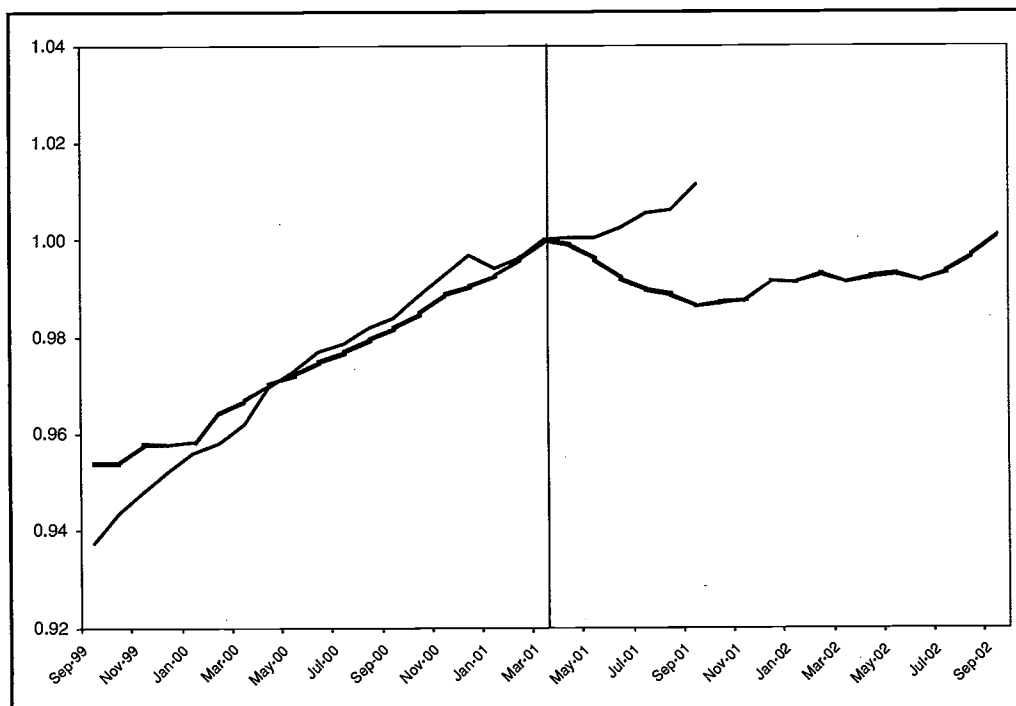


Figure 4. Current Real Personal Income Less Transfers

The dark line shows the movement of income in 1999-2001 and the shaded line the average over the past 6 recessions. Source: The Conference Board (<http://www.globalindicators.org>)

mined that the first quarter of 2001 was a quarterly peak in economic activity. Currently, the National Income and Product Accounts show slight growth of real GDP in the second quarter over the first. The committee did not believe that this evidence merited identifying a peak quarter that did not contain the peak month.

For more information, see the FAQs at the end of this memo, and also see <http://www.nber.org/cycles.html>.

FAQs

Q: The NBER has dated the beginning of the recession in March 2001. Does this mean that the attacks of September 11 did not have a role in causing the recession?

A. No. Before the attacks, it is possible that the decline in the economy would have been too mild to qualify as a recession. The attacks clearly deepened the contraction and may have been an important factor in turning the episode into a recession.

Q: The financial press often states the definition of a recession as two consecutive quarters of decline in real GDP. How does that relate to the NBER's recession dating procedure?

A: Most of the recessions identified by our procedures do consist of two or more quarters of declining real GDP, but not all of them. According to current data, real GDP declined for the first time in the third quarter (July-September). We will not have data for the fourth quarter until January, though current forecasts call for another decline. Our procedure differs from the two-quarter rule in a number of ways. First, we use monthly indicators to arrive at a monthly chronology. Second, we use indicators subject to much less frequent revision. Third, we consider the depth of the decline in economic activity. Recall that our definition includes the

Peak	Industrial Production	Employment	Real Sales	Real Income
1960	-3	0	-3	+1
1969	-2	+3	-2	+8
1973	0	+11	0	0
1980	-7	+2	-10	-1
1981	0	0	-6	+1
1990	+2	-1	+1	0
2001	-6	0	-7	No peak

phrase, "a significant decline in activity."

Q: Isn't a recession a period of diminished economic activity?

A: It's more accurate to say that a recession—the way we use the word—is a period of diminishing activity rather than diminished activity. We identify a month when the economy reached a peak of activity and a later month when the economy reached a trough. The time in between is a recession, a period when the economy is contracting. The following period is an expansion. Economic activity is below normal or diminished for some part of the recession and for some part of the following expansion as well. Some call the period of diminished activity a slump.

Q: You emphasize the payroll survey as a source for data on economy-wide employment. What about the household survey, which showed large declines in employment in August and September?

A: Although the household survey is a large, well-designed probability sample of the U.S. population, its

estimates of total employment appear to be noisier than those from the payroll survey. The downward movements in August and September were larger than those in the payroll data, but the general movements in the two measures over longer periods are similar. According to the household survey, employment is down about 1.4 million from a peak in January of this year.

Q: How do the movements of unemployment claims inform the Bureau's thinking?

A: A bulge in jobless claims would appear to forecast declining employment, but we don't use forecasts and the claims numbers have a lot of noise.

Q: What about the unemployment rate, which jumped 0.4 percentage points in August and 0.5 percentage points in September?

Unemployment is generally a lagging indicator. Its rise from a very low level to date is consistent with the employment data.

Q: How do structural changes in the economy in the 1990s affect the NBER's method for dating

business cycles? The Bureau notes that industrial production measures a declining part of the economy. What other substitutes for output bear watching, particularly with regard to service sector activity?

A: Economy-wide employment and real personal income are the most important monthly indicators. At a quarterly frequency, real GDP is informative. Another interesting monthly indicator is aggregate hours of work. For the service sector, the BEA publishes monthly data on consumption of services. Interestingly, these data show that consumption of services has grown more slowly in past months than consumption of durable and non-durable goods.

Q: Regarding movements of income as an indicator of recessions, isn't it true that real income has not fallen substantially during five of the past nine recessions.

A: That is why employment is probably the single most reliable indicator.



Research Summaries

What Might School Accountability Do?

David N. Figlio*

Education is currently at the forefront of the nation's political agenda: everyone, regardless of political persuasion, wants to see an improvement in the performance of U.S. schools. This consensus ends abruptly, however, when it comes to determining how to effect such a change in performance. One popular approach is to increase the accountability of schools to the public, by assessing schools on the basis of improvements in students' performance on standardized examinations and by offering remedies, such as increased choice (either within the public sector or through vouchers for private schools), reconstitution, or closure, in the event of persistent identified failure of a school to improve. School accountability is the centerpiece of President George W. Bush's education reform proposal, and in dozens of states, other accountability measures have been proposed or implemented.

This past summer, both the U.S. Senate and the U.S. House of Representatives passed education reform bills that set stringent standards for schools to meet. Both bills require states to test students in the third through eighth grades and to identify schools that, on the basis of the test results, fail to make "adequate yearly progress." Although the definition of adequate yearly progress is still ambiguous, both bills include provi-

sions requiring that students who attend schools that fail to make such progress be granted additional public-school choice. In both bills, schools that persistently fail will be subject to increasingly severe sanctions, including reorganization or closure of the school. Both the House and the Senate bills have significant teeth: intriguing recent work by Thomas J. Kane, Douglas O. Staiger, and Jeffrey Geppert suggests that the vast majority of U.S. schools would face at least moderate sanctions under either bill.¹

Much of my current research centers around issues related to school accountability. My work on accountability follows several strands. One strand, still in its infancy, involves school responses to accountability systems. In joint work with Cecilia Rouse, Dan D. Goldhaber, and Jane Hannaway, I am studying how Florida schools have changed their instructional policies, practices, and allocations of resources within and between schools as a result of increased accountability. In other work, which is being conducted in Florida, Virginia, and elsewhere, I am investigating noninstructional responses to accountability systems. Several specific projects along these lines study whether increased scrutiny has led to the removal of "problem" students from threatened schools (either by relabeling them as "disabled" or by active redrawing of school boundaries), as well as whether schools respond to accountability systems by manipulating school nutrition programs (that is, changing school menus during testing periods to increase nutrients that might stimulate short-term perform-

ance) in attempts to boost test performance. A second strand of research considers the often unintended consequences of design issues associated with school accountability. The specific design of an accountability system may have dramatic consequences for school choice, for instance, or for other factors not directly related to education. This essay focuses on my early work on this second strand of research.

Design Matters

There are a number of ways to measure a school's performance. One approach is to rate schools on the basis of some value-added measure, following the same students over time to gauge improvements in their performance. A handful of states, including North Carolina now and Florida next year, have implemented or are planning to implement a value-added system for school accountability. This type of solution is popular with economists because it attempts to deal with an important and vexing identification problem: whether high-performing students are doing well because their school is excellent or because of other factors, for example, family background. Of course, the same question can be asked about low-performing students. By following the same students over time, the analyst can isolate more clearly—although still imperfectly—the component of students' test scores that is most likely attributable to the school.

An alternative approach uses so-called "status" scores to measure school performance. Status scores can take many forms. They may simply be average test scores, or they may

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measure the fraction of a school's students who achieve some level of proficiency. Likewise, they may assess schools on the basis of their performance in a single year, or they may rate schools on changes in average test scores from one year to the next or the percent of their students who attain competency. Florida's current accountability system and those of several other states follow this latter model. The appeal of status scores—particularly those measures that are based on the fraction of students who attain some threshold—comes from the popular notion that schools should bring all students to an adequate level of performance.


The accountability system that is currently being discussed in Congress is a hybrid of the status and value-added approaches. While the House and Senate education bills vary in their definition of adequate yearly progress, both propose to assess schools on the basis of improvements in their status scores—here, the fraction of students who attain a specific level of proficiency—from one year to the next. The House bill requires that a school be on a pace to have 100 percent of its students proficient within 12 years and rates each school on the basis of its making sufficient annual gains in proficiency to reach this goal. The Senate bill requires that schools increase the number of students in every subgroup who meet proficiency requirements by at least 1 percentage point. In another subtle distinction between the House and Senate bills, the Senate would assess schools on a rolling-average basis rather than solely on year-to-year changes in the percentage of proficient students. As mentioned above, Kane, Staiger, and Geppert estimate that even under the less stringent Senate version, an overwhelming majority of schools would fail to make adequate yearly progress as it is currently defined.

Marianne Page and I report that in identifying which schools are failing to meet some standard, design matters quite a bit.² One obvious way that design issues make a difference involves the stringency of the standards. The Kane, Staiger, and Geppert study makes this point clear. But even if the stringency of standards is removed from the picture, the way school progress is defined can have a profound impact on which schools are identified as failing. The correlations among schools' rankings based on various measures of status scores from a single year of tests are very high—nearly perfect. However, the correlations between those rankings and the ones based on changes in test scores from one year to the next—using either value-added measures, as mentioned above, or changes-in-proficiency measures like those proposed in Congress—are extremely low. Using data from Florida, Page and I find that there is virtually no relationship between any measure of status scores and any measure that we could construct of scores that follow individual students. Stated differently, we find that status scores assess schools nearly randomly—if the goal of an accountability system is to measure a school's contribution toward student performance. If the goal instead is to identify which schools are moving toward proficiency, then the use of status scores as a measure of performance is clearly more appropriate.

Even were one to determine that status scores are appropriate for measuring school performance, however, as Congress has done, potentially serious implementation issues remain. Page and I also find that rankings based on changes in year-to-year scores in the same grade level—the approach proposed in the Congressional bills—bounce around considerably: the correlation between schools that make yearly progress along these lines in one


year and schools that make yearly progress in the next year is strongly negative. Kane and Staiger find similar patterns in North Carolina, and they make the point that evaluating schools on the basis of this type of measure of progress leads to arbitrary assignment of school rankings.³ Together with my recent findings, this suggests that assigning school grades in the manner Congress proposes may lead to effectively random assignment of school ranks, or at best to rankings that are largely unrelated to the school's likely contribution to student performance. Arbitrary performance measures, with the attendant rewards and punishments, may impose unnecessary risk on the stakeholders, including school administrators and teachers. This could lower the attractiveness of both working at and attending public schools.

This point has relevance in several other critical areas, the first of which is school choice. Both the House and the Senate bills embed school choice into the accountability system: students attending schools that fail to make adequate yearly progress are offered choice within the public sector. (Florida is currently the only state in which students who attend persistently failing schools have the option of attending private schools. However, at this time, none of Florida's public schools is identified as failing.) Many economists find school choice appealing for two reasons. First, it broadens schooling options for families whose choices might otherwise be limited (by such constraints as low incomes, job location, and residential segregation). Second, the increased competition among schools may spur efficiency gains because the loss of student revenues provides schools with an incentive to improve. In the policy arena, an alternative argument for school choice is often put forward: school choice is justified because it



provides students with a means of exiting low-quality schools, thus avoiding failure. Economists typically are less comfortable with this logic because it suggests that the state is better than parents at assessing school quality and because it leaves open the question of whether parents who had voluntarily selected low-quality schools in the past would make a better choice if they had more options.

Page and I argue that the structure of a school accountability system may have profound implications for determining which students are offered choice in a program that is integrated with accountability. We find that accountability systems that grade schools on the basis of changes from one year to the next (using either value-added measures or changes in proficiency) tend to provide choice to a much more advantaged group of students than systems that offer choice to students who attend schools with low absolute-status scores or systems that offer choice directly to disadvantaged students. Stated differently, integrating choice and accountability in the manner proposed by Congress would probably be less effective in providing choice to constrained households than offering choice alone, separate from an accountability system.



The design of a school accountability system also may have repercussions that extend beyond the conduct and choice of schools. Maurice Lucas and I recently studied the independent effects of school ranks on real estate markets.⁴ Using data on every real estate transaction in the Gainesville, Florida, metropolitan area over a six-year period, we were able to isolate the effect of Florida's imposition of school rankings in May 1999. We find that—independent of test scores, neighborhood quality, or home attributes—the state's assignment of grades on schools had large,

statistically significant effects on the prices of houses. Houses within the zones of schools that received a grade of A increased in value by nearly 9 percent relative to those in zones of schools receiving a B; and houses within zones of schools that received a grade of B increased in value by 9 percent relative to those in zones whose schools received a C. Given that the distinctions between such school grade levels are often arbitrary and, as mentioned above, that the design of the school-grading system itself could have important effects on determining which schools earn good grades and which schools earn poor grades, the specific nature of the federal accountability system might have major effects on house prices, thereby directly affecting even those households with no school-age children.

Fifty Ways to Game the System?

The economic rationale behind school accountability systems is that they will provide schools with an incentive to change and to improve their performance. Certainly, accountability systems should lead schools to focus more attention on the basic skills chosen for evaluation (such as reading, writing and mathematics.) Provided the tests are rigorous and represent the broad set of skills that policymakers want students to master, this is a positive aspect of school accountability systems. This increased attention paid to certain specific skills may lead schools to abandon instruction in topics that others in society believe are essential but that are not directly covered by the accountability system. Such a system may also lead to gaming: schools also will have an incentive to manipulate resources (and possibly students) so that their apparent productivity is overstated. For example, if they are rated using

a value-added system, schools might transfer their most effective teachers from the “baseline” grade to the “evaluation” grade. Or they might shuffle students among schools—or into special-education classes—to alter the composition of student groups who take the accountability test at a school. Of course, these behaviors may not be purely manipulative, and they may have productive consequences as well. As I mentioned in the introduction to this essay, I am currently studying the myriad ways in which schools respond to accountability systems and the performance effects of these systems.

While it is too early to judge the degree to which schools respond to these incentives to manipulate resources, it is possible to draw some inferences from my recent work on local government (including school) responses to fiscal accountability measures. Arthur O'Sullivan and I asked whether local governments that are faced with binding tax-and-expenditure limitations choose to manipulate their “service mix” in order to induce voters to override such limitations.⁵ We identify conditions under which the incentives to do so should be strongest and find that cities and school districts are most likely to change their behaviors as predicted when the incentives are strongest. Although the context is different, the fundamental lessons of that paper can be applied to school accountability systems as well.

Conclusion

In summary, the new school-accountability measures put in place by many states (and probably the federal government) will likely change some of the ways schools do business. Of course, this is the intent of these policies. But when designing these systems, we must be careful to minimize the incentives for

schools to manipulate their resources in an ultimately unproductive manner and to ensure that the schools labeled "excellent" or "failing" truly are excellent or failing along the desired lines. In addition, we should try to avoid creating the impression of randomness in the assignment of school grades. The more random the rewards and punishments appear to be, the less likely the schools will effect meaningful change. The literature on tax limitation provides another lesson that might be applied here: Kim Rueben and I find that tax limitations led to a worse degrada-

tion of the teaching force than might have been expected on the basis of the actual changes in resources and salaries.⁶ Likewise, perceived randomness in school grading might change the nature of the teaching force. Although this last point is speculative, our concern is genuine.

¹ T. J. Kane, D. O. Staiger, and J. Geppert, "Assessing the Definition of 'Adequate Yearly Progress' in the House and Senate Education Bills," *UCLA Working Paper*, July 2001.

² D. N. Figlio and M. E. Page, "Can School Choice and School Accountability Successfully Coexist?" *forthcoming in The*

Economics of School Choice, C. Hoxby, ed., University of Chicago Press.

³ T. J. Kane and D. O. Staiger, "Improving School Accountability Measures," *NBER Working Paper No. 8156*, March 2001.

⁴ D. N. Figlio and M. E. Lucas, "What's in a Grade? School Report Cards and House Prices," *NBER Working Paper No. 8019*, November 2000.

⁵ D. N. Figlio and A. O'Sullivan, "The Local Response to Tax Limitation Measures: Do Local Governments Manipulate Voters to Increase Revenues?" *Journal of Law and Economics*, 44 (April 2001), pp. 233-57.

⁶ D. N. Figlio and K. S. Rueben, "Tax Limits and the Qualifications of New Teachers," *Journal of Public Economics*, 80 (April 2001), pp. 49-71

Alcohol and Violence

Sara Markowitz*

Since the early 1980s, a number of economists have examined the impact of the price of alcoholic beverages on alcohol consumption. Recently their research has turned to the role of alcohol prices on negative outcomes, including motor vehicle crashes, workplace accidents, cirrhosis of the liver, alcohol-related deaths, and crime.¹ In general, this research, which has used a wide variety of data, has concluded that increases in the prices of alcoholic beverages do lead to reductions in drinking, and thus in the adverse consequences of alcohol use and abuse. Along these lines, my research explores the links among alcohol consumption, alcohol control policies, and violence.

Violence is of particular interest because of the mental and physical harm it inflicts on others. The victims, often well known to the perpe-

trator, include spouses, children, and friends. Alcohol is frequently a factor in such violence. When the victim is the offender's spouse, alcohol is a factor as much as 75 percent of the time.² Alcohol consumption is cited also as a common correlate of violence committed by teenagers. Although the two behaviors often are observed together, much is still unknown about their association. Understanding the nature of their relationship is important from a policy perspective: if alcohol consumption does indeed lead to violent behaviors, then it may be possible to reduce violence through changes in policies that affect the demand for alcohol.

My interest in the alcohol-violence connection has led me in two main directions in my work: first, focusing on the relationship between alcohol and criminal violence and second considering the impact of alcohol consumption on the family, where violence is only one of the ways in which children and spouses are affected.

Alcohol and Criminal Violence

Although alcohol consumption is widely believed to be a precipitator of violent behaviors, it is not clear whether the relationship is causal. If alcohol consumption results in a pharmacological reaction that makes people more likely to engage in violent behaviors, that implies causality. However, both behaviors may be outcomes of a third factor, such as an individual's personality. Even without knowing the true causal nature of the alcohol-violence connection, one can examine the role of alcohol price in reducing violence: estimating a reduced-form equation yields a model of violence as a direct function of the full price of alcohol. Prices are not expected to have any impact on violence except through consumption. Thus, any price effects provide evidence that alcohol consumption and violence are causally linked.

In two recent studies, I use reduced-form models to examine the

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impact of alcohol control policies on the incidence of assault, rape, and robbery. This approach accounts for the possibility that consumption by both perpetrators and victims may influence the occurrence of crimes. Alcohol consumption may intensify a perpetrator's tendency to violence, while a victim's consumption may result in behaviors that put him or her at greater risk.

In the first of these studies, I focus on crimes in the United States and consider the impact of alcohol policies, as well as illegal-drug policies.³ Illegal drugs may have the same impact as alcohol on the propensity for violence. Previous studies have had to rely on data collected from police reports, which dramatically underreport crimes, but this research is the first to look at the alcohol-violence link using individual-level data. The data on crime come from special geographically coded versions of the 1992, 1993, and 1994 National Crime Victimization Surveys. Criminal violence is measured in terms of physical assault, rape and sexual assault, and robbery, as well as alcohol- or drug-involved assault, rape and sexual assault, and robbery. Given that not all violence is alcohol- or drug-related, these latter measures are particularly useful. They identify only crimes in which the victim observed that the perpetrator was under the influence of a mind-altering substance. There are drawbacks to these measures: the victim's consumption is not reported, and the perpetrator's actual consumption is not confirmed and may be reported inaccurately.

The results show that increasing the tax on beer decreases the probability of assault, but it has no effect on robbery and rapes and sexual assaults. A single percent increase in the beer tax decreases the probability of assault by 0.45 percent. Furthermore, a 1 percent decrease in the number of outlets that sell alcohol decreases the probability of rape by

1.75 percent. Decriminalizing marijuana increases the probability of being a victim of assault and robbery, but decriminalization of marijuana does not affect rapes. Likewise, higher cocaine prices decrease the probability of being a victim of assault and robbery but have no effect on rapes. For cases in which the perpetrator was observed to be under the influence of alcohol, illegal drugs, or both, the results are similar to those for all types of victimization: higher beer taxes decrease the probability of assaults.

The second study examines crimes worldwide.⁴ The data come from the 1989 and 1992 International Victimization Surveys, which include large samples of respondents from 16 countries. The respondents were asked whether they had been victims of robbery, assault, or sexual assault. The results indicate that both higher prices for alcoholic beverages and higher taxes on alcohol lead to lower incidences of all three types of violent crime. For example, a 1 percent increase in the tax on alcohol leads to a 0.19 percent decrease in the probability of robbery, a 0.25 percent decrease in the probability of assault, and a 0.16 percent decrease in the probability of sexual assault. Regulatory variables relating to alcohol may have negative effects on crime as well. Lowering legal blood-alcohol levels, imposing bans on advertising, and raising minimum legal-drinking ages reduce the probability of robbery. Lowering legal blood-alcohol levels also may reduce the probability of assault, but neither advertising bans nor higher minimum legal-drinking ages reduce the probability of assault or sexual assault against women.

Alcohol and Violence by Youths

During the past few decades, violence committed by and against

teens has become a serious problem. Violent victimization of youths between the ages of 16 and 19 has been increasing since the 1970s. For all types of violent crime, teens in this age group suffer higher rates of victimization than any other age group.⁵ But what causes teens to engage in violence and to carry weapons? Certainly a wide variety of factors contribute to the culture of violence faced by today's teenagers. These factors include family structure, environment, and peer behavior, but alcohol and drug use are two of the most widely cited correlates of youth violence.

Michael Grossman and I examine whether alcohol consumption increases the likelihood that college students will engage in violent behaviors and whether higher taxes on beer might directly decrease the incidence of violence.⁶ Our research focuses on four adverse consequences of alcohol consumption that serve as indicators of violence: getting into trouble with the police or residence-hall and other college authorities; damaging property or pulling a fire alarm; getting into an argument or a fight; and taking advantage of another person sexually or having been taken advantage of sexually. Our principal finding is that the incidence of each of these four acts of violence is inversely related to the price of beer in the state in which the student attends college. We also examine a structural equation in which violence is modeled as a function of alcohol consumption. Simple ordinary least squares (OLS) estimation of the structural equation may be biased because of the possibility that both violence and consumption are determined by the same unmeasured individual traits. Therefore, we use two-stage least squares (2SLS) estimates to purge the consumption measure of its correlation with unobserved characteristics. Our results show that

alcohol consumption is related positively to all measures of violence, and these results are consistent with a causal mechanism.

In a similar study, I examine whether alcohol or drug use increases the likelihood that teenagers in high school will engage in violent behaviors measured in terms of physical fighting, carrying a gun, or carrying other types of weapons.⁷ Using 2SLS, I show that beer and marijuana consumption do lead to more physical fights, but there is no evidence that the consumption of these substances increases the probability of carrying a gun or other weapons. I also estimate the reduced-form equation and show that higher beer taxes lower the probability of physical fights but not of carrying weapons.

Alcohol and the Family

Focusing on violence in the family, I look at the effect of alcohol regulation on spousal abuse.⁸ The data for this study come from the 1985 cross section and the 1985–7 panel of the National Family Violence Survey. After controlling for unmeasured characteristics in the panel, I find that increases in the price of alcohol reduce the probability of severe violence aimed at wives. However, the evidence is inconclusive on the propensity of an increase in the price of alcohol to lower violence towards husbands. Severe violence is defined as kicking, biting, or hitting with a fist; hitting or trying to hit with an object; beating; choking; or threatening to use or using a gun or knife.

Recognizing that children also are at risk for alcohol-related violence, Michael Grossman and I examine the impact of alcohol price and regulation on the incidence of child abuse.⁹ Using data from the 1976 and 1985 National Family Violence Surveys, we estimate models in which the incidence of child abuse is affected by the state excise-tax rate on beer,

illegal-drug prices, decriminalization of marijuana, laws restricting alcohol advertising, the per capita number of outlets licensed to sell alcohol, and demographic and socioeconomic characteristics of parents. Results from the 1976 data show that increasing the tax on beer can be an effective policy tool for reducing violence and that laws designed to make obtaining beer more difficult also may be effective in reducing violence. Restrictions on advertising and increases in illegal-drug prices have no effect on child abuse. When the 1976 and 1985 data are pooled and state fixed effects are added, the results are similar.

Parental alcohol consumption may have other negative ramifications for a child's health. Previous research observed that children of substance-abusing parents are more likely to have behavior problems that may lead to psychiatric disorders, delinquency, or violent behaviors in later childhood and adolescence. The link between parental substance use and the children's mental health is not well understood. Furthermore, the existence of a causal link between a mother's postnatal substance use and her child's adverse outcomes remains controversial. The observed positive correlation may be causal if alcohol consumption has a direct impact on parenting ability and the amount of time parents spend with children and therefore adversely affects children's well-being. However, the relationship between parental substance use and children's mental health may be a result of unobserved factors that determine outcomes, such as parental psychiatric disorder, individual personality, or home environment.

Pinka Chatterji and I examine whether maternal drug and alcohol consumption has a direct impact on children's behavior problems.¹⁰ If maternal substance use is causally linked to children's behavior prob-

lems, then programs and policies that reduce maternal substance use may benefit the children. Alternatively, if unobservable factors can explain the link between maternal substance use and children's outcomes, then programs and policies that reduce maternal substance use will not improve children's outcomes.

We develop a production function for children's mental health that provides the analytical framework for assessing whether drug and alcohol consumption by mothers interferes with children's mental health. We use two empirical methods to address this issue, and each accounts for the influence of unobserved factors. In the first, we use a 2SLS estimation that relies on alcohol prices and illicit-drug prices and policies as identifying instruments. In the second, we use fixed-effects models that control for unobserved heterogeneity at the level of the mother's family of birth and at the level of the mother-child pair. The family fixed-effects model is based on the idea that mothers and their sisters share unobserved characteristics that affect children's behavior. The mother-child fixed-effects model presumes that the individual mother-child pair has unique unobserved characteristics that influence behavior.

Using data from the Children of the National Longitudinal Survey of Youth, we find that maternal substance use is linked causally to children's behavior problems. The 2SLS results are problematic because of the poor performance of the identifying instruments. The OLS models, family fixed-effects models, and mother-child fixed-effects models all suggest that maternal use of alcohol, marijuana, or cocaine is associated with an increased prevalence of behavior problems in children four to 15 years old. We use broad measures of substance, including consumption of all substances at any

current level of use. The effects of diagnosed substance abuse and dependence may have a much greater impact on children than undiagnosed, or more casual, use. Moreover, children at certain ages, for example, during early childhood, may be more vulnerable to the effects of maternal substance use. Estimating these effects is a direction for future research.

¹ For a review of the literature, see F.J. Chaloupka, M. Grossman, and H. Saffer, "The Effects of Price on the Consequences of Alcohol Use and Abuse," in *Recent Developments in Alcoholism*, Volume 16: *The Consequences of Alcohol*, M. Galanter, ed. New York: Plenum Publishing, 1998.

² L.A. Greenfeld, *Alcohol and Crime: An Analysis of National Data on the Prevalence of Alcohol Involvement in Crime, a report prepared for the Assistant Attorney General's National Symposium on Alcohol Abuse and Crime*, April 1998.

³ S. Markowitz, "An Economic Analysis of

Alcohol, Drugs, and Violent Crime in the National Crime Victimization Survey," NBER Working Paper No. 7982, October 2000.

⁴ S. Markowitz, "Criminal Violence and Alcohol Beverage Control: Evidence from an International Study," NBER Working Paper No. 7481, January 2000, and in *The Economic Analysis of Substance Use and Abuse: The Experience of Developed Countries and Lessons for Developing Countries*, M. Grossman and C.R. Hsieh, eds. Cheltenham, United Kingdom: Edward Elgar Publishing, 2001.

⁵ U.S. Department of Justice, Bureau of Justice Statistics, *Violent Crime*, NCJ-147486; and U.S. Department of Justice, Bureau of Justice Statistics, *Criminal Victimization 1998: Changes 1997-98 with Trends 1993-98*, NCJ-176353.

⁶ M. Grossman and S. Markowitz, "Alcohol Regulation and Violence on College Campuses," NBER Working Paper No. 7129, May 1999, and in *The Economic Analysis of Substance Use and Abuse: The Experience of Developed Countries and Lessons for Developing Countries*.

⁷ S. Markowitz, "The Role of Alcohol and Drug Consumption in Determining

Physical Fights and Weapon Carrying by Teenagers," NBER Working Paper No. 7500, January 2000; forthcoming in *Eastern Economic Journal*.

⁸ S. Markowitz, "The Price of Alcohol, Wife Abuse, and Husband Abuse," NBER Working Paper No. 6916, January 1999, and *Southern Economic Journal*, 67 (October 2000), pp. 279-303.

⁹ S. Markowitz and M. Grossman, "Alcohol Regulation and Violence Towards Children," NBER Working Paper No. 6359, January 1998, and *Contemporary Economic Policy*, 16 (July 1998), pp. 309-20; S. Markowitz and M. Grossman, "The Effects of Alcohol Regulation on Physical Child Abuse," NBER Working Paper No. 6629, July 1998, and *Journal of Health Economics*, 19 (March 2000), pp. 271-82.

¹⁰ P. Chatterji and S. Markowitz, "The Impact of Maternal Alcohol and Illicit Drug Use on Children's Behavior Problems: Evidence from the Children of the National Longitudinal Survey of Youth," NBER Working Paper No. 7692, May 2000; forthcoming in *Journal of Health Economics*.

Taxes, Welfare, and Work by Single Mothers

Bruce D. Meyer*

Between 1984 and 1996, changes in tax and transfer programs sharply increased the incentives for single mothers to work. Two aspects of these policy changes are often overlooked. First, many important policy changes occurred even before the implementation of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA). Second, despite the media's emphasis on welfare cuts, workfare, and time limits, many of the post-1984 policy changes have encouraged work by increasing financial rewards for work-

ing mothers, not by cutting their benefits. These policy changes have included large expansions of the Earned Income Tax Credit (EITC) and Medicaid for families with working mothers, reductions in the implicit tax rates of Aid to Families with Dependent Children (AFDC), and new child-care programs. During this same period, single mothers began to work more; their weekly employment increased by about 6 percentage points and their annual employment increased by nearly 9 percentage points. Other groups—for example, single women without children, married mothers, and black men—did not experience similar gains in employment during this period. In recent work, Dan T. Rosenbaum and

I document the changes in programs and incentives directed toward single mothers, and we examine the effect of these changes on the employment of these women.¹ We show that a large share of the increase in single mothers' work through 1996 can be attributed to the EITC and other tax changes, with smaller shares attributable to cuts in welfare benefits, welfare waivers, training, and child care programs.

The 1984-96 period provides a rich laboratory for studying the effects of tax and welfare programs on the decision to work. The magnitudes of these effects are critical determinants of the gains or losses that result from changes in income redistribution and social insurance

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policies. Moreover, the increase in states' discretion under PRWORA and certain political changes have led to welfare reform that both discourages receipt of welfare benefits and diverts potential welfare recipients from traditional programs. These reforms are difficult, if not impossible, to characterize using a few variables. And it is likely that many of the policies examined in this paper will be even more difficult to analyze using post-PRWORA data.²

We study three types of changes in single mothers' rewards for work. First, there were very large increases in the EITC between 1984 and 1996, primarily benefiting working mothers with children. During this period, real dollars received through the EITC increased more than tenfold: in 1984, the average single mother who earned \$10,000 paid about \$300 in income and payroll taxes; by 1996, that same average single mother received a \$2,000 subsidy for working. Most of the shift from taxes to subsidies has been attributable to the EITC. During the same period, the taxes paid by single women without

children rose slightly.

Figure 1 plots the difference in aftertax earnings of single women with two children and those with no children for a range of real pretax earnings in 1984, 1988, 1992, and 1996. We focus on these two types of women because this comparison is used in much of our data analysis. Between 1984 and 1988, single mothers of two whose real annual earnings ranged from \$10,000 to \$20,000 experienced increases of \$500 to \$1,500 in aftertax earnings (relative to single women without children). Yet these EITC expansions were smaller than the 1994-6 expansions, particularly for very low-income women with two or more children. For example, for women who earned \$7,500, the aftertax earnings difference increased only about \$600 between 1984 and 1993; but between 1993 and 1996, their aftertax earnings difference rose more than \$1,500.

We calculate summary measures of the changes in work incentives by combining the changes in taxes and benefits and averaging them over an

(unchanging) earnings distribution of single women. We find that the average annual tax payments by working single mothers fell by \$1,442 between 1984 and 1996, and those of single women with no children rose by \$187. This represents a decrease of \$1,629 in the taxes of single mothers relative to single women without children. Single mothers with two or more children experienced the sharpest decreases in taxes. Their taxes fell \$868 more than the taxes of single mothers with only one child.

The second set of policy changes that we study includes changes in the Medicaid and AFDC programs. Between 1984 and 1994, the number of children receiving Medicaid increased by 77 percent, and the number of covered adults with dependent children increased by 35 percent. These expansions, which affected primarily nonwelfare families whose incomes were near the poverty line, made work more attractive for low-income single mothers. Valued at the average cost of Medicaid coverage for adults (\$1,083) and children (\$1,900) during this period,

Figure 1
Difference in After-Tax Income of Single Women
With and Without Children, Selected Years

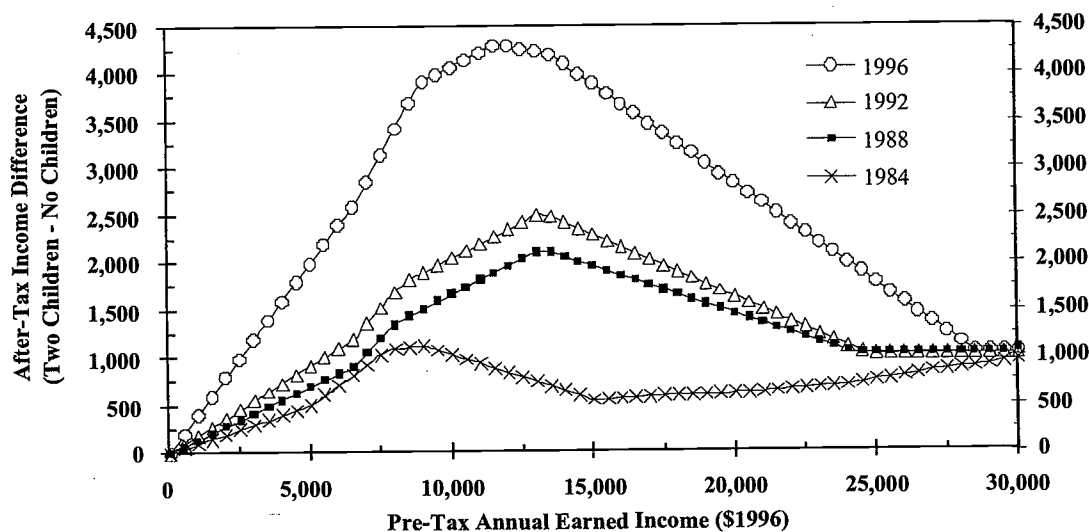


Table 1
Employment Rates, and Differences Between
Single Women With and Without Children, 1984 to 1996

Year	CPS Outgoing Rotation Group, Employed = Worked Last Week				March CPS, Employed = Worked During Year			
	Single Mothers	Single Women w/o Children	Difference	Standard Error	Single Mothers	Single Women w/o Children	Difference	Standard Error
1984	0.5854	0.8014	-0.2160	0.0059	0.7322	0.9399	-0.2077	0.0083
1985	0.5861	0.8048	-0.2187	0.0058	0.7302	0.9439	-0.2137	0.0083
1986	0.5891	0.8131	-0.2240	0.0057	0.7310	0.9450	-0.2141	0.0082
1987	0.5941	0.8179	-0.2238	0.0056	0.7382	0.9473	-0.2091	0.0081
1988	0.6027	0.8215	-0.2188	0.0058	0.7482	0.9485	-0.2003	0.0084
1989	0.6136	0.8150	-0.2015	0.0058	0.7577	0.9409	-0.1831	0.0080
1990	0.6007	0.8155	-0.2148	0.0056	0.7591	0.9424	-0.1832	0.0079
1991	0.5790	0.8031	-0.2242	0.0056	0.7428	0.9418	-0.1990	0.0079
1992	0.5790	0.7957	-0.2167	0.0057	0.7387	0.9299	-0.1913	0.0081
1993	0.5875	0.7918	-0.2044	0.0057	0.7511	0.9356	-0.1845	0.0080
1994	0.6053	0.7921	-0.1868	0.0057	0.7907	0.9312	-0.1405	0.0078
1995	0.6265	0.7971	-0.1707	0.0058	0.8072	0.9340	-0.1268	0.0080
1996	0.6450	0.7958	-0.1488	0.0060	0.8191	0.9290	-0.1098	0.0079
1996-1984	0.0596	-0.0075	0.0671	0.0084	0.0870	-0.0109	0.0979	0.0114

Sources: The data are from the 1984-1996 Current Population Survey Outgoing Rotation Group File (ORG) and the 1968-1997 March Current Population Survey (March CPS).

Restrictions: Both samples include 19-44 year-old single women who are not in school.

the changes in Medicaid eligibility increased single mothers' relative incentives to work by about \$752 between 1984 and 1996.

During the same period, welfare benefits for those not working were cut, but benefits changed little, or even increased, for those who were balancing work and welfare. Between 1984 and 1996, welfare benefits (from AFDC and the Food Stamp Program) for working single mothers rose \$582 relative to the benefits of nonworking single mothers. In other words, the increased

incentive to work because of tax changes was about three times as large as the incentive based on changes in welfare benefits. In the 1990s, nearly every state experimented with changes in its welfare programs, often under waivers of the existing program rules. Many of these changes imposed work requirements, time limits, or other measures aimed at encouraging single mothers to work.

The third set of policy changes that we study includes the impact of recent increases in funding for child care and

in job training for single mothers. Between 1988 and 1990, four major new government child-care programs were added for those on welfare and other low-income women. Expenditures for job training programs increased sharply in the early 1990s, and the programs emphasized education and basic skills. The combined effect of these program changes was to significantly alter the incentives for single mothers to enter the workforce. The average child-care benefits for those with young children increased by about \$294.

Together, the changes in taxes, welfare, Medicaid, and child care increased the financial reward for working by a total of \$3,258 from 1984-96. This change equaled almost 18 percent of the average annual pre-tax and transfer earnings of working single mothers, or \$18,165. The \$3,258 represents nearly a 44 percent increase over the average financial gain from working in 1984 of \$7,469. Overall, the policy changes between 1984 and 1996, especially the tax changes, dramatically increased the incentive for single mothers to work.³

When we began this project, we did not know how large the increases in the employment of single mothers concurrent with these policy changes

Figure 2
Weekly Employment Estimates, Controlling for Individual
Characteristics and Macroeconomic Conditions

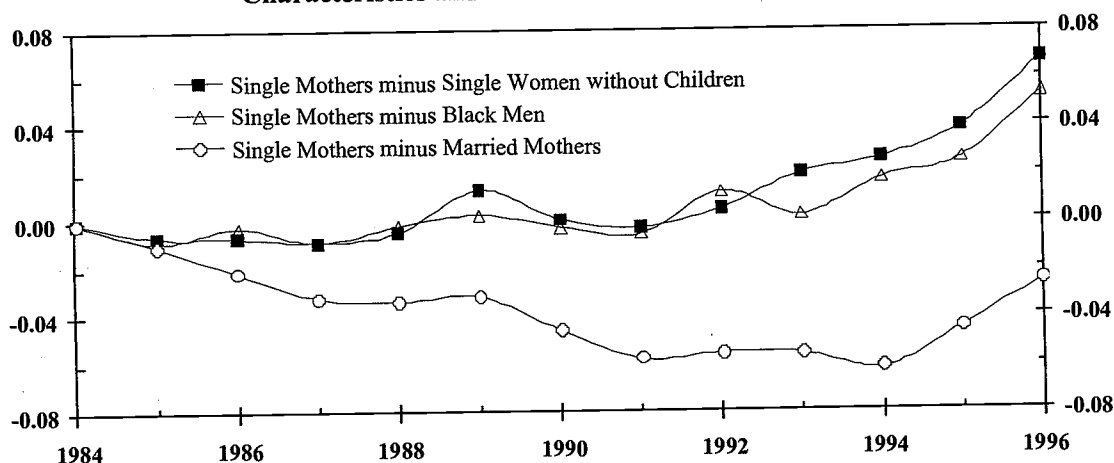
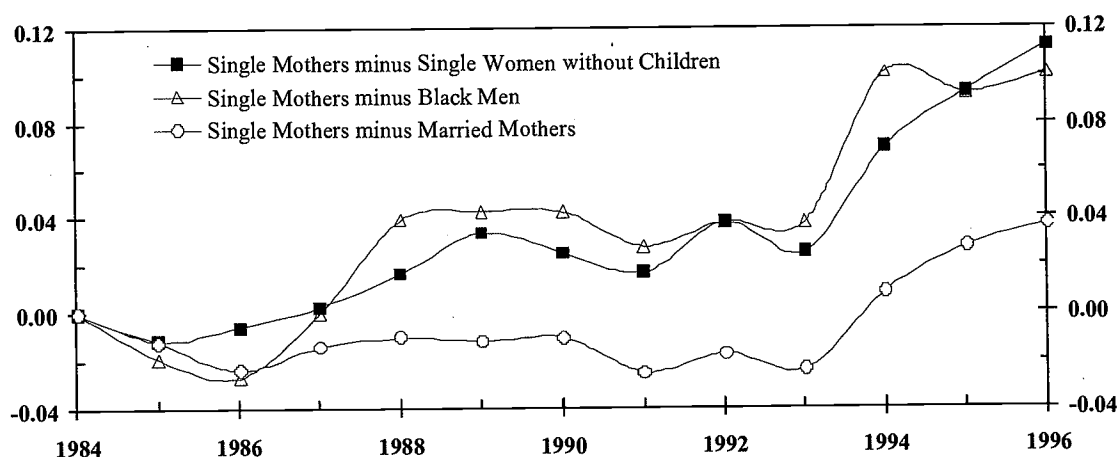


Figure 3
Annual Employment Estimates, Controlling for Individual Characteristics and Macroeconomic Conditions



Sources : The data are from the 1984-1996 CPS Outgoing Rotation Group File (ORG) and the 1985-1997 March Current Population Survey (March CPS).

Restrictions : Both samples include 19-44 year-old persons who are not in school.

were. As Table 1 shows, between 1984 and 1996, the fraction of single mothers working in an average week increased from 0.58 to 0.64, and the fraction working at any time during the year rose from 0.73 to 0.82. During the same period, both weekly and annual employment for a plausible comparison group—single women without children—decreased by about 1 percentage point. Comparisons with married women and black men indicate that the increase in the employment of single mothers represents a break from historic patterns. These patterns are little changed when we account for a wide range of demographic and business cycle characteristics. To illustrate this result, Figures 2 and 3 display the difference in employment rates of single mothers and single women without children for the years 1984–96, after accounting for these demographic and business cycle characteristics. Figure 2 reports changes in weekly employment since 1984, and Figure 3 shows the annual pattern for employment. Both show a relative increase in the employment of single mothers that accelerated after 1991.

In the main part of our work, we construct measures of the work incentives facing single women for each of the years between 1984 and 1996 and in all 50 states and the District of Columbia. The variables we use in the empirical analysis incorporate federal and state income taxes and EITCs, AFDC and Food Stamp benefits, Medicaid coverage, and welfare waivers that led to time limits, work requirements, or disqualification of recipients. We also examine the effects of changes in child care and training programs during this period. Because of the complicated structure of and interactions between these programs, a substantial part of our project characterizes the incentives and program details for women in different states, in different months, and with a range of family sizes and children of various ages.

Our main research strategy identifies the effects of these policies on the work choice of single mothers. The richness of the policy changes that we observe allows us to focus also on narrower sources of variation among women, including differences in the number and ages of children, as well

as differences among states—their taxes, benefits, and living costs. These sources of differences across individuals are not likely to be related to underlying differences in desire to work, and thus may be good levers for determining what influences work decisions.

Our main estimates suggest that the EITC and other tax changes account for more than 60 percent of the 1984–96 increase in the weekly and annual employment of single mothers (relative to single women without children). Welfare waivers and other changes in AFDC account for smaller—but still large—shares of the increase for both employment measures. Changes in Medicaid, training, and child care programs play a still smaller role. The effects of changes in taxes and the EITC are also fairly similar across time periods and specifications. We find that the various policy changes have larger effects on less educated women, and smaller—but still substantial—effects on single mothers with different size families. Some of these research approaches suggest that AFDC produces much weaker effects. The effects on employ-

ment that we find for other policies do not vary much by approach. Furthermore, we find that the effects of the policies on total hours worked are very similar to the results for employment as a whole.

Our detailed examination of the policy changes between 1984 and 1996 uses two large microdata sets. Our results indicate that changes in EITC and other taxes played a dominant role in the employment increases of single mothers between 1984 and 1996. This suggests that policies that "make work pay" are effective in increasing work by single mothers. This lesson is important in that it shows that work can be encouraged by making employment more attractive through tax incentives as well as

by making welfare less attractive through measures such as time limits and work requirements.

¹ B. D. Meyer and D. T. Rosenbaum, "Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers," *NBER Working Paper No. 7363*, September 1999, and *Quarterly Journal of Economics*, 116 (August 2001), pp. 1063–114; and B. D. Meyer and D. T. Rosenbaum, "Making Single Mothers Work: Recent Tax and Welfare Policy and Its Effects," *NBER Working Paper No. 7491*, January 2000, and *National Tax Journal* 53, (December 2000), pp. 1027–62, and in *Making Work Pay: The Earned Income Tax Credit and Its Impact on American Families*, B. D. Meyer and D. Holtz-Eakin, eds., forthcoming from Russell Sage Foundation Press.

² For related arguments see D. T. Ellwood,

"The Impact of the Earned Income Tax Credit and Social Policy Reforms on Work, Marriage, and Living Arrangements," *National Tax Journal*, 53:4 Pt. 2 (December 2000), pp. 1063–106; *National Research Council, Evaluating Welfare Reform: A Framework and Review of Current Work*, R. Moffitt and M. Ver Ploeg, eds. Washington, DC: National Academy Press, 1999; and C. Jencks and J. Swingle, "Without a Net," *The American Prospect*, 11 (January 3, 2000).

³ Wage changes over this period are unlikely to provide an alternative explanation for the changes in employment of single women without children relative to single mothers. When we account for changes in the observed characteristics of single mothers and single women without children in a log wage regression, the changes in hourly wages over time are similar for the two groups of single women.

Medical Care and Economywide Price Indexes

Joseph P. Newhouse*

It is well known that price indexes for service industries are subject to considerable error. However, errors in medical care price indexes are particularly significant because of that sector's share of the economy. Although the United States is an outlier with more than 13 percent of its GDP devoted to medical care in recent years, the share for other developed countries—typically between 7 and 11 percent—generally has been rising. The accuracy—or inaccuracy—of medical care price indexes has become sufficiently important that Alan Greenspan has taken note of it publicly.¹

A group of NBER researchers have been working for several years both to quantify biases and to suggest technical improvements to medical care

price indexes.² In a recent paper, I attempt to synthesize our results with those of other investigators and to put the work in a larger context.³

I make two principal points: First, although it is difficult to be precise about the amount of bias in the medical care price index, a number of studies have quantified the effects of its various problems. The results suggest that the bias may be large enough to have a nontrivial effect on the overall index. On the basis of some of the early studies, the Boskin Commission estimates that the medical care component of the consumer price index (CPI) was biased upward by 3 percentage points annually.⁴ Second, the amount of bias may change from year to year. This possibility has important implications for monetary policy.

Some Causes of Bias in the Indexes

There are many reasons why the official medical care indexes may

overstate the change in a cost-of-living index. Fortunately, some of the historical reasons have been corrected. For example, the CPI has measured the price of a hospital stay rather than the price of a hospital day since 1997. Between 1980 and 1995, the average length of a patient's stay fell 27 percent. Ignoring any effect on outcomes, this change clearly reduced the cost of treatment. Nevertheless, that reduction in cost was not proportional to the reduction in length of stay because marginal cost falls throughout a stay and care outside the hospital is frequently substituted for the marginal day. Before 1997, the CPI did not register the decrease in cost that resulted from shorter stays because it was pricing the cost of a day in the hospital. Indeed, pricing the cost of a day probably sent a perverse signal: because marginal costs rose as stays shortened, the average cost of a day rose with the fall in length of stay. (When the producer price index for hospitals was intro-

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duced in December 1991, it priced the cost of a stay.)

Another improvement that was introduced into the medical care CPI in 1997 was the grouping of inpatient and outpatient surgical procedures in a single category. Prior to that time, a given procedure conducted in the hospital was treated as a different service when it was performed outside the hospital. Of course, because a hospital stay is avoided, performing a procedure on an outpatient basis is much cheaper. Between 1980 and 1996, the percentage of procedures done on an outpatient basis rose from 16 percent to 60 percent. (I have not found a dollar-weighted figure, but it would surely show a smaller—but still substantial—increase.) By treating inpatient and outpatient treatment as separate services, the CPI did not recognize the savings. Irving Shapiro, Matthew D. Shapiro, and David W. Wilcox estimate that between 1969 and 1994, a price index for cataract surgery ignored the shift of the procedure out of the hospital, thus overstating the rate of price increase by 5 percentage points annually.⁵

Accounting for improved outcomes is probably the most intractable problem remaining in the medical care indexes. The problem has two sources: first, new services may improve quality; second, better management of care may move the production of health care closer to its potential best outcome.

New goods and services invariably pose difficulties for price indexes. One theoretically satisfactory way to handle them—a hedonic price index for medical care—would be difficult to implement because of the widespread nature of medical insurance and its associated “administered prices.” Probably the only feasible method for addressing improved methods of care would be direct adjustment by the statistical agencies. However, the agencies naturally have been resistant to this course because of the judgment required. Instead, the agencies typically have dealt with new

goods and services by linking them into the index and making no adjustment for quality change. But the adjustments could be very important. For example, David M. Cutler, Mark B. McClellan, and I show that failing to account for reduced mortality from better treatment of heart attacks in 1984–91 biased a price index for heart attacks upward by 4 to 6 percentage points annually.⁶

Outcomes also can be improved through better application of existing knowledge. Recently, there has been much publicity about the extent of medical error, which is estimated to cause 44,000 to 98,000 deaths annually.⁷ Medical error is only the most visible target of ways to improve quality of care, however. One-sixth to one-third of several common procedures are estimated to have benefits that are not commensurate with their clinical risk, let alone their resource cost.⁸ In short, medical care seems to be far from a production possibility frontier. Although managed care perhaps is best noted for lowering unit prices, one of its original rationales was that it would move production closer to the frontier.

A number of researchers have attempted to estimate the effects of improved treatment of depression.⁹ They find that the proportion of treatment that satisfies clinical guidelines rose from 35 percent in 1991 to 55 percent in 1996, a gain the investigators attribute primarily to the spread of managed care for behavioral health. Accounting for the expected effect of this improved treatment on outcomes implies a 2-to-6 percentage-point reduction during this period in a price index for the treatment of depression.

For these and other reasons, the Boskin Commission’s estimate of a 3 percentage-point annual bias in the medical care CPI may well be low. However, even a bias of that size is sufficient to cause a 0.15 percentage-point annual bias in the all-items CPI. (Medical care has a weight of only 5 percent in the CPI versus 13 percent in the GDP deflator because government-

financed medical care and employer-paid health-insurance premiums are beyond the scope of the CPI.) And biases in the CPI have substantial effects on the federal budget. The Boskin Commission estimates that a single percentage-point bias in the all-items CPI would raise the national debt by about \$1 trillion over a 12-year period. This is about one-fifth of the current debt and an even higher percentage of the publicly held debt.

Monetary Policy and Changes in the Bias

One important use of price indexes is in the determination of monetary (and possibly fiscal) policy. For monetary policy, any constant bias in a price index is of little consequence; it will implicitly enter the rate of equilibrium inflation at the nonaccelerating inflation rate of unemployment (NAIRU). But any changes in the bias are obviously important because the central bank is prepared to act on even rather modest changes in overall price indexes. Unfortunately, much less work has been done to date on the degree of instability in the bias.

I make the case that the annual bias in the medical care index may have increased by 2 to 3 percentage points in 1993–7, resulting in a change of around 0.3 percentage points in the bias in the GDP deflator.¹⁰ I focus on those years because the rate of increase in real spending per person on medical care services fell to about 2 percent per year from its 50-year historical average of 4 to 5 percent per year. The sustained fall in the growth rate of spending during this five-year period has no precedent in the post-World War II period.

The spread of managed care offers the only plausible explanation for much of this decline. Although the number of enrollees in various kinds of managed-care contracts is somewhat uncertain, clearly there was a sharp increase just before and during the 1993–7 period. One estimate, for example, is that the share of the pri-

ately insured population that was enrolled in some form of managed care jumped 50 percentage points between 1987 and 1995.

There is further uncertainty about how much of the fall in spending is attributable to a reduction in unit prices rather than a reduction in the real quantity of services, but it appears that much of the decrease was in transaction prices. For example, Cutler, McClellan, and I show that health maintenance organizations (HMOs) in Massachusetts treated their enrollees' heart attacks much as indemnity insurers did, but the HMOs paid 40 percent less for each type of treatment.¹¹

Unfortunately, the official indexes probably did not account for much of the reduction in transaction prices attributable to managed care because medical providers are reluctant to share transaction prices with the Bureau of Labor Statistics. For example, in 1996 only 15 percent of the quotations in the hospital price index were transaction prices: the rest were list prices.¹² Thus, the change in the bias in the medical care indexes could have caused a nontrivial change in the bias in the overall indexes during the 1990s, a factor that could have played a role in the apparent fall of the NAIRU in those years.

In sum, although the accuracy of medical care price indexes has improved, there are still substantial opportunities for further improvement. However, assigning value to better outcomes and obtaining transaction prices are not trivial tasks. Therefore, statistical agencies probably will require additional resources for implementing the opportunities for improvement.

¹ A. Greenspan, "The Challenge of Measuring and Modeling a Dynamic Economy," (remarks at the Washington Economic Policy Conference of the National Association for Business Economics, Washington, DC, March 27, 2001), available from World Wide Web @ <http://www.federalreserve.gov/boarddocs/speeches/2001/20010327/default.htm>.

² E. R. Berndt et al., "The Medical Treatment of Depression, 1991–1996: Productive Inefficiency, Expected Outcome Variations, and Price Indexes," NBER Working Paper No. 7816, July 2000; E. R. Berndt et al., "Medical Care Prices and Output," in Handbook of Health Economics, A. J. Culyer and J. P. Newhouse, eds. Amsterdam: Elsevier, 2000; E. R. Berndt et al., "Price Indexes for Medical Care Goods and Services: An Overview of Measurement Issues," in Medical Care Output and Productivity, E. R. Berndt and D. M. Cutler, eds. Chicago: University of Chicago Press, 2001; E. R. Berndt, S. M. Busch, and R. G. Frank, "Treatment Price Indexes for Acute Phase Major Depression," in Medical Care Output and Productivity; D. M. Cutler et al., "Are Medical Prices Declining?" Quarterly Journal of Economics, 113 (November 1998), pp. 991–1024; D. M. Cutler, M. McClellan, and J. P. Newhouse, "The Costs and Benefits of Intensive Treatment for Cardiovascular Disease," NBER Working Paper No. 6514, April 1998, and in Measuring the Prices of Medical Treatments, J. Triplett, ed. Washington, DC: The Brookings Institution, 1999; D. M. Cutler et al., "Pricing Heart Attack Treatments," NBER Working Paper No. 7089, April 1999, and in Medical Care Output and Productivity; J. E. Triplett, ed. Measuring the Prices of Medical Treatments; and J. E. Triplett, "What's Different about Health? Human Repair and Car Repair in National Health Accounts," in Medical Care Output and Productivity.

³ J. P. Newhouse, "Medical Care Price Indices: Problems and Opportunities/The Chung-Hua Lectures," NBER Working Paper No. 8168, March 2001, and

Academia Economic Papers, 29 (2000), pp. 1–65.

⁴ M. J. Boskin et al., Toward a More Accurate Measure of the Cost of Living, final report from the Advisory Commission to Study the Consumer Price Index, prepared for the Finance Committee, U.S. Senate, 1996.

⁵ I. Shapiro, M. D. Shapiro, and D. W. Wilcox, "Measuring the Value of Cataract Surgery," Medical Care Output and Productivity.

⁶ D. M. Cutler et al., "Are Medical Prices Declining?"

⁷ W. C. Richardson, "To Err is Human: Building a Safer Health System" (paper presented at a public briefing of the Institute of Medicine of the National Academy of Sciences, Washington, DC, December 1999.)

⁸ M. R. Chassin et al., (1987), "Does Inappropriate Use Explain Geographic Variation in the Use of Health Care Services? A Study of Three Procedures," Journal of the American Medical Association, 258: 18 (1987) pp. 2533–7.

⁹ E. R. Berndt et al., "The Medical Treatment of Depression, 1991–1996: Productive Inefficiency, Expected Outcome Variations, and Price Indexes"; E. R. Berndt, S. M. Busch, and R. G. Frank, "Treatment Price Indexes for Acute Phase Major Depression"; and S. H. Busch, E. R. Berndt, and R. G. Frank, "Creating Price Indexes for Measuring Productivity in Mental Health Care" (2000, photocopy).

¹⁰ J. P. Newhouse, "Medical Care Price Indices: Problems and Opportunities/The Chung-Hua Lectures."

¹¹ D. M. Cutler, M. B. McClellan, and J. P. Newhouse, "How Does Managed Care Do It?" RAND Journal of Economics, 31(Autumn 2000), pp. 526–48.

¹² U.S. General Accounting Office, Consumer Price Index: Cost-of-Living Concepts and the Housing and Medical Care Components, report to the ranking minority member, Committee on Banking and Financial Services, U. S. House of Representatives, 1996.



NBER Profile: *David N. Figlio*

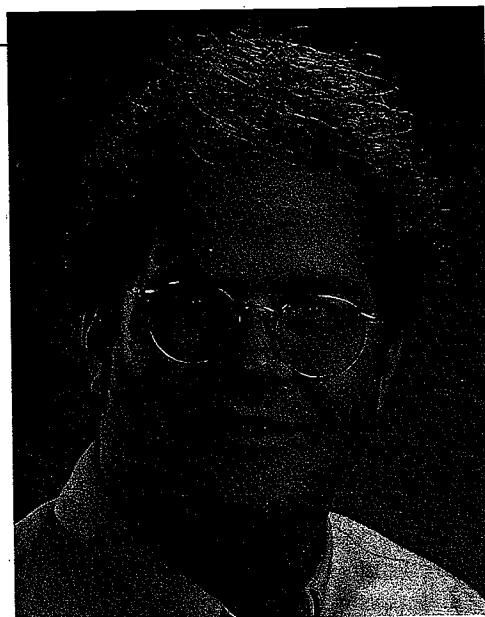
David N. Figlio is the Walter J. Matherly Professor of Economics at the University of Florida and a Faculty Research Fellow of the National Bureau of Economic Research. He received his B.S. in Business Economics and Public Policy from the George Washington University in 1991 and his Ph.D. in Economics from the University of Wisconsin-Madison in 1995. Prior to joining Florida's faculty, Figlio was an assistant professor at the University of Oregon from 1995-8.

Figlio's research focuses on topics in the economics of education and social policy and on the political economy of policy formation and implementation. Much of his current research concerns the unintended consequences of school accountability systems, studying outcomes as disparate as school lunch programs, student disability classification, school zoning, and house prices. In addition,

he is a principal investigator, along with Cecilia Rouse, Dan Goldhaber, and Jane Hannaway, of an evaluation of school choice programs in Florida.

Figlio's research has been published extensively in leading journals including the *American Economic Review*, *Journal of Public Economics*, and *Journal of Law and Economics*, as well as several policy-oriented outlets. His work has been funded by the National Science Foundation, National Institutes of Child Health and Development, the U.S. Departments of Agriculture, Education, and Health and Human Services, and numerous private foundations.

When Figlio is not working (and, sometimes, when he is) he enjoys traveling around the world with his seven-year-old son Joseph, five-year-old daughter Rebecca, and three-year-old daughter Elizabeth.



NBER Profile: *Sara J. Markowitz*



Sara J. Markowitz has been an NBER Faculty Research Fellow since 1998, but has worked in NBER's New York office since 1994, when she was hired as a research assistant. She received her B.A. from Rutgers College and her Ph. D. from the Graduate School and University Center of the City University of New York.

From 1996-8, Markowitz was an adjunct lecturer of economics at Hunter College. Between 1998 and 2000, she was an assistant professor of economics at the New Jersey Institute

of Technology. Since August 2000, she has been an assistant professor of economics at Rutgers University, Newark, where she teaches Economics of Health and Microeconomics. Her articles have been published in a number of professional journals, including the *Journal of Health Economics* and the *Southern Economic Journal*.

Markowitz and her husband, Bryan, who is a lobbyist for the New Jersey Business and Industry Association, live in South Brunswick, NJ. Her hobbies are traveling and gardening.

NBER Profile: *Joseph P. Newhouse*

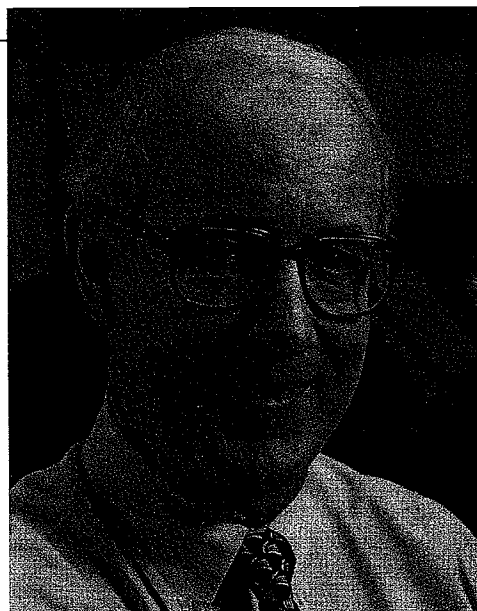
Joseph P. Newhouse, an NBER Research Associate in the Programs on Health Care, Health Economics, Children, and Productivity, is the John D. MacArthur Professor of Health Policy and Management at Harvard University. He is a member of the faculties of Harvard's John F. Kennedy School of Government, the Harvard Medical School, the Harvard School of Public Health, and the Faculty of Arts and Sciences.

Newhouse received both his B.A. and Ph.D. degrees in Economics from Harvard University. He spent the first 20 years of his career at RAND, where he designed and directed the RAND Health Insurance Experiment, a project that ran from 1971 to 1988 and studied the consequences of different ways of financing medical services. From 1981 to 1985 he was also Head of the RAND Economics Department.

In 1981 Newhouse became the founding editor of the *Journal of*

Health Economics, which he continues to edit. He is currently a member of the Medicare Payment Advisory Commission, which reviews Medicare payment policy and makes recommendations to the Congress. He has been elected to the Institute of Medicine of the National Academy of Sciences, and has served two terms on its governing Council. He has also been elected a Fellow of the American Academy of Arts and Sciences. He is a past President of the Association for Health Services Research and of the International Health Economics Association.

In 2000, Newhouse was the first co-recipient of the Zvi Griliches Award (with David Cutler, Mark McClellan, and Dahlia Remler) honoring the best empirical article appearing in the *Quarterly Journal of Economics* over the previous four years. He also gave the Chung Hua Lectures in Taipei. He recently co-won the Kenneth J. Arrow



Award, also with Cutler and McClellan, given by the International Health Economics Association for the best article on health economics in the past year.

If he had some free time, he would golf or play bridge.



Twelfth Annual East Asian Seminar on Economics: Privatization, Corporate Governance, and Transition Economies

The NBER's Twelfth Annual East Asian Seminar on Economics (EASE), sponsored jointly with Hong Kong University of Science and Technology (HKU), Korea Development Institute (KDI), Korea for International Economic Policy (KIEP), Tokyo Center for Economic Research (TCER), Chung-Hua Institution for Economic Research (CIER), and the Australian Productivity Commission, took place in Hong Kong on June 28-30. The organizers were NBER Research Associates Takatoshi Ito, Hitotsubashi University, and Anne O. Krueger, Stanford University. This year's theme was "Privatization, Corporate Governance, and Transition Economies." The following papers were discussed:

Chen Chien-Hsun and **Shih Hui-Tzu**, CIER, "Initial Public Offering and Corporate Governance in China's Transitional Economy"

Discussants: Deunden Nikomborirak, Thailand Development Research Institute, and Changqi Wu, HKU

David Li and **Francis Lui**, HKU, "Why do Governments Dump State Enterprises? Evidence from China"

Discussants: Deunden Nikomborirak, and Yun-Wing Sung, Chinese University of Hong Kong

Keijiro Otsuka, Foundation for Advanced Studies on International Development, and **Tetsushi Sonobe**, Tokyo Metropolitan University, "Productivity Effects of TVE Privatization: The Case Study of Garment and Metal Casing

Enterprises in the Great Yangtze River Region"

Discussants: Yun-Wing Sung, and Yang Yao, Beijing University

Yang Yao, "Government Commitment and the Results of Privatization in China"

Discussants: Takashito Ito and David Li

Fumitoshi Mizutani, Kobe University, and **Kiyoshi Nakamura**, Waseda University, "The Japanese Experience with Railway Restructuring"

Discussants: Mario Lamberte, Philippine Institute for Development Studies, and Helen Owens, Australian Productivity Commission

Helen Owens, "Rail Reform: Privatize, Corporatize, Franchise, or Contracts – The Australian Experience"

Discussants: John McMillan, Stanford University, and Mari Pangestu, Centre for Strategic and International Studies

Tsuruhiko Nambu, Gakushuin University, "What Has Been Achieved in Japanese Telecommunications Industry since 1985?"

Discussants: Il Chong Nam, and Richard Snape, Australian Productivity Commission

Il Chong Nam, KDI, "Recent Developments in the Public Enterprises Sector in Korea"

Discussants: Cassey Lee Hong Kim, University of Malaya, and Aaron Tornell, NBER and University of California, Los Angeles

Sung Wook Joh, KDI, "Korean Corporate Governance and Firm Performance"

Discussants: Mario Lamberte, and Philip Williams, Melbourne Business School

Youngjae Lim, KDI, "Sources of Corporate Financing and Economic Crisis in Korea"

Discussants: Francis Lui and Chong-Hyun Nam

Philip Williams, and **Graeme Woodbridge**, Frontier Economics Australia, "Antitrust Merger Policy: Lessons from the Australian Experience"

Discussants: Charles Calomiris, NBER and Columbia University, and Chong-Hyun Nam

Simon Johnson, NBER and MIT, and **Andrei Shleifer**, NBER and Harvard University, "Privatization and Corporate Governance"

Discussants: Cassey Lee Hong Kim and Richard Snape

Charles Calomiris, and **Joseph Mason**, Drexel University, "How to Restructure Failed Banking Systems: Lessons from the U.S. in the 1930s and Japan in the 1990s"

Discussants: Simon Johnson and Mari Pangestu

Aaron Tornell, "Banks, Bailout Guarantees, and Risky Debt"

Discussants: Kyoji Fukao, Hitotsubashi University, and Sung Wook Joh

John McMillan, "Using Markets to Solve Public Problems"

Discussants: Kyoji Fukao and Tsuruhiko Nambu

Chen and **Shih** investigate Chinese initial public offerings (IPOs) from mid-1995 to mid-1999 with a sample of 884 companies, 437 listed on the Shanghai Stock Market and 447 on the Shenzhen Stock Market. The only industries in which listed Chinese companies display strong performance are public utilities, transportation, and finance, otherwise known as China's "sunrise" industries. The overall operational performance of other industries is unsatisfactory. Examining the financial indicators of the listed companies following the IPO, it appears that except for earnings-related indicators, there are no significant changes. What's more, the financial indicators tend to fall rapidly year after year. This means that the IPO is of little obvious help to the companies' operational performance, and actually may make things worse. This is in part because companies tend to submit inflated figures in the financial statements that they are required to provide in order to implement the IPO and secure stock market listing. Another possible explanation is the poor corporate governance characteristics of Chinese enterprises. One way to improve the quality of listed companies is to select only those which display strong performance, have strong development potential, and which occupy a leading or advantageous position within their industry. This would encourage hi-tech enterprises and companies in other emerging industries to make use of the capital markets.

Why do governments choose to dump state enterprises by privatization or liquidation? Existing research on privatization has not paid much attention to this question. **Li** and **Lui** focus on two alternative theories of the issue. One theory explains that governments privatize or liquidate state enterprise in order to enhance efficiency. The other theory explains that increasing government revenue or ending subsidies to profit-losing state enterprises is the motivation. Based on a dataset from

China, the authors reject the efficiency theory and support the revenue theory. In addition, they find that concerns about unemployment and losing the political benefit of control to the government are important obstacles to privatization or liquidation decisions. One simple implication of these findings is that it might make sense to propose second-best privatization or liquidation programs that take government objectives into account and are feasible with the government rather than first-best programs that will not be implemented.

Sonobe and **Otsuka** quantitatively assess the productivity of township and village enterprise (TVE) privatization. If recent privatization results in improvement of production efficiency, the question immediately arises as to why it did not take place earlier. Also, why did township- and village-run enterprises (TVREs) prosper in Jiangsu in the 1980s? These issues are critically important in understanding the growth performance of the Chinese economy in the 1990s and assessing its future growth potential for the early decades of the 21st century. As a first step toward a fuller understanding of the effects of TVE privatization on productivity, this paper looks at studies of the garment and metal casting enterprises in the Great Yangtze River Region extending from the suburbs of Shanghai to the western border of Anhui province.

Yao uses recent survey data to assess disparity in regional performance and then provides an explanation for it. He ascribes the disparity to the different degrees of local government commitment to privatization. For example, the survey that this study draws on finds that the amount of fees is equivalent to the amount of regular taxes among the surveyed firms. Privatization cannot exempt a firm from being subject to excessive charges. In other words, privatization does not mean the establishment of the rule of law. Yao presents a brief review of the Chinese

government's policy toward privatization in the last 20 years, and then constructs a theoretical model to explain the relationship between privatization and government reform. The model treats government reform as a commitment device for the politician to commit himself to better state governance. To illustrate the theory, Yao then describes the government reform experience in Shunde, Guangdong province.

Mizutani and **Nakamura** summarize the privatization of the Japan National Railway (JNR), explaining the impetus for privatization, the steps by which it is being achieved, the restructuring options which were available at the time of privatization, and the general characteristics of this privatization. Then they describe how the management of the privatized JNR differs from that of the former JNR. While most privatization studies focus on regulatory changes, the authors want to concentrate here on managerial issues as well, such as corporate goals, relationships with interest groups, organizational structure, incentive systems, and task-improving activities. They describe the performance of the JNR companies since privatization, discussing not only overall performance but also rail fare, competition, and the operation of local rail service. Next, they consider several policy issues related to rail restructuring, using as a basis for discussion these topics: regional subdivision, vertical integration, and yardstick competition. Finally, with the situation of developing countries in mind, they outline important points related to rail privatization policy.

Railways in many countries have undergone significant changes in aspects of their organizational structure, ownership, and access arrangements during the 1990s. Widely differing approaches to rail reform are evident. These reforms have included structural separation (both vertical and horizontal), the introduction of commercial disciplines (corporatization and privatiza-

tion), and arrangements for third-party access to track infrastructure. The wide range of reforms being implemented raises the question of whether one approach is superior to another. **Owens** argues that because rail networks differ in terms of their economic characteristics and the challenges they face, it is important that individual reform packages be tailored to each network. She draws on work undertaken by the Australian Productivity Commission in 1999.

Nambu analyzes the development of the Japanese telecommunications industry since 1985, when NTT (Nippon Telephone and Telegraph) public corporation (a natural monopoly) was privatized and competition was introduced into long distance (interprefecture) markets. At the outset of the analysis, he stresses the importance of changes in the mode of usage as well as in the technology, even though the time period is as short as 15 years.

Nam points out that Korea has made significant progress in privatizing the commercial businesses owned by the government. Korea's approach to commercial public enterprises and their privatization differs, in several respects, from that of the United Kingdom and New Zealand, or other European countries that are going through large-scale privatization. In network industries, privatization policies focused on partial sales of the shares owned by the government and did not pay much attention to industry structure, competition policies, and regulatory frameworks. The policy environment, by and large, was left intact as were the functions and organizations of the line ministries. Line ministries of commercial public enterprises in Korea have long been granted the authority to intervene in the relevant industries to promote a wide range of policy objectives. Separation among commercial operation of the public enterprises to be privatized, regulatory functions of the government, and the industrial policies of the government

probably requires a fundamental change in the way the line ministries operate, and more generally in the way the government is organized. It appears that Korea was not ready to make such a change with regard to privatization. Another crucial factor that affected the privatization path of Korea was the absence of a properly functioning financial market and adequate corporate governance systems for large firms. Extensive reliance on the chaebol system and the accompanying heavy government intervention in the financial market during the past four decades deprived the financial sector of a fair chance of developing into a well-functioning market. The only governance systems that existed in Korea for large firms were essentially ownership and control by the government or control by chaebol families that crucially depended upon heavy government intervention in the financial market. Korea has yet to come up with a model of corporate governance for large commercial firms that can be relied upon by a majority of investors. For this to occur, the financial market must be made to work based upon sound profit incentives of banks and other financial companies and effective prudential supervision.

Joh explains that high debt/equity ratios and low firm profitability under a weak corporate governance system helped cause Korea's 1997 economic crisis. High debt stemmed from government incentives for large firms, firms' exaggeration of their sizes, and bank lending to poorly performing firms. Low profitability was caused partially by unprofitable investment in affiliated firms. High disparity between control and ownership correlated with low profitability. These results suggest that controlling shareholders divert firm resources for private benefits. Moreover, Korea's weak governance system allowed such low firm profitability to persist for nearly ten years before the crisis. This system includes no credible exit threat, inadequate

financial information, little financial institution monitoring, few minority shareholder rights, and negligent boards of directors. Analysis of daily stock market prices suggests the effects of recent corporate governance reform. First, investors believe that chaebols behave more independently. Second, they believe controlling shareholders' private benefits are smaller now, but are still high.

Lim documents that Korean financial institutions have undergone substantial changes in their customer (borrowing firm) base, in particular, after the economic crisis began in 1997. After the crisis, the largest firms left financial institutions and switched to the capital market or to the stock market for their corporate financing. As a consequence, financial institutions increasingly are forced to select their loan customers from the pool of small- and medium-sized firms. This change in the loan customer base of financial institutions (banks), which they expect to continue at an accelerated pace in the future, has an important implication for the future of the banking industry in Korea. Selecting high quality loan customers from the pool of small- and medium-sized firms requires that financial institutions have the capacity for credit evaluation. Unfortunately, many financial institutions did not develop this capacity for credit evaluation before the outbreak of the economic crisis. In the past, financial institutions had access to the pool of large loan customers with implicit loan guarantees by the government, and hence, incentives for good credit evaluation were virtually removed from financial institutions. But recently, with financial institutions still not equipped with credit evaluation capacity, their loan customer base began to shrink at a rapid pace. This is the current dilemma for financial institutions in Korea. Trying to restore their loan customer base without developing the capacity of credit evaluation will result in much riskier assets, which implies an

increased possibility of failure of financial institutions in Korea. On the other hand, accepting the shrinking loan customer base will lead to overcapacity of the industry as a whole, and thus, the number of viable financial institutions will be much smaller in the future.

According to **Williams** and **Woodbridge**, study of the operation of Australia's merger policy over the last 27 years can yield lessons for countries that are contemplating the introduction of their own antitrust policy. Merger policy should provide that any possible increase in monopoly power be weighed against any increases in efficiency. Williams and Woodbridge argue that the process by which this is achieved should be undertaken with speed and secrecy so as not to deter efficiency-enhancing mergers. The twin requirements of speed and secrecy, in turn, will present problems in achieving fair process and the creation of precedent.

According to **Johnson** and **Shleifer**,

effective privatization requires enforceable investor protection. There is no evidence that strong investor protection emerges spontaneously from private contracts or political institutions. Attempts to "opt in" by listing privatized firms in high investor protection countries have only limited value. One way to protect investors is by instituting strong domestic regulation for privatized companies, mutual funds, and financial intermediaries. For countries with relatively weak legal systems, Poland offers a good model.

Calomiris and **Mason** explore the motives for government assistance to weak banks, which include the legitimate goal of mitigating credit crunches and politically motivated assistance to powerful banks and their clients. The authors contrast the relatively successful experience of Reconstruction Finance Corporation assistance to U.S. banks during the Depression with Japanese government assistance to banks in the late 1990s. They argue that

there are ways to construct policies that maximize the potential benefits of government assistance by ensuring selectivity in providing assistance and by constraining bank abuse of government funds. Desirable rules include common stock issuing matching requirements for dividends, and the reform of prudential regulation to incorporate market discipline into prudential capital regulation.

McMillan reviews four public-sector uses of markets: for spectrum allocation, electricity supply, pollution control, and fishery management. Governments can successfully use markets for allocation. But the market must be well-designed, and it cannot supersede the government's regulatory function.

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.

Turkey

The seventh in a series of meetings of the NBER Project on Economic and Financial Crises in Emerging Market Countries, directed by NBER President Martin Feldstein and Research Associate Jeffrey A. Frankel, both of Harvard University, took place in Cambridge on July 18. This gathering focused on Turkey and was organized by Frankel and Dani Rodrik, NBER and Harvard University. Like earlier NBER meetings on Mexico, Thailand, Brazil, Korea, Indonesia, and Malaysia, this occasion brought together academics, individuals from the country, international bankers, and government officials in the hopes of developing an in-depth understanding of Turkey's economic situation.

The day-long meeting was divided into four sessions. In Session 1, a panel

consisting of Rusdu Saraceglu, former head of Turkey's central bank, Edwin Truman, Institute for International Economics and formerly of the Federal Reserve Board and the U.S. Treasury, Erik Nielsen of Goldman Sachs, and Mohamed El-Erian, PIMCO, described the exchange rate situation in Turkey prior to 1999.

In Session 2, the experts discussed Turkey's stabilization and the exchange rate regime. The panelists were: Mahfi Egitmez, former undersecretary of Turkey's Treasury; Caroline Atkinson, Council on Foreign Relations, formerly of the U.S. Treasury country-specific; Atish Ghosh, International Monetary Fund (IMF); George Hoguet, State Street Global Advisers; and Kasper Bartholdy, Credit Suisse First Boston.

In Session 3, panelists Selcuk Demiralp, former undersecretary of Turkey's Treasury, Nouriel Roubini, NBER and New York University, formerly of the President's Council of Economic Advisers and the U.S. Treasury, Carlo Cottarelli, IMF, and Joyce Chang, Chase Manhattan Bank, considered Turkey's banking problems and the crisis in the fall of 2000.

In the fourth session, Gazi Ercel, former head of Turkey's central bank, Steve Radelet, U.S. Treasury, Michael Deppler, IMF, and Peter Garber, Deutschebank, discussed the crisis of February 2001 and the current outlook.

A summary of the other meetings of this project appears on the NBER's web site at <http://www.nber.org/crisis/>. A complete summary of this meeting will also be provided at that site.

Bureau News

NBER Researchers Share Nobel Prize in Economics

NBER Research Associate Joseph E. Stiglitz of Columbia University, NBER Director George A. Akerlof of the University of California, Berkeley, and former NBER researcher A. Michael Spence of Stanford University will share the 2001 Nobel Prize in Economics.

Stiglitz has been affiliated with the NBER since 1978 and is a member of the Programs in Public Economics and Economic Fluctuations and Growth. Akerlof was elected to the

NBER's Board of Directors in 1996, representing the University of California, Berkeley. He had earlier been an NBER Research Associate. Spence is an emeritus professor at Stanford University and is currently a partner in a venture capital firm. He also was an NBER researcher at one time.

All three were awarded the prize for their pioneering work on the shortcomings and imperfections of market systems, also known as the

economics of information. They now join a long list of NBER researchers who have received the Prize, including: James J. Heckman and Daniel L. McFadden, 2000; Robert C. Merton and Myron S. Scholes, 1997; Robert E. Lucas, Jr., 1995; and Robert W. Fogel, 1993. Other NBER researchers who have won the Nobel Prize in Economics are Simon S. Kuznets, Milton Friedman, Theodore W. Schultz, George J. Stigler, and Gary S. Becker.

More NBER Researchers Head to Service in Washington

Richard H. Clarida, an NBER Research Associate in the Programs in "International Finance and Macroeconomics" and "International Trade and Investment," has been nominated to become assistant secretary of the Treasury for economic policy. His appointment requires Senate confirmation.

Clarida is currently chairman of the economics department at Columbia University. He was on the staff of the Council of Economic Advisers during the Reagan administration and has served as a consultant to the Federal Reserve Bank of New York and as a visiting scholar with the International Monetary Fund.

Kristin J. Forbes, an NBER Faculty Research Fellow in the International

Finance and Macroeconomics Program, also has taken a leave from her duties at MIT for a position in Washington. She becomes Deputy Assistant Secretary for Quantitative Policy Analysis in the International Affairs Division of the U.S. Treasury. In that position, she will report to former NBER Research Associate John Taylor.

Three other NBER researchers recently joined the staff of the President's Council of Economic Advisers. Douglas Holtz-Eakin, a Research Associate in the NBER's Public Economics Program and Chair of the Economics Department at Syracuse University, will be the CEA's Chief Economist. Faculty Research Fellows Katherine Baicker of Dartmouth College and Jeffrey Brown

of the Kennedy School of Government, also members of the NBER's Program on Public Economics, become Senior Staff Economists at the Council.

Carmen M. Reinhart, a Research Associate in the NBER's Program on International Finance and Macroeconomics, is now a Senior Policy Advisor at the IMF. Her position is in the Fund's Research Department. Reinhart is on leave from the University of Maryland.

Shang-Jin Wei, a member of the NBER's Programs on "International Finance and Macroeconomics" and "International Trade and Investment" also joins the Fund as an advisor in its research department. Wei had been on leave from Harvard University at the Brookings Institution.

Twenty-Second NBER Summer Institute Held in 2001

In the summer of 2001, the NBER held its twenty-second annual Summer Institute. More than 1100 economists from universities and organizations throughout the world attended. As in prior years, this year's program was funded primarily by a

grant from the Lynde and Harry Bradley Foundation, with additional support from the National Science Foundation and the National Institute on Aging.

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 2001 on our conference page, www.nber.org/~confer.

Economic Fluctuations and Growth

Roughly one hundred academic macroeconomists from all over the world gathered in Cambridge on July 24 to attend the summer research meeting of NBER's Program on Economic Fluctuations and Growth. The meeting was organized by Mark Eiris, NBER and University of Rochester, and Christopher Sims, NBER and Princeton University. These papers were discussed:

Thomas Cooley and **Vincenzo Quadrini**, New York University, and **Ramon Marimon**, NBER and European University, "Institute: Aggregate Consequences of Limited Contract Enforceability"

Discussant: **Stephen Williamson**, University of Iowa

John H. Cochrane, NBER and University of Chicago, "Money as Stock"

Discussant: **Bennett T. McCallum**, NBER and Carnegie Mellon University

Stephanie Schmitt-Grohe, Rutgers University, and **Martin Uribe**, University of Pennsylvania, "Optimal Fiscal and Monetary Policy Under Sticky Prices"

Discussant: **V.V. Chari**, University of Minnesota

Raquel Fernandez, NBER and New York University, **Nozli Guner**, Queen's University, and **John Knowles**, University of Pennsylvania, "Love and Money: A Theoretical and Empirical Analysis of Household Sorting and Inequality"

Discussant: **Michael Kremer**, NBER and Harvard University

Muhammet Fatih Guvenen, Carnegie Mellon University, "Mis-measurement of the Elasticity of Intertemporal Substitution: The Role of Limited Stock Market Participation"

Discussant: **Robert E. Hall**, NBER and Stanford University

Athanasios Orphanides, Federal Reserve Board, "Monetary Policy Rules: Macroeconomic Stability and Inflation: A View From the Trenches"

Discussant: **Eric Leeper**, Indiana University

Cooley, Marimon, and Quadrini develop a general equilibrium model in which entrepreneurs finance investment by signing long-term contracts with a financial intermediary. Because of the enforceability problems, financial contracts are constrained to be efficient. After showing that the micro structure of the model captures some of the observed features of the investment policy and dynamics of firms, the authors demonstrate that limited enforceability makes the diffusion of new technologies to the economy sluggish and amplifies their impact on aggregate output.

Nominal government debt is a

residual claim to government surpluses. Thus, the value of fiat money, just like the price of stock, can be determined in a completely frictionless economy. **Cochrane's** main theoretical objection to this fiscal theory of the price level is that it mistreats the government's intertemporal budget constraint. He shows that the valuation equation for nominal government debt is not, in fact, a budget constraint. Most clearly, a corporation can double shares without changing earnings. This is a stock split and halves the stock price. Similarly, the government can double debt with no change in surpluses. This is a currency reform,

and doubles the price level. Thus, if a currency reform is possible, the nominal debt valuation equation is not a budget constraint. Cochrane anchors this analysis in a simple cash-in-advance model. He makes one small modification: he reopens the security market at the end of the day. With this modification, overnight money demand is precisely zero. Cochrane shows that the price level is still determined by the government debt valuation equation, though. His model shows that the value of unconvertible fiat money can be determined with no money demand as well as with elastic supply.

Schmitt-Grohe and **Uribe** study optimal fiscal and monetary policy under sticky product prices. Their theoretical framework is a stochastic production economy without capital. The government finances an exogenous stream of purchases by levying distortionary income taxes, printing money, and issuing one-period nominally risk-free bonds. The main findings of the paper are: First, for a minuscule degree of price stickiness (that is, many times below available empirical estimates) the optimal volatility of inflation is near zero. This result stands in stark contrast with the high volatility of inflation implied by the Ramsey allocation when prices are flexible. The finding is in line with a recent body of work on optimal monetary policy under nominal rigidities that ignores the role of optimal fiscal policy. Second, even small deviations from full price flexibility induce behavior in government debt and tax rates that is close to a random walk, as in economies with real non-state-contingent debt only. Finally, sluggish price adjustment raises the average nominal interest rate above the one called for by the Friedman rule.

Fernandez and **Guner** examine the interactions between household matching, inequality, and per capita income. They develop a model in which agents decide whether to become skilled or unskilled, form households, consume, and have children. The authors show that matches increasingly are correlated (sorted) in skill type as a function of the skill premium. In the absence of perfect capital markets, depending on initial conditions, the economy can converge to steady states with a high

degree of marital sorting, high inequality, and large fertility differentials, or to states with low sorting, low inequality, and small fertility differentials. Using 34 country household surveys from the Luxembourg Income Study and the Inter-American Development Bank to construct several measures of the skill premium and of the degree of correlation of spouses' education (marital sorting), the authors find a positive and significant relationship between the two variables.

Guvener reconciles two opposing views about the elasticity of intertemporal substitution (EIS), a parameter that plays a key role in macroeconomic analysis. On the one hand, empirical studies using aggregate consumption data typically find that the EIS is close to zero. On the other hand, calibrated macroeconomic models designed to match growth and business cycle facts typically require that the EIS be close to one. Guvener shows that this apparent contradiction arises from ignoring two kinds of heterogeneity across individuals. First, a large fraction of households in the United States do not participate in stock markets. Second, a variety of microeconomic studies using individual-level data conclude that an individual's EIS increases with his wealth. In a dynamic economy which incorporates both kinds of heterogeneity, limited participation creates substantial wealth inequality. Consequently, the dynamic behavior of output and investment is almost entirely determined by the preferences of the wealthy minority of households. At the same time, since consumption is

much more evenly distributed across households than is wealth, estimation using aggregate consumption uncovers the low EIS of the majority of households (that is, the poor). Finally, using simulated data generated by a heterogeneous-agent model, the author shows that the econometric methods used by Hall and others produce biased estimates of the average EIS across individuals. In particular, ignoring the correlation of instruments with (the omitted) conditional variances in the log-linearized Euler equation biases the estimate of the EIS downward by as much as 60 percent.

Orphanides estimates a forward-looking monetary policy reaction function for the Federal Reserve for the periods before and after Paul Volcker's appointment as Chairman in 1979, using information that was available to the FOMC in real time from 1966 to 1995. The results suggest broad similarities in policy and point to a forward looking approach to policy consistent with a strong reaction to inflation forecasts during both periods. This contradicts the hypothesis, based on analysis with ex post constructed data, that the instability of the Great Inflation was the result of weak FOMC policy responses to expected inflation. One difference is that, prior to Volcker's appointment, policy was too activist in reacting to perceived output gaps that proved retrospectively to be overambitious. Drawing on contemporaneous accounts of FOMC policy, Orphanides discusses the implications of the findings for alternative explanations of the Great Inflation and the improvement in macroeconomic stability since then.



Japan Group Meets in Tokyo

Members of the NBER's Working Group on Japan and their guests met in Tokyo on September 14-15. Their two-day session was organized by Magnus Blomstrom, NBER, and Stockholm School of Economics; Jennifer Corbett, Oxford University; Eumio Hayashi, NBER and University of Tokyo; and Anil K Kashyap, NBER and University of Chicago. The following papers and topics were discussed:

Tachun Jung, Yuki Teranishi, and Kunitomu Watanabe, Hitotsubashi University, "Zero Bound on Nominal Interest Rates and Optimal Monetary Policy"

Discussant: Sergio Altman, European Central Bank

Hiroshi Fujiki and Shigenori Shiratsuka, Bank of Japan, "Policy Duration Effect under the Zero Interest-Rate Policy in 1999-2000: Evidence from Japan's Money Market Data"

Discussant: Matthew D. Shapiro, University of Michigan and NBER

Luncheon Speaker: **Heizo Takenaka**, Economics Minister of the Japanese Government

Donald R. Davis and David E. Weinstein, NBER and Columbia University, "Bones, Bombs, and Break Points: The Geography of Economic Activity"

Discussant: Michael M. Knetter, NBER and Dartmouth College

Panel Discussion: The Looming Social Security Crisis in Japan

Chair: **Charles Y. Horioka**, NBER and Osaka University

Panelists: **Taisuo Hatta**, University of Tokyo; **Marten Palme**, Stockholm School of Economics; and **Toshiaki Tachibanaki**, Kyoto University

Ralph Bryant, Brookings Institution, and **Warwick McKibbin**, Australian National University, "Incorporating Demographic Change in Multi-Country Macroeconomic Models: Some Preliminary Results"

Discussant: Eumio Hayashi

Gavin Cameron, Oxford University, "The Sun Also Rises: Productivity Convergence between Japan and the U.S."

Discussant: An Kokko, Stockholm School of Economics

Masaharu Hanazaki, Hitotsubashi University, and **Akiyoshi Horiuchi**, University of Tokyo, "Can the Financial Restraint Hypothesis Explain Japan's Postwar Experience?"

Discussant: Jennifer Corbett

Heather Montgomery, The Asian Development Bank Institute, "The Effect of the Basel Accord on Bank Portfolios in Japan"

Discussant: Joe Peck, University of Kentucky

Takatoshi Ito, NBER and Hitotsubashi University, and **Kimie Harada**, Daito Bunka University, "Japan Premium and Stock Prices: Two Mirrors of Japanese Banking Crisis"

Discussant: Kenji Wada, Kero University

What can a central bank do when faced with weak aggregate demand even after it has reduced the short-term nominal interest rate to zero? To address this question, **Jung, Teranishi, and Watanabe** solve a central bank's intertemporal loss minimization problem. They explicitly consider the non-negativity constraint on nominal interest rates and compute the optimal path of short-term nominal interest rates assuming that the central bank has the ability to make a credible commitment about the future path of those rates. They find that the optimal path depends on history, in the sense that a zero interest rate policy should be continued for a while even after the economy returns to normal. By making such a

commitment, the central bank is able to achieve higher expected inflation, lower long-term nominal interest rates, and weaker domestic currency in the adverse periods when the natural rate of interest deviates significantly from a normal level. The authors show that this channel of monetary policy transmission is quantitatively important.

Fujiki and Shiratsuka quantify the policy duration effect of the zero-interest-rate policy that was implemented in Japan from February 1999 to August 2000. They show that the policy duration effect observed in Japanese financial markets emerged via the expectations (of the future course of monetary policy) channel, supplemented significantly by the liq-

uidity effects of the severe financial conditions at the time. The resulting policy implication is that the effectiveness of a zero interest rate policy depends crucially on financial and economic conditions.

Davis and Weinstein consider the distribution of economic activity within a country in light of three leading theories: increasing returns; random growth; and locational fundamentals. To do so, the authors examine the distribution of regional population in Japan from the stone age to the modern era. They also consider the Allied bombing of Japanese cities in WWII as a shock to relative city sizes. Their results support a hybrid theory in which locational fundamentals establish the spatial pattern

of relative regional densities, but increasing returns may help to determine the degree of spatial differentiation. One implication of these results is that even large temporary shocks to urban areas have no long-run impact on city size.

Building on the theoretical work of Blanchard, Weil, and others, **Bryant** and **McKibbin** incorporate demographic structure into open-economy empirical macroeconomic models. They combine changes in birth and mortality rates with an approximation of age-earning profiles to allow demographic shifts to influence human wealth, consumption, and asset accumulation. Their preliminary work introduces the new approach into two simplified empirical models; they are still refining the empirical adaptation of the theoretical work in both of these models. The stylized shock on which the authors initially focus is an unanticipated and transitory demographic bulge, analogous to the "baby boom" experienced by some industrial nations several decades ago. With the passage of time, the shock results in population aging of the type now confronting industrial nations, especially Japan. One set of simulation results describes the effects when the demographic bulge occurs simultaneously in both of the two model regions. A second set considers the consequences when the shock occurs in one of the regions but not the other. Preliminary findings strongly support the conclusion that this analytical approach is promising. The findings also strongly confirm the hypothesis that differences across countries in the timing and intensity of demographic shifts can have significant effects on exchange rates and cross-border trade and capital flows.

The growth process for a technological leader is different from that of a follower. While followers can grow through imitation and capital deepening, a leader must undertake origi-

nal research. This suggests that as the gap between the leader and the follower narrows, the follower must undertake more formal R and D and possibly face a slower overall growth rate. **Cameron** constructs measures of relative total factor productivity for 11 Japanese manufacturing industries and uses dynamic panel data methods to test whether a smaller productivity gap leads to slower growth, and whether R and D takes over as the engine of growth as Japan approaches the technological frontier. His results suggest that Japanese and U.S. productivity have been growing at similar rates since the mid-1970s, and that some of the Japanese growth slowdown is attributable to the exhaustion of imitation possibilities.

According to the "financial restraint hypothesis" advocated by Hellman, Murdock, and Stiglitz (1996), comprehensive competition-restricting regulation in Japan was effective in motivating banks to monitor their client firms prudently by giving the banks excess profit opportunities. The financial deregulation begun in the early 1980s undermined banks' profitability and thus induced the banks to shirk monitoring. According to the financial restraint hypothesis, Japan's bank crisis in the 1990s was a consequence of the financial deregulation in the 1980s. **Hanazaki** and **Horiuchi** criticize that hypothesis and propose an alternative: that the banking sector was potentially fragile even before the 1980s because the government was unable to penalize inefficiently managed banks in credible ways. Manufacturing firms, which were subject to competitive pressures from abroad, reduced their reliance on bank credit in the late 1970s; non-traded goods industries, such as real estate, became major borrowers of bank credit in the 1980s. This structural change in the market for bank credit revealed the potential fragility of the Japanese banking sector. The authors' empirical analyses

based on more than 1,600 manufacturing firms support this alternative hypothesis.

Montgomery asks whether stricter capital adequacy requirements introduced under the 1988 Basel Accord caused Japanese banks to restrict loan growth. Using a panel of Japanese bank balance sheets for fiscal years 1982-99, she finds that the Basel Accord regulation requiring international banks to hold a BIS (Bank for International Settlements) capital-to-risk-weighted-asset ratio of at least 8 percent increased the sensitivity of total loan growth to capitalization for international banks in Japan. A similar, but quantitatively smaller, finding is reported for a group of "switcher" banks that initially pursued the 8 percent BIS capital adequacy requirement following the signing of the Basel Accord, but then later switched to pursue a domestic 4 percent MOF (Ministry of Finance) capital adequacy requirement. Domestic banks, which were subject to the 4 percent MOF capital adequacy requirement for the entire post-Basel period, show no evidence of increased sensitivity of lending to capitalization in the post-Basel period.

Ito and **Harada** investigate how financial troubles among Japanese banks in the second half of the 1990s were viewed by the market. Specifically, they examine two indicators: the Japan premium and the stock price index of the banking sector in Tokyo. Testing to see whether different kinds of investors saw the banking crisis differently, and what kind of news had the most impact on market pricing of Japanese banks, they find that the factors that most pushed up the Japan Premium were the Daiwa Bank incident in the fall of 1995, failures of large financial institutions in November 1997, and uncertainties in the resolution of banking problem in fall 1998. The bank stock index declined (relative to the general stock index) most with bank failures,

particular the Yamaichi Securities
 ure in November 1997. Individual
 ures of financial institutions may
 may not have an impact on other
 nks' stock prices, the authors con-
 ide. The bank stock index and the
 neral stock index historically
 oved together, but structural

changes occurred in that co-move-
 ment relationship around the summer
 of 1995. News that affects the Japan
 premium and bank stocks sometimes
 is different, the authors note. The
 bank stock price index Granger-
 causes the Japan premium, but the
 reverse does not hold. This result is

consistent with the view that the
 Japan premium reflects both domes-
 tic structural problems and banks' liq-
 uidity problem in the euro dollar
 market, while bank stock prices
 reflect only the former.

Economic Fluctuations and Growth

The NBER's Program on Economic
 Fluctuations and Growth held its fall
 research meeting at the Federal Reserve
 Bank of Chicago on October 19. Charles
 Jones and David H. Romer, both of the
 NBER and University of California at
 Berkeley, organized the meeting and
 chose these papers for discussion.

Michael Kremer, NBER and
 Harvard University, and **Benjamin
 Olken**, Harvard University, "A
 Biological Model of Union Politics"

Discussant: Kevin M. Murphy, NBER
 and University of Chicago

Paul Beaudry, NBER and
 University of British Columbia, and
Fabrice Collard, CNRS-GERMAO, "Why Has the Employment

Productivity Trade-off among
 Industrialized Countries Been so
 Strong?"

Discussant: Susanto Basu, NBER and
 University of Michigan

Olivier J. Blanchard, NBER and
 MIT, and **Francesco Giavazzi**, NBER
 and Bocconi University, "Macroeconomic Effects of Regulation

and Deregulation in Goods and Labor
 Markets" (NBER Working Paper No.
 8120)

Discussant: John F. Kennan, NBER
 and University of Wisconsin

Daron Acemoglu, NBER and MIT, "Labor and Capital Arguing
 Technical Change"

Discussant: Chang-Iin Hsieh,
 Princeton University

Princeton University

Dirk Krueger, Stanford University,
 and **Fabrizio Perri**, New York
 University, "Does Income Inequality
 Lead to Consumption Inequality?
 Empirical Findings and a
 Theoretical Explanation"

Discussant: Pierre-Olivier
 Gourinchas, NBER and Princeton
 University

N. Gregory Mankiw, NBER and
 Harvard University, and **Ricardo
 Reis**, Harvard University, "Sticky
 Information Versus Sticky Prices: A
 Proposal to Replace the New
 Keynesian Phillips Curve"

Discussant: Martin S. Lichenbaum,
 NBER and Northwestern University

Kremer and Olken apply principles from evolutionary biology to the study of unions. They show that unions that maximize the present discounted wages of current members will be displaced in evolutionary competition by unions with more moderate wage policies that allow their firms to live longer. This suggests that unions with constitutional incumbency advantages allowing leaders to moderate members' wage demands may have a selective advantage. When incumbency advantages are reduced exogenously, the model predicts, unions should increase their wage demands. These predictions seem broadly consistent with the evidence.

Beaudry and Collard's paper is

motivated by a set of cross-country observations on labor productivity growth among industrial countries over the period 1960-97. In particular, the authors show that the speed of convergence among industrialized countries has decreased substantially over this period while the negative effect of a country's own employment growth (or labor force growth) on labor productivity has increased dramatically. The paper shows how these observations further support the view that industrialized countries may have been undergoing a particularly drastic technological revolution over the recent past. In effect, the authors show how the process of endogenous technological adoption following the

diffusion of a general purpose technology can explain these observations when demographic factors temporarily become a major determinant of labor productivity growth.

Blanchard and Giavazzi build a model based on two central assumptions: 1) monopolistic competition in the goods market, which determines the size of rents; and 2) bargaining in the labor market, which determines the distribution of rents between workers and firms. They then think of product market regulations as determining both the entry costs faced by firms and the degree of competition between firms. Labor market regulation in turn determines the bargaining power of workers. Having char-

acterized the effects
product market
authors study
First, they analyze
macroeconomic
over the last 20
the behavior
Second, they look
any interaction
d labor market
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Economics of Education

The NBER Program on the Economics of Education, directed by Caroline M. Hoxby, NBER and Harvard University, met in Cambridge on November 1. The following papers were discussed:

Michael Kremer, NBER and Harvard University, and **Edward Miguel**, University of California at

Berkeley, "Worms, Education and Health Externalities in Kenya" (NBER Working Paper No. 8481)

Raquel Fernandez, NBER and New York University, "Education, Segregation, and Marital Sorting: Theory and an Application to the U.K. Data" (NBER Working Paper No. 8377)

Esther Duflo, NBER and MIT, "The

Medium-Run Effects of Educational Expansion: Evidence from a Large-Scale School Construction Program in Indonesia"

Thomas J. Nechyba, NBER and Duke University, "School Finance, Spatial Segregation, and the Nature of Communities"

Intestinal helminths—including hookworm, roundworm, schistosomiasis, and whipworm—infect more than one-quarter of the world's population. A randomized evaluation by **Miguel** and **Kremer** of a project in Kenya suggests that school-based mass treatment with deworming drugs reduced school absenteeism in treatment schools by one quarter; the gains were especially large among the youngest children. Deworming is cheaper than alternative ways of boosting school participation. By reducing the transmission of disease, deworming creates substantial benefits among untreated children in the treatment schools and among children in neighboring schools. These externalities are large enough to justify subsidizing treatment. The authors find no evidence that deworming improves academic test scores, though. Existing experimental studies, in which treatment is randomized among individuals in the school, find that deworming has small and insignificant effects on education; however, these effects underestimate the true treatment effects if deworming indeed reduces drop-out and reduces attrition in the treatment group. **Fernandez** presents a model of intergenerational transmission of income and marital sorting. Parents sort because of their house-

hold income and because their human capital determines the distribution of a child's disutility from making an effort to become skilled. The author shows that in the steady state an increase in segregation has potentially ambiguous effects on the fraction of individuals who become skilled, and hence on marital sorting, the personal and household income distribution, and welfare. Using U.K. statistics, she finds that an increase in the correlation of spouses' years of education will bring about a small increase in the proportion of skilled individuals when the relative supply of skilled individuals is endogenous, and a decrease when the supply is exogenous. The welfare effect of increased sorting is negative for unskilled individuals, but ex ante utility is greater in the endogenous case.

Duflo studies the medium-run consequences of an increase in the rate of accumulation of human capital in a developing country. From 1974 to 1978, the Indonesian government built over 61,000 primary schools. The program led to an increase in education among individuals who were young enough to attend primary school after 1974, but not among the older cohorts. Duflo's estimates suggest that an increase of 10 percentage points in the proportion of primary school graduates in the labor force reduced the wages of the older cohorts by 3.8-10 percent

and increased their formal labor force participation by 4-7 percent. Her results suggest that physical capital did not adjust to the faster increase in human capital. This suggests that adjustment to shocks is extremely slow in developing countries.

While the issue of school finance has been studied extensively, relatively little effort has been devoted to understanding how school finance policies affect the nature of communities. This is peculiar in light of substantial evidence that public school quality—at least in the United States—has much to do with residential choices by households, and in light of increasing empirical evidence that residential segregation perpetuates income inequality. In this paper, **Nechyba** emphasizes the importance of considering not only the level of government that is funding public schools but also the role played by the private sector. Somewhat surprisingly, simulation results based on U.S. data suggest that, in terms of producing spatial income segregation, the role of centralization versus decentralization of public school financing is quite secondary to the role played by the private sector. Motivated by this insight, the author reports on additional simulations involving explicit government support for private schools in the form of vouchers.

Working Group on
Finance, directed by
Prof. NBRK and Yale
Prof. Richard H. Thaler
University of Chicago, met
on November 10. They
discussed the following papers:

Prof. NBRK and Harvard
Prof. Robert W. Vishny
University of Chicago
"Driven Acquisitions"
David A. Schaubert
MIT
Prof. and Pedro Santa-Clara
of California, Los Angeles
"Credit Risk Market"
Prof. John W. Campbell, NBRK

Ger and Vishny present a model of mergers and acquisitions in a stock market misvaluations combining firms. The key ingredients of the model are the relative valuations of the merging firms, the horizons of their respective managers, and the market's perception of the synergies from the combination. The model explains who acquires whom, whether the medium of payment is cash or stock, what the valuation consequences of mergers are, and why there are merger waves. The model is consistent with available empirical findings about characteristics and outcomes of merging firms, and yields new predictions as well.

Goyal and Santa-Clara take a new look at the tradeoff between risk and return in the stock market. They find a significant positive relationship between average stock variance and the return on the market. Therefore, there is a tradeoff between risk and return in the stock market, but risk is measured as total risk, including idiosyncratic risk, not simply systematic risk. Further, the authors find that the variance of the market by itself has no

and Harvard University
Harrison Hong, Stanford University
 and **Jeffrey D. Kubik**, Syracuse University, "Analyzing the Analysts' Career Concerns and Biased Earnings Forecasts"
 Discussant: Kent Womack, Dartmouth College
Brad M. Barber, University of California, Davis, and **Terrance Odean**, University of California, Berkeley, "All that Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors"
 Discussant: Sandhir Mullainathan, NBER and MIT

Charles M. Jones, NBER and
Columbia University, and **Owen A.
Tamarit**, NBER and University of
Chicago, "Short Sale Constraints and
Stock Returns"
Discussant: **Kent Daniel**, NBER and
Northwestern University
Artyom Durnev, University of
Michigan, **Randall Morck**, NBER and
University of Alberta, and **Bernard
Yeung**, New York University, "Value
Enhancing Capital Budgeting and
Firm-Specific Stock Returns Variation"
Discussant: **Jeremy C. Stein**, NBER
and Harvard University

forecasting power for market return. These relationships persist even after the authors control for macroeconomic variables known to forecast the stock market. Idiosyncratic risk explains most of the variation of average stock risk through time and drives the forecastability of the stock market.

Hong and Kubik examine the career concerns of security analysts: they relate long histories of their earnings forecasts to job separations. It turns out that relatively accurate past forecasts lead to favorable career outcomes, such as remaining at or moving up to a high status (large, prestigious) brokerage house. Controlling for analysts' accuracy, optimistic forecasts relative to the consensus forecast increase the chances of favorable job separations. Job separations depend much less on accuracy for those analysts who cover stocks that are underwritten by their brokerage houses. Such analysts are also much more likely to be rewarded for optimistic forecasts than other analysts. Furthermore, job separations have been much less sensitive to accuracy and somewhat more sensitive to opti-

Barber and Odean test the hypothesis that individual investors are more likely to be net buyers of attention-grabbing stocks than institutional investors are. The authors speculate that attention-based buying is a result of the difficulty that individual investors have in searching the thousands of stocks they can potentially buy. Individual investors don't face the same search problem when selling, because they tend to sell only a small subset of all stocks — those they already own. The authors look at three indications of how likely stocks are to catch investors' attention: daily abnormal trading volume; daily returns; and daily news. They calculate net order imbalances for more than 66,000 individual investors with accounts at a large discount brokerage, 647,000 individual investors with accounts at a large retail brokerage, 14,000 individual investor accounts at a small dis-

count brokerage, and 43 professional money managers. The individual investors tend to be net purchasers of stocks on high attention days — days when those stocks experience high abnormal trading volume, days following extreme price moves, and days on which stocks are in the news. Institutional investors are more likely to be net buyers on days of low abnormal trading volume than days of high abnormal trading volume. Investors' reaction to extreme price moves depends on their investment style. The tendency of individual investors to be net buyers of attention-grabbing stocks is greatest on days of negative returns. The authors speculate that this tendency may contribute to momen-

tum in small stocks with losses.

Stocks can be overpriced when constraints on short sales are binding. **Jones** and **Lamont** study the costs of short selling equities between 1926 and 1933, using the publicly observable market for borrowing stock. Some stocks are sometimes expensive to short, and it appears that stocks enter the borrowing market when shorting demand is high. The authors find that stocks that are expensive to short, or which enter the borrowing market, have high valuations and low subsequent returns; this is consistent with the overpricing hypothesis. Size-adjusted returns are 1 to 2 percent lower per month for new entrants; despite high costs, it is profitable to short them.

A major issue in corporate finance is the extent to which managers' decisions enhance firm value. **Durnev**, **Morck**, and **Yeung** show that capital budgeting decisions are more consistent with value maximization in those industries whose stocks exhibit greater variation in firm-specific returns. This finding argues against the view that variation in firm-specific returns is simply noise, and supports Roll's (1988) view that it indicates activity by risk arbitrageurs. As a result, the authors argue that corporate investment decisions tend to enhance firm value more where there is more firm-specific risk arbitrage activity.



United States and Japan
Aging Issues in the

Aging Issues in the United States and Japan, edited by Seiritsu Ogura, Toshiaki Tachibana, and David A. Wise, is available from the University of Chicago Press for \$75.00. This NBER Conference Volume, the third in a joint series offered by the NBER and the Japan Center for Economic Research, explores the consequences of an aging population in the two countries. Among other topics, it considers: incentives for early retirement; the allocation of savings, wealth, and assets over a life time; health care and its reform; and population projections.

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NBER Working Papers

Paper	Author(s)	Title
8397	Frederic S. Mishkin Klaus Schmidt-Hebbel	One Decade of Inflation Targeting in the World: What Do We Know and What Do We Need to Know?
8398	Bruce A. Blonigen Thomas J. Prusa	Antidumping
8399	Edward J. Kane	Using Deferred Compensation to Strengthen the Ethics of Financial Regulation
8400	Eckhard Janeba	Attracting FDI in a Politically Risky World
8401	Jenny Williams Rosalie Liccardo Pacula Frank J. Chaloupka Harry Wechsler	Alcohol and Marijuana Use Among College Students: Economic Complements or Substitutes?
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