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Program Report

Progress Report on the Children's Program

Jonathan Gruber*

The impact of public policy on the well-being of children continues to be a major area of interest for policymakers. Likewise, the economics of children's issues continue to concern members of the Children's Program at the NBER. This Program brings together a wide variety of researchers from across many different fields, including labor economics, public economics, industrial organization, econometrics, and development economics. These researchers work on a diverse set of issues related to the wellbeing of children, and present their work in annual meetings each spring and in the NBER's Summer Institute. Much of the work that is done by Children's Program members is funded by an Integrated Research Program Grant from the National Institute of Child Health and Human Development.

The first report on the Children's Program was written four years ago; since that time, the Program has continued to thrive because of a rapid growth in its roster of members, including some of the most exciting young economists in the profession. In this report, I focus on the contributions of this group of researchers in five areas: the economics of education; evaluating welfare reform; modeling child health and insurance coverage; modeling and assessing the implications of risky behaviors among youth; and modeling the determinants of and assessing the implications of family structure for youth.

Education

The economics of education remain the main focus for researchers affiliated with the Children's Program. This research is concerned with estimating the labor market returns to additional schooling. The problem

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facing researchers has been that individuals who obtain higher levels of schooling may be of higher ability, so their higher wages later in life could reflect the returns to their ability and not to the education per se. David Card (WP 7769) reviews a number of clever solutions to this problem that have been suggested by researchers, including comparing those who differ in their access to schools, or those subject to different compulsory schooling laws. He concludes that the returns to additional education are larger than traditional estimates, reflecting the fact that the low-income groups that are affected by supply-side innovations have particularly high returns to schooling. Consistent with this conclusion, Philip Oreopolous (10155) shows that students who are allowed to drop out of school earlier through looser compulsory schooling laws see enormous reductions in their lifetime earnings, wealth, and health. He finds that dropping out one year later increases future income by more than ten times the foregone wages during that extra year of high school. Esther Duflo (7860, 8710) shows that in Indonesia a massive school construction project was associated with substantial improvements in the labor market outcomes of the generation of students that benefited from that program.

In assessing the appropriate government role in education, however, what matters is not only the *private* returns in terms of higher wages, but also the *public* returns to society from having a more highly educated populace. Researchers in the Children's Program have made great progress over the past few years in documenting these public returns, relying on the type of solutions used to estimate the wage returns to education. Thomas Dee (9588) and Kevin Milligan, Enrico Moretti, and Oreopolous (9584) show that higher education attributable to college availability and compulsory schooling laws leads to higher levels of civic participation, in terms of voting and awareness of public issues. Adriana Lleras-Muney (8986) demonstrates that higher education related to compulsory schooling laws in the early twentieth century led to reduced mortality later in life. Janet Currie and Moretti (9360) show that higher maternal education linked to college openings leads to improved health for the infants of these mothers. Oreopolous, Marianne E. Page, and Ann Huff Stevens (10164) find that stronger compulsory schooling requirements for parents not only increased their own education, but also the education of their children, suggesting important intergenerational effects of education policy. Finally, there is some debate over whether

higher levels of education among some workers "spill over" to higher productivity levels among their co-workers, with Moretti (9108, 9316) finding evidence for such spillovers, and Daron Acemoglu and Joshua Angrist (7444) finding no evidence for spillovers.

Another focus of research for Children's Program members has been assessing innovative ways to improve school quality and student outcomes. Angrist and Victor Lavy (9389) study an Israeli program that provided a cash bonus for high school matriculation. They find that such bonuses are effective when provided to an entire school, but not to individual students within the school. Brian A. Jacob and Lars Lefgren (8918) find that assigning students to remedial summer education improved the school performance of third graders, but not sixth graders. David N. Figlio and Maurice E. Lucas (7985) find that students benefit from having teachers who have relatively high grading standards. Alan Krueger (8875) reviews the evidence showing that reduced class size improves student performance, and Krueger and Diane Whitmore (7656) provide additional positive evidence for the effects of a Tennessee experiment that reduced class sizes in terms of increasing college entrance exam-taking, particularly for minorities. Angrist and Jonathan Guryan (9545) find that teacher-testing programs in the United States lead to higher teacher wages, but no improvement in teacher quality.

Another exciting new area of research for Children's Program members is the effect of school choice and school accountability efforts on educational production and student outcomes. The results on the impact of existing school choice programs are mixed. As Caroline Hoxby (8873) argues, existing evidence as of 2001 suggests that school choice could greatly improve the productivity of schooling in the United States. But Julie Cullen, Brian A. Jacob, and Steven Levitt (10113) study a Chicago program which used a lottery to assign slots to the most desired public schools, and they find no improvement in outcomes for those students assigned to the best schools. And, Krueger and Pei Zhu (9418) reevaluate a voucher program in New York City and find no evidence of a resulting improvement in student outcomes. So, the impact of school choice on student outcomes remains a lively area of debate.

Another popular policy initiative at both the state and federal level is to make schools more accountable for the performance of their students on standardized exams, for example by tying school funding to school performance. While the incentives tied to accountability may improve educational production, a number of studies by Children's Program researchers have shown that efforts to make schools more accountable for their performance are also having perverse effects on educational incentives. For example, David Figlio and Lawrence S. Getzler (9307) find that making schools accountable for their performance on a Florida exam led the schools to classify low-skills students as disabled (and thus excluded from testing) in order to raise their test scores. Figlio and Joshua Winicki (9319) find that schools even manipulated their menus around testing time, increasing calories to improve student energy levels and test scores. Jacob and Levitt (9413, 9414) use clever statistical methods to identify cheating by teachers on standardized exams (through giving out the right answers to their students), and propose means of identifying and addressing this cheating. Jacob (8968) finds strong evidence that accountability leads schools to "teach to the test": the introduction of such an accountability system tied to a particular test in Chicago led to improved scores on that test, but no improvement on a more general test which did not matter for school accountability. This finding is mirrored in a paper by Paul Glewwe, Nauman Iilas, and Michael Kremer (9671) in the context of a developing country: they find that such teaching-to-the-test occurs in an incentive program in Kenya. And, Thomas J. Kane and Douglas O. Staiger (8156) highlight the unreliability of year-to-year variation in school test scores, particularly for small schools, as a means of assessing school performance.

As teachers in institutions of higher education, economists in the Children's Program continue to be fascinated by the economics of the higher education sector as well. Susan Dynarski (7756, 9400) finds that state "merit aid" programs that provide subsidies to in-state students who meet a modest high school achievement standard raise the probability of college attendance by 5 to 7 percentage points, but that a particular program in Georgia had benefits that were focused solely on higher income groups because of more stringent achievement requirements and poor income targeting. Dennis Epple, Richard Romano, and Holger Seig (9799) use a sophisticated model of college admissions processes to predict that abolishing affirmative action would lead to a large fall in non-white representation at top colleges and universities. Kane (9703) finds that a California grant program for college costs significantly increased college matriculation among applicants, particularly in four-year colleges. Christopher Avery and Hoxby (9482) find that students respond somewhat irrationally to the design of college aid packages, irrationally preferring grants that are called "scholarships" and are front-loaded to provide more benefits in initial years. David M. Linsenmeier, Harvey S. Rosen, and Cecelia E. Rouse (9228) find some evidence that moving from a loan to a grant system at one university led to increased matriculation by low income minority students.

Welfare Reform

One particular concern about welfare reform is that it led individuals to lose the public health insurance coverage they receive through the Medicaid program; in principle, families could retain health insurance coverage when they leave welfare, but in practice families may not have been aware of this benefit. In fact, Kaestner and Neeraj Kaushal (10033) find that welfare reform was associated with a sizeable rise in the loss of insurance among single mothers, and Kaestner and Won Chan Lee (9769) find that there were reductions in use of prenatal care and increases in low birth weight infants.

One of the most important changes in programs affecting children over the past several decades was the major reform of cash welfare programs targeted to single mothers in the United States. The 1996 reforms gave states much more freedom to design their cash welfare programs and imposed time limits on the receipt of cash welfare. A large body of work by researchers in the Children's Program over the past few years has assessed the impacts of these reforms. Robert Moffitt (8749) and Rebecca Blank (8983) review this work, and other related work on this topic. An excellent overview of the impacts of all of the redistributive transfer programs in the United States is provided in Moffitt's recent volume, *Means Tested Transfer Programs in the U.S*. The introduction to that volume is Moffitt (8730).

A major focus of work in this area has been the impact of welfare reform on the labor supply of single mothers and the wellbeing of their families. Robert Scheoni and Blank (7627) find that welfare reform led to reduced welfare participation and increased family earnings, so that total family income rose and poverty declined as a result. Similarly, Bruce D. Meyer and James X. Sullivan (8928) find that the consumption of families headed by single mothers did not decline as a result of welfare reform. Melissa Kearney (9093) and Theodore Joyce, and Robert Kaestner and Sanders Korenman (9406) find that welfare reform had no effect on nonmarital fertility in the United States, although Marianne P. Bitler, Jonah B. Gelbach, and Hilary W. Hoynes (8784) do find important effects on living arrangements of women and children. Jeffrey Grogger (7709) finds that the time limits imposed through welfare reform caused significant declines in welfare participation among those families with younger children, possibly concerned that they not "use up" their limited time on welfare.

Child Health and Insurance Coverage

A major topic of longstanding interest to members of the Children's Program has been the health and health insurance coverage of children. Public health insurance is provided for children under the Medicaid program, as I review in WP 7829. The literature as of that year (2000) suggested that expanding Medicaid increases public insurance coverage, decreases private insurance coverage, and reduces use of welfare (by allowing individuals to maintain insurance when they leave welfare). More recent work by Children's Program members has provided more mixed evidence with respect to these conclusions. Card and Lara D. Shore-Sheppard (9058) find that Medicaid expansions to non-poverty groups of children had little impact on either Medicaid or private health insurance coverage, while Currie and Grogger (7667) find that expansions did increase insurance coverage among children, but that this was offset to some extent by welfare contractions. Meyer and Dan T. Rosenbaum (7491) and John C. Ham and Shore-Sheppard (9803) find that Medicaid expansions did not have significant effects on welfare participation.

An interesting series of more recent papers have delved into the important issue of how socioeconomic status affects the health of children. Anne Case, Darren Lubotsky, and Christina Paxson (8344) find that child health rises with family income, and that this relationship strengthens as children age; a large part of this relationship appears to be caused by the superior ability of high-income families to deal with chronic health problems in their children. Currie and Mark Stabile (9098) explore this relationship further using Canadian data and find that the major problem is the higher incidence of negative health shocks for low-income families. Case, Angela Fertig, and Paxson (9788) find that childhood health has a very persistent effect and that individuals in worse health as children have poorer adult health, lower educational attainment, and lower adult earnings. Case and Paxson (7691) find that children living with stepmothers (as opposed to biological mothers) are less likely to have routine medical visits, although this effect is mitigated if the children have regular contact with their biological mothers.

Risky Behaviors

Youths engage in a variety of risky behaviors on a frequent basis: drinking, smoking, consuming illegal drugs, driving recklessly, having unprotected sex, dropping out of school, and others. This motivated an earlier study through the Children's Program that I edited: *Risky Behavior Among Youth*. In the past few years, a large number of papers have continued this research agenda.

A primary focus of this research has been on smoking. Botond Koszegi and I (7507, 8777) have developed a theory of smoking which highlights the self-control problems faced by smokers who want to quit. This theory suggests much more interventionist government policies than are recommended by traditional economic models.[1] Sendhil Mullainathan and I (8872) develop evidence that supports this alternative model, finding that higher cigarette taxes raise the self-reported wellbeing of smokers. John A. Tauras, Patrick M. O'Malley, and Lloyd D. Johnston (8331) find that higher cigarette prices deter teens from starting to smoke. Matthew C. Farrelly, Terry F. Pechacek, and Frank J. Chaloupka (8691) find that increased state funding for tobacco control programs has reduced tobacco use in recent years. Greg Coleman, Michael Grossman, and Ted Joyce (9245) find that higher cigarette prices have a strong effect in deterring women from smoking when they are pregnant, and in preventing relapse to smoking after childbirth. Donna B. Gilleskie and Koleman S. Strumpf (7838) find that price responsiveness is much stronger among teens who do not yet smoke than among teens who are already smokers.

Other research in this area has focused on costs for youths of using illicit drugs or consuming alcohol. Rosalie L. Pacula and Beau Kilmer (10046) find that consumption of marijuana is associated with increased property crimes and increased odds of getting caught for violent crimes. Naci Mocan and Erdal Tekin (9824) find that use of illicit drugs by one twin, when the other does not use the drugs, is associated with a much higher incidence of criminal behavior. Pacula,

Karen E. Ross, and Jeanne Ringel (9963) find that marijuana use is associated with a 15 percent decline in performance on standardized exams. Grossman and Sara Markowitz (9244) find that alcohol use does not increase the likelihood of having sex or of having multiple sexual partners, but it does lower the odds of using birth control. Michael Kremer and Dan Levy (9876) use randomized assignment of roommates in college to demonstrate that individuals assigned to a roommate who is a drinker in the year before college have a grade point average which is one-quarter point lower than if they were assigned a non-drinking roommate, and that this effect is much larger than effects of the roommate's high school grades or family background. Finally, Jenny Williams, Pacula, Chaloupka, and Henry Wechsler (8401) find that alcohol use and marijuana use among college students are complements, so that reducing use of one substance leads to reduced use of the other.

Family Structure

The final major area of research by Children's Program members is the determinants and consequences of family structure. One exciting topic of research has been the implications of abortion availability. Philip B. Levine and Douglas Staiger (8813) argue that abortion availability both provides a form of "insurance" against unwanted pregnancies and reduces the incentive to avoid pregnancies through birth control or abstinence. They find evidence consistent with these contentions in Eastern Europe, where legalizing abortion led to a large drop in births, but reducing the costs of abortion once available led to a rise in pregnancies that was offset by a rise in abortions. John Donohue and Levitt (8004) argue that increased abortion availability in the early 1970s led to reduced crime in the early 1990s (roughly 18 years later), as the children not born because of abortion availability would have been particularly likely to commit crimes. Joyce (8319) disagrees with those findings, and Donohue and Levitt (9532) respond, leading to a lively debate on this important topic. The opposite fertility incentive was provided in Quebec from 1988 to 1997, which offered a very large bonus to families for having additional children, up to $8000 for the third child. Milligan (8845) finds that this policy caused a sizeable increase in births in Quebec, but that the response was concentrated among higher income families (which is consistent with the lack of birth response to welfare reforms among lower income groups).

Another potentially important determinant of child wellbeing is marital dissolution. I compare children who grew up in states where divorce was easier to obtain to those who grew up in states where divorce was more difficult to obtain, and find that growing up where divorce was easier leads to more parental divorce and much worse outcomes later in life in terms of education, income, and marital stability (7968). Page and Stevens (8786) find that divorce is associated with a dramatic reduction in family resources, with income falling by 40-45 percent and consumption falling by 17 percent six or more years after the divorce.

Conclusions

The past four years have seen continued growth in the areas of interest and depth of research done by members of the Childrens' Program. The results are an important set of findings that dramatically advance our understanding of how education affects children, what the impacts of welfare reform on family well-being were, what determines the health and health insurance coverage of children, how children decide to engage in risky behaviors, and the implications of alternative family structures for child outcomes. The findings summarized here are only a small part of the total research done by the Children's Program, which includes work on youth employment, childcare, nutrition, and other topics. This policy-relevant work will continue to promote our understanding of children's well-being in the United States and around the world.

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[1] *J. Gruber, "The New Economics of Smoking," NBER Reporter, Summer 2003.*

Research Summaries

Explaining European Unemployment

Olivier J. Blanchard*

Unemployment, Shocks, and Institutions

Anybody attempting to explain the evolution of unemployment in Europe over the last 30 years must confront the following set of facts: First, high unemployment is not a European trait. Until the end of the 1960s, unemployment was very low in Europe and the talk then was of the "European unemployment miracle." The miracle came to an end in the 1970s, when unemployment steadily increased. It kept increasing in the 1980s. It appeared to turn around in the mid-1990s, but the decline is (temporarily?) on hold. For the European Union as a whole, the current unemployment rate is still very high, around 8 percent.

Second, the evolution of the average European unemployment rate hides large cross-country differences. In the four large continental countries — France, Germany, Spain, and Italy — the unemployment rate has increased steadily and remains very high, around 10 percent. (The Spanish unemployment rate has been cut in half since its peak, but remains above 10 percent.) In a number of smaller countries, notably Ireland and the Netherlands, unemployment increased until the early 1980s, but has steadily decreased since then. Unemployment is less than 5 percent in both countries today. In a number of other countries, notably Sweden and Denmark, unemployment has remained consistently low — except for a bout of high cyclical unemployment at the start of the 1990s. Unemployment is below 5 percent in both countries today.

Third, at a given unemployment rate, individual unemployment duration is substantially longer, and flows in and out of unemployment substantially lower, in Europe than in the United States.[1] And, the increase in European unemployment reflects an increase in duration rather than an increase in flows. As a result, duration is high. In Germany and Italy for example, more than half of the unemployed today have been unemployed for more than one year.

Finally, if one takes the change in inflation as a rough indicator of whether the rate of unemployment is above or below the natural rate, one must conclude that, apart from cyclical movements in the early 1980s and early 1990s, the broad movements in the unemployment rate have reflected movements in the natural rate of unemployment. In particular, over the last few years, inflation has declined only slightly, suggesting that the natural rate today is lower than, but close to, the actual unemployment rate.

Shocks

The initial increase in unemployment in the 1970s coincided with a number of adverse shocks — some worldwide, some specific to Europe. Thus, much of the initial research naturally focused on the role of shocks in explaining the increase in the natural rate of unemployment. In the 1970s, raw materials prices rose sharply. More importantly, but less visibly at the time, the high rate of productivity growth that had characterized the post-war period came to an end. To the extent that workers did not fully adjust to these changes, these shocks plausibly could have led to an increase in the cost of labor, and so to the increase in unemployment. In the 1980s, tight money led to a prolonged period of high real interest rates, and so to a large increase in the user cost of capital. This in turn could have led to low capital accumulation, and by implication, lower employment growth and higher unemployment.

That is why initial explanations focused on shocks. However, looking at it from today's vantage point, an explanation of unemployment based on shocks runs into two main difficulties: first, shocks were largely similar across countries. The decline in productivity growth was largely common to all European countries. The same is true of most other shocks: while the increase in interest rates varied across countries, real interest rates increased in all countries from the early 1980s on. Yet, as we have seen, the evolutions of unemployment have been very different across countries.

Second, the oil price increases of the 1970s turned into decreases in the 1980s. Underlying productivity growth has remained low, but it is hard to believe that 25 years later, workers' expectations have not adjusted to the new reality. Yet, as we have seen, the natural rate of unemployment remains high in Europe today. This requires either very long lasting effects of shocks or the advent of new adverse shocks. The quantitative evidence on new adverse shocks, such as an

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increased pace of reallocation attributable to technological progress and globalization, is, however, mixed at best.

Institutions

By the mid-1980s, these difficulties led researchers to turn their attention increasingly to labor market institutions as the main factor behind high unemployment. Many of these institutions are inherently multidimensional, so it is hard to summarize their evolution over time in a simple way. The evidence, such as it is, suggests the following: social protection is high in Europe. Unemployment insurance is more generous than in the United States, both in terms of the replacement rate and of the length for which benefits are given. Employment protection often has a large administrative and judicial component. The tax wedge between labor costs and take home pay is high, although this reflects in large part the higher proportion of services that are provided by the state rather than by the market in Europe.

However, explanations of European unemployment based on institutions run into two difficulties: first, European labor market institutions did not come into being in the early 1970s. For the most part, both the architecture and the level of social protection were put in place earlier, and were then consistent with low unemployment. In many (but not all) countries the increase in unemployment in the 1970s was associated with a small further increase in the generosity of unemployment insurance, a small increase in employment protection, and an increase in the tax wedge. From the mid-1980s on, most reforms have moved in the opposite direction. They typically have been limited and non-systemic, eliminating the worst distortions while maintaining the existing degree of social protection.

Second, labor market institutions differ across European countries. Still, there is no obvious relationship between the degree of social protection and the unemployment rate today. For example, the Netherlands has returned to low unemployment while continuing to offer high social protection. Scandinavian countries have maintained both high social protection and a low natural rate of unemployment.

My initial forays into European unemployment were aimed at explaining the dynamic effects of shocks on the natural rate, and the role of institutions in shaping these effects. In work with Lawrence H. Summers, I focused on how, when wages were set in collective bargaining, shocks could have long lasting effects on the natural rate (the "hysteresis" hypothesis). In work with Peter A. Diamond, I explored the effects of shocks in models with explicit flows and individual bargaining. In work with Lawrence F. Katz, I developed simple models of the determination of the natural rate and the Phillips curve. This research was summarized in an *NBER Reporter* article in 1995.

Starting in the mid-1990s, I explored whether I could develop a coherent story for the evolution of European unemployment both across time and across countries and whether I could account for the set of facts presented above. I have followed two strategies, the first based on a structural approach, the second on a reduced-form approach.

The Structural Approach

If higher unemployment is caused by excessive wage demands, one should see it in the data. One should see an increase in wages, given unemployment, and a subsequent decrease in employment. One should also see a decrease in the profit rate, an effect on capital accumulation, and on subsequent employment. If higher unemployment is instead attributable to an increase in the real interest rate, then one should see lower capital accumulation, leading in turn to lower employment over time.

These simple ideas underlie the strategy I followed in this first approach.[2] I assumed that, in the absence of shocks, each European economy would have grown on a balanced path, with Harrod-neutral technological progress, a stable unemployment rate, a stable output/capital ratio, and real wages growing at the underlying rate of technological progress. I then measured deviations of these variables from their balanced growth path values, and with simple identification restrictions, I obtained empirical series for "labor supply shifts," or shifts in wages given unemployment and the level of technology; for "user cost shifts," or shifts in the cost of capital; and for "labor demand shifts," or shifts in wages given employment, capital, and the level of technology.

The strength of this approach is that it provides a simple interpretative grid, not just for movements in unemployment but, more generally, for joint movements in capital, employment, output, real wages, and user costs over time. Its limits are equally clear: it cannot tell where the shifts themselves come from, for example whether "labor supply shifts" come from increased union militancy or from changes in institutions, but it tells us where to look. Applying this methodology to each European country yielded a number of interesting findings.

Most findings confirmed the prevailing wisdom. In most countries, the main proximate cause of the increase in unemployment in the 1970s and the early 1980s was indeed a series of adverse "labor supply shifts," that is a series of steady increases in wages given unemployment and the level of technology. By the mid-1980s however, this movement was reversed, and wage moderation prevailed. By the early 1990s, in most countries, the early adverse labor supply shifts had been fully reversed. And, wage moderation was indeed stronger in some of the countries with the sharpest turnaround in unemployment: the dramatic decreases in unemployment in Ireland and the Netherlands indeed were associated with unusually large wage moderation from the early 1980s on.[3]

However, some findings were more puzzling. In particular, wage moderation from the early 1980s on did not translate into the increase in employment that one would have expected. For Europe as a whole, real wages are now back on (or below) their benchmark growth path, yet unemployment remains high. Another reflection of this fact is the dramatic decline in the labor share that has taken place in Europe since the early 1980s. In many countries, the share of

labor in the business sector has declined by 5 to 10 percentage points of GDP, a very large shift by historical standards.

In my interpretative model, these shifts simply were labeled "labor demand shifts." However, this is just giving a name to a phenomenon, not providing an explanation for it. In principle, these shifts may come from one of two sources: they may reflect non-Harrod-neutral technological progress, in which case one would like to understand whether this non-neutrality was endogenous, that is triggered by some of the factors affecting unemployment, or exogenous, thus caused by the nature of technological progress during that period. Or, they may reflect changes in the nature of price or wage setting: an increase in monopoly power for example will increase prices given wages, and so will reduce the real wage at any given level of employment, and reduce the labor share. In a series of papers, I explored whether these shifts could be explained by deregulation in labor and goods markets.[4] While these papers are, I think, successful in providing a way to think about the macroeconomic effects of regulation and deregulation, I do not feel that they provide a satisfactory explanation for what lies behind the "labor demand shifts" documented above. More needs to be done on what is an important and still mysterious part of the story of European unemployment.

The Reduced Form Approach

This second approach, which I explored first with Justin Wolfers,[5] came from the need to organize and assess the quantitative evidence on unemployment, shocks, and institutions. The approach was straightforward. For each country and each year, I constructed time series for the main shocks identified in previous research, namely changes in the rate of technological progress, changes in the real interest rate, and labor demand shifts. For each country, relying on the work of the OECD and others, I constructed quantitative measures of labor market institutions, from replacement rates and length of benefits for unemployment insurance, to indexes of employment protection, to indexes of coordination in collective bargaining. For a few of these institutions, time series could be constructed; for others, they could not.

I then ran panel data regressions of unemployment for each year (or more precisely for each five-year period) and each European country, on shocks, institutions, and shocks interacted with institutions. In one variant, unemployment was run on time effects and time effects interacted with institutions. This alternative specification allows for a more agnostic and flexible specification of shocks over time (the shocks are captured by time effects), but implicitly imposes the assumption that shocks have been the same across countries.

The main results were that shocks could explain the general evolution of European unemployment since the 1970s, but they could not explain the heterogeneity of evolutions across countries. For example, measures of shocks were quite similar in Spain and Portugal, while unemployment evolutions in the two countries have been extremely different. Portugal in fact has avoided high unemployment.

Based on the evidence on the evolution of the limited number of institutions for which we had time series, institutions could not explain much of the evolution of unemployment over time.

Interactions between shocks and institutions could account both for the time-series evolution and the heterogeneity of experiences across data. This was true whether explicit measures of shocks or time effects were used. In either case, the econometric evidence suggested that, for a given adverse shock, countries with either long lasting unemployment benefits or high employment protection, or little coordination and centralization of collective bargaining, experienced a larger and longer increase in unemployment. In other words, these particular institutions appeared to generate a larger and longer lasting effect of shocks on unemployment.

The panel data approach used in that paper has been tested by a number of other researchers, and the conclusions appear fairly robust. Let me mention however one qualification and one extension, both of which I see as important.

Relying on some new evidence on the time evolution of institutions, Steven Nickell[6] has argued that the evolution of institutions has played a stronger role in the evolution of unemployment than Wolfers and I had concluded. This may well be the case, and the issue can only be settled by the use of better time series on institutions.

Looking more closely at some of the "unemployment miracles," in particular the dramatic decline in unemployment in the Netherlands, I concluded that the large wage moderation did not come so much from changes in institutions as from the behavior of unions, which had become convinced that wage moderation was key to a decrease in unemployment. It appeared that Dutch unions had accepted the argument by firms that they needed to reestablish profit margins in order to increase employment. This led me to explore, with Thomas Philippon, the role of trust between capital and labor in the evolution of unemployment.[7]

Using various measures of trust between firms and unions, we found that differences in trust indeed could explain much of the differences in the evolution of unemployment across countries. Adding trust to the other institutions in the Blanchard-Wolfers specification, we found trust to also be strongly significant. A tentative conclusion is that, in an environment in which collective bargaining is central to wage determination, not only formal labor market institutions, but also good labor relations, are crucial to reducing the effects of adverse shocks on unemployment.

This set of results, as a whole, has a number of policy implications: Labor market institutions matter; they affect both the size and the duration of the effects of the shocks on unemployment. High social protection is not inconsistent with low unemployment. However, it must be provided efficiently.

This in turn raises two broad questions. In those countries where social protection is inefficient, will governments reform labor market

institutions? In a recent paper, I speculate that reforms in goods and financial markets will indeed force reforms in the labor market.[8]

The other question is normative. If governments want to reform their labor market institutions, how should they do it? To answer this last question, Jean Tirole and I have started working on the optimal design of labor market institutions.[9] Hopefully this will be the topic of another *NBER Reporter* article in the future.

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[1] *O.J. Blanchard and P. Portugal, "What Hides behind an Unemployment Rate? Comparing Portuguese and U.S. Unemployment," NBER Working Paper No. 6636, July 1998, and in* American Economic Review*, 91 (1) (March 2001), pp. 187-207.*

[2] *O.J. Blanchard, "The Medium Run," in* Brookings Papers on Economic Activity*, 2 (1997), pp. 89-158. O. J. Blanchard, "Revisiting European Unemployment: Employment, Capital Accumulation, and Factor Prices,"* NBER *Working Paper No. 6566, May 1998, and Geary Lecture,* ESRI*, June 1998.*

[3] *O.J. Blanchard, "The Economics of Unemployment: Shocks, Institutions, and Interactions," Lionel Robbins lectures, 2000.*

[4] *O.J. Blanchard, "The Economics of Unemployment: Shocks, Institutions, and Interactions;" and O.J. Blanchard and F. Giavazzi, "The Macroeconomic Effects of Labor and Product Market Deregulation," NBER Working Paper No. 8120, February 2001, and in* Quarterly Journal of Economics*, 118 (3) (August 2003), pp. 879-909.*

[5] *O.J. Blanchard and J. Wolfers, "The Role of Shocks and Institutions in the Rise of European Unemployment," NBER Working Paper No. 7282, August 1999, and Harry Johnson Lecture,* Economic Journal, *Vol. 110 (March 2000), pp.1-33.*

[6] *S. Nickell, "Labour Market Institutions and Unemployment in OECD Countries," CESIFO DICE Report 1, No. 2 (2003), pp. 13-26.*

[7] *O.J. Blanchard and T. Philippon, "The Decline of Rents, and the Rise and Fall of Unemployment in Europe," forthcoming as an NBER Working Paper.*

[8] *O.J. Blanchard, "The Economic Future of Europe," NBER Working Paper No. 10310, March 2004, and forthcoming in the* Journal of Economic Perspectives.

[9] *O.J. Blanchard and J. Tirole, "Contours of Employment Protection," MIT Working Paper 03-35, September 2003, and "The Optimal Design of Unemployment Insurance and Employment Protection, forthcoming as an NBER Working Paper.*

The Challenge of Turning Managers into Owners

Brian J. Hall*

During the past two decades, the influence of shareholders has grown dramatically as institutional investors and other shareholder representatives became increasingly vocal and activist in exercising their "ownership rights" over the decisions, policies, and governance of corporations. Shareholder anger over the recent corporate scandals appears to have further increased shareholder activism, continuing or even accelerating the trend of increasing shareholder power.[1] Aligning the interests of shareholders and managers has been a central goal of institutional investors and shareholder activists. To a significant extent, that goal has been realized, because the large increase in executive pay since the early 1980s was caused primarily by dramatic increases in equity-based pay (especially stock options), which led to a nearly ten-fold increase in the relationship between top executive wealth and shareholder returns.[2] In spite of this, there has been widespread concern (and outrage) among the press, shareholders, and the public that executive pay has become "excessive" while also motivating dysfunctional behavior. These concerns are targeted particularly at instances where large executive payoffs — typically from option exercises or sales of company stock — follow (or precede, in the case of the company scandals) poor corporate performance and declining company stock prices. The shareholder goal of "turning managers into owners" is more difficult to achieve than it may seem. What is the best equity-instrument? Over what period should equity grants vest? How much should be granted? What pay designs minimize risk-taking and gaming temptations? Much of my research concerns

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the many pay-design challenges and tradeoffs involved in turning managers into owners. In what follows, I discuss several of these issues.

Creating Leveraged Ownership Incentives

Although there has been a recent shift toward restricted stock (stock that vests over time), the vast majority of executive equity grants have been in the form of stock options rather than stock. But if the chief goal of equity-based pay has been to turn managers into owners (who own shares, not options), why has pay been dominated by options instead of stock? Although such an explanation does not always sit well with economists trained to think that important economic decisions are affected by real economic (not accounting) factors, there is considerable evidence that the accounting rules are one of the dominant factors determining choices among equity-pay instruments.[3] Current accounting regulations heavily favor stock options, because option grants create no accounting expense on company profit-and-loss statements while stock grants (and most other equity-pay instruments) do create accounting charges. As a result, equity-based pay plans are astoundingly similar across companies, with the vast majority of plans in the form of at-the-money options designed to qualify for the favorable accounting treatment. Discount, indexed or performance-based options[4], all of which have certain advantages, are rarely even given serious consideration by companies because they would lead to accounting charges. Beginning in 2005, the accounting rules are likely to be changed, requiring options to be expensed, and this should have large affects on equity-based pay design.

But even with a level playing field in terms of accounting, options have another advantage over stock. Options are a leveraged ownership instrument.[5] Because an option is less expensive to shareholders than a share of stock — in terms of the expected transfer from shareholders to the options holder — companies generally can grant two to three times more options than shares for any given cost to the company. Thus, options provide greater upside potential than stock for a given company cost. Leverage is a helpful feature of incentive plans, often enabling companies to provide greater pay-to-performance without increasing costs. For example, most bonus plans (especially commission plans for sales forces) are designed to create payoffs only after certain quotas or thresholds are reached. This is because companies would rather pay a higher commission rate (say 12 percent) for sales above some (generally reachable) threshold than a lower commission rate (say 2 percent) on all sales. Options — which create a payoff only for stock prices that are above an exercise price — create similarly leveraged incentives.

Option Fragility

But the leverage of options goes in both directions. When stock prices fall, options fall underwater and quickly lose their value. Stock options fall underwater much more than is commonly believed.[6] More than half of all options were underwater at the end of 2002. Given that this followed a three-year bear market, this fact does not surprise most people. What does often seem surprising to most is that approximately one-third of all options were underwater in the mid-1990s and also in 1999 at the height of the bull market. Because of the volatility of stock prices (and the fact that stock returns are skewed to the right, so that the median stock price return is much lower than the average) stock options frequently fall underwater, a problem that does not go away with the passage of time.[7]

Options are therefore a fundamentally fragile incentive instrument, unlike stock, which can't fall underwater. And in practice, the underwater option problem causes significant problems for companies that rely heavily on options. Underwater options fail to retain executives, while also losing their effectiveness in terms of creating ownership incentives. It is for this reason that option-granting companies feel pressure to reprice options and to take other actions deemed to be highly objectionable to shareholders. While actual option repricings have become exceedingly rare in practice (in part owing to shareholder activism and in part because of accounting rule changes that made it punitive), the evidence suggests that many companies engage in a type of back-door repricing — they make "above average" option grants when stock prices fall significantly. While this helps to restore incentives *ex post*, it undermines incentives *ex ante*.[8]

A general principle taught in "Incentives 101" is that well-designed incentive plans should continue to motivate managers and workers in a wide-range of circumstances. That is, well-designed plans are resilient, not fragile. Thus, the choice between options and stock involves a tradeoff between leverage and resilience. For many years, Microsoft granted only options to their executives and employees. But because of the underwater option problem facing the company, Microsoft CEO Steve Ballmer announced in 2003 that its days of issuing stock options were gone forever, making a permanent switch to more resilient stock grants. The early evidence suggests that many other companies will switch to restricted stock in 2005 (and some have already made the change in anticipation of the rule change) once the coming accounting rule changes put stock and options on a (roughly) even playing field.[9]

Value-Cost Efficiency

A fundamental principle of finance is that investors should diversify, not putting "all their eggs in one basket." But according to Mark Twain, it is wise to "put all your eggs in one basket, and watch that basket carefully." Twain's clever retort does well in summing up the fundamental incentive-risk tradeoff that requires managers to be insufficiently diversified in order to have strong ownership incentives. Thus, the price that must be paid to ensure strong ownership incentives is the imposition of non-diversification risk on executives. Therefore, risk-averse and undiversified executives rationally discount the value of the equity-based pay.[10] Thus, equity-based pay is generally more expensive —

because companies must grant more of it in expected value — than less risky cash compensation. Put another way, unlike cash, the value to executives of equity-pay is generally less than the expected cost of that equity to shareholders, which is approximately the market value of that equity (with a downward adjustment for early exercise in the case of options), since that is its economic (or "opportunity") cost. Option value does not equal option cost.[11]

Of course, the higher cost of equity is well worth it if the resulting ownership (and retention) incentives are sufficiently strong and beneficial. But a growing body of research suggests that the "value-cost" inefficiency of options is considerable, with value cost-ratios less than 0.5 for reasonable parameter values. Value-cost ratios for stock are much higher, in the range of 0.85 or higher. The large value-cost inefficiency of options is especially problematic for middle and lower-level managers whose typically limited ability to affect share prices in significant ways makes it seem unlikely that the incentive benefits of options are large enough to offset their costs in terms of inefficiency. The reason that the value-cost inefficiency is so high for traditional options is straightforward, and tied closely to the previous analysis of option fragility. Because traditional options fall underwater so often, they are much riskier than stock, leading risk-averse and undiversified executives to discount them much more heavily than they discount their stock grants.

Transparency and Understandability

Effective equity pay plans are also transparent to shareholders and understandable to executives. Transparency is important, because it helps to guard against the challenges created by boards who agree to excessive grants to executives, either because they are weak or easily "captured" by powerful CEOs.[12] Understandability is important because the incentive properties of equity are undermined when managers fail to comprehend the value of their equity holdings or how that value changes in response to stock price changes.

Stock has clear advantages over options in terms of transparency and understandability.[13] While stock is easily valued by multiplying price times quantity, option valuation is complex and requires the use of non-intuitive pricing models that aren't even correct for the purpose of determining the option's value or cost. Although more appropriate for measuring company cost than executive value, standard option pricing models rely on assumptions that clearly do not apply — that options are tradable or hedgeable in markets. But even after options vest, executives generally can't sell them or hedge them. Option pricing models assume that options are held by investors who will exercise them optimally, typically at maturity. But executives and employees routinely exercise their options early — and in ways not easily captured by formulas — which causes option pricing models to overstate the expected payoff of an option held by executives. Moreover, the formula requires measures of expected future volatility (and a few other parameters) that are not easily estimated or obtained without an active market for options. It is no wonder that many executives have little understanding of how to value their options while shareholders and boards continue to refer to option grants in terms of the "number of options" (masking their expected cost) while referring to stock grants in terms of their value (making the expected cost more transparent).[14]

TSOs and the Coming Revolution in Equity-Pay Design

There is an emerging view that options are problematic as an incentive device.[15] This makes it likely that the recent shift away from options will accelerate dramatically when the accounting rules change in 2005. While much of the shift is likely to be toward restricted stock — which has the advantages of greater resiliency, value-cost efficiency, transparency and understandability — it is likely that we will see lots of new ideas and pay instruments as board and consultants are liberated from the accounting rules that have for so long stifled innovation in this area.

One intriguing possibility is the introduction and proliferation of ongoing transferable stock option (TSO) programs. TSOs are options that executives and employees can sell to investment banks once they have become fully vested.[16] When Microsoft moved away from options and toward restricted stock, they contracted with J.P. Morgan to turn Microsoft's underwater options into TSOs[17], enabling Microsoft's employees to sell their options. While the move toward restricted stock and the innovative one-time "clean up" of Microsoft's underwater options received much attention in the financial press, there was little attention paid to the fact that this transaction cleared away key regulatory and tax hurdles for the introduction of ongoing TSO programs, with the potential to transform the prevailing norms of equity-pay design. TSOs have many advantages over standard options. They are resilient, because they retain value when the stock price drops, while also having much higher value-cost efficiency (for related reasons). Since investment banks can bid for TSOs on a regular basis, they create third-party prices that make options as transparent and understandable as stock. Also like restricted stock, TSOs can be created with vesting contingent on both time and performance (measured in any way). But, unlike stock, TSOs are leveraged incentives. Indeed, with only minor exceptions, TSOs are essentially a leveraged version of restricted stock, retaining all of the advantages of restricted stock while also retaining the leverage advantage of options.

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[1] *For evidence and analysis, see B. Holmstrom and S. N. Kaplan, "The State of U.S. Corporate Governance: What's Right and What's Wrong," NBER Working Paper No. 9613, April 2003, and* Journal of Applied Corporate Finance*, Vol. 15, No. 3 (Spring 2003), pp. 8-20.*

[2] *See B. J. Hall and J. B. Liebman, "Are CEOs Really Paid Like Bureaucrats?" NBER Working Paper No. 6213, October 1997, and* Quarterly Journal of Economics*, Vol. 113, No. 3 (August 1998), pp. 653-91; G. P. Baker and B. J. Hall, "CEO Incentives and Firm Size," NBER Working Paper No. 6868, December 1998, and forthcoming in* Journal of Labor Economics*, 2004; and B. J. Hall, "What You Need to Know About Stock Options,"* Harvard Business Review*, (March-April 2000), pp. 121-9.*

[3] *B. J. Hall and K. J. Murphy, "The Trouble with Stock Options," NBER Working Paper No. 9784, June 2003, and* Journal of Economic Perspectives*, Vol. 17, No. 3 (Summer 2003), pp. 49-70.*

[4] *Discount options are in-the-money at grant. Indexed options have an exercise price that moves with some stock market or industry-based index. Performance-based options vest only when certain performance hurdles are met, whereas standard options vest over time, such as 25 percent per year for four years.*

[5] *See B. J. Hall, "What You Need to Know about Stock Options;" B. J. Hall and K. J. Murphy, "Optimal Exercise Prices for Executive Stock Options," NBER Working Paper No. 7548, February 2000, and* American Economic Review*, Vol. 90, No. 2 (May 2000), pp. 209-14, and B. J. Hall, "Six Challenges in Designing Equity-based Pay," NBER Working Paper No. 9887, August 2003, and* Journal of Applied Corporate Finance*, Vol. 15, No. 3 (Spring 2003), pp. 21-33.*

[6] *B. J. Hall and T. A. Knox, "Managing Option Fragility," NBER Working Paper No. 9059, July 2002, and B. J. Hall, "Transferable Stock Options (TSOs) and the Coming Revolution in Equity-based Pay,"* Journal of Applied Corporate Finance*, Vol.16, No. 1 (Winter 2004), pp. 8-17.*

[7] *This is because even though the expected return increases over time, so does volatility.*

[8] *B. J. Hall and T. A. Knox, "Underwater Options and the Dynamics of Executive Pay-to-Performance Sensitivities," forthcoming in the* Journal of Accounting Research*, 2004.*

[9] *B. J. Hall, "Transferable Stock Options (TSOs) and the Coming Revolution in Equity-based Pay." See also B. J. Hall and K. J. Murphy, "The Trouble with Stock Options.*

[10] *B. J. Hall and K. J. Murphy, "Stock Options for Undiversified Executives," NBER Working Paper No. 8052, December 2000, and* Journal of Accounting & Economics*, Vol. 33, No. 1 (February 2002), pp. 3-42.*

[11] *B. J. Hall and K. J. Murphy, "Option Value Does Not Equal Option Cost,"* WorldAtWork Journal*, Second Quarter 2001, pp. 23-7.*

[12] *For an argument that executive pay is too high because CEOs extract rents too easily from pawn-like boards, see L. Bebchuk, J. Fried, and D. Walker, "Managerial Power and Rent Extraction in the Design of Executive Compensation," NBER Working Paper No. 9068, July 2002, and* University of Chicago Law Review*, Vol. 69, No. 3 (Summer 2002), pp. 751-846.*

[13] *See B. J. Hall, "Six Challenges in Designing Equity-based Pay."*

[14] *See B. J. Hall and K. J. Murphy, "The Trouble with Stock Options."*

[15] *Some of this criticism is appropriate in my view, but some of it is based on the false logic that options created the accounting scandals. However, the perverse behavior of executives was caused by equity holdings (not necessarily options) combined with weak disclosure rules. Options have no special ability to create temptations toward gaming.*

[16] *For evidence and analysis of this issue, see B. J. Hall, "Transferable Stock Options (TSOs) and the Coming Revolution in Equity-based Pay."*

[17] *They also shortened the maturities of these options so that Microsoft shareholders also would gain in the transaction.*

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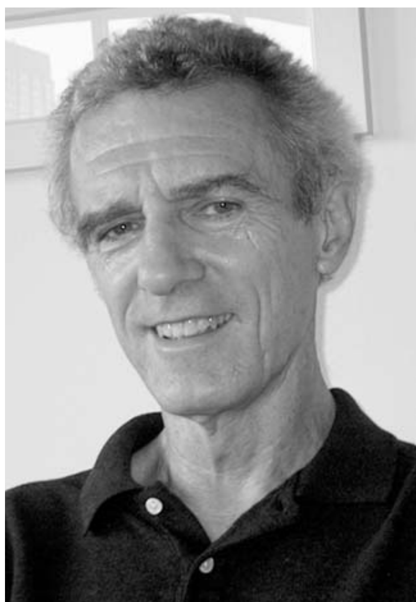
NBER Profile: *Ray C. Fair*



Ray C. Fair was elected to the NBER's Board of Directors last fall, representing Yale University. He has been a professor of economics at Yale's Cowles Foundation since 1979.

Fair has a B.A. from Fresno State College and a Ph.D. in economics from MIT. He was an assistant professor of economics at Princeton University from 1968-74. He then joined Yale's faculty as an associate professor, a title he held from 1974-9. He was also a visiting associate professor at MIT in 1977.

Fair's main research is in macroeconometrics, but he has also done work in the areas of finance, voting behavior, and aging in sports.

Fair lives in New Haven with his wife, Sharon Oster, who is also an economist. They have three children, at least one of whom is going into the family business. Fair is an avid runner and is desperately trying to get back on his aging regression line.

NBER Profile: *Brian J. Hall*

Brian J. Hall is an NBER Research Associate in the Programs on Corporate Finance, Public Economics, and Labor Studies and a professor of business administration at Harvard Business School. Previously, he spent four years as an assistant professor of economics in Harvard University's Economics Department.

Hall received his B.A., M.A., and Ph.D. in economics from Harvard and holds an M.Phil. in economics from Cambridge University. He was on the staff of the President's Council of Economic Advisers in 1990-1. Hall teaches and researches in the area of performance management, corporate governance, and organizational strategy, with a specialty in compensation and incentive design.

Hall's research has been published widely in a variety of academic and practitioner-oriented journals, including the *American Economic Review*, the *Quarterly Journal of Economics*, and the *Harvard Business Review*. He is a member of the Global Corporate Governance Initiative at the Harvard Business School and consults or advises leading companies in the area of corporate governance, organizational strategy, and compensation-incentive design.

Hall lives in Belmont, MA, with his wife, Kay and their two sons, Joseph (10) and Roger (7). The Halls are huge sports fans, indulging annually and masochistically in the widespread hope that this is the year the Sox will reverse the curse. They also enjoy summer boating explorations on the New England coast.

NBER Profile: *Thea M. Lee*

Thea M. Lee was elected to NBER's Board of Directors in September as the representative from the AFL-CIO. Ms. Lee is Chief International Economist in the Public Policy Department of the AFL-CIO, where she oversees research on international trade and investment policy. Previously, she worked as an international trade economist at the Economic Policy Institute in Washington, D.C. and as an editor at *Dollars & Sense* magazine in Boston.

Ms. Lee received a Bachelors degree from Smith College and a Masters degree in economics from the University of Michigan. She is co-author of *A Field Guide to the Global Economy*, published by the New Press. Her research projects include reports on the North American Free Trade Agreement, on the impact of international trade on U.S. wage inequality, and on the domestic steel and textile industries. She has testified before several committees of the U.S. House of Representatives and the Senate on various trade topics.

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Conferences

Nineteenth Annual Conference on Macroeconomics

The NBER's Nineteenth Annual Conference on Macroeconomics took place in Cambridge on April 2 and 3. Mark Gertler, NBER and New York University, and Kenneth S. Rogoff, NBER and Harvard University, organized this program:

Graziella Kaminsky, NBER and George Washington University; **Carmen M. Reinhart**, International Monetary Fund; and **Carlos A. Vegh**, NBER and University of California, Los Angeles, "When It Rains It Pours: Procyclical Capital Flows and Macroeconomic Policies"
Discussants: Gita Gopinath, University of Chicago, and Roberto Rigobon, NBER and MIT

Eric M. Engen, American Enterprise Institute, and **R. Glenn Hubbard**, NBER and Columbia University, "Federal Government Debt and Interest Rates"
Discussants: Jonathan Parker, NBER and Princeton University, and Matthew D. Shapiro, NBER and University of Michigan

Domenico Giannone and **Lucrezia Reichlin**, Free University of Brussels, and **Luca Sala**, Bocconi University, "Monetary Policy in Real Time"
Discussants: Mark W. Watson, NBER and Princeton University, and Harald Uhlig, Humboldt University

Jordi Gali, NBER and CREI, and **Pau Rabanal**, International Monetary Fund, "Technology Shocks and Aggregate Fluctuations: How Well Does the RBC Model Fit Postwar U.S. Data?"
Discussants: Ellen McGrattan, Federal Reserve Bank of Minneapolis, and Valerie A. Ramey, NBER and University of California, San Diego

David K. Backus, NBER and New York University; **Bryan R. Routledge**, Carnegie Mellon University; and **Stanley E. Zin**, NBER and Carnegie Mellon University, "Exotic Preferences for Macroeconomists"
Discussants: Lars P. Hansen, NBER and University of Chicago, and Ivan Werning, NBER and MIT

Paul Gomme, University of Iowa; **Richard Rogerson**, NBER and Arizona State University; **Peter Rupert**, Federal Reserve Bank of Cleveland; and **Randall Wright**, NBER and University of Pennsylvania, "The Business Cycle and the Life Cycle"
Discussants: Eva Nagypal, Northwestern University, and Robert Shimer, NBER and University of Chicago

Based on a sample of 105 countries, **Kaminsky**, **Reinhart**, and **Vegh** document some key cyclical properties of capital flows, fiscal policy, and monetary policy. First, capital flows are procyclical (that is, external borrowing increases in good times and falls in bad times) for developing countries and, most notably, for middle-high income countries (emerging markets). Second, fiscal policy is procyclical (that is, government spending increases in good times and falls in bad times) for all developing countries. Third, this feast and famine cycle of fiscal spending is positively linked to the capital flows cycle (with spending rising markedly when capital is plentiful). Fourth, there is some evidence to suggest that, in emerging markets, monetary policy is also procyclical. In sum, the evidence suggests that for the middle-high income countries the business, capital flows, monetary policy and fiscal policy cycles all reinforce one another. For such countries, when it rains, it does indeed pour.

Using a standard set of data and a simple neoclassical analytical framework, **Engen** and **Hubbard** reconsider and add to empirical evidence on the effect of federal government debt and interest rates. They begin by deriving the effect of government debt on the real interest rate and conclude that it is modest — an increase in government debt equivalent to one percent of GDP would increase the real interest rate by about 2 to 3 basis points. While some existing studies estimate effects in this range, others find larger effects. In many cases, these larger estimates come from specifications relating federal deficits (as opposed to debt) and interest rates, or from specifications not controlling adequately for macroeconomic influences on interest rates that might be correlated with deficits. The bulk of their empirical results suggest that an increase in federal government debt equivalent to one percent of GDP, all else equal, would be expected to increase the long-term real rate of interest by three to five basis points, although some specifications suggest a larger impact, while some estimates are not statistically significantly different from zero. By presenting a range of results with the same data, they illustrate the dependence of estimation on specification and definition differences.

Giannone, **Reichlin**, and **Sala** analyze the panel of the Greenbook forecasts and a large panel of monthly variables for the United States since 1970. They show that the dimension

of the U.S. economy is two and that a model which exploits, in real time, information on many time series to extract a two dimensional signal, produces a degree of forecasting accuracy of the federal funds rate similar to that of the markets and for output and inflation similar to that of the Greenbook forecasts. They also show that dimension two is generated by a real and nominal shock and that the Phillips curve tradeoff is weak, which implies that the dimension of the policy problem is one.

Gali and **Rabanal** review recent research efforts that seek to identify and estimate the role of technology as a source of economic fluctuations, in a more direct way than the early RBC literature. The bulk of the evidence suggests a very limited role for aggregate technology shocks, instead pointing to demand factors as the main force behind the strong positive comovement between output and labor input measures that is the hallmark of the business cycle.

Backus, **Routledge**, and **Zin** provide a users' guide to non-additive "exotic" preferences: nonlinear time aggregators; departures from expected utility; preferences over time with known and unknown probabilities; risk-sensitive and robust control; "hyperbolic" discounting; and preferences over sets ("temptations"). They apply each to a number of classic issues in macroeconomics and finance, including consumption and saving, portfolio choice, equilibrium asset pricing, and optimal allocation.

Gomme, **Rogerson**, **Rupert**, and **Wright** document the differences in variability of hours worked over the business cycle across several demographic groups and show that these differences are large. They argue that understanding these differences should be useful in understanding the forces that account for aggregate fluctuations in hours worked. In particular, it is well known that standard models of the business cycle driven by technology shocks do not account for all of the variability in hours of work. This raises the question of to what extent the forces in this model can account for the differences across demographic groups. The authors explore this in the context of hours fluctuations by age groups, using a stochastic overlapping generations model. Their analysis shows that the model does a good job of accounting for hours fluctuations of prime age workers, but not for young or old workers. They conclude that a key issue is understanding why fluctuations for young and old workers are so much larger.

These papers and discussions will be published by the MIT Press. The volume's availability will be announced in a future issue of the *Reporter*.

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Innovation Policy and the Economy

The NBER's fifth annual conference on Innovation Policy and the Economy took place in Washington on April 13. The conference was organized by NBER Research Associates Adam B. Jaffe, Brandeis University; Joshua Lerner, Harvard University; and Scott Stern, Northwestern University. The following papers were discussed:

Ashish Arora, Carnegie Mellon University, "The Globalization of the Software Industry: Perspectives and Opportunities for Developed and Developing Countries"

William J. Baumol, New York University, "Education for Innovation: Entrepreneurial Breakthroughs vs. Corporate Incremental Improvements"

Mary Ann Feldman, University of Toronto, "Jurisdictional Advantage: Why Location and Local Economic Development Policy Matter"

William Gentry, NBER and Williams College, and **R. Glenn Hubbard**, NBER and Columbia University, "Success Taxes, Entrepreneurial Entry, and Innovation"

Michael L. Katz and **Howard A. Shelanski**, University of California, Berkeley, "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?"

The spectacular growth of the software industry in some non-G7 economies has aroused both interest and concern. **Arora** addresses two sets of inter-related issues. First, he explores the determinants of the success stories. Then he touches upon the broader question of what lessons, if any, can be drawn from economic development more generally. From the U.S. perspective, the interesting debate is not the current one on the impact of outsourcing on jobs, but rather whether offshoring of software is a long-term threat to American technological leadership. Arora concludes that policymakers in the United States should not fear the growth of new software producing regions. Instead, the U.S. economy will broadly benefit from their growth. The U.S. technological leadership rests in part on the continued position of the United States as the primary destination for highly trained and skilled scientists and engineers from the world over. Although this is likely to persist for some time, the increasing attractiveness of foreign emerging economy destinations is a long-term concern for continued U.S. technological leadership.

Baumol explores several hypotheses on the appropriate education for innovating entrepreneurship: 1) breakthrough inventions are contributed disproportionately by independent inventors and entrepreneurs, while large firms focus on cumulative, incremental (and often invaluable) improvements; 2) education for mastery of scientific knowledge and methods is enormously valuable for innovation and growth, but can impede heterodox thinking and imagination; 3) large-firm R&D requires personnel who are highly educated in extant information and analytic methods, while successful independent entrepreneurs and inventors often lack such preparation; and 4) while procedures for teaching current knowledge and methods in science and engineering are effective, we know little about training for the critical task of breakthrough innovation.

Feldman defines jurisdictional advantage, the recognition that location is critical to firms' innovative success and that every location has unique assets that are not easily replicated. Drawing from the well developed literature on corporate strategy, she considers analogies to cities in their search for competitive advantage. She argues that jurisdictions may benefit from a strategic orientation that considers the unique and not easily replicated assets, resources, and skill set contained in a jurisdiction and the position of the jurisdiction vis-a-vis the hierarchy of cities in the national and world economy and then maximizes wages and property values within the jurisdiction. She also reviews recent advances in our understanding of patterns of urban specialization and the composition of activities within cities, which suggest strategies that may generate economic growth as well as some strategies to avoid. Finally, she considers the role of firms and their responsibility to jurisdictions in light of the net benefits received from place-specific externalities, and concludes by considering the challenges to implementing jurisdictional advantage.

Gentry and **Hubbard** find that, while the level of the marginal tax rate has a negative effect in entrepreneurial entry, the progressivity of the tax also discourages entrepreneurship, and significantly so for some groups of households. Prospective entrants from *a priori* innovative industries and occupations are no less affected by the considerations examined here than other prospective entrants. In terms of destination-based industry and occupation measures of innovative entrepreneurs, the authors find mixed evidence on whether innovative entrepreneurs differ from the general population; the results for entrepreneurs moving to innovative entrepreneurs suggest that they may be unaffected by tax convexity, but the possible endogeneity of this measure of innovative entrepreneurs confounds interpreting this specification. Using education as a measure of potential for innovation, Gentry and Hubbard find that tax convexity discourages entry into self-employment for people of all educational backgrounds. Overall, they find little evidence that the tax effects are focused simply on the employment changes of less skilled or less promising potential entrants.

Merger policy is the most active area in U.S. antitrust policy. It is now widely recognized that merger policy must move beyond its traditional focus on static efficiency to account for innovation and to address dynamic efficiency. Innovation can fundamentally affect merger analysis in two ways. First, it can dramatically affect the relationship between the pre-merger marketplace and what is likely to happen if a proposed merger is consummated. Thus, innovation can fundamentally influence the appropriate analysis for addressing traditional, static efficiency concerns. Second, innovation itself can be an important dimension of market performance that is potentially affected by a merger. **Katz** and **Shelanski** explore how merger policy is meeting the challenges posed by innovation.

These papers will appear in an annual volume published by the MIT Press. Its availability will be announced in a future issue of the *Reporter*. They can also be found at "Books in Progress" on the NBER's website.

Economics of the Information Economy

An NBER/Universities Research Conference on the "Economics of the Information Economy" took place in Cambridge on May 7 and 8. Organizers Judith Chevalier, NBER and Yale University, and Joel Waldfogel, NBER and the Wharton School, put together this program:

Hal Varian, **Fredrick Wallenberg**, and **Glenn Woroch**, University of California, Berkeley, "Who Signed Up for the Do-Not-Call List?"
Thede Loder, **Marshall Van Alystyne**, and **Richard Wash**, University of Michigan, "Information Asymmetry and Thwarting Spam"
Discussant: Curtis Taylor, Duke University

Patrick Scholten, Bentley College, "The Propensity to Advertise Price Online: Evidence from Shopper.com"
Mark Stegeman, Virginia Polytechnic Institute, "Information Goods and Advertising: An Economic Model of the Internet"
Discussant: Austan Goolsbee, NBER and University of Chicago

Nicholas Economides, New York University, and **V. Brian Viard** and **Katja Seim**, Stanford University, "Quantifying the Benefits of Entry into Local Phone Services'
Eugenio J. Miravete, University of Pennsylvania, and **Lars-Hendrik Roller**, Humboldt University, "Competitive Nonlinear Pricing in Duopoly Equilibrium: The Early U.S. Cellular Telephone Industry"
Discussant: Ingo Vogelsang, Boston University

Ron Borzekowski, Federal Reserve Board, "In Through the Out Door: The Role of Outsourcing in the Adoption of Internet Technologies by Credit Union"
Paul Gertler, NBER and University of California, Berkeley, and **Tim Simcoe**, University of California, Berkeley, "Disease Management: Using Standards and Information Technology to Improve Medical Care Productivity"
Discussant: Lisa Lynch, NBER and Tufts University

David Waterman, Indiana University, "The Effects of Technological Change on the Quality and Variety of Information Products"
Felix Oberholzer, Harvard University, and **Koleman Strumpf**, University of North Carolina, "The Effect of File Sharing on Record Sales: An Empirical Analysis"
David J. Balan, **Pat DeGraba**, and **Abraham L. Wickelgren**, Federal Trade Commission, "Media Mergers and the Ideological Content of Programming"
Discussant: Steven Wildman, Michigan State University

Using the phone numbers registered with the Federal Trade Commission's national do-not-call (DNC) list, **Varian**, **Wallenberg**, and **Woroch** identify key demographic and economic determinants of household decisions to block unsolicited telemarketing calls. With a model of households' decisions to register phone numbers and telemarketers' decisions to attempt calls, the authors uncover the factors affecting signup frequencies. They map the more than 60 million registered phone numbers into counties and then match them with household demographic information from the 2000 Census, plus several behavioral variables from national panel datasets. Regressions of county-level signup frequencies on individual demographic variables reveal that participation in the DNC registry is related directly to household income, educational attainment, home mortgage, and linguistic integration. Irregular patterns emerge for household size and for the ages of the children and the head of household. The authors, after further estimation, find that a parsimonious specification including just income, teenaged kids, low education, and whether the state maintains and merges its list explains nearly the

same fraction of variance as the full set of demographic variables. States that maintained a DNC list that is subsequently merged with the national list have significantly higher signup rates, while those that declined to merge their lists have significantly lower rates. This suggests that a state list is a close substitute for the national one.

Loder, **Van Alstyne**, and **Wash** explore a novel approach to spam based on economic rather than technological or regulatory screening mechanisms. Their first point is that mechanisms designed to promote valuable communication often can outperform those merely designed to block wasteful communication. Their second point shifts the focus from the information in the message to the information known to the sender. Then they can use principles of information asymmetry to "cause" people who knowingly misuse communication to incur higher costs than those who do not. In certain cases, the authors show that this approach leaves recipients better off than with even an idealized or "perfect" filter that costs nothing and makes no mistakes. Their mechanism also accounts for individual differences in opportunity costs, and allows for bi-directional wealth transfers while facilitating both sender signaling and recipient screening.

How frequently do firms advertise prices in online markets? **Scholten** examines price information at one of the leading Internet price comparison sites, Shopper.com. His results suggest that firms advertise price information about 69 percent of the time. In addition, firms are 13 percent less likely to advertise price information in markets with few consumers. Firms' propensity to advertise prices does not appear to vary inversely with market structure. This suggests that Baye-Morgan provided a very good starting point, but that additional theoretical models are needed to see whether relaxing the assumption that firms' propensity to advertise is symmetric leads to equilibrium outcomes more consistent with the data.

Small firms produce information goods, which have properties of both private and nonrival goods, under conditions of constant returns to scale and free entry. The firms embed messages in their goods, selling access to the good to small consumers and message content to small advertisers. Information goods are excludable if positive access fees are feasible and includable if negative access fees are feasible; **Stegeman** studies several cases. In equilibrium, firms generally could increase total surplus by increasing the quality of the good, supplying less advertising, and reducing access fees. They could similarly increase surplus by supplying less advertising and making a profit-compensating adjustment in access fees. Firms may over- or under-produce information goods, and Stegeman identifies circumstances that produce each outcome. The welfare results are mostly robust to the presence of small to moderate negative externalities from advertising.

Economides, **Seim**, and **Viard** evaluate the consumer welfare effects of entry into residential local phone service in New York state using household-level data. Since residential local phone service is sold under a menu of two-part tariffs, the authors develop a method for estimating a mixed discrete/continuous demand model. The econometric model incorporates the simultaneity of the discrete plan and continuous consumption choices by consumers and allows for flat-rate plans, bundling of services, and unobservable firm quality. Since utility maximization underlies the model, the authors can estimate welfare effects from the introduction of additional choices or changes in product features. They use the model to evaluate the effect of entry by the two largest competitive local exchange carriers in the New York market from the third quarter of 1999 to the first quarter of 2003. Residential local phone service competition is an important goal of the 1996 Telecommunications Act and the authors provide one of the most detailed evaluations of its effect on consumer welfare. Their preliminary results indicate that relative to what it would have paid to Verizon, the average household switching to AT&T or MCI saved 4.4 percent and 0.7 percent respectively, ignoring quantity and observed and unobserved quality effects from switching.

Miravete and **Roller** present a framework for estimating a model of horizontal product differentiation in which firms compete in nonlinear tariffs. They explicitly incorporate the information contained in the shape of the tariffs offered by competing duopolists. The model identifies the determinants of the non–uniform equilibrium markups charged to consumers who make different use of cellular telephone services. The authors then use the model to study the early U.S. cellular telephone industry and evaluate, among others, the welfare effects of competition, the benefits of a reduction of the delay in awarding the second cellular license, and alternative linear and nonlinear pricing strategies. They find that a single two–part tariff achieves 63 percent of the potential welfare gains and 94 percent of the profits of a more complex, fully nonlinear tariff.

Borzekowski focuses on the relationship between credit unions' outsourcing of their information systems and their adoption of Internet technologies. Using a dataset that contains semi-annual technology information for 10,390 credit unions from June 1998 through June 2003, he estimates a model that includes both the adoption and outsourcing decisions. The model also explicitly accounts for heterogeneity in a firm's ability to use IT. The estimation results indicate that "IT Type" does matter in the outsourcing decision, but not in the decision to adopt Internet technology. Outsourcing does not appear to lower the cost of Internet adoption, a result that runs counter to the evidence in the raw data which indicates that Internet technology was adopted faster by credit unions that outsourced their IT.

Patients with a chronic illness (such as diabetes or congestive heart failure) are one of the costliest and fastest growing segments of the U.S. health care system. Disease management (DM) programs use clinical standards and information technology to identify high-risk patients among the chronically ill and intervene before expensive treatments become necessary. Despite DM's growing popularity, few studies have shown that these pro-

grams actually change patient behaviors, improve health outcomes, or reduce costs. In this paper, **Gertler** and **Simcoe** describe the recent rise of DM within the health care industry and estimate its impact on medical care productivity. Using data from a DM program for diabetics at a central Massachusetts HMO, the authors find that the program led to increased compliance with Clinical Practice Guidelines (CPGs), improvements in patient health, and reductions in the total cost of care.

Anecdotal evidence suggests that producers of information products (TVprograms, movies, computer software) may respond to potentially cost saving technological change by increasing, not reducing, their total production investments in the "first copy" of each product, possibly at the expense of product variety. **Waterman** shows that under reasonable assumptions about consumer demand and production technology, a monopolist in fact is induced to increase first copy investments as a result of either what he defines as "quality-enhancing" or "cost-reducing" types of technological advance. In a competitive industry, first copy investments also rise for both types of technological change, while variety falls or stays the same. Contrary to often held expectations, potentially cost saving technological advances in information industries may result in higher barriers to entry and greater concentration.

A longstanding economic question is the appropriate level of protection for intellectual property. The Internet has drastically lowered the cost of copying information goods and provides a natural crucible for assessing the implications of reduced protection. **Oberholzer** and **Strumpf** consider the specific case of file sharing and its effect on the legal sales of music. They match a dataset containing 0.01 percent of the world's downloads to U.S. sales data for a large number of albums. To establish causality, downloads are instrumented using technical features related to file sharing, such as network congestion or song length, as well as international school holidays. Downloads have an effect on sales which is statistically indistinguishable from zero, despite rather precise estimates. Moreover, these estimates are of moderate economic significance and are inconsistent with claims that file sharing is the primary reason for the recent decline in music sales.

Media outlets sometimes incorporate ideological content into their programming. Such content may simply be a form of product variety, but it also may be attributable to media outlet owners who are willing to sacrifice some profit in order to engage in ideological persuasion. **Balan**, **DeGraba**, and **Wickelgren** assume the existence of such owners and compare the amount and type of persuasion that will occur under two regimes: one in which mergers are prohibited and the other in which they are permitted. The results for the "mergers-prohibited" regime are: there will be diversity of persuasion (that is, more than one variety of persuasion will exist in equilibrium) if and only if the ideological preferences of the different types of potential owners are not too different; and total persuasion is higher when these ideological preferences are less similar. The main results for the mergers-permitted regime are: mergers between firms with identical ideologies cause total persuasion to increase; and mergers between firms with different ideologies cause total persuasion to increase as long as the persuasion utility function is not too concave. Interestingly, permitting mergers sometimes can lead to ideological diversity when there was no diversity under the mergers-prohibited regime.

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Conference on Fiscal Federalism

The NBER and the CESifo in Munich co-sponsored a Conference on Fiscal Federalism on May 20-22 in Munich. The conference, part of a series of Trans-Atlantic Public Economics Seminars, was organized by Roger H. Gordon, NBER and University of California, San Diego. The following papers were discussed:

Mihir A. Desai, NBER and Harvard University, and **C. Fritz Foley** and **James R. Hines, Jr.**, NBER and University of Michigan, "Economic Effects of Regional Tax Havens"
Discussants: Roger H. Gordon, and Federico Revelli, University of Turin

Kurt Schmidheiny, Universite de Lausanne, "Income Segregation and Local Progressive Taxation: Empirical Evidence from Switzerland"
Discussants: Hans-Werner Sinn, NBER and University of Michigan, and Katherine Baicker, NBER and Dartmouth College

Thiess Buettner, Mannheim University, "Incentive Effects of Fiscal Equalization Transfers on Tax Policy"
Discussants: Helmuth Cremer, University of Toulouse, and James M. Poterba, NBER and MIT

Federico Revelli, "Performance Rating and Yardstick Competition in Social Service Provision"
Discussants: James R. Hines, Jr., and Jean Hindriks, Catholic University of Louvain

Dennis Epple and **Holger Sieg**, NBER and Carnegie Mellon University; **Stephen Calabrese**, University of South Florida; and **Thomas Romer**, Princeton University, "Myopic Voting and Local Public Good Provision: Theory and Evidence"
Discussants: Soren Blomquist, Uppsala University, and Tim Besley, NBER and Stanford University

Martin Farnham, University of Michigan, and **Purvi Sevak**, Hunter College, "State Policy and Local Residential Sorting: Are Tiebout Voters Hobbled?"
Discussants: Michelle J. White and Nora Gordon, NBER and University of California, San Diego

Clemens Fuest, University of Cologne, and **Bernd Huber**, University of Munich, "Can Regional Policy in a Federation Improve Economic Efficiency?"
Discussants: Vesa Kanniainen, University of Helsinki, and John Burbidge, McMaster University

Katherine Baicker and **Nora Gordon**, "Do State and Local Governments Use Other Public Expenditures Programs to Undo the Redistribution of Court-Ordered School Finance Equalization?"
Discussants: Holger Sieg, and Julia Darby, University of Strathclyde

Julia Darby; and **Anton Muscatelli** and **Graeme Roy**, University of Glasgow, "Fiscal Federalism and Fiscal Consolidations: Evidence from an Event Study"
Discussants: Dennis Epple and Thiess Buettner

Katherine Cuff, **John Burbidge**, and **Jack Leach**, McMaster University, "Capital Tax Competition with Heterogeneous Firms"
Discussants: Luca Micheletto, Bocconi University, and Clemens Fuest

Jacob L. Vigdor, Duke University, "Median Voters, Nonresidents, and Property Tax Limitations"
Discussants: Brian Knight, University of Greenwich, and Martin Farnham

Jacques Dreze, CORE; **Charles Figuieres**, University of Bristol, and **Jean Hindriks**, "Voluntary Matching Grants"
Discussants: Alexander Plekhanov, Cambridge University, and Jacob L. Vigdor

Using affiliate-level data, **Desai**, **Foley**, and **Hines** analyze the impact of tax haven operations on the non-haven activities of American multinational firms. The evidence implies that American firms use tax haven affiliates both to reallocate taxable income away from high-tax jurisdictions and to facilitate deferral of repatriation taxes, particularly from low-tax jurisdictions. Ownership of tax haven affiliates reduces tax payments by nearby non-haven affiliates to the same degree as would a 21 percent reduction in the local tax rate. While havens facilitate profit reallocation and deferral of repatriation taxes, they may also reduce the cost of capital and thereby increase the attractiveness of foreign investment in non-havens. The evidence indicates that firms with non-haven operations in countries whose economies grow rapidly are the most likely to establish new tax haven affiliates, implying a complementary relationship between haven and nonhaven operations, and the potential for tax haven jurisdictions to contribute to regional economic growth.

Schmidheiny investigates spatial segregation of the population in fiscally decentralized urban areas. The theoretical part of his paper proposes the progressivity of local income taxes as a new explanation for income segregation. The empirical part studies how income tax differentials across communities affect households' location decisions. The data from the Swiss metropolitan area of Basel contain tax information from all households that moved, either within the city center of Basel or from the city center to the outskirts. The empirical results show that rich households are significantly

and substantially more likely to move to low-tax communities than poor households.

A theoretical analysis gives rise to the presumption that, in the presence of tax competition, a system of redistributive "fiscal equalization" transfers tends to raise the taxing effort of local jurisdictions. More specifically, **Buettner** shows that the marginal contribution rate, *that is* the rate at which an increase in the tax base reduces those transfers, might be positively associated with the local tax rate. This is partly confirmed in an empirical investigation based on a large panel of German municipalities. In particular, changes in the marginal contribution rate attributable to changes in the rules of the system exert a significant positive impact on the local tax rate.

Revelli investigates whether national evaluation of decentralized government performance, by lessening local information spill-overs, tends to reduce the scope for local performance comparisons and consequently to lower the extent of spatial auto-correlation among local government expenditures. He analyzes U.K. local government expenditures on personal social services before and after the introduction of a national performance assessment system that attributes a rating to each local authority. The empirical evidence suggests that the introduction of the social services performance assessment system has substantially reduced policy mimicking among neighboring jurisdictions.

There have been few empirical strategies developed to investigate public provision under majority rule while explicitly accounting for the constraints implied by households' mobility. Most previous empirical work has focused on necessary conditions that the observed expenditures, housing prices, and tax rates had to satisfy in a myopic voting equilibrium. The existing empirical evidence suggests that myopic voting behavior is not consistent with the data. This is puzzling, especially given the prominence that myopic voting plays in the theoretical literature. **Calabrese**, **Epple**, **Romer**, and **Sieg** develop a new empirical approach that allows them to impose all restrictions that arise from these equilibrium models simultaneously on the data generating process. They can then analyze how close myopic models come in replicating the main regularities about expenditures, taxes, sorting by income, and housing observed in the data. The main results suggest that myopic models can replicate the observed expenditure patterns as well as the observed sorting of households by income. However, these models cannot fit the observed tax rates.

While the Tiebout hypothesis has come under increasing empirical fire, studies have not convincingly ascertained whether weak Tiebout sorting is truly evidence against the hypothesis or simply evidence that the prevalence of centralized state policies removes the conditions necessary for fiscal sorting. **Farnham** and **Sevak** explore the extent to which state fiscal policy pertaining to the school finance system affects the incentive or ability to sort on local fiscal characteristics. Using panel data on older households from the Health and Retirement Study, the authors find smaller adjustments of the local fiscal bundle by within-state empty-nest movers in the presence of school finance equalization policies. In addition, they use household data from the 1970-2000 decennial census to analyze differences in within-state and cross-state mobility rates and location choice under different school finance regimes. They find evidence of decreased within-state mobility at critical points in the Tiebout lifecycle when school finance equalization is present. They also find evidence that older households may escape centralization by moving across state lines.

In the European Union and in many federal and non-federal countries, the central government pays subsidies to poor regions. These subsidies often are seen as a redistributive measure which comes at the cost of an efficiency loss. **Fuest** and **Huber** develop an economic rationale for regional policy based on economic efficiency. They consider a model of a federation consisting of a rich and a poor region. The economy is characterized by increasing returns to scale in production and imperfect competition in goods markets. Firms initially only produce in the rich region and may set up additional production facilities in the poor region or serve this region via exports, which gives rise to a transport cost. The authors show that the laissez faire allocation is characterized by too little mobility; that is, the number of firms investing in the poor region and the number of households migrating to the rich region is inefficiently low. The optimal regional policy subsidizes investment and supports mobility of households in the poor region. These results also hold if there are autonomous regional governments.

Many states are under court-order to reduce local disparities in education spending. When states spend more on education, that changes both state and local budget constraints, and thus may affect many different spending and revenue decisions. **Baicker** and **Gordon** examine how changes in state education spending affect the level and distribution of the total resources available to localities and spending on public goods — both through changes in state spending patterns and through changes in the revenue and spending decisions of local jurisdictions themselves. The authors find that mandated school finance equalizations do increase both the level and progressivity of state spending on education, but that states finance the required increase in education spending in part by reducing their aid to localities for other programs. Local governments, in turn, respond to the increases in state taxation and spending by reducing both their own revenue-raising and their own spending on education and other programs. Thus, while state education aid does increase total spending on education, it does so at the expense of drawing resources away from spending on programs like public welfare, highways, and hospitals.

Darby, **Muscatelli**, and **Roy** investigate the use of grants and shared tax revenues, and their impact on fiscal outcomes, including decentralized service provision. They use a panel dataset covering 15 OECD countries to investigate how central and sub-central expenditures, taxation, and intergovernmental grants change in response to central governments' attempts to correct their fiscal posi-

tions. Their key results can be summarized as follows: first, successful fiscal consolidations are generally driven by similar, and sustained, falls in expenditure at both central and sub-central tiers. Moreover, the evidence counters Gramlich (1987) in the United States: when central governments cut intergovernmental grants, sub-central tiers do not take redress through offsetting increases in other forms of revenues. Second, unsuccessful consolidations tend to be characterized by increased central government taxation, with no fall back in grants and no tendency for sub-central taxation to change. There does appear to be a strong correlation between success in consolidating central fiscal deficits and similar actions from lower tiers of government. Third, where consolidations are successful, sub-central tiers of government are typically forced to cut back on capital expenditure. This suggests that the burden of adjustment falls onto lower tiers of government; and central governments worry less about the long-term (that is, public investment) consequences of consolidation if these decisions are taken at local level. Also, when faced with cuts in intergovernmental grants, sub-central governments tend to maintain expenditures on wages at the expense of capital expenditure, reflecting a definite compositional switch towards public consumption. Finally, these results shed some light, at least indirectly, on the "Fly-paper Effect," by showing that it operates in reverse. Successful consolidations are characterized by cut-backs in grants that are more than offset by cut-backs in sub-central expenditures. In contrast, periods of unsuccessful consolidation are characterized by increases in central taxation, no change in grants, and small, temporary reductions in sub-central expenditure.

Burbidge, **Cuff**, and **Leach** extend the capital tax competition literature by incorporating heterogeneous capital and agglomeration. Their model nests the standard tax competition model as well as the special case in which there is agglomeration but no firm/capital heterogeneity and the opposite case, firm heterogeneity with no agglomeration. The authors build on the existing tax competition literature and establish a link between it and the more recent work on agglomeration using the new economic geography model.

Why would voters resort to a statewide tax limitation to force change in their own local government? **Vigdor** develops and tests the hypothesis that property tax limitations succeeded because they allowed voters to lower tax rates in *other* communities. Statewide limitations effectively extend the voting franchise to individuals who have no standing in local elections. Voters may have preferences for tax and expenditure levels in other jurisdictions because they receive rents from employment in those jurisdictions, directly own taxable assets in those jurisdictions, or because changes in other jurisdictions might influence their own residential location choice. Empirical tests of this hypothesis focus on the Massachusetts experience with Proposition 2½, which passed in 1980. Voting patterns, household mobility patterns, and post-Proposition growth in property values all support the nonresident hypothesis.

Dreze, **Figuieres**, and **Hindriks** investigate the possibility of achieving by means of voluntary matching grants both the optimal allocation of factors and the optimal level of redistribution in the presence of factor mobility. They use a fiscal competition model in which states differ in their technologies and preferences for redistribution. They derive the optimal differentiation of matching rates across states according to the asymmetries in the technology and in the redistribution motive. Then they derive the willingness of each state to match the contribution of other states, and decompose the aggregate willingness to pay as the sum of two terms. The first term is related to redistribution; it is positive only if matching the contribution of one state brings overall redistribution closer to its optimal level. The second term is related to production; it is positive if the matching to one state leads to a more efficient allocation of factors. Willingness to pay for matching rates converges to zero when both the optimal level of redistribution and the optimal allocation of factors are achieved. The authors then describe the adjustment process for the matching rates that will lead agents to the efficient outcome and guarantee that everyone will gain.

Bureau News

Yellen to Head San Francisco Fed

Janet Yellen, a Research Associate in the NBER's Program on Monetary Economics, has been appointed president of the Federal Reserve Bank of San Francisco. She takes up her position on June 14.

Yellen most recently had been a professor of economics at the University of California, Berkeley's Haas School of Business. She specialized in studies of unemployment and international trade. She was also Chair of the President's Council of Economic Advisers from 1997-9 under President Clinton, and a member of the Federal Reserve's Board of Governors from 1994-7.

Nonprofit Fellowship Winners for 2004-5

Four NBER Fellowships for the Study of Nonprofit Institutions were awarded to faculty members and four to graduate students this spring.

The Faculty Grants went to: **David Card** and **Enrico Moretti**, both of University of California, Berkeley, for a project on how location of corporate headquarters affects the geographical pattern of corporate donations to nonprofits; **Antonio Rangel**, Stanford University, for work on the "neuroeconomics" of charitable giving, with a particular emphasis on how the immediacy of benefits from a charitable activity affects physical responses and consequently donor behavior; **David H. Reiley**, University of Arizona, for a study evaluating the success of direct mail versus other fund raising strategies carried out in a quasi-experimental setting by several public radio and public television stations; and **Jonathan S. Skinner**, Dartmouth College, for research on differences between for-profit and not-for-profit hospitals in terms of the speed with which they adopt medical innovations.

The Student Awards went to: **Martha Bailey**, Vanderbilt University, for work on the effect of expansion of non-profit family planning clinics on female labor supply and related economic outcomes; **Leah Brooks,** University of California, Los Angeles, for a project on Business Improvement Districts, that is voluntary nonprofit organizations created and funded by community businesses, usually in large cities, as a means of reviving urban neighborhoods; **Daniel Hungerman**, Duke University, for a study of the charitable activities of religious organizations in the United States, using nearly a century of church-level data to investigate both the determinants of charitable contributions and the efficacy of programs supervised by churches and affiliated groups; and **Jeremy Tobacman,** Harvard University, for research on the role of non-pecuniary rewards in determining the supply of labor to nonprofit organizations.

Entrepreneurship

The NBER's Working Group on Entrepreneurship met in Cambridge on March 19. Its director, Josh Lerner, of NBER and Harvard Business School, organized the meeting.

The NBER's Entrepreneurship Working Group, established in the spring of 2003, brings together some of the leading discipline-based researchers in the field. While the effort largely draws upon those approaching these issues from an economics-based perspective — for instance, from the disciplines of corporate finance, industrial organization, and labor studies — leading researchers from other areas also are involved. The issues being studied — the dynamics of small firms, the structure of venture capital investments and other financing arrangements, the nature of strategic alliances between small and large firms, the role of public policy, and the impact of entrepreneurial activity on growth — are manifold. In addition, a broad range of methodologies must be employed, from detailed analyses of individual contracts to large-sample studies employing Census data. The working group has three components. First, there is a regular series of workshops where new work is presented. Second, there are special projects that look at important themes relating to the economics of entrepreneurship. Finally, there is a provision for advanced doctoral students to visit the NBER for entrepreneurship meetings. The agenda for the March 2004 meeting was:

Boyan Jovanovic, NBER and New York University, "The Pre-Producers" (presented at the Productivity Program meeting on March 12, described earlier in this issue)
Discussant: David Evans, NERA

Daron Acemoglu and **Simon Johnson**, NBER and MIT, "Unbundling Institutions"
Discussant: Enrico Perotti, University of Amsterdam

Philippe Aghion, NBER and University College London, "Entry and Innovation: Theory and Evidence from U.K. and India"
Discussant: Fiona Scott-Morton, NBER and Yale University

Robert W. Fairlie, University of California, Santa Cruz, and **Alicia M. Robb**, Foundation for Sustainable Development, "Why Are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital"
Discussant: Timothy Bates, Wayne State University

Bruce Fallick and **Charles A. Fleischman**, Federal Reserve Board, and **James B. Rebitzer**, NBER and Case Western Reserve University, "Job Hopping in Silicon Valley: The Micro-Foundations of a High Technology Cluster"
Discussant: David S. Scharfstein, NBER and Harvard University

Panel Discussion: "What is the State of Entrepreneurship Data, and What Should We be Doing About It?"
Diane Burton, MIT; **John Haltiwanger**, NBER and University of Maryland; and **Robert Litan**, Kauffman Foundation

Acemoglu and **Johnson** evaluate the importance of "property rights institutions," which protect citizens against expropriation by the government and powerful elites, and "contracting institutions," which enable private contracts between citizens. The authors exploit exogenous variation in both types of institutions driven by colonial history, and document strong first-stage relationships between property rights institutions and the determinants of European colonization (settler mortality and population density before colonization), and between contracting institutions and the identity of the colonizing power. Using this instrumental variables approach, they find that property rights institutions have a first-order effect on long-run economic growth, investment, and financial development. Contracting institutions appear to matter only for the form of financial intermediation. A possible explanation for this pattern is that individuals often find ways of altering the terms of their formal and informal contracts to avoid the adverse effects of contracting institutions, but are unable to do so against the risk of expropriation.

Aghion asks how an increase in entry threat affects incentives to innovate and productivity growth among incumbent firms and industries. Among his theoretical predictions are that innovation and productivity growth of incumbents will react more positively to entry threat in industries that are close to the technological frontier than in sectors that are far below it. He uses micro-level U.K. data on productivity growth and patenting activity between 1987 and 1993 and on plant entry between 1986 and 1992, and finds evidence generally consistent with his hypotheses.

Four decades ago, Nathan Glazer and Daniel Patrick Moynihan made the argument that the black family "was not strong enough to create those extended clans that elsewhere were most helpful for businessmen and professionals." Using data from the confidential and restricted access Characteristics of Business Owners (CBO) Survey, **Fairlie** and **Robb** investigate this hypothesis by examining whether racial differences in family business backgrounds can explain why black-owned businesses lag substantially behind white-owned businesses in sales, profits, employment size, and

survival probabilities. Estimates from the CBO indicate that black business owners have a relatively disadvantaged family business background compared with white business owners. Black business owners are much less likely than white business owners to have had a self-employed family member owner prior to starting their business and are less likely to have worked in that family member's business. However, there are not sizeable racial differences in inheritances of business. The relatively low probability of having a self-employed family member prior to business startup among blacks does not generally contribute to racial differences in small business outcomes. Instead, the lack of prior work experience in a family business among black business owners, perhaps by limiting their acquisition of general and specific business human capital, negatively affects black business outcomes. The authors also find that limited opportunities for acquiring specific business human capital through work experience in businesses providing similar goods and services contribute to worse business outcomes among blacks.

The geographic clustering of firms is a poorly understood feature of entrepreneurial economies. In their paper, **Fallick**, **Fleischman**, and **Rebitzer** analyze a widely discussed cause of spatial concentration: knowledge spillovers attributable to employee mobility between firms. The focus is on the computer industry — particularly on Silicon Valley's computer cluster. The authors present a model of innovation and knowledge spillovers in computers and develop three implications from it: a high degree of spatial concentration and high rates of employee "job hopping" between firms are associated with rapid rates of innovation; "non-compete agreements" that inhibit employee movement to competitors will *reduce* spatial concentration and innovativeness; and these two implications generally will *not* hold outside of computers. California differs from other states in that its law makes "non-compete" agreements unenforceable. Combining this fact with new data on inter-firm mobility, the authors find empirical support for their model.

Economics of Education

The NBER's Program on the Economics of Education met in Cambridge on April 1. Program Director Caroline M. Hoxby of Harvard University organized this agenda:

Jorn-Steffen Pischke, NBER and London School of Economics, and **Alan Manning**, London School of Economics, "Ability Tracking and Student Performance in Secondary Schools in England and Wales"

Heather Rose, Public Policy Institute of California (PPIC), and **Jon Sonstelie**, University of California, Santa Barbara, "School Board Politics, School District Size, and the Bargaining Power of Teachers' Unions"

Randall K. Filer, Hunter College, and **Daniel Münich**, CERGE-EI, Prague, "Responses of Private and Public Schools to Voucher Funding"

David J. Zimmerman, NBER and Williams College, "Institutional Ethos, Peers, and Individual Outcomes"

Steven Rivkin, NBER and Amherst College, and **Christopher Jepsen**, PPIC, "What is the Tradeoff between Smaller Classes and Teacher Quality?"

Sean P. Corcoran, California State University, Sacramento, and **William N. Evans**, NBER and University of Maryland, "Income Inequality, the Median Voter, and the Support for Public Education"

British secondary schools moved from a system of extensive selection and tracking to a system with comprehensive schools during the 1960s and 1970s. Before the reform, students would take an exam at age eleven which determined whether they would attend an academically-oriented grammar school or a lower-level secondary school. **Manning** and **Pischke** use differences in the timing of the reform at the local level to study the impact of the system students attended on their performance in school, educational attainment, and labor market success. The authors use data from the National Child Development Study, a cohort panel following individuals who entered secondary school in 1969, in the midst of the transition to comprehensive education. They show that areas which switched to a comprehensive system earlier tended to have poorer households and more poorly performing students, so the raw difference between early comprehensive areas and those remaining selective is not informative. In a more detailed examination, the results indicate that selective schools tend to perform at least as well, or better, overall — but there may be an advantage from attending comprehensive schools for certain children, particularly those with high ability but poor family background.

Rose and **Sonstelie** develop a public choice model of the bargaining power of teachers' unions. The model

predicts that the power of the unions rises with the number of eligible voters in a district. As a bargaining outcome reflecting this power, the authors use the experience premium for teachers. The premium is defined as the difference in salary between experienced and inexperienced teachers. For a sample of 771 California school districts in 1999-2000, a district's premium is related positively to the number of voters. This finding is consistent with the model's prediction.

Filer and **Münich** point out that the post-communist Czech Republic provides a laboratory in which to investigate what would happen if a large American state were to adopt universal education vouchers. There, private schools appear to have arisen in response to distinct market incentives. They are more common in fields where public school inertia resulted in two few available slots. They are also more common where the public schools appear to be doing a worse job in their primary mission: obtaining admission to the top universities for their graduates. Public schools facing private competition improve their performance. They spend a larger fraction of their resources on classroom instruction and significantly reduce class sizes. Furthermore, facing significant private competition in 1995, Czech public academic high schools substantially improved their relative success in obtaining university admission for their graduates between 1996 and 1998. However, the rise of private schools also spurred public schools to engage in bureaucratic maneuvering in order to preserve their entrenched position. This points out how important it is that any voucher system be simple and leave as little opportunity as possible for discretionary action on the part of the implementing officials.

Zimmerman presents estimates of roommate- and institution-based peer effects. Using data from the College and Beyond survey, the Freshman survey, and phonebook data that allows him to identify college roommates, he estimates models of students' political persuasion and their intellectual engagement. The evidence suggests that a student's roommate's political sentiments have some impact of his or her own political views later in life. Zimmerman also implements a cluster-based analysis that attempts to answer the question: how would students' outcomes have changed if they had attended very different schools? The findings suggest that student outcomes are, indeed, sensitive to the school attended. Similar students attending schools with a decidedly different "ethos" differ in important ways after college. Institutional peer effects seem to have a powerful effect on student outcomes.

Jepsen and **Rivkin** investigate the effects of California's class size reduction program on teacher quality and student achievement. They use year-to-year differences in class size generated by both variation in enrollment and the state's class size reduction program to identify both the direct effects of smaller classes and any related changes in teacher quality. Their results show that smaller classes raise mathematics and reading achievement; the effects are larger in the earlier grades. The need to hire large numbers of new teachers, many of whom lacked full certification, did reduce the average quality of instruction after the implementation of class size reduction. However, there is no strong evidence of a longer-term decline in the quality of instruction because of the need to hire large numbers of new teachers in a short period of time.

While much has been written about the relationship between income inequality and spending disparities *across* jurisdictions, less is known about the consequences of rising inequalities *within* school districts. Income inequality in U.S. school districts has risen nearly 16 percent since 1969, at the same time that districts have become more heterogeneous along other dimensions. **Corcoran** and **Evans** use a panel of 8,700 school districts from 1970-2000 to explore how rising within-district income inequality has affected support for education. They measure support in two ways — local tax dollars and student participation in public schools — and examine the impact of rising inequality on both per-pupil revenues and the fraction of students in private schools. They find that rising income inequality within districts actually *increases* local per-pupil spending. This is consistent with a median voter model, in which rising income inequality in the top of the income distribution reduces the tax price of school spending to the median voter. Income inequality appears to have little impact on private schooling.

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Children

The NBER's Program on Children met in Cambridge on April 2. Program Director Jonathan Gruber, MIT, organized the meeting. These papers were discussed:

Gordon B. Dahl, NBER and University of Rochester, and **Enrico Moretti**, NBER and University of California, Los Angeles, "The Demand for Sons: Evidence from Divorce, Fertility, and Shotgun Marriage" (NBER Working Paper No. 10281)

Elizabeth Oltmans Ananat and **Guy Michaels**, MIT, "The Effect of Marital Breakup on the Income and Poverty of Women with Children"

Eric V. Edmonds, NBER and Dartmouth College, "Does Illiquidity Alter Child Labor and Schooling Decisions? Evidence from Household Responses to Anticipated Cash Transfers in South Africa" (NBER Working Paper No. 10265)

H. Naci Mocan, NBER and University of Colorado, and **Erdal Tekin**, NBER and Georgia State University, "Guns, Drugs, and Juvenile Crime: Evidence from a Panel of Siblings and Twins"

Philip Oreopolous, NBER and University of Toronto; **Marianne E. Page**, University of California, Davis; and **Ann Huff Stevens**, NBER and University of California, Davis, "The Intergenerational Effects of Compulsory Schooling"

Jeffrey R. Kling, NBER and Princeton University; **Jens Ludwig**, Georgetown University; and **Lawrence F. Katz**, NBER and Harvard University, "Youth Criminal Behavior in the Moving to Opportunity Experiment"

Dahl and **Moretti** show how parental preferences for sons versus daughters affect divorce, child custody, marriage, shotgun marriage when the sex of the child is known before birth, and fertility-stopping rules. They document that parents with girls are significantly more likely to be divorced; that divorced fathers are more likely to have custody of their sons; and that women with only girls are substantially more likely to have never been married. Perhaps the most striking evidence comes from the analysis of shotgun marriages. Among those who have an ultrasound test during their pregnancy, mothers carrying a boy are more likely to be married at delivery. When the authors turn to fertility, they find that in families with at least two children, the probability of having another child is higher for all-girl families than all-boy families. This preference for sons seems to be largely driven by fathers, with men reporting that they would rather have a boy by more than a two-to-one margin. In the final part of the paper, the authors compare the effects for the United States to five developing countries.

Having a female firstborn child significantly increases the probability that a woman's first marriage breaks up. **Ananat** and **Michaels** exploit this exogenous variation to measure the effect of marital breakup on women's economic outcomes. They find that breakup has little effect on a woman's average household income, but significantly increases the probability that her household will be in the lowest income quartile. While women partially offset the loss of spousal earnings with child support, welfare, combining households, and substantially increasing their labor supply, divorce significantly increases the odds of household poverty on net.

Edmonds considers the response of child labor supply and schooling attendance to anticipated social pension income in South Africa. For black households in South Africa, the social pension is large, highly anticipated, and shared across generations. Moreover, pension benefits are determined largely by age in South Africa's extremely poor black population, and Edmonds uses the age discontinuity in the pension benefit formula for identification. The South African social pension thus presents an unusually clean test of the applicability of the Life-Cycle/Permanent Income model to child labor and schooling decisions in developing countries. The data here support the theory that liquidity constraints contribute to high levels of child labor. When households become eligible for the social pension in South Africa, the resulting increase in household non-labor income is associated with a sizeable decline in child labor and with increases in schooling. Changes in child labor and schooling are largest among pensioners with little formal education. This suggests that the current emphasis in development policy of addressing child labor by attacking labor demand may be misdirected.

Using a nationally-representative panel data set of U.S. high school students (AddHealth data) that contains a relatively large sample of siblings and twins, **Mocan** and **Tekin** investigate the impact of gun availability at home and individual drug use on robbery, burglary, theft, and damaging property among juveniles. Using a variety of fixed-effects models that exploit variations over time and between siblings and twins, the results show that gun availability at home increases the propensity to commit crime by about 2 percentage points for juveniles but has no impact on damaging property. It appears unlikely that gun availability is merely a measure of the unobserved home environment, because gun availability does not influence other risky or bad behaviors of juveniles including smoking, drinking and fighting, being expelled from school, lying, and having sex. Nor does gun availability appear

to decrease the propensity for being victimized. In fact, the results show that having access to guns increases the probability of being cut or stabbed by someone, and of someone pulling a knife or gun on the juvenile. Estimates obtained from models that exploit variations over time and between siblings and twins indicate that drug use has a significant impact on the propensity to commit crime. The authors find that the median impact of cocaine use on the propensity to commit various types of crimes is 11 percentage points. The impact of using inhalants or other drugs is an increase in the propensity to commit crime by 7 and 6 percentage points, respectively.

The strong correlation between parents' economic status and that of their children has been well-documented, but little is known about the extent to which this is a causal phenomenon. **Oreopolous**, **Page**, and **Stevens** attempt to improve our understanding of the causal processes that contribute to intergenerational immobility by exploiting historical changes in compulsory schooling laws that affected the educational attainment of parents without affecting their innate abilities or endowments. The authors examine the influence of parental compulsory schooling on grade retention status for children aged 7 to 15 using the 1960, 1970, and 1980 U.S. Censuses. Their estimates indicate that a one-year increase in the education of either parent reduces the probability that a child repeats a grade by between 5 and 7 percentage points. Parental compulsory schooling also significantly lowers the likelihood of dropping out among 15- to 16- year olds living at home. These findings suggest that education policies may be able to reduce part of the intergenerational transmission of inequality.

The Moving to Opportunity (MTO) demonstration assigned housing vouchers via random lottery to low-income public housing residents in five cities. **Kling**, **Ludwig**, and **Katz** use the exogenous variation in residential locations generated by the MTO demonstration to estimate the effects of neighborhoods on youth crime and delinquency. They find that the offer to relocate to lower-poverty areas reduces the incidence of arrests for violent crimes and property crimes among female youth, and increases self-reported problem behaviors and property crime arrests for male youth, relative to a control group. Female and male youth move through MTO into similar types of neighborhoods, so the gender difference in MTO treatment effects seems to reflect differences in responses to similar neighborhoods. Within-family analyses similarly show that brothers and sisters respond differentially to the same new neighborhood environments with more adverse effects for males. Males show some short-term improvements in delinquent behaviors from moves to lower-poverty areas, but these effects are reversed and gender differences in MTO treatment effects become pronounced by 3 to 4 years after random assignment.

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International Trade and Investment

The NBER's Program on International Trade and Investment met in Cambridge on April 2 and 3. Kala Krishna, NBER and Pennsylvania State University, organized this program:

Abhijit V. Banerjee, MIT, and **Andrew F. Newman**, University College London, "Inequality, Growth, and Trade Policy"

Andrew B. Bernard, NBER and Dartmouth College; **Stephen Redding**, London School of Economics; and **Peter Schott**, NBER and Yale University, "Comparative Advantage and Heterogeneous Firms"

Robert Feenstra, NBER and University of California, Davis, and **Hiau Looi Kee**, The World Bank, "Export Variety and Country Productivity"

Marc J. Melitz, NBER and Harvard University, and **Gianmarco J. P. Ottaviano**, University of Bologna, "Market Size, Trade, and Productivity"

Mihir A. Desai, NBER and Harvard University; **C. Fritz Foley**, University of Michigan; and **Kristin J. Forbes**, NBER and MIT, "Shelters from the Storm: Multinational and Local Firm Reponses to Currency Crises"

Shubham Chaudhuri, Columbia University; **Pinelopi K. Goldberg**, NBER and Yale University; and **Panle Jia**, Yale University, "Estimating the Effects of Global Patent Protection in Pharmaceuticals: A Case Study of Quinolones in India"

Rebecca Hellerstein, Federal Reserve Bank of New York, "Who Bears the Cost of a Change in the Exchange Rate? The Case of Imported Beer"

Richard Baldwin and **Daria Taglioni**, Graduate Institute of International Studies, Geneva, "Positive OCA Criteria: Microfoundations for the Rose Effect"

Banerjee and **Newman** analyze a dynamic model of trade and intersectoral reallocation of resources in the presence of credit constraints. Because entrepreneurs can only invest in the sector they are specialized in, and are limited in the amount they can borrow, the intersectoral allocation of resources adjusts gradually when there is a change in trade policy. During this adjustment phase, trade liberalization has the potential to hurt the poor in countries with poor capital markets. Moreover, there may be large changes in the income distribution without much reallocation of resources as a result of trade liberalization. Finally, the model suggests an explanation of why rich countries mostly trade with each other. The authors go on to examine the efficiency implications of various trade policies in this environment: they show that import tariffs can be quite costly in terms of lost growth in this model, but export subsidies actually may improve efficiency.

Bernard, **Redding**, and **Schott** present a model that incorporates endowment-based inter-industry trade, variety-driven intra-industry trade, firm heterogeneity, and industry entry and exit. The model simultaneously explains why some countries export more in certain industries than in others and why, within industries, some firms export and others do not. The authors show how the theorems of the Heckscher-Ohlin model carry over to this general framework and derive novel implications for *firm-level responses* to a decline in trade costs. Opening to trade increases both the number of firms and the amount of firm entry and exit in comparative advantage industries relative to comparative disadvantage industries. The authors also show that industry productivity gains attributable to reallocation across firms depend on country and industry size and are strongest in comparative advantage industries.

Feenstra and **Kee** examine how export variety affects productivity. Using a broad cross-section of countries and disaggregating across sectors, they calculate export variety at the sectoral level for each country, and enter it into a translog GDP function which is estimated along with its output share equations. Export variety is treated as *endogenous*, determined by tariffs, transport costs, and other border effects. This framework also incorporates an important *exclusion restriction*: tariffs and transport costs should not have an impact on GDP or country productivity *except through* export variety. This exclusion amounts to a test for overidentification in the system, which the authors test and accept. They confirm the importance of export variety as the mechanism by which trade affects productivity. Indeed, they show that a 10 percentage point increase in U.S. tariffs would lead to a 3.8 percent fall in exporting countries' productivity; this indicates that tariffs are statistically and economically important in affecting productivity via export variety.

Melitz and **Ottaviano** develop a multi-country model of trade with heterogeneous firms and endogenous differences in the "toughness" of competition across regions. As in Melitz (2002), firms face some initial uncertainty concerning their future productivity when making a costly and irreversible investment decision prior to entry. However, the authors further incorporate endogenous markups using the monopolistic competition demand system developed in Ottaviano, Tabuchi, and Thisse (2002). This generates an endogenous distribution of markups across firms that responds to

the "toughness" of competition in a market — the number and average productivity of competing firms in that market. The authors analyze how these features vary across markets of different size that are not perfectly integrated through trade. Their model predicts that trade liberalization increases average productivity by forcing the least productive firms to exit, and by reallocating market share towards more productive firms who export (firms with lower productivity only serve their local market). In addition, they can explain other empirical patterns, linking market size to the micro-level distribution of productivity, prices, and markups across firms. They also highlight an important feedback mechanism between market size and the selection effects of trade: although multilateral trade liberalization increases average productivity and reduces average markups in all regions, larger regions still induce a "tougher" competitive environment. This environment is characterized by higher average productivity, lower markups and prices, and a greater level of product variety.

Desai, **Foley**, and **Forbes** investigate whether large depreciations differentially affect multinational affiliates and local firms in emerging markets, and what determines these differential responses. U.S. multinational affiliates increase sales, assets, and investment significantly more than local firms during, and subsequent to, currency crises. The enhanced relative performance of multinationals is traced to their ability to use internal capital markets to capitalize on the competitiveness benefits of large depreciations. Investment specifications indicate that increases in leverage induced by sharp depreciations constrain local firms but not multinational affiliates. Multinational parents also infuse new capital in their affiliates subsequent to currency crises. These results indicate another effect of foreign direct investment in emerging markets – affiliates expand economic activity during currency crises when local firms are most constrained.

Under the TRIPS agreement, WTO members are required to enforce product patents for pharmaceuticals. Many low-income economies claim that patent protection for pharmaceuticals will result in substantially higher prices for medicines, with adverse consequences for the health and well-being of their citizens. On the other hand, research-based global pharmaceutical companies argue that prices are unlikely to rise significantly because most patented products have therapeutic substitutes. **Chaudhuri**, **Goldberg**, and **Jia** empirically investigate the basis of these claims. Central to the debate is the structure of demand for pharmaceuticals in poor economies where, because health insurance coverage is so rare, almost all medical expense are met out-of-pocket. Using a detailed product-level dataset from India, they estimate key price and expenditure elasticities and supply-side parameters for the fluoroquinolones sub-segment of the systemic anti-bacterials segment of the Indian pharmaceuticals market. They then use these estimates to carry out counterfactual simulations of what prices, profits, and consumer welfare would have been had the fluoroquinolone molecules they study been under patent in India as they were in the United States at the time. The results suggest that concerns about the potential adverse welfare effects of TRIPS may have some basis. In the absence of any price regulation or compulsory licensing, the total annual welfare losses to the Indian economy from the withdrawal of the four domestic product groups in the fluoroquinolone sub-segment would be on the order of U.S. $713 million, or about 118 percent of the sales of the entire systemic anti-bacterials segment in 2000. Of this amount, foregone profits of domestic producers constitute roughly $50 million (or 7 percent). The overwhelming portion of the total welfare loss therefore derives from the loss of consumer welfare. In contrast, the profit gains to foreign producers are estimated to be only around $57 million per year.

Nominal exchange rates are remarkably volatile. They ordinarily appear disconnected from the fundamentals of the economies whose currencies they price. These facts make up a classic puzzle about the international economy. If prices do not respond fully to changes in the nominal exchange rate, who bears the cost of such large and unpredictable changes: foreign firms, domestic firms, or domestic consumers? **Hellerstein** quantifies the welfare effects of a change in the nominal exchange rate using the example of the beer market. She estimates a structural model that makes it possible to compute manufacturers' and retailers' pass-through of a nominal exchange-rate change without observing wholesale prices or firms' marginal costs. She then conducts counterfactual experiments to quantify how the change affects domestic and foreign firms' profits and domestic consumer welfare. The counterfactual experiments show that foreign manufacturers bear more of the cost of an exchange-rate change than do domestic consumers, domestic manufacturers, or the domestic retailer. The model can be applied to other markets and can serve as a tool for assessing the welfare effects of various exchange-rate policies.

Since Rose (2000), many scholars have found empirical evidence linking trade to exchange rate volatility and currency unions. **Baldwin** and **Taglioni** take a first step toward providing theoretical underpinnings for this "Rose effect." In their Melitz model, reduced volatility boosts trade by inducing existing exporters to export more and by inducing more firms to begin exporting. Specifically, volatility is a greater hindrance to export for small firms, so reduced volatility especially promotes small firms' exports. Because most firms are small, the extra exports induced by a marginal reduction in volatility may increase as the level of volatility falls — a result that can account for the convexity of the trade-volatility link implied by the Rose effect. The authors derive and test three new empirical hypotheses generated by the model. They find some support for two of them using data on Eurozone aggregate bilateral trade, but have insufficient data to test the third in a convincing manner.

Public Economics

The NBER's Program on Public Economics met at the Bureau's California office on April 8-9. This meeting was organized by Alan J. Auerbach, NBER and University of California, Berkeley; Roger H. Gordon, NBER and University of California, San Diego; and Antonio Rangel, NBER and Stanford University. The program was:

Mikhail Golosov, University of Minnesota, and **Aleh Tsyvinski**, NBER and University of California, Los Angeles, "Optimal Taxation with Endogenous Insurance Markets"
Discussant: Amy Finkelstein, NBER and Harvard University

Brian Knight, NBER and Brown University, "Are Policy Platforms Capitalized into Equity Prizes? Evidence from the Bush/Gore 2000 Presidential Election" (NBER Working Paper No. 10333)
Discussant: James M. Poterba, NBER and MIT

Eric A. Hanushek, NBER and Stanford University; **Charles Ka Yui Leung**, Chinese University of Hong Kong; and **Kuzey Yilmaz**, Koc University; "Borrowing Constraints, College Aid, and Intergenerational Mobility"
Discussant: Dennis Epple, NBER and Carnegie Mellon University

Mark Duggan, NBER and University of Maryland, "Do New Prescription Drugs Pay for Themselves? The Case of Second-Generation Antipsychotics"
Discussant: Joshua Graff Zivin, NBER and Columbia University

John Karl Scholz, NBER and University of Wisconsin; **Ananth Seshadri**, University of Wisconsin; and **Surachai Khitatrakun**, ERS Group, "Are Americans Saving Optimally for Retirement?" (NBER Working Paper No. 10260)
Discussant: Emmanuel Saez, NBER and University of California, Berkeley

Austan Goolsbee, NBER and University of Chicago, and **Joel Slemrod**, NBER and University of Michigan, "Playing with Fire: Cigarettes, Taxes and Competition from the Internet"
Discussant: Hal Varian, University of California, Berkeley

Richard Carson, **Theodore Groves**, and **Mark Machina**, University of California, San Diego; and **John List**, University of Maryland, "Probabilistic Influence and Supplemental Benefits: A Field Test of the Two Key Assumptions Underlying Stated Preferences"
Discussant: William Harbaugh, NBER and University of Oregon

Julie B. Cullen and **Catherine Wolfram**, NBER and University of California, Berkeley; and **Leora Friedberg**, NBER and University of Virginia, "Consumption and Changes in Home Energy Costs: How Prevalent is the 'Heat or Eat' Decision?"
Discussant: Raj Chetty, NBER and University of California, Berkeley

Marianne P. Bitler, RAND; **Jonah B. Gelbach**, University of Maryland; and **Hilary W. Hoynes**, NBER and University of California, Davis, "What Mean Impacts Miss: Distributional Effects of Welfare Reform Experiments"
Discussant: Thomas MaCurdy, NBER and Stanford University

Golosov and **Tsyvinski** study optimal tax policy in a dynamic private information economy. They describe efficient allocations and competitive equilibriums, and show that in such an environment the competitive equilibrium is efficient and government consumption can be financed by lump-sum taxation. Then they consider an environment with unobservable trades in competitive markets and show that efficient allocations have this property: the marginal product of capital is different from the market interest rate associated with unobservable trades. In any competitive equilibrium without taxation, the marginal product of capital and the market interest rate are equated, so competitive equilibriums are not efficient. Taxation of capital income can improve welfare because it introduces a wedge between market interest rates and the marginal product of capital and allows agents to obtain better insurance in private markets.

Using a sample of 70 firms favored under Bush or Gore platforms during the 2000 U.S. Presidential election, **Knight** tests for the capitalization of policy platforms into equity prices. He incorporates two sources of daily data for the six months leading up to the election: firm-specific equity returns and the probability of a Bush victory, as implied by prices from the Iowa electronic market. For this group of politically-sensitive firms, the daily baseline estimates demonstrate that platforms are capitalized into equity prices: under a Bush administration, relative to a counterfactual Gore administration, Bush-favored firms are worth 3 percent more and Gore-favored firms are worth 6 percent less, implying a statistically significant differential return of 9 percent. The most sensitive sectors include: tobacco worth 13 percent more under a favorable Bush administration; Microsoft competitors, worth 15 percent less under an unfavorable Bush administration; and alternative energy companies, worth 16 percent less under an unfavorable Bush administration. A corresponding analysis of campaign contributions, which allows for heterogeneity in the importance of policy platforms to the firms, supports the baseline estimates.

The current level and form of

subsidization of college education is often rationalized by appealing to capital constraints on individuals. Because borrowing against human capital is difficult, capital constraints can lead to less than optimal outcomes unless government intervenes. **Hanushek**, **Leung**, and **Yilmaz** develop a simple dynamic general equilibrium model of the economy that permits them to explore the impact of alternative ways of subsidizing higher education. The key features of this model include: endogenously determined bequests from parents that can be used to finance schooling; uncertainty in college completion related to differences in ability; and wage determination based upon the amount of schooling in the economy. Because policies toward college lead to large changes in schooling, it is very important to consider the general equilibrium effects on wages. Within this structure, the authors analyze: tuition subsidies such as exist in most public colleges; alternative forms of need-based aid; income contingent loans; and merit-based aid. Each of these policies tends both to improve the efficiency of the economy and to yield more intergenerational mobility and greater income equality. But, the various policies have quite different implications for societal welfare.

During the last several years, spending on prescription drugs in the United States increased at a 15 percent annual rate, with the $178 billion spent in 2002 accounting for more than 11 percent of health care expenditures. This growth has been driven largely by a shift to new drugs, which are typically more expensive than earlier drugs within the same therapeutic category. Recent research has suggested that the shift to new drugs may lower health care spending by reducing the need for hospitalization and other costly health care services. Using a 20 percent sample of Medicaid recipients from the state of California for the 1993-2001 period, **Duggan** investigates this hypothesis for antipsychotic drugs — the therapeutic category that has accounted for more government spending than any other during the past decade. Using three different identification strategies, he demonstrates that the 610 percent increase in Medicaid spending on antipsychotic drugs during the study period caused by the shift to three new treatments has not reduced spending on other types of medical care, thus undermining the hypothesis that the drugs have "paid for themselves." Because of data limitations, the findings for health outcomes are necessarily more speculative but suggest that the new medications have increased the prevalence of diabetes while reducing the prevalence of extrapyramidal symptoms among the mentally ill.

Scholz, **Seshadri**, and **Khitatrakun** ask whether Americans are saving optimally for retirement. Their standard for assessing optimality comes from a life-cycle model that incorporates uncertain lifetimes, uninsurable earnings and medical expenses, progressive taxation, government transfers, and pension and social security benefit functions derived from rich household data. The authors solve every household's decision problem, from death to starting age, and then use the decision rules in conjunction with earnings histories to make predictions about wealth in 1992. This is the first study to compare, household by household, wealth predictions that arise from a life-cycle model that incorporates earnings histories for a nationally representative sample. The results, based on data from the Health and Retirement Study, are striking: the model can account for more than 80 percent of the 1992 cross-sectional variation in wealth. Fewer than 20 percent of households have less wealth than their optimal targets, and the wealth deficit of those who are not saving enough is generally small.

Goolsbee and **Slemrod** document the rise of the Internet as a source of cigarette tax competition for U.S. states. Using data on the cigarette tax rates, taxable sales, and individual smoking by state from 1990 to 2001, merged to data on the rise of Internet use, they document that there has been a substantial increase in the sensitivity of the sales of cigarettes in a state to changes in the state's cigarette tax. This increase in sensitivity is directly correlated with the rise of Internet usage across states. But, while the increase of the Internet appears to have almost doubled the tax sensitivity of within-state cigarette sales, data on cigarette usage does not indicate that Internet growth has made smoking any more sensitive to tax rates. If anything, rising Internet usage has made smoking less sensitive to tax rates, as smokers now have another way to avoid high taxes. The impact of the Internet appears to be concentrated entirely in the amount of smuggled cigarettes. Overall, with the tax sensitivity of taxable cigarette sales having almost doubled, this has lessened the revenue-generating potential of recent cigarette tax increases by 25 percent or more. Given the continuing growth of the Internet and of Internet cigarette merchants, the results imply serious problems for state revenue authorities.

Researchers using stated preference methods typically hold one of two beliefs about the preference information they obtain: respondents always answer questions truthfully or, they answer truthfully only when it is in their interest to do so. The second position is consistent with economic theory, but it implies that the interpretation of survey responses depends critically on the incentive structure provided and the success in conveying that incentive structure. **Carson**, **Groves**, **List**, and **Machina** derive the simplest tests capable of distinguishing between the two views. The empirical part of their paper uses a binary discrete choice framework in the context of a vote on a public good — whether a unique baseball memorabilia item should be provided to all or no members of a group at a specified fixed individual price. The tests are cast in terms of the probability of influencing the outcome and the success in creating a true take-it-or-leave-it offer. The empirical results are consistent with the predictions from the theoretical model.

Home energy costs comprise a significant fraction of household budgets, particularly for poor families. **Cullen**, **Friedberg**, and **Wolfram** analyze how household consumption responds to changes in home energy outlays over the course of the year. The authors specify equations describing nondurable and food consumption and

then rely on changes in energy prices and weather severity to identify changes in disposable income. They distinguish changes in energy spending that are anticipated, for instance because it is winter in the Northeast, from those that are unanticipated, for instance because it is an unusually cold winter. They find little evidence of excess sensitivity to anticipated variation among households in the Consumer Expenditure Survey 1990-2002, even among those without substantial financial assets. However, the latter group experiences large reactions in their consumption to unanticipated changes.

Labor supply theory predicts systematic heterogeneity in the impact of recent welfare reforms on earnings, transfers, and income. Yet most welfare reform research focuses on mean impacts. **Bitler**, **Gelbach**, and **Hoynes** investigate the importance of heterogeneity using random-assignment data from Connecticut's Jobs First waiver, which features key elements of post-1996 welfare programs. Estimated quantile treatment effects exhibit the substantial heterogeneity predicted by labor supply theory. Thus, mean impacts miss a great deal. Looking separately at dropouts and other women does not improve the performance of mean impacts. Evaluating "Jobs First" relative to AFDC using a class of social welfare functions, the authors find that Jobs First's performance depends on the degree of inequality aversion, the relative valuation of earnings and transfers, and whether one accounts for Jobs First's greater costs. They conclude that the effects of welfare reform are probably more varied and more extensive than has been recognized.

Asset Pricing

The NBER's Program on Asset Pricing met in Chicago on April 9. Deborah J. Lucas, NBER and Northwestern University, and Amir Yaron, NBER and The Wharton School, organized this program:

Dimitri Vayanos, NBER and MIT, "Flight to Quality, Flight to Liquidity, and the Pricing of Risk" (NBER Working Paper No. 10327)
Discussant: Andrea Eisfeldt, Northwestern University

Anthony W. Lynch, NBER and New York University, and **Sinan Tan**, New York University, "Explaining the Magnitude of Liquidity Premia: The Roles of Return Predictability, Wealth Shocks, and State-Dependent Transaction Costs"
Discussant: John C. Heaton, NBER and University of Chicago

Xiaohong Chen, New York University, and **Sydney C. Ludvigson**, NBER and New York University, "Land of Addicts? An Empirical Investigation of Habit-Based Asset Pricing Models"
Discussant: David Chapman, Boston College

Michael Gallmeyer and **Burton Hollifield**, Carnegie Mellon University, "An Examination of Heterogeneous Beliefs with a Short Sale Constraint"
Discussant: George M. Constantinides, NBER and University of Chicago

John H. Cochrane, NBER and University of Chicago; and **Francis A. Longstaff** and **Pedro Santa-Clara**, NBER and University of California, Los Angeles, "Two Tree: Asset Price Dynamics Induced by Market Clearing"
Discussant: Ravi Bansal, Duke University

Xavier Gabaix, NBER and MIT; **Arvind Krishnamurthy**, Northwestern University; and **Olivier Vigneron**, Deutsche Bank, "Limits of Arbitrage: Theory and Evidence from the Mortgage-Backed Securities Market"
Discussant: John Geanakoplos, Yale University

Vayanos proposes a dynamic equilibrium model of a multi-asset market with stochastic volatility and transaction costs. His key assumption is that investors are fund managers, subject to withdrawals when fund performance falls below a threshold. This generates a preference for liquidity that varies over time and increases with volatility. He shows that during volatile times, the liquidity premiums on assets increase; investors become more risk averse; assets become more negatively correlated with volatility; pairwise correlations of assets can increase; and market betas of illiquid assets increase. Moreover, an unconditional Capital Asset Pricing Model (CAPM) can understate the risk of illiquid assets because they become riskier when investors are the most risk averse.

Lynch and **Tan** examine dynamic portfolio choice with transaction costs. In particular, the authors allow returns to be predictable and transaction costs to be stochastic, and they introduce wealth shocks, both stationary multiplicative and labor income. With predictable returns, the wealth shocks and transaction costs also can be state dependent. With labor income calibrated to data from the U.S. Panel Survey of Income Dynamics and the wealth shock and its correlation with dividend yield assumed to be negative, the liquidity premium can be as high as 1.14 percent for an agent with no financial wealth and as high as 0.8 percent for an agent whose wealth-to-per-

manent-monthly-income ratio is 100. When the multiplicative wealth shock covaries negatively with expected return and the transaction cost rate, and these latter two covary positively, then the liquidity premium is higher. When the authors estimate these correlations using U.S. data, they find exactly this pattern of correlations between the three variables. In the multiplicative wealth shock model, the liquidity premium becomes 1.56 percent when the correlations are set to the data point estimates, which are admittedly very noisy estimates of the true correlations. The authors conclude that the effect of proportional transaction costs on the standard consumption and portfolio allocation problem can be materially altered by reasonable perturbations that bring the problem closer to the one investors are actually solving.

Chen and **Ludvigson** study the ability of a general class of habit-based asset pricing models to match the conditional moment restrictions implied by asset pricing theory. Their approach is to treat the functional form of the habit as unknown, and to estimate it along with the rest of the model's parameters. The resulting specification for investor utility is semiparametric, in the sense that it contains both the finite dimensional set of unknown parameters that are part of the power function and time-preference and the infinite dimensional unknown habit function that must be estimated nonparametrically. This semiparametric approach allows the authors to empirically evaluate a number of interesting hypotheses about the specification of habit-based asset pricing models, and to test the framework's ability to explain stock return data relative to other models that have proven empirically successful. They find that a flexibly estimated internal habit model can explain a cross-section of size and book-to-market sorted portfolio equity returns better than the Fama and French (1993) three-factor model, the Lettau and Ludvigson (2001b) scaled consumption CAPM model, a flexibly estimated external habit model, the classic CAPM, and the classic consumption CAPM.

Gallmeyer and **Hollifield** study the effects of a short-sale constraint on stock prices in a dynamic general equilibrium economy populated by investors with heterogeneous beliefs. To clear both the stock and bond markets when the constraint binds, the most optimistic investor's equity demand must decrease relative to the unconstrained economy. The market price of risk must drop to reduce the optimist's demand for stock. The expected return on the investors' portfolios decreases as a result of the short-sale constraint. If the substitution effect is stronger than the income effect, then aggregate consumption demand must drop for the current consumption market to clear. In this case, the stock price drops as a consequence of imposing the short-sale constraint. If the substitution effect is weaker than the income effect, then aggregate demand must rise for the current consumption market to clear. In this case, the stock price rises as a consequence of imposing the short-sale constraint. In parameterized examples, the authors find that this resulting price rise is small. In all cases, the pessimistic investors believe the stock to be overvalued in the constrained economy.

If stocks go up, investors may want to rebalance their portfolios. But investors cannot all rebalance. Expected returns may need to change so that the average investor is still happy to hold the market portfolio despite its changed composition. In this way, simple market clearing can give rise to complex asset market dynamics. **Cochrane**, **Longstaff**, and **Santa-Clara** study this phenomenon in a very simple model. Despite the simple setup, price-dividend ratios, expected returns, and return variances vary through time. A dividend shock leads to "underreaction" in some states, as expected returns rise and prices slowly adjust, and "overreaction" in others. Expected returns and excess returns are predictable by price-dividend ratios in the time series and in the cross section, roughly matching value effects and return forecasting regressions. Returns generally display positive serial correlation and negative cross-serial correlation, leading to "momentum," but the opposite signs are possible as well. A shock to one asset's dividend affects the price and expected return of the other asset, leading to substantial correlation of returns even when there is no correlation of cash flows and giving the appearance of "contagion." Market clearing allows the "inverse portfolio" problem to be solved, in which the weights of the assets in the market portfolio are "inverted" to solve for the parameters of the assets' return generating process.

"Limits of Arbitrage" theories require that the marginal investor in a particular asset market be a specialized arbitrageur. Then the constraints faced by this arbitrageur (that is, capital constraints) feed through into asset prices. **Gabaix**, **Krishnamurthy**, and **Vigneron** examine the mortgage-backed securities (MBS) market in this light, as casual empiricism suggests that investors in the MBS market do seem to be very specialized. The authors show that risks that seem relatively minor for aggregate wealth are priced in the MBS market. A simple pricing kernel based on the aggregate value of MBS securities can price risk in the MBS market. A pricing kernel based on aggregate consumption or aggregate wealth implies the wrong sign for the price of MBS risk, though. The evidence suggests that limits of arbitrage theories can explain the cross-sectional and time-series behavior of spreads in this market.

Corporate Finance

The NBER's Program on Corporate Finance met in Chicago on April 9. Mitchell A. Petersen, NBER and Northwestern University, and Paola Sapienza, Northwestern University, organized this program:

Philip Bond, University of Pennsylvania, "Optimal Plaintiff Incentives When Courts are Imperfect"
Discussant: Luigi Zingales, NBER and University of Chicago

Francesca Cornelli and **David Goldreich**, London Business School, and **Alexander Ljungqvist**, New York University, "Pre-IPO Markets"
Discussant: Kent Womack, Dartmouth College

Leora Klapper and **Luc Laeven**, World Bank, and **Raghuram Rajan**, International Monetary Fund, "Business Environment and Firm Entry: Evidence from International Data"
Discussant: Mihir A. Desai, NBER and Harvard University

Noel Maurer, Instituto Tecnologico Autonomo de Mexico, and **Stephen Haber**, NBER and Stanford University, "Related Lending and Economic Performance: Evidence from Mexico"
Discussant: Randall S. Kroszner, NBER and University of Chicago

Michael Greenstone, NBER and MIT; **Paul Oyer**, NBER and Stanford University; and **Annette Vissing-Jorgensen**, NBER and Northwestern University; "Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments"
Discussants: Roberta Romano, NBER and Yale University

John R. Graham, Duke University, and **Krishnamoorthy Narasimhan**, University of Pennsylvania, "Corporate Survival and Managerial Experiences During the Great Depression"
Discussant: Antoinette Schoar, NBER and MIT

Ayla Kayhan, University of Texas, and **Sheridan Titman**, NBER and University of Texas, "Firms' Histories and Their Capital Structure"
Discussant: Malcolm Baker, NBER and Harvard University

The plaintiff's incentives in a lawsuit are affected by a variety of legal rules. One example is the proportion of the fine imposed on the defendant that is awarded to the plaintiff. Another is the identity of the plaintiff: private litigants are motivated by the prospect of receiving damages, while government employees (public prosecutors or employees of regulatory agencies) instead are rewarded (if at all) by career advancement. **Bond** examines the interactions between court characteristics and plaintiff incentives on the deterrence provided by contracts/laws/regulations. He shows that a key determinant of the optimal level of plaintiff incentives is the extent to which a party arguing "against the facts" is able to influence the court, relative to the party arguing with the facts. When the court is more susceptible to the influential activities of the party arguing against the facts, it is generally optimal to restrict plaintiff incentives. In more general terms, Bond's study makes precise an avenue via which legal rules affect the efficacy of a legal system.

Cornelli, **Goldreich**, and **Ljungqvist** take advantage of the grey market — a "when-issued market" for shares to be issued in an IPO — to look at how behavioral biases affect prices in the post-IPO market. They develop a model in which bookbuilding and a grey market take place simultaneously. While bookbuilding extracts information from large institutions about the fundamental value of the securities, the grey market reflects the opinion of (possibly biased) retail and other small investors. When the publicly observable grey market price is high relative to fundamental value, bookbuilding investors resell shares to these smaller investors in the aftermarket. Thus, the offer price and the aftermarket price will be close to the grey market price, but will revert to the fundamental value in the long run. In contrast, when the grey market price is low, the offer and aftermarket prices will be close to fundamental value. The empirical results here confirm this asymmetry in the issue price and aftermarket prices.

Using a comprehensive database of firms in Western and Eastern Europe, **Klapper**, **Laeven**, and **Rajan** study how the business environment in a country drives the creation of new firms. They find that entry regulations hamper entry, especially in industries that naturally should have high entry. Also, value added per employee in naturally "high entry" industries grows more slowly in countries with onerous regulations on entry. Interestingly, regulatory entry barriers have no adverse effect on entry in corrupt countries, only in less corrupt ones. Taken together, the evidence suggests that bureaucratic entry regulations are neither benign nor do they improve welfare. However, not all regulations inhibit entry. In particular, regulations that enhance the enforcement of intellectual property rights, or those that lead to a better developed financial sector, lead to greater entry in industries that do more R and D, or in industries that need more external finance.

There is a broad consensus that bankers in LDCs engage in related (insider) lending. However, there is no

consensus as to whether related lending has a positive or negative effect on economic growth. **Maurer** and **Haber** argue that related lending has negative consequences for growth when compared to the outcome that would obtain in an efficient capital market, because bankers choose borrowers based on personal contacts rather than on the quality of the underlying projects. The result is the misallocation of capital. The authors also argue that related lending arises as a rational response to high levels of default risk. Thus, it is an endogenous outcome of weak property rights and/or information asymmetries that are costly to overcome. In sum, related lending is a second-best outcome, but it is superior to the readily available alternative: banking systems that effectively do not lend for productive purposes.

Greenstone, **Oyer**, and **Vissing-Jorgensen** analyze the last major imposition of mandatory disclosure in U.S. equity markets. The 1964 Securities Act Amendments required a group of firms traded over the counter (OTC) to periodically provide audited financial information, proxy information prior to shareholder meetings, and details on insider holdings and trades to their shareholders for the first time. This legislation left unchanged the disclosure requirements of all NYSE, all AMEX, and some OTC firms. When the authors use these unaffected groups as a counterfactual for the affected firms, they find that those firms newly required to make all types of disclosures under the 1964 Act had a cumulative abnormal excess return of approximately 20 percent in the approximately 18 months between the initial calls for legislative action and the law's passage. In that same time period, firms for which proxy and insider information were the only new mandated forms of disclosure had a (marginally statistically significant) cumulative abnormal excess return of about 10 percent. In contrast, there is little evidence of a difference between the adjusted returns of affected and unaffected groups in a period when there is no new information about the law, or about which firms will comply with its requirements. Finally, event study analyses indicated that firms that initially registered with the SEC after the 1964 Amendments experienced positive abnormal excess returns and modest reductions in bid/ask spreads.

Graham and **Narasimhan** study corporate performance during and after the Great Depression for all industrial firms on the NYSE. Their first goal is to identify the factors that contribute to business insolvency and valuation during 1928 to 1938. The authors examine factors such as debt policy, credit-worthiness, corporate governance, and investment. Their second goal is to determine whether experiences during the Depression had a lasting effect on corporate decisions in the 1940s. The authors find that firms with more debt and lower bond ratings in 1928 had a greater probability of becoming financially distressed during the Great Depression. The value loss associated with high leverage for "value" firms is very significant, while the effect for "growth" firms is small. The probability of encountering distress during the Depression is also related to operating profits and firm size in the year prior to the occurrence of distress. Further, companies with large boards, and boards dominated by insiders, are less likely to survive the Depression. Finally, the Depression experience appears to have affected the preference to use debt, even after the economic environment improved: firms that were highly leveraged during the Depression use relatively little debt in the 1940s. Moreover, this behavior appears to be individual: the use of debt increases in the 1940s at companies for which the Depression-era company president retires or otherwise leaves the firm.

Kayhan and **Titman** examine how cash flows, investment expenditures, and stock price histories affect corporate debt ratios. The authors find that these variables have a substantial influence on changes in capital structure. Specifically, stock price changes and financial deficits (that is, the amount of external capital raised) have a strong influence on changes in capital structure, but their effects are at least partially reversed later. These results indicate that although a firm's history strongly influences its capital structure, financial choices over time tend to move firms towards target debt ratios that are consistent with the tradeoff theories of capital structure.

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Environmental Economics

The NBER's Working Group on Environmental Economics met at the Bureau's California office on April 9 and 10. This NBER Working Group undertakes theoretical or empirical studies of the economic effects of environmental policies around the world, including their effects on pollution, research and development, physical investment, labor supply, economic efficiency, and the distribution of real income. Particular issues under study include the costs and benefits of alternative policies to deal with air pollution, water quality, toxic substances, solid waste, and global warming. Working Group Director Don Fullerton, University of Texas, Austin, organized this program:

Richard Newell, **Jhih-Shyang Shih,** and **William Pizer**, Resources for the Future, "Estimating the Gains to Emission Trading"

Joshua Graff Zivin, NBER and Columbia University; **Richard Just**, University of Maryland; and **David Zilberman**, University of California, Berkeley, "Risk Aversion, Liability Rules, and Safety" (NBER Working Paper No. 9678)
Discussant: Donald Wittman, University of California, Santa Cruz

Trudy Ann Cameron and **Graham D. Crawford**, University of Oregon, "Superfund Taint and Neighborhood Change: Ethnicity, Age Distributions, and Household Structure"
Discussant: Randall Walsh, University of Colorado

Charles D. Kolstad, University of California, Santa Barbara, "Uncertainty in Self-Enforcing International Environmental Agreements"
Discussant: Brian Copeland, University of British Columbia

Over the past twenty years there has been a remarkable trend towards the use of market-based policies to control pollution. That trend has been fueled, in part, by economic arguments that these policies save a lot of money. Yet, most analyses of the gains to trade have been based on prospective engineering data rather than retrospective cost data, sparking a concern that they ignore actual command-and-control implementation, as well as the practical realities of pollution abatement efforts. **Newell**, **Pizer**, and **Shih** address such concerns with data collected from 1979-85 by the Census Bureau on pollution abatement costs and abatement levels. The authors estimate control cost functions and the potential gains from emissions trading. Their initial results, focusing on sulfur dioxide controls in the steel industry, find average annual savings of $300,000-$800,000 (in 1982 dollars) per plant associated with a prospective shift to sulfur dioxide emissions trading, or 5-14 percent as a share of overall air pollution control costs. The gains as a share of sulfur dioxide control costs would be much higher.

Zivin, **Just**, and **Zilberman** investigate the performance of liability rules in situations where negotiations are feasible and side payments are based on the realized level of externalities. They show that an increase in polluter liability does not necessarily increase safety or efficiency if the polluter is risk neutral. When either party is risk averse, an increase in polluter liability may reduce safety and efficiency. If the polluter is risk neutral and the victim is risk averse, optimality is only achieved by assigning full liability to the polluter, that is, giving the victim complete property rights to a clean environment. If the polluter is risk averse and the victim is risk neutral, no level of polluter liability is optimal. In this case, optimality can only be achieved through a contract on abatement activities, so that the risk-averse polluter receives a guaranteed payment regardless of the stochastic outcome.

Certain sociodemographic groups often seem to be relatively more concentrated near environmental hazards than in the surrounding community. Using decennial panel data for census tracts surrounding seven different urban Superfund localities, **Cameron** and **Crawford** examine how ethnicities, the age distribution, and family structure vary over time with distance from these major environmental disamenities. If the slope of the distance profile decreases over time, the group in question could be argued to be "coming to the nuisance." The authors find a lot of statistically significant movement, including some evidence of minority move-in and increasing exposure of children, especially those in single-parent households. However, there appears to be little generality, across localities, in the mobility patterns for different groups in the face of evolving environmental hazards. This heterogeneity may account for the difficulty other researchers have experienced in identifying such systematic effects in data that are pooled across different environmental hazards. Changes over time in the sociodemographic mix near Superfund sites also may help to explain differences in the extent to which housing prices rebound after cleanup commences.

Kolstad addresses the subject of self-enforcing international agreements. He emphasizes international environmental agreements (IEAs), although the results are more general. Kolstad adapts the standard model of IEAs to include uncertainty in environmental costs and benefits and learning about these costs and benefits. He then investigates the extent to which the size of the coalition changes as a result of learning and uncertainty. He finds that uncertainty by itself decreases the size of an IEA. Learning has the further effect of increasing or decreasing the size of an IEA, depending on the parameters of the problem.

Behavioral Finance

The NBER's Behavioral Finance group, part of NBER's Working Group on Behavioral Economics, met in Chicago on April 10. Robert J. Shiller, NBER and Yale University, and Richard H. Thaler, NBER and University of Chicago, direct the group and organized this meeting.

Behavioral finance approaches the study of financial market activity from a broad social science perspective, acknowledging the complexity of underlying human behavior and making use of an expansive repertory of research methods. It seeks to broaden the tool kit of financial theorists by introducing models of human behavior that are well-grounded in research in psychology. It challenges some conclusions about financial behavior by providing contrary evidence, or anomalies, that call into question the standard models. It further seeks to understand the parameters of human behavior in the financial context by econometric analysis of extensive datasets on financial transactions, prices and related economic data.

The following papers were discussed in April:

Harrison Hong, Princeton University, and **Jeremy C. Stein**, NBER and Harvard University, "Simple Forecasts and Paradigm Shifts" (NBER Working Paper No. 10013)
Discussant: Pietro Veronesi, NBER and University of Chicago

Alok Kumar, University of Notre Dame, and **Charles M.K. Lee**, Cornell University, "Mass Psychology and Returns Comovements: The Case of Retail Trades"
Discussant: Jeffrey Wurgler, NBER and New York University

David Hirshleifer, **Kewei Hou**, **Siew Hong Teoh**, and **Yinglei Zhang**, Ohio State University, "Do Investors Overvalue Firms with Bloated Balance Sheets?"
Discussant: Kent Daniel, NBER and Northwestern University

Robin Greenwood, Harvard University, "Aggregate Corporate Liquidity and Stock Returns"
Discussant: Owen Lamont, NBER and Yale University

Anna Scherbina, Harvard University, "Analyst Disagreement, Forecast Bias, and Stock Returns"
Discussant: Narasimhan Jegadeesh, Emory University

Daniel Bergstresser, Harvard University; **Mihir A. Desai**, NBER and Harvard University; and **Joshua Rauh**, MIT, "Earnings Manipulation: Evidence from Pension Decisionmaking"
Discussant: Shlomo Benartzi, University of California, Los Angeles

Hong and **Stein** study the implications of learning in an environment where the true model of the world is multivariate, but agents only update over the class of simple univariate models. If a particular simple model does a poor job of forecasting over a period of time, it is eventually discarded in favor of an alternative — yet equally simple — model that would have done better over the same period. This theory makes several distinctive predictions, which the authors develop in a stock-market setting. For example, the theory yields forecastable variation in the size of the value/glamour differential, in volatility, and in the skewness of returns. Some of these features mirror familiar accounts of stock-price bubbles.

Kumar and **Lee** document the existence of a common component in the buy-sell activities of retail investors and evaluate its impact on stock returns. Their analysis is based on more than 1.85 million buy-and-sell transactions made by over 60,000 retail investors in a six-year period. They show that retail trades are systematically correlated. That is, individual investors buy (or sell) stocks in concert with each other. Moreover, a factor based on this common directional behavior explains return comovements, particularly for stocks with high retail concentrations that are also costly to arbitrage. Collectively, the results support a role for mass psychology in returns formation.

When cumulative net operating income (accounting value added) outstrips cumulative free cash flow (cash value added), subsequent earnings growth is weak. **Hirshleifer**, **Hou**, **Teoh**, and **Zhang** argue that investors with limited attention overvalue the firm, because naïve earnings-based valuation disregards the firm's relative lack of success in generating cash flows in excess of investment needs. The normalized level of net operating assets is therefore a measure of the extent to which operating/reporting outcomes provoke excessive investor optimism. Consequently, if investor attention is limited, net operating assets will predict negative subsequent stock returns. In the 1964-2002 sample, net operating assets scaled by beginning total assets are a strong negative predictor of long-run stock returns. Predictability is robust with respect to an extensive set of controls and testing methods.

Aggregate investment in cash and liquid assets as a share of total corporate investment negatively predicts U.S. stock market returns between 1947 and 2003. The share of cash in total investment is a more stable predictor of returns than scaled price variables and performs well in out-of-sample predictability tests. Increases in cash are not correlated with planned increases in investment and current or lagged changes in profitability, but are negatively related to other known predictors that are positively related to subsequent returns. Cash investment is a stronger predictor of market returns in years in which external financing is

also high. **Greenwood** suggests that these results support a theory of active market timing, in which cash accumulation is the consequence of overvalued firms issuing external finance that cannot be spent productively and which they do not immediately return to investors.

Scherbina presents evidence on inefficient information processing in equity markets by documenting that biases in analysts' earnings forecasts result in biased stock prices. In particular, she shows that investors fail to fully account for optimistic bias associated with analyst disagreement. This bias arises for two reasons. First, analysts issue more optimistic forecasts when earnings are uncertain. Second, analysts with sufficiently low earnings expectations who choose to keep quiet introduce an optimistic bias in the mean reported forecast that increases with the underlying disagreement. Indicators of the missing negative opinions predict earnings surprises and stock returns. By selling stocks with high analyst disagreement, institutions exert correcting pressure on prices.

Bergstresser, **Desai**, and **Rauh** construct a measure of the sensitivity of reported earnings to the assumed long-term rate of return on pension assets. Managers are more aggressive with assumed long-term rates of return when their assumptions have a greater impact on reported earnings. Managers also increase assumed rates of return as they prepare to acquire other firms and as they exercise stock options, further confirming the opportunistic nature of these increases. Decisions about assumed rates of return, in turn, influence asset allocation within pension plans. In this study, the instrumental variables results suggest that a 25 basis point increase in the assumed rate of return is associated with a 5 percent increase in equity allocation. Taken together, these results suggest that earnings manipulation arising from managerial motivations influences other significant managerial investment decisions.

Labor Studies

The NBER's Program on Labor Studies met in Cambridge on April 16. Program Director Richard B. Freeman and Lawrence F. Katz, both of NBER and Harvard University, organized this agenda:

George J. Borjas, NBER and Harvard University, "Native Internal Migration and the Labor Market Impact of Immigration"

Steven J. Davis, NBER and University of Chicago, and **Magnus Henrekson**, Stockholm School of Economics, "Tax Effects on Work Activity, Industry Mix, and Shadow Economy Size: Evidence from Rich-Country Comparisons"

Lawrence F. Katz and **Jeffrey B. Liebman**, NBER and Harvard University; **Jeffrey R. Kling**, NBER and Princeton University; and **Lisa Sanbonmatsu**, NBER, "Moving to Opportunity or Moving to Tranquility? The Effects of Neighborhoods on Low-Income Household Heads"

Caroline M. Hoxby, NBER and Harvard University, "Our Favorite Method of Redistribution: School Spending Equality, Income Equality, and Growth"

Immigrants tend to cluster in a small number of geographic areas. Many studies use this clustering to estimate the wage impact of immigration by relating wage rates across labor markets to some measure of immigrant penetration. These spatial correlations may not measure the true impact of immigration, though, because the internal migration response of native workers helps to re-equilibrate local labor markets. **Borjas** studies how immigrant supply shocks influence the joint determination of wages and internal migration decisions in local labor markets. His data indicate that immigration is associated with lower wages, lower in-migration rates, higher out-migration rates, and a decline in the growth rate of the native workforce. The native migration response is strong enough to attenuate the measured impact of immigration on wages in a local labor market from 40 to 60 percent, depending on whether the labor market is defined at the state or metropolitan area level.

Guided by a simple theory of task assignment and time allocation, **Davis** and **Henrekson** investigate the long-run response to national differences in tax rates on labor income, payrolls, and consumption. The theory implies that higher tax rates reduce work time in the market sector, increase the size of the shadow economy, alter the industry mix of market activity, and twist labor demand, amplifying the negative effects on market work and concentrating effects on the less skilled. The authors also describe conditions whereby cross-country regressions yield unbiased estimates of the total effect of taxes, including the indirect effects that work through government spending responses to tax revenues. Regressions on rich-country samples in the mid-1990s indicate that one standard deviation difference in the tax rate of 12.8 percentage points leads to: 122 fewer market workhours per adult per year; a drop of 4.9 percentage points in the employment-population ratio; and a rise in the shadow economy equal to 3.8 percent of GDP. It also leads to 10 to 30 percent lower employment and value added

shares in: retail trade and repairs; eating, drinking and lodging; and a broader industry group that includes wholesale and motor trade.

Using a randomized experiment, **Kling**, **Liebman**, **Katz**, and **Sanbonmatsu** study the effects of changing housing assistance from the public provision of housing in high-poverty neighborhoods to housing vouchers that allow tenants to move to lower-poverty neighborhoods. Housing vouchers were offered by lottery to families living in high-poverty housing projects in five cities through the Moving to Opportunity (MTO) demonstration. An "experimental" group was offered vouchers only valid in a low-poverty neighborhood; a "Section 8" group was offered traditional housing vouchers without geographic restriction; a control group was not offered vouchers. This study examines the effects of these three alternatives on the economic self-sufficiency and health of the adults in these families, a group largely consisting of black or Hispanic female household heads with children. Five years after random assignment, the families offered housing vouchers through MTO lived in safer neighborhoods that had significantly lower poverty rates than those of the control group not offered vouchers. There may have been no *significant* overall effects on adult employment, earnings, or public assistance receipt, although the sample sizes here are not large enough to rule out moderate effects in either direction. In contrast, the authors find significant mental health benefits of the MTO intervention for the experimental group. They also show a more general pattern for the mental health results, using both treatment groups, of systematically larger effect sizes for groups experiencing larger changes in neighborhood poverty rates. In the analysis of physical health outcomes, the authors find a significant reduction in obesity, but no significant effects on four other aspects of physical health: general, asthma, physical limitations, and hypertension. And, their summary measure of physical health was not affected significantly by the MTO treatment for the overall sample.

Equalizing spending on the education of children from rich and poor families is one of the most popular methods of redistribution in the world. Undoubtedly it is the method on which the United States primarily relies, given the relatively low level of social benefits in America. Redistributing through education is potentially very efficient compared to other methods of redistribution because children from poor families are likely to underinvest in education, judging not only by social returns but also by private returns. And, if implemented well, redistribution through education poses few incentive problems (parents would not readily make themselves poorer to obtain more school aid). In short, redistribution through education not only could suppress income inequality, but also could potentially raise growth. **Hoxby** directly tests whether U.S. states that practiced more redistribution through education ended up producing adults whose incomes were less unequal and growing faster. She exploits substantial within-state variation in states' school finance policies. Because of rather arbitrary implementation of state Supreme Court judgments, the changes in the redistributive consequences of these policies are relatively uncorrelated with changes in the states' income and education distributions. Hoxby finds that redistribution through education may reduce income inequality among adults, but it does not raise income growth. Because the U.S. relies so heavily on redistribution through education, weak effects are problematic and suggest that understanding where the method "breaks down" is important.

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Monetary Economics

The NBER's Program on Monetary Economics met in Cambridge on April 16. Laurence M. Ball and Christopher D. Carroll, NBER and Johns Hopkins University, organized this program:

Thomas Laubach, Federal Reserve Board, "New Evidence on the Interest Rate Effects of Budget Deficits and Debt"
Discussant: Benjamin M. Friedman, NBER and Harvard University

Olivier J. Blanchard, NBER and MIT, "Fiscal Dominance and Inflation Targeting: Lessons from Brazil"
Discussant: Fredric S. Mishkin, NBER and Columbia University

Ricardo Reis, Harvard University, "Inattentive Consumers"
Discussant: John Shea, NBER and University of Maryland

Adam S. Posen, Institute for International Economics, "It Takes More than a Bubble to Become Japan"
Discussant: Takeo Hoshi, NBER and University of California, San Diego

Susanto Basu and **Miles S. Kimball**, NBER and University of Michigan, "Investment Planning Costs and the Effects of Fiscal and Monetary Policy"
Discussant: Simon Gilchrist, NBER and Boston University

Estimating the effects of government debt and deficits on Treasury yields is complicated by the need to isolate the effects of fiscal policy from other influences. In order to abstract from the effects of the business cycle and associated monetary policy actions on debt, deficits, and interest rates, **Laubach** studies the relationship between long-horizon expected government debt and deficits (measured by CBO and OMB projections) and expected future long-term interest rates. The estimated effects of government debt and deficits on interest rates are statistically and economically significant: a one percentage point increase in the projected deficit-to-GDP ratio is estimated to raise long-term interest rates by roughly 25 basis points. Under plausible assumptions these estimates are consistent with predictions of the neoclassical growth model.

A standard proposition in open-economy macroeconomics is that a central-bank-engineered increase in the real interest rate makes domestic government debt more attractive and leads to a real appreciation. However, if the increase in the real interest rate also increases the probability of default on the debt, then the effect instead may be to make domestic government debt less attractive, and to lead to a real depreciation. That outcome is more likely the higher the initial level of debt, the higher the proportion of foreign-currency-denominated debt, and the higher the price of risk. Under that outcome, inflation targeting clearly can have perverse effects: an increase in the real interest rate in response to higher inflation leads to a real depreciation. The real depreciation in turn leads to a further increase in inflation. In this case, fiscal policy, not monetary policy, is the right instrument to decrease inflation. **Blanchard** argues that this is the situation the Brazilian economy found itself in 2002 and 2003. He presents a model of the interaction between the interest rate, the exchange rate, and the probability of default, in a high-debt high-risk-aversion economy such as Brazil's during that period. Then, estimating the model using Brazilian data, he concludes that in 2002 the level and the composition of public debt in Brazil, and the general level of risk aversion in world financial markets, implied perverse effects of the interest rate on the exchange rate and on inflation.

Reis studies the consumption decisions of agents who face costs of acquiring, absorbing, and processing information. These consumers rationally choose to update their information and re-compute their optimal consumption plans only sporadically. In between, they remain inattentive. This implies that news disperses slowly throughout the population, so events have a gradual and delayed effect on aggregate consumption. Reis predicts that aggregate consumption will adjust slowly to shocks and be excessively sensitive and smooth relative to income. In addition, individual consumption likely is sensitive to ordinary and unexpected past news, but not to extraordinary or predictable events. Further, some people rationally choose not to plan, to live hand-to-mouth and save less, while other people sporadically update their plans. The longer these plans are, the more they save. The U.S. aggregate and microeconomic data generally support these predictions.

Did monetary easing in the 1980s cause Japan's bubble, as is often suggested? Drawing on both a new cross-national consideration of the monetary policy–asset price linkage and a reexamination of what actually occurred in Japan during 1985–90, **Posen** concludes that the bubble was just as likely to occur regardless of what monetary policy (within reason) would have done. Did the bubble's bursting cause Japan's Great Recession? In fact, Japan's recession of 1990–4 was mild, and only a combination of policy mistakes turned this normal recession into extended stagnation. This is borne out by cross-national investigation suggesting that the frequency of extended downturns following asset booms is relatively low. Comparing the post-bubble response of the U.S. and Japanese economies, did the bubble itself impede restructuring? Given very different responses in the two economies to similar bubbles, a bubble itself is not sufficient to cause real-side disruption. Central bankers could learn from Japan's bubble the benefits of a more thoughtful

approach to assessing potential growth and of easing rapidly in the face of asset price declines and be less concerned with targeting asset prices or pricking bubbles per se.

Basu and **Kimball** show that a simple "New Keynesian" model with capital but without investment frictions yields counterfactual predictions regarding the short-run effects of fiscal policy shocks: in these models fiscal expansions *lower* output, employment, and the real interest rate. The authors modify the model by assuming that investment projects are costly to start or stop, which is consistent with micro evidence. Adding investment planning costs restores the aggregate expenditure logic of the Keynesian Cross, and eliminates the counterfactual predictions regarding fiscal shocks. The modified model also is better able to match stylized facts on the delayed effects of monetary policy shocks on output, the size of the liquidity effect, and the fact that monetary shocks change real interest rates for a significantly shorter time than they change real output. The authors show that convex *capital* adjustment costs, as in the neoclassical interpretation of Tobin's *Q*, cannot substitute for investment planning costs in all of these respects.

International Trade and Organization

The NBER's Working Group on International Trade and Organizations met in Cambridge on April 24. This group, directed by Gordon Hanson of University of California, San Diego, studies how firms structure their operations in the global economy. Multinational enterprises have been at the forefront of globalization. These firms mediate trade flows between countries, are the source of much foreign investment, and are a principal conduit through which technology moves abroad. The ITO Working Group examines how trade policy, tax policy, and the legal environment in the United States and other countries affect where multinational enterprises locate their activities and how they design the contracts and ownership arrangements that govern international flows of trade, investment, and technology.

The following topics were discussed at the meeting:

Robert Gibbons, NBER and MIT, "Incentives, Control, and Relationships Within and Between Firms"

Stephen Lin and **Catherine Thomas**, Harvard University, "When Do Multinational Firms Outsource? Evidence from the Hotel Industry"

Giovanni Maggi, NBER and Princeton University, and **Massimo Morelli**, Ohio State University, "Self-Enforcing Voting in International Organizations"

Patrick Legros, ECARES, and **Andrew F. Newman**, University College London, "Managerial Firms, Vertical Integration, and Consumer Welfare"

Gibbons summarized two recent papers from organizational economics and then discussed how this work might apply to issues in international trade, including multinational enterprises, joint ventures and alliances, foreign direct investment, and international organizations. In the first paper, he defines and compares elemental versions of four theories of the firm. These theories are distilled from important contributions by Hart, Holmstrom, Klein, Williamson, and others. Although these contributions have been widely cited and much discussed, Gibbons had found it difficult to understand the commonalities, distinctions, and potential combinations of these seemingly familiar contributions. Therefore, he attempts to clarify these issues, in three steps: beginning with informal summaries of the theories, then turning to simple but formal statements of each elemental theory, and finally nesting the four elemental theories in an integrative framework. In the second paper, Gibbons and his co-authors explore how governance structures (defined as ex ante allocations of decision rights and payoff rights) affect the way that parties adapt to changing circumstances. Their model allows for an arbitrary number of parties and an arbitrary number of decision rights, payoff rights, and assets (inseparable bundles of decision rights and payoff rights). They solve for the governance structure that maximizes expected social surplus under spot adaptation, and also for the (typically different) governance structure that maximizes surplus under relational adaptation. They offer three complementary interpretations of the model: a theory of the firm without specific investments; a theory of decision rights allocated between firms via contract; and a theory of alternative governance structures such as alliances, networks, and joint ventures.

Lin and **Thomas** examine the determinants of the organizational form of a multinational firm's domestic and foreign production establishments. They adapt the Antras-Helpman (2004) property rights and Grossman-Helpman (2004) managerial incentives models of the multinational firm to a setting in which a hotel headquarters chooses the size and organizational form of each of its hotel properties. The property rights model predicts a monotonic relation-

ship between the size of a hotel and the probability that it is owned by the headquarters. The managerial incentives model predicts an inverted-U relationship between size and the likelihood that the headquarters manages the hotel; small and large hotels are likely to be managed by a third party, while medium-sized hotels are likely to be managed by the headquarters. The authors test these propositions using new data on organizational form, location, and size of more than 4000 hotel properties. Three of 15 hotel brands in the dataset exhibit patterns that are consistent with the managerial incentives model and inconsistent with the property rights model. Four other brands exhibit patterns that are consistent with both models, and organizational structures for one other brand are inconsistent with both models.

Some international organizations are governed by unanimity rule; some others by a majority system; still others have moved from one system to the other over time. The existing voting models, which generally assume that decisions made by voting are perfectly enforceable, have a difficult time explaining the observed variation in governance mode, and in particular the widespread occurrence of the unanimity system. **Maggi** and **Morelli** present a model whose main departure from standard voting models is that there is no external enforcement mechanism: each country is sovereign and cannot be forced to follow the collective decision; in other words, the voting system must be self-enforcing. The model yields unanimity as the optimal system for a wide range of parameters, and delivers rich predictions on the variation in the mode of governance, both across organizations and over time.

Legros and **Newman** show that important organizational decisions — such as whether to integrate — undertaken by managerial firms may adversely affect consumers, even in the absence of monopoly power in supply and product markets. While the effect is likely to come about when there is a negative shock of supply relative to demand, it is also possible for consumer-welfare-reducing reorganizations in the form of outsourcing to be triggered by entry of upstream suppliers. These results have implications for current policy debates about corporate governance and international outsourcing.

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Higher Education

The NBER's Working Group on Higher Education met in Cambridge on April 30. The Higher Education Working Group examines aspects of the higher education industry, including admissions, financial aid, enrollment patterns, financing, cost structure, the research enterprise, and the role of teaching as well as public policies that affect colleges and universities. Group Director Charles T. Clotfelter, NBER and Duke University, organized the meeting at which these papers were discussed:

Marie C. Thursby, NBER and Georgia Institute of Technology; **Jerry Thursby**, Emory University; and **Emmanuel Dechenaux**, Purdue University, "Shirking, Shelving, and Sharing Risk: The Role of University License Contracts"
Discussants: Irwin Feller, Pennsylvania State University

Johanne Boisjoly, University of Quebec at Rimouski; **Greg J. Duncan**, Northwestern University; **Michael Kremer**, NBER and Harvard University; **Dan M. Levy**, Mathematica Policy Research; and **Jacque Eccles**, University of Michigan, "Empathy or Antipathy? The Impact of Diversity"
Discussant: Bruce Sacerdote, NBER and Dartmouth College

Peter Arcidiacono and **Jacob L. Vigdor**, Duke University, "Does the River Spill Out? Estimating the Economic Returns to Attending a Racially Diverse College"
Discussant: Ronald G. Ehrenberg, NBER and Cornell University

Susan Dynarski, NBER and Harvard University, "Who Benefits from the Education Saving Incentives? Income, Educational Expectations and the Value of the 529 and Coverdell"
Discussant: Sarah Turner, NBER and University of Virginia

Larry D. Singell, Jr., **Glen R. Waddell**, and **Bradley R. Curs**, University of Oregon, "Hope for the Pell? The Impact of Merit-Aid on Needy Students"
Discussant: Eric Bettinger, NBER and Case Western University

University license contracts are more complex than the simple fixed fees and royalties typically examined by economists. **Thursby**, **Thursby**, and **Dechenaux** argue that these contracts are complex because of multiple distortions present when embryonic inventions are licensed. The authors test whether moral hazard, adverse selection, and risk aversion all play a role. Milestone payments can address inventor moral hazard without the inherent inefficiency in royalties; royalties are optimal only when the licensee is risk averse. The potential for a licensee to shelve inventions is one adverse selection problem that can be addressed by annual fees if the shelving is unintentional; milestones are needed if the firm licensed the invention with the intention of shelving it. The effectiveness of contracts in preventing shelving depends on the credibility of the threat to take the license back from the shelving firm. The authors use survey data and find that milestone payments help both to address inventor moral hazard and to share risk. Royalties are not used to address moral hazard, and their risk-sharing role is mitigated by difficulties in defining them for early-stage inventions. The authors further find that consulting is related to inventor moral hazard. Finally, their data support the use of annual payments for unintentional shelving.

Mixing across ethnic and class lines has the potential to either spur understanding or inflame tensions between groups. **Boisjoly**, **Duncan**, **Kremer**, **Levy**, and **Eccles** find that white students at a large state university who are randomly assigned African-American roommates in their first year are more likely to endorse affirmative action policies several years later. Whites randomly assigned black roommates also are more likely to say they have more personal contact with, and interact more comfortably with, members of minority groups. Whites assigned either black or low-income roommates are more likely to view a diverse student body as essential for a high-quality education. Further, students become less supportive of higher taxes for the wealthy when their assigned roommates are from high-income families, and they appear more likely to volunteer when their assigned roommates come from low-income families. Taken together, these results suggest that students become more empathetic with the social groups to which their roommates belong.

Arcidiacono and **Vigdor** evaluate the hypothesis that students receive tangible benefits from experiencing racial diversity in college. Using data on graduates of 30 selective universities, the authors find no significant link between racial composition and the post-graduation outcomes of typical white or Asian students. This result persists when they use major-level variation in racial composition with college and major fixed effects. While the results are consistent with the view that undergraduate diversity is irrelevant to postcollegiate outcomes, the authors find suggestive evidence that the lack of a significant estimated return may reflect persistent exposure to diversity before and after college combined with diminishing returns.

Dynarski examines the incentives created by the 529 and Coverdell tax-advantaged savings accounts. She finds that the advantages of the 529 and Coverdell rise sharply with income, for three reasons. First, those with the highest marginal tax rates benefit the most from sheltering income, gaining most in both absolute and relative terms. Second, the tax penalties that are assessed on families whose children do not use their Coverdell accounts to pay for college hit some

families harder than others. Strikingly, those in the top two tax brackets benefit more from non-educational use of a Coverdell than those in the bottom bracket gain from its educational use. Finally, the college financial aid system reduces aid for those families that have any financial assets, including an ESA or 529. Since the highest-income families are unaffected by this aid tax, this further intensifies the positive correlation between income and the advantages of the tax advantaged college savings accounts.

Prior empirical evidence finds that enrollment effects of merit-aid programs, such as the Georgia Hope Scholarship, are large and significant, whereas the effects of need-based aid programs such as the Pell Grant are modest and often insignificant. **Singell**, **Waddell**, and **Curs** use new panel data on Pell awards along with detailed institutional data from the National Center of Educational Statistics to examine whether the Georgia Hope Scholarship improves college access of needy students relative to students in other southern states. The authors show that large increases in merit aid improve college access of needy students and leverage Hope Scholarship funds with greater federal Pell assistance. Whereas most institution-specific increases in both Pell enrollment and funding are found for two-year and less-selective four-year institutions, the results also suggest that Pell students are not crowded out of more selective schools by Hope's intent to retain the best Georgia high-school students.

Health Care

The NBER's Program on Health Care met in Cambridge on May 7. NBER Research Associate Dana Goldman, RAND Corporation, organized this program:

Paul Gertler, NBER and University of California, Berkeley, and **Tim Simcoe**, University of California, Berkeley, "Disease Management: Exploiting Standards and Information Technology to Improve Health-Care Productivity" (presented at the Universities Research Conference described earlier in this issue)

Mark Duggan and **William Evans**, NBER and University of Maryland, "Lifetime Medical Costs of Treating HIV Patients on Medicaid"

Jay Bhattacharya, NBER and Stanford University, and **Darius Lakdawalla**, NBER and RAND Corporation, "Time-Inconsistency and Welfare"

Frank R. Lichtenberg, NBER and Columbia University, "The Expanding Pharmaceutical Arsenal in the War on Cancer" (NBER Working Paper No. 10328)

William H. Dow, NBER and University of North Carolina, and **Michael D. Hurd**, NBER and RAND Corporation, "Medicare as Valued by Recipients"

During the last decade, annual mortality rates for AIDS patients in the United States have declined by more than 75 percent. **Duggan** and **Evans** estimate the contribution of new drug treatments to this decline and to changes in health care spending, using more than ten years of claims and eligibility data for a sample of 12,152 HIV-positive Medicaid recipients from the state of California. Medicaid recipients are a natural group to examine given that approximately half of individuals with AIDS in the United States are on this program. The findings here indicate that the introduction of Epivir (a nucleoside reverse transcriptase inhibitor or NRTI) and protease inhibitors in late 1995 explain virtually all of the mortality improvement during the past decade. The increase in life expectancy coupled with the sharp increase in the average price of HIV antiviral drugs has led to a 3500 percent increase (from less than $5000 to approximately $175,000) in the present value of lifetime HIV drug spending.

Self-control devices — such as rehabilitation programs, group commitment, and informal fines — can make time-inconsistent smokers better off. Health economists have used this result to argue in favor of cigarette taxes that restrain smoking. However, taxes alone are not Pareto-improving overall, because they benefit today's smoker at the expense of future smokers, who have less demand for self-control. **Bhattacharya** and **Lakdawalla** suggest an alternative class of taxation policies that provide self-control and benefit a smoker at every point in life. Smokers could be allowed to purchase "smoking licenses" when they start to smoke, and in exchange commit their future selves to facing compensated cigarette taxes. The authors show that this scheme — which could be made voluntary — improves the welfare of current and future smokers, generates positive revenue for the government, and can be made incentive-compatible. Similar schemes also can be envisioned to address problems of time inconsistency in other contexts.

Lichtenberg assesses the contribution of pharmaceutical innovation to the increase in cancer survival rates in a "differences in differences" framework, by estimating models of cancer mortality rates using longitudinal, annual, cancer-site-level data based on records of 2.1 million people diagnosed with cancer during the period 1975-95. He controls for fixed cancer site effects, fixed year effects, incidence, stage distribution of diagnosed patients, mean age at diagnosis, and

surgery and radiation treatment rates. He finds that cancers for which the stock of drugs increased more rapidly tended to have greater increases in survival rates. The increase in the stock of drugs accounted for about 50-60 percent of the increase in age-adjusted survival rates in the first six years after diagnosis. New cancer drugs increased the life expectancy of people diagnosed with cancer by about one year from 1975 to 1995. The estimated cost to achieve the additional year of life per person diagnosed with cancer — below $3000 — is well below recent estimates of the value of a statistical life-year. Since the lifetime risk of being diagnosed with cancer is about 40 percent, the estimates imply that new cancer drugs accounted for 10.7 percent of the overall increase in U.S. life expectancy at birth.

Dow and **Hurd** analyze the value of the Medicare health insurance program from the perspective of individual beneficiaries. A principal reason why Medicare's perceived value has not been previously studied is the lack of exogenous price variation. The fact that 99 percent of the elderly population is covered by the program makes it difficult to study health insurance choices among elderly Americans. This paper explores an alternative method for understanding Medicare's value, using contingent valuation techniques to elicit willingness-to-pay measures. The data are based on an experimental questionnaire module included in panel wave III of the Health and Retirement Study. This module was designed to elicit demand choices in response to hypothetical variation in the size of cash grants that could be substituted for Medicare coverage. The empirical analysis addresses two principal questions: What is the average estimated value of Medicare in comparison to its actuarial value? And, how do preferences for Medicare vary by wealth? In the process of analyzing these questions, and through examination of the reasonableness of preference variation by other characteristics such as age and health, the authors also seek to better understand the extent to which this contingent valuation approach may be useful in future related research.

Market Microstructure

The NBER's Working Group on Market Microstructure met in New York on May 7. Working Group Director Bruce Lehmann, NBER and University of California, San Diego, organized the program along with Joel Hasbrouck, Stern School of Business at New York University, Matthew Spiegel, Yale School of Management; and Avanidhar Subrahmanyam, Anderson School of Management at University of California, Los Angeles. These papers were discussed:

Andrew Ellul, Indiana University; **Hyun Song Shin**, London School of Economics; and **Ian Tonks**, University of Bristol, "How to Open and Close the Market: Evidence from the London Stock Exchange"
Discussant: Tavy Ronen, Rutgers University

Richard C. Green, **Burton Hollifield**, and **Norman Schurhoff**, Carnegie Mellon University, "Financial Intermediation and the Costs of Trading in an Opaque Market"
Discussant: Clifton Green, Emory University

Andy Puckett, **Paul Irvine**, and **Marc Lipson**, University of Georgia, "Tipping"
Discussant: Sorin Sorescu, Texas A&M University

Mario Panayides, Yale University, "The Specialist's Participation in Quoted Prices and the NYSE's Price Continuity Rule"
Discussant: Ashish Tiwari, University of Iowa

Ioanid Rosu, MIT, "A Dynamic Model of the Limit Order Book"
Discussant: Lawrence Glosten, Columbia University

Shmuel Baruch, University of Utah, and **Gideon Saar**, New York University, "Asset Returns and the Listing Choice of Firms"
Discussant: Daniel Deli, Arizona State University

Various markets, particularly NASDAQ, have been under pressure from regulators and market participants to introduce call auctions for their opening and closing periods. **Ellul**, **Shin**, and **Tonks** investigate the performance of call markets at the open and close via a unique natural experiment provided by the institutional structure of the London Stock Exchange. Besides a call auction, London has a parallel "off-exchange" dealership system at the market's open and close. Although the call market dominates the dealership system in terms of price discovery, the authors find that the call frequently fails to open and close trading, especially on days characterized by difficult trading conditions. In particular, the call's success decreases significantly when: asymmetric information is high; trading is expected to be slow; order flow is unbalanced; and uncertainty is high. Furthermore, traders' resorting to call auctions is negatively correlated with firm size, implying that the call auction is not the optimal method for opening and closing trading of medium and small-sized stocks. The authors sug-

gest that these results can be explained by thick market externalities.

Municipal bonds trade in opaque, decentralized broker-dealer markets in which price information is costly to gather. Whether dealers in such markets operate competitively is an empirical issue, but a difficult one to study, because data in such markets is generally not centrally recorded. **Green**, **Hollifield**, and **Schurhoff** analyze a comprehensive database of all trades between broker-dealers in municipal bonds and their customers. The data is only released to the public with a substantial lag, and thus the market was relatively opaque to the traders themselves during the sample period. The authors use their sample to estimate the cross-sectional determinants of the dealer markups. They find that dealers earn lower average markups on larger trades with customers, even though larger trades lead the dealers to bear more risk of losses. Formulating and estimating a simple structural bargaining model allows the authors to estimate measures of dealer bargaining power and relate them to characteristics of the trades. The results suggest that dealers exercise substantial market power in their trades with customers. The authors' measures of market power decrease with trade size and increase with variables that indicate the complexity of the trade for the dealer.

Puckett, **Irvine**, and **Lipson** investigate the trading behavior of institutional investors immediately prior to the release of analysts' initial strong buy, or buy, recommendations. Using a proprietary database of institutional orders from the Plexus Group, the authors document abnormally high trading volume and abnormally large buying imbalances beginning five days before initial recommendations are released publicly. They confirm that buying prior to the recommendation release generates positive abnormal trading profits. Furthermore, the magnitude of the trading imbalances are related to variables that are typically associated with positive price responses to initiations, including strong buy recommendations, the analyst being an all-star analyst, and lower prior dispersion in analysts' forecasts. The authors also find that some institutional investors partially reverse their trading patterns after analysts' initiations are made public, consistent with theoretical predictions about differentially informed investors' trading behavior. Some institutional traders receive tips regarding the contents of the soon-to-be-released analysts' report, the authors conclude. To the extent that brokerage firm clients who benefit from these tips are more likely to direct business to the brokerage, tipping provides economic profits to the brokerage that can help to defray the cost of analyst information gathering. Thus, while tipping benefits some traders at the expense of others, the welfare consequences of tipping are unclear.

Theoretical work has shown that inventory rebalancing by a Specialist through the quoted price is important to the functioning of the market, but empiricists have failed to identify any evidence of this action intradaily. By partitioning Specialist actions as active or passive, conditioned on the Price Continuity Rule, **Panayides** shows that the Specialist engages in active inventory rebalancing throughout the trading day. He finds that the Specialist's obligations — set by the NYSE — of achieving price continuity and smooth price changes come at a significant cost for the Specialist. However, the trader manages to mitigate this cost through his own actions when the rules are not binding. The implications of this paper have direct bearing on the current debate as to whether the design of the NYSE should be restructured.

Rosu proposes a continuous-time model of price formation in a market where trading is conducted according to a limit-order book. Strategic liquidity traders arrive randomly in the market and dynamically choose between limit and market orders, trading off execution price with waiting costs. Rosu proves the existence of a Markov equilibrium in which the bid and ask prices depend only on the number of buy and sell orders in the book, and which can be characterized in closed-form in several cases of interest. His model generates empirically verified implications for the shape of the limit-order book and the dynamics of prices and trades. In particular, he shows that buy and sell orders can cluster away from the bid-ask spread, thus generating a hump-shaped limit-order book. Also, following a market buy order, both the ask and bid prices increase, with the ask increasing more than the bid. Hence the spread widens.

Baruch and **Saar** propose a mechanism that relates asset returns to the firm's optimal listing choice. The crucial element in this framework is not a difference in the structure or rules of the alternative markets, but a difference in the return patterns of the securities that are traded on these markets. The authors use a simple trading model with asymmetric information to show that a stock would be more liquid when listed on a market with "like" securities, or securities with correlated payoff patterns. Using NYSE and Nasdaq securities, they find that stocks that are eligible to list on another market but do not switch indeed have return patterns that are similar to other securities on their own market and different from securities listed on the other market. The authors also show that the return patterns of stocks that switch markets change in the two years prior to the move in the direction of being more similar to the stocks on the new market. These results are consistent with the notion that managers optimally choose the market on which to list their stocks.

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Tax Policy and the Economy, Volume 18

Tax Policy and the Economy, Volume 18, edited by James M. Poterba, will be available this summer from the MIT Press for $25.00 in paperback and $58.00 clothbound. Volume 18 of this NBER series continues the tradition of addressing issues that are relevant to current policy debates as well as to questions of longer-term interest. It covers such topics as the tax treatment of assets saved for higher education expenses, the measurement of depreciation allowances, and the mortgage interest subsidy.

Poterba directs the NBER's Program on Public Economics and is the Mitsui Professor of Economics and the Associate Head of the Economics Department at MIT.

Frontiers in Health Policy Research, Volume 7

Frontiers in Health Policy Research, Volume 7, edited by David M. Cutler and Alan M. Garber, is available now from the MIT Press. It is priced at $30.00 for the paperback and $70.00 for the clothbound version. The papers in this seventh volume in the series, originally presented at the annual Frontiers in Health Policy Research conference held in Washington D.C. in the summer of 2003, reflect the economic challenges faced by policymakers and healthcare professionals in an age of budget deficits. The topics discussed include prescription drug benefits as a stand-alone component of Medicare, disability rates and Medicare costs, and conversion to for-profit health plans.

Cutler is Director of the NBER's Program on Health Care and a professor of economics at Harvard University. Garber directs the NBER's Program on Health Economics and is the Henry J. Kaiser Professor of Medicine and a professor(by courtesy) of Economics at Stanford University.

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College Choices: The Economics of Where to Go, When to Go, and How to Pay for It

College Choices: The Economics of Where to Go, When to Go, and How to Pay for It, edited by Caroline M. Hoxby, will be available for $65.00 from the University of Chicago Press this summer. In this volume, Hoxby and a distinguished group of economists show how students and their families really make college decisions — how they respond to financial aid options, how peer relationships figure in the decision making process, and even whether they need mentoring to get through the admissions process. Students of all sorts are considered — from poor students who may struggle with applications and even about whether to continue on to college, to high aptitude students who are offered "free rides" at elite schools. The authors use the best methods and latest data to analyze the college decision process, while explaining how changes in aid and admissions practices inform those decisions as well.

Hoxby directs the NBER's Program on the Economics of Education and is a professor of economics at Harvard University.

Law and Employment: Lessons from Latin America and the Caribbean

Law and Employment: Lessons from Latin America and the Caribbean, edited by James J. Heckman and Carmen Pagés, will be available this summer from the University of Chicago Press for $95.00.

Of the numerous labor regulations that were altered or created in Latin America during the last 30 years, many have had unintended and far-reaching results. Heckman and Pagés document the behavior of firms attempting to stay in business and be competitive while facing the high costs of complying with these labor laws. They show that mandated benefits reduce employment, have a disruptive impact on turnover rates and labor market flexibility, promote inequality, and discriminate against marginal workers. Along with in-depth studies of Colombia, Peru, Brazil, Argentina, Chile, and Uruguay, *Law and Employment* provides comparative analysis from a range of European countries and the United States. It also covers important changes in regulation in such countries as Jamaica and Trinidad. The book breaks new ground by quantifying not only the cost of regulation in Latin America, the Caribbean, and in the Organization for Economic Cooperation and Development, but also the broader impact of this regulation.

Heckman is a Nobel Prize winner, a professor of economics at the University of Chicago, and a Research Associate in the NBER's Program on Labor Studies. Pagés is a senior research economist in the Research Department of the Inter-American Development Bank.

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