

effect on garbage and a positive cross-price effect on recycling. When we correct for endogenous policy, then the effect of the user fee on garbage increases, and the significance of the cross-price effect on recycling disappears.

Asymmetric Volatility and Risk in Equity Markets

Geert Bekaert and Guojun Wu

NBER Working Paper No. 6022

April 1997

Asset Pricing

It appears that volatility in equity markets is asymmetric: returns and conditional volatility are correlated negatively. We provide a unified framework to investigate simultaneously asymmetric volatility at the firm and in the market and to examine two potential explanations of the asymmetry: leverage effects and time-varying risk premiums. Our empirical application uses the market portfolio and portfolios with different leverage constructed from Nikkei 225 stocks, extending the empirical evidence on asymmetry to Japanese stocks. Although asymmetry in volatility is present and significant at the market and the portfolio levels, its source differs across portfolios. We find that it is important to include leverage ratios in the volatility dynamics, but that their economic effects mostly are dwarfed by the volatility feedback mechanism. Volatility feedback is enhanced by a phenomenon that we term covariance asymmetry: conditional covariances with the market increase significantly only following negative market news. We do not find significant asymmetries in conditional betas.

Answering the Critics: Yes, ARCH Models Do Provide Good Volatility Forecasts

Torben G. Andersen and Tim Bollerslev

NBER Working Paper No. 6023

April 1997

JEL Nos. C22, C52, C53, G12, G13

Asset Pricing

Volatility permeates modern financial theories and decisionmaking processes. As such, accurate measures and good forecasts of future volatility are critical for the implementation and evaluation of asset pricing theories. In response to this, a voluminous literature has emerged for modeling the temporal dependencies in financial market volatility at the daily and lower frequencies using ARCH and stochastic-volatility-type models. Most of these studies find highly significant in-sample parameter estimates and pronounced persistence of intertemporal volatility. Meanwhile, when judged by standard forecast evaluation criteria, based on the squared or absolute returns over daily or longer forecast horizons, ARCH models provide seemingly poor forecasts of volatility. We demonstrate that ARCH models, contrary to the above contention, produce strikingly accurate interdaily forecasts for the latent volatility factor that is relevant for most financial applications.

Openness, Country Size, and the Government

Alberto Alesina and Romain Wacziarg

NBER Working Paper No. 6024

May 1997

Economic Fluctuations and Growth, Monetary Economics, and Public Economics

This paper shows that smaller countries have larger public sectors as a share of GDP, and are also more open to trade, than larger countries.

These empirical observations are consistent with recent theoretical models explaining country formation and breakup.

The Limited Financing of Catastrophe Risk: An Overview

Kenneth A. Froot

NBER Working Paper No. 6025

May 1997

JEL No. 400

Asset Pricing and Corporate Finance

This paper argues that the financial exposure of households and firms to natural (catastrophe) disasters is borne primarily by insurance companies. Surprisingly, insurers use reinsurance to cover only a small fraction of these exposures, yet many insurers do not have enough capital and surplus to survive medium or large disasters. In a well-functioning financial system, these risks would be shared more widely. This paper articulates eight different explanations that may lie behind the limited risk-sharing, relating them to both recent industry developments and financial theory. I then examine how financial innovation can help to change the equilibrium toward a more efficient outcome.

Does Parents' Money Matter?

John Shea

NBER Working Paper No. 6026

May 1997

JEL Nos. J62, O15

Labor Studies

This paper asks whether parental income *per se* has a positive impact on children's accumulation of human capital. Previous research has established that income is correlated positively across generations. This does not prove that parents' money matters, however, since income presumably is correlated with unobserved

abilities transmitted across generations. I estimate the impact of parental income by focusing on variation attributable to parental factors — union, industry, and job loss experience — that arguably represent luck. When I examine a nationally representative sample, I find that changes in parental income attributable to luck have at best a negligible impact on children's human capital. On the other hand, I find that parental income does matter in a sample of low income families. These findings are potentially consistent with models in which credit market imperfections constrain low income households to make suboptimal investments in their children.

National Borders, Trade, and Migration

John F. Helliwell

NBER Working Paper No. 6027

May 1997

International Trade and Investment

This paper extends and reconciles recent estimates of the strikingly large effect of national borders on trade patterns. Trade among Canadian provinces in 1988–90 was more than 20 times as dense as trade between Canadian provinces and U.S. states. There is some evidence of a downward trend since, because of the post-free trade agreement growth in trade between Canada and the United States. Using approximate data for the volumes and distances of internal trade in OECD countries, the 1988–92 border effect for unrelated OECD countries exceeds 12. Both types of data confirm substantial border effects, even after accounting for common borders and language, with the directly-measured data for interprovincial and province-state trade producing higher estimates.

Initial estimates from a census-based gravity model of interprovincial and international migration show a much higher border effect for mi-

gration, with interprovincial migration among the Anglophone provinces almost 100 times as dense as migration from U.S. states to Canadian provinces. Migration has effects on subsequent trade patterns for international but not for interprovincial trade, suggesting the existence of nationally-shared networks, norms, and institutions as possible sources of the large national border effects for trade flows.

Testing Endogenous Growth in South Korea and Taiwan

Robert C. Feenstra, Dorsati Madani, Tzu-Han Yang, and Chi-Yuan Liang

NBER Working Paper No. 6028

May 1997

JEL Nos. F14, O47, O53

International Trade and Investment

We evaluate the endogenous growth hypothesis using sectoral data for South Korea and Taiwan. Our empirical work relies on a direct measure of the variety of products from each sector which can serve as intermediate inputs or as final goods. We test whether changes in the variety of these inputs, for Taiwan relative to Korea, are correlated with the growth in total factor productivity (TFP) in each sector, again measured in Taiwan relative to Korea. We find that changes in relative product variety (entered as either a lag or a lead) have a positive and significant effect on TFP in 8 of the 16 sectors. Seven out of these 8 sectors are classified as secondary industries, in that they rely on differentiated manufactured inputs, and therefore seem to fit the idea of endogenous growth. Among the primary industries that rely more heavily on natural resources, we find more mixed evidence.

Impact of Augmented Prenatal Care on Birth Outcomes of Medicaid Recipients in New York City

Theodore Joyce

NBER Working Paper No. 6029

May 1997

JEL No. I18

Health Economics

I examine whether New York state's Prenatal Care Assistance Program (PCAP) is associated with greater use of prenatal services and improved birth outcomes. PCAP is New York state's augmented prenatal care initiative that became a part of the Medicaid program after expansion in income eligibility thresholds in January 1990. Data are from the linkage of Medicaid administrative files with New York City birth certificates (N=23,243). For women on cash assistance, I find PCAP is associated with a 20 percent increase in the likelihood of enrollment in WIC, an increase in mean birth weight of 35 grams, and a 1.3 percentage point drop in the rate of low birth weight. Associations between PCAP and improved birth outcomes for women on medical assistance are similar, but appear contaminated by selection bias. Reductions in newborn costs associated with PCAP participation are modest, between \$100–\$300 dollars per recipient, and are not sufficient to offset program expenditures.

How Taxing is Corruption on International Investors?

Shang-Jin Wei

NBER Working Paper No. 6030

May 1997

JEL Nos. F02, F23, H20, H32

International Finance and Macroeconomics and International Trade and Investment

This paper studies the effect of corruption on foreign direct investment (FDI). The sample covers bilat-

eral investment from 14 source countries to 45 host countries during 1990–1. There are three central findings: 1) A rise in either the tax rate on multinational firms or the corruption level in a host country reduces inward FDI. An increase in the corruption level from that of Singapore to that of Mexico is equivalent to raising the tax rate by over 20 percentage points. 2) There is no support for the hypothesis that corruption has a smaller effect on FDI into East Asian host countries. 3) American investors are averse to corruption in host countries, but not necessarily more so than average OECD investors, in spite of the U.S. Foreign Corrupt Practices Act of 1977. On the other hand, there is some weak support for the hypothesis that Japanese investors may be somewhat less sensitive to corruption. Neither American nor Japanese investors treat corruption in East Asia any differently from that in other parts of the world.

There are other interesting and sensible findings. For example, consistent with theories that emphasize the importance of networks in trade and investment, sharing a common linguistic tie between the source and host countries and geographic proximity between the two are associated with a sizable increase in the bilateral FDI flow.

Cohort Crowding and Youth Labor Markets: A Cross-National Analysis
Sanders Korenman and David Neumark

NBER Working Paper No. 6031

May 1997

JEL Nos. J11, J21

Labor Studies

We assess the evidence on the contribution of changes in the age structure of the population to the changing fortunes of youth in labor markets in the advanced economies over the 1970s, 1980s, and early

1990s. We then use this evidence to project the likely effects of future cohort sizes on youth labor markets. We estimate a series of regression models in order to isolate the effects of exogenous changes in potential youth labor supply on youth employment and unemployment rates, using a panel data set on 15 countries over more than 20 years. Our preferred estimates indicate that large youth cohorts lead to increases in the unemployment rate of youths, with elasticities as high as 0.5 or 0.6. On the other hand, the estimates generally indicate little effect of relative cohort size on employment rates of youths.

We also find some evidence, although it is statistically weak, to suggest that labor market institutions that decrease flexibility lead to sharper responses of youth unemployment and employment rates to fluctuations in youth cohort size. Finally, because of recent declines in fertility, several European countries will experience marked reductions in the size of youth cohorts over the next 16 years (especially Ireland, Italy, Portugal, and Spain). Projections suggest that declining youth shares should improve youth labor markets in these countries, although the effects are not large when compared with longer-term changes in youth unemployment rates. Other countries cannot expect demographic changes to improve youth labor markets, since youth population shares are projected to decline moderately or to increase.

Predation and Its Rate of Return: The Sugar Industry, 1887–1914

David Genesove and Wallace P. Mullin

NBER Working Paper No. 6032

May 1997

JEL Nos. L13, L41

Industrial Organization

We study entry into the American sugar refining industry before World War I and show that the price wars which followed two major episodes of entry were predatory. Our proof is twofold: by direct comparison of price to marginal cost; and by construction of predicted competitive price cost margins, which we show exceed observed margins. We argue that predation occurred only when its relative cost to the dominant firm was small. It most probably was used to deter future additions to capacity. It also was used to lower the purchase price of preexisting firms after one episode of entry.

Complementarity and Cost Reduction: Evidence from the Auto Supply Industry
Susan Helper

NBER Working Paper No. 6033

May 1997

Productivity

Over the last 20 years, the success of Japanese manufacturing firms has brought renewed attention to the importance of cost reduction on existing products as a source of productivity growth. This paper uses survey data and field interviews from the auto supply industry to explore the determinants of average-cost reduction for a sample of 171 plants in the United States and Canada between 1988 and 1992. The main result is that the determinants of cost reduction differ markedly between firms that had employee involvement programs in 1988 and firms that did not. The two groups of firms achieved equal amounts of cost reduction, but did so in very different ways. Firms with employee involvement saw their costs fall more if they also had “voice” relationships with customers and workers. Firms without such involvement gained no cost-reduction benefit from these programs; instead, their cost-reduction success was largely a function of increases

in volume. These results support Milgrom and Roberts's concept that certain production practices exhibit complementarity.

Abortion Legalization and Child Living Circumstances: Who is the "Marginal Child?"

Jonathan Gruber, Phillip Levine, and Douglas Staiger

NBER Working Paper No. 6034

May 1997

JEL Nos. I18, J13

Children, Health Care, and Public Economics

We estimate the impact of changes in abortion access in the early 1970s on the average living standards of cohorts born in those years. In particular, we address the selection process that is inherent in the abortion decision: is the "marginal child" who is not born when access to abortion increases more or less disadvantaged than the average child? Legalization of abortion in five states around 1970, followed by legalization nationwide because of the 1973 *Roe v. Wade* decision, generates natural variation which can be used to estimate the effect of access to abortion. We find that cohorts born after abortion was legalized experienced a significant reduction in a number of adverse outcomes. Our estimates imply that the marginal child who was not born because of legalization would have been 70 percent more likely to live in a single parent family, 40 percent more likely to live in poverty, 50 percent more likely to receive welfare, and 35 percent more likely to die as an infant. These effects imply that the legalization of abortion saved the government over \$14 billion in welfare expenditures through 1994.

Insuring Consumption Against Illness

Paul Gertler and Jonathan Gruber

NBER Working Paper No. 6035

May 1997

JEL Nos. O15, I18, H53

Health Care and Public Economics

One of the most sizable and least predictable shocks to economic opportunities in developing countries is major illness, in terms of both expenditures for medical care and lost income from reduced labor supply and productivity. As a result, families may not be able to smooth out their consumption over periods of illness. In this paper, we investigate the extent to which families are able to insure consumption against major illness. We use a unique panel dataset from Indonesia that combines excellent measures of health status with information about consumption. We focus on the effect of large exogenous changes in physical functioning. We find that there are significant economic costs associated with these illnesses, albeit more from income loss than from medical expenditures. We also find that full consumption insurance does not exist. Indeed, the deviation from complete consumption smoothing is significant, particularly for illnesses that severely limit physical function. Families are able to smooth less than 30 percent of the income loss caused by these illnesses. These estimates suggest that there would be large welfare gains from the introduction of formal disability insurance. Also, the large public subsidies for medical care typical of most developing countries may improve welfare by providing consumption insurance.

Environmental Regulation, Investment Timing, and Technology Choice

Wayne B. Gray and Ronald J. Shadbegian

NBER Working Paper No. 6036

May 1997

JEL Nos. Q28, O33

Productivity and Public Economics

We began this project interested in collecting "real-world" insights about how environmental regulation affects the paper industry. Based on conversations with people in the industry and visits to paper mills, we formulated several hypotheses related to the choice of technology in new mills and the investment decision for existing plants. We tested these hypotheses, using data on technology choice for 686 paper mills and data on annual investment for 116 mills.

The choice of technology is influenced by environmental regulation. New mills in states with strict environmental regulations are less likely to employ the more polluting technologies that involve pulping. Differences between air and water pollution regulations also emerge, with the dirtiest technology in each medium avoiding those states with the strictest regulations. The magnitudes of the impacts are sizable, with a one standard deviation increase in stringency associated with reduction of several percentage points in the probability of choosing a dirty technology.

State regulatory stringency and plant technology have little or no effect on annual investment spending at existing plants. However, pollution abatement investment is related significantly to productive (non-abatement) investment. Plants with high abatement investment spend less on productive capital. The magnitude of the impact corresponds to nearly complete crowding out of productive investment by abatement investment. Examining investment timing, we find that abatement and

productive investment tend to be concentrated in the same years, consistent with the high cost of shutting down a paper mill for renovations.

Ohio School Milk Markets: An Analysis of Bidding

Robert H. Porter and J. Douglas Zona

NBER Working Paper No. 6037
May 1997
JEL Nos. L13, L41, L66
Industrial Organization

We examine the institutional details of the school milk procurement process, bidding data, statements of dairy executives, and supply characteristics in Ohio during the 1980s. We compare the bidding behavior of a group of firms to a control group. We find that the behavior of each of the firms differs from that of the control group. We argue that the behavior of these firms is consistent with collusion. The estimated average effect of collusion on market prices is about 6.5 percent, or roughly the cost of shipping school milk about 50 miles.

Unemployment vs. Mismatch of Talents: Reconsidering Unemployment Benefits

Ramon Marimon and Fabrizio Zilibotti

NBER Working Paper No. 6038
May 1997
JEL Nos. J64, J65, D33
Economic Fluctuations and Growth

We develop an equilibrium search-matching model with risk-neutral agents and two-sided ex-ante heterogeneity. Unemployment insurance has the standard effect of reducing employment, but also helps workers to get a *suitable* job. Our predictions are consistent with the contrasting performance of the labor markets in Europe and the United States in terms of unemployment, productivity growth, and wage inequality. To illustrate, we construct two fictitious

economies with calibrated parameters which differ only by the degree of unemployment insurance. We assume that they are hit by a common technological shock which enhances the importance of mismatch. This shock reduces the proportion of jobs which workers regard as acceptable in the economy with unemployment insurance ("Europe"). As a result, unemployment doubles in this economy. In the laissez-faire economy ("United States"), unemployment remains constant, but wage inequality increases more and productivity grows less because of the larger mismatch. This model can be used to address a number of normative issues.

Wage Dispersion and Country Price Levels

Robert E. Lipsey and Birgitta Swedenborg

NBER Working Paper No. 6039
May 1997
JEL Nos. E31, F3, J31
International Finance and Macroeconomics and International Trade and Investment

In this paper, we investigate whether there is a relationship between the degree of wage dispersion in a country and its price level relative to other countries, compared in a common currency. We find that once we allow for a country's real per capita income and deviations of its exchange rate from its trend value, there is a pervasive relationship between wage dispersion and prices. Low wage dispersion, defined as a relatively small difference between the median wage and the wage of the lowest paid decile of workers, is associated with high price levels. The relationship applies more frequently to service prices than to goods prices, but where it does apply, the effects of wage dispersion are as large for goods as for services.

The Impact and Organization of Publicly-Funded Research and Development in the European Community

Maryann P. Feldman and Frank R. Lichtenberg

NBER Working Paper No. 6040
May 1997
JEL Nos. H5, L52, O3
Productivity

This paper examines R and D activities in the European Community using the Community R and D Information Service (CORDIS) databases. We find that a country's private companies tend to be specialized in the same scientific fields as its universities and public organizations. In addition, we construct indicators of the degree of tacitness of R and D and find that greater expected ability to communicate research outcomes encourages less centralized R and D programs. Programs that yield tangible results are less centralized geographically and administratively. The more that research leads to codifiable knowledge, the less centralized R and D activity there needs to be.

Public Health Insurance and Private Savings

Jonathan Gruber and Aaron Yelowitz

NBER Working Paper No. 6041
May 1997
JEL Nos. H51, I18, E21
Aging, Children, Health Care, and Public Economics

Recent theoretical work suggests that means-tested and asset-tested social insurance programs can explain the low savings rates of lower income households in the United States. We assess the validity of this hypothesis by investigating the effect of Medicaid, the health insurance program for low income women and children, on savings behavior. We use data on asset holdings from the

Survey of Income and Program Participation, and on consumption from the Consumer Expenditure Survey, matched to information on the eligibility of each household for Medicaid. Exogenous variation in Medicaid eligibility is provided by the dramatic expansion of this program from 1984 to 1993. We show that Medicaid eligibility has a sizeable and significant negative effect on wealth holdings; we estimate that in 1993 the Medicaid program lowered wealth holdings among the eligible population by 17.7 percent. We confirm this finding by uncovering a strong positive association between Medicaid eligibility and consumption expenditures: in 1993, the program raised consumption expenditures among eligibles by 5.2 percent. We also exploit the fact that asset testing was phased out by the Medicaid program over this period; we show that these Medicaid effects are much stronger in the presence of an asset test, confirming the importance of asset testing for household savings decisions.

The Future of Old-Age Longevity: Competitive Pricing of Mortality Contingent Claims

Charles Mullin and Tomas Philipson

NBER Working Paper No. 6042

May 1997

Aging, Health Care, and Health Economics

The future course of mortality in old age is highly important for public sector expenditures in countries where old-age programs, such as Social Security and Medicare in the United States, account for large fractions of the public budget. We argue that the competitive market prices of mortality-contingent claims, such as annuities and life insurance, contain information about the market's opinion of the pace of increase in longevity in old age. We develop

methods to identify and estimate the mortality that is implicit in the market prices of such claims by identifying survival functions from prices of contracts that differ in their duration. Using these methods, and the cohort-specific prices of U.S. term life insurance contracts in 1990–6 for individuals aged 60 in each calendar year, we find that the patterns inferred from these prices indicate a continued decline in cohort-specific mortality at rates equal to or greater than recent historical trends; about a 5 percent reduction in relative terms in the mortality hazards per successive cohort.

The Pricing of U.S. Catastrophe Reinsurance

Kenneth A. Froot and Paul G. J. O'Connell

NBER Working Paper No. 6043

May 1997

JEL No. 400

Corporate Finance

We explore two theories that have been advanced to explain the patterns in the pricing of U.S. catastrophe reinsurance. The first is that price variation is tied to demand shocks, driven in effect by changes in actuarially expected losses. The second holds that the supply of capital to the reinsurance industry is less than perfectly elastic, with the consequence that prices are bid up whenever existing funds are depleted by catastrophe losses. Using detailed reinsurance contract data from Guy Carpenter & Co. over a 25-year period, we test these two theories. Our results suggest that imperfections in the capital market are more important than shifts in actuarial valuation for understanding catastrophe reinsurance pricing. Shifts in supply, rather than demand, seem to explain most features of the market in the aftermath of a loss.

Evidence from Patents and Patent Citations on the Impact of NASA and Other Federal Labs on Commercial Innovation

Adam B. Jaffe, Michael S. Fogarty, and Bruce A. Banks

NBER Working Paper No. 6044

May 1997

Productivity

We explore the commercialization of government-generated technology by analyzing patents awarded to the U.S. government and the citations to them from subsequent patents. We use information on citations to federal patents in two ways: 1) to compare the average technological impact of NASA patents, "other Federal" patents, and a random sample of all patents using measures of "importance" and "generality;" and 2) to trace the geographic location of commercial development by focusing on the location of inventors who cite NASA and other federal patents. We find, first, that the evidence is consistent with increased effort to commercialize federal lab technology generally and NASA specifically. The data reveal a striking NASA "golden age" during the second half of the 1970s which remains a puzzle. Second, spillovers are concentrated within a federal lab complex of states representing agglomerations of labs and companies. The technology complex links five NASA states through patent citations: California, Texas, Ohio, DC/Virginia/Maryland, and Alabama. Third, qualitative evidence provides some support for the use of patent citations as proxies for both technological impact and knowledge spillovers.

Average Interest

George Chacko and
Sanjiv Ranjan Das

NBER Working Paper No. 6045

May 1997

Asset Pricing

We develop analytic pricing models for options on averages by means of a state-space expansion method. These models augment the class of Asian options to markets where the underlying traded variable follows a mean-reverting process. The approach builds from the digital Asian option on the average and enables pricing of standard Asian calls and puts, caps and floors, as well as other exotica. The models may be used to hedge long period interest rate risk cheaply; to hedge event risk (regime-based risk); to manage long-term foreign exchange risk by hedging through the average interest differential; to manage credit risk exposures; and to price specialized options, like range-Asians. The techniques we explore provide several advantages over existing numerical approaches.

Inflation and the User Cost of Capital: Does Inflation Still Matter?

Darrel Cohen, Kevin A. Hassett,
and R. Glenn Hubbard

NBER Working Paper No. 6046

May 1997

JEL Nos. E5, E6

Economic Fluctuations and Growth,
Monetary Economics and Public
Economics

In the late 1970s, many economists argued that there were large deleterious effects of inflation on the user cost of capital for U.S. firms. Since that time, the tax code has changed, the level of inflation has dropped significantly, and the "canonical" model of investment has evolved considerably. In this paper, we demonstrate that the net effect of these changes has — under reason-

able assumptions — not relegated inflation to the sidelines. Indeed, we conclude that: 1) inflation, even at its relatively low current rates, continues to increase the user cost of capital significantly; 2) the marginal gain in investment in response to a percentage-point reduction in inflation is larger for lower levels of inflation; 3) the beneficial effects for steady-state consumption of lowering inflation even further than has been achieved to date likely would be significant; and 4) inflation has only a small impact on intratemporal distortion in the allocation of capital within the domestic business sector. We also show that the magnitude of the inflation effect on the user cost of capital is likely much smaller in open economies.

The Effect of Welfare Payments on the Marriage and Fertility Behavior of Unwed Mothers: Results from a Twins Experiment

Jeff Grogger and
Stephen G. Bronars

NBER Working Paper No. 6047

May 1997

JEL Nos. I3, J1

Labor Studies and Public Economics

We study one aspect of the link between welfare and unwed motherhood: the relationship between benefit levels and the time-to-first-marriage or the time-to-next-birth among women whose first child was born out of wedlock. We use births of twins to generate effectively random variation in welfare benefits among mothers within a state. That allows us to control for unobservable characteristics of states which typically confound the relationship between welfare payments and behavior. The twins approach yields evidence that higher base levels of welfare benefits: 1) lead initially unwed white mothers to forestall their eventual marriage; and 2) lead initially unwed

black mothers to hasten their next birth. The magnitudes of these effects are small, however. Moreover, we find no evidence that the *incremental* benefit paid upon the birth of an additional child affects fertility.

Balladurette and Juppette: A Discrete Analysis of Scraping Subsidies

Jérôme Adda and Russell Cooper

NBER Working Paper No. 6048

May 1997

JEL Nos. E62, E65, E21

Economic Fluctuations and Growth

This paper studies the effects of subsidies on durable goods markets. In particular, we study a recent policy in France where the governments of Balladur and Juppé subsidized the replacement of old cars with new ones. We construct a dynamic, stochastic discrete choice model of car ownership at the household level. We use the resulting decision rules and equilibrium conditions to estimate the underlying parameters of the model. We then evaluate the short- and long-run effects of the French policies. We find that these policies do stimulate the automobile sector in the short run but, through the induced changes in the cross-sectional distribution of cars' ages, they create the basis for subsequent low activity. Further, while these policies increase government revenues in the short run, in the long run revenues are lower relative to a baseline without intervention.

An Economic Theory of GATT

Kyle Bagwell and
Robert W. Staiger

NBER Working Paper No. 6049

May 1997

JEL Nos. F02, F13, F15

International Trade and Investment

Despite the important role played by GATT in the world economy,

economists have not developed a unified theoretical framework that interprets and evaluates the principles that form the foundation of GATT. We propose such a framework here. Working within a general equilibrium trade model, we represent government preferences with a very general formulation that includes all the major political-economy models of trade policy as special cases. Using this general framework, we establish three key results. First, GATT's principle of *reciprocity* can be viewed as a mechanism for implementing efficient trade agreements. Second, through the principle of reciprocity, countries can implement efficient trade agreements if and only if they also abide by the principle of *nondiscrimination*. Third, *preferential agreements* undermine GATT's ability to deliver efficient multilateral outcomes through the principle of reciprocity, unless these agreements take the form of customs unions among partners that are sufficiently similar.

Labor Mobility from Academe to Commerce

Lynne G. Zucker, Michael R. Darby, and Maximo Torero

NBER Working Paper No. 6050

May 1997

JEL Nos. J60, J44, O31

Productivity

After a breakthrough discovery, scientific knowledge with natural excludability may best be transferred to industry by the labor mobility of top scientists from universities and research institutes to firms. We model labor mobility as a function of the scientists' quality (as measured by scientific citations) and their reservation wage. Labor quality and the cost of moving determine the reservation wage, which also depends on the trial frequency (number of potential firm employers), potential interfering offers from universities, and the

increase in productivity experienced by top scientists already in firms (reducing their reservation values). Applying our model to bioscience and related biotechnology industries, we find broad support in a group duration analysis. The time that star scientists remain in a university before moving to a firm is decreased significantly as the quality of the bioscientists and their focus on human genetics increases; is decreased as the expected frequency of offers increases, with increases in local firms commercializing the technology, and as the percentage of ties to scientists outside the bioscientist's organization increases; and is decreased by the experienced increase in productivity of other nearby star scientists who have already moved to firms. Only the number of top quality universities in the local area, through interfering university "moves," increases the time that a star scientist remains in a university before moving to a firm. We find some evidence of heterogeneity when we decompose the sample of bioscientists by their destination status; only quality remains significant across both *affiliated* scientists (full-time employment in a firm) and *linked* scientists (part-time employment), with all variables that are significant in the duration model also entering for linked scientists.

Experimental Estimates of Education Production Functions

Alan B. Krueger

NBER Working Paper No. 6051

June 1997

JEL Nos. I21, J24

Children and Labor Studies

This paper analyzes data from Project STAR, an experiment in which 11,600 Tennessee kindergarten students and teachers were assigned randomly to one of three types of classes beginning in the 1985-6

school year: small classes (13-17 students); regular-size classes (22-25 students); and regular-size classes with a teacher's aide. According to the original design, students were to remain in their initial class type through the third grade. In practice, however, students in regular-size classes randomly were re-assigned at the end of kindergarten, and about 10 percent of students moved between class types in second and third grade. Attrition was also common. I used several statistical methods to investigate the impact of these limitations. My main conclusions are: 1) on average, performance on standardized tests increases by about 4 percentile points in the first year that students are assigned to a small class, irrespective of the grade in which the student first attends a small class; 2) after initial assignment to a small class, student performance increases by about one percentile point per year relative to those in regular-size classes; 3) teacher's aides have little effect on student achievement; 4) class size has a larger effect on test scores for minority students and for those who receive free lunch; 5) the beneficial effect of smaller classes does not appear to result from *Hawthorne* effects.

Productivity Measurement and the Impact of Trade and Technology on Wages: Estimates for the U.S., 1972-1990

Robert C. Feenstra and Gordon H. Hanson

NBER Working Paper No. 6052

June 1997

JEL Nos. F14, J30

International Trade and Investment and Productivity

We develop an empirical framework to assess the importance of trade and technical change on the wages of production and nonproduction workers. Trade is measured

by the foreign outsourcing of intermediate inputs, while technical change is measured by the shift towards high-technology capital, for example computers. In our benchmark specification, we find that both foreign outsourcing and expenditures on high-technology equipment can explain a substantial amount of the increase in the wages of nonproduction (high-skilled) relative to production (low-skilled) workers that occurred during the 1980s. Surprisingly, expenditures on high-technology capital *other than* computers are most important. These results are very sensitive, however, to our benchmark assumption that industry prices are independent of productivity. When we allow for the endogeneity of industry prices, expenditures on computers becomes the most important cause of the increased wage inequality, and have a 50 percent greater impact than foreign outsourcing does.

Nonlinear Aspects of Goods-Market Arbitrage and Adjustment: Heckscher's Commodity Points Revisited

Maurice Obstfeld and Alan M. Taylor

NBER Working Paper No. 6053

June 1997

JEL Nos. F31, F41

International Finance and Macroeconomics

We propose that analysis of purchasing power parity (PPP) and the law of one price (LOOP) should take into account explicitly the possibility of "commodity points": thresholds delineating a region of no central tendency among relative prices, possibly because of a lack of perfect arbitrage in the presence of transactions costs and uncertainty. More than 80 years ago, Heckscher stressed the importance of such incomplete arbitrage in the empirical application of PPP. We

devise an econometric method to identify commodity points. We treat price adjustment as a nonlinear process; a threshold autoregression offers a parsimonious specification within which both thresholds and adjustment speeds are estimated by maximum likelihood methods. Our model performs well using post-1980 data, and yields parameter estimates that appear quite reasonable: adjustment outside the thresholds might imply half-lives of price deviations measured in months rather than years, and the thresholds correspond to popular rough estimates as to the order of magnitude of actual transport costs. The estimated commodity points appear to be related positively to objective measures of market segmentation, notably nominal exchange rate volatility.

Less of a Luxury: The Rise of Recreation Since 1888

Dora L. Costa

NBER Working Paper No. 6054

June 1997

JEL Nos. D12, N11, N12

Development of the American Economy and Labor Studies

I show that recreation has become much more egalitarian over the last hundred years by estimating elasticities of recreational expenditure in 1888-90, 1917-9, 1935-6, 1972-3, and 1991. I find that elasticities of expenditure have fallen from around 2 at the beginning of the century to slightly more than one today. I attribute this decline to rising incomes, declines in the price of recreation, and investment in public recreational goods. My findings have implications for trends in the well-being of the poor relative to the rich, and for long-term trends in work hours and labor force participation rates.

The Economics of Prefunding Social Security and Medicare Benefits

Martin Feldstein and Andrew Samwick

NBER Working Paper No. 6055

June 1997

JEL Nos. H55, E2

Aging, Economic Fluctuations and Growth, Health Care, and Public Economics

This paper presents a detailed analysis of the economics of prefunding benefits for the aged, focusing on Social Security but indicating some of the analogous magnitudes for prefunding Medicare benefits. We use detailed Census and Social Security information to model the transition to a fully funded system based on mandatory contributions to individual accounts. The funded system that we examine would permanently maintain the level of benefits now specified in current law and would require no new government borrowing (other than eventually selling the bonds that are officially in the Social Security Trust Fund). During the transition, the combined rate of payroll tax and mandatory saving initially rises by 2 percentage points (to a total of 14.4 percent) and then declines so that, in less than 20 years, it is less than the current 12.4 percent payroll tax.

We estimate the impact of such prefunding on the growth of the capital stock and the level of national income and show that the combination of higher pretax wages and lower payroll taxes could raise wages net-of-income-and-payroll-taxes by more than 35 percent in the long run. We also discuss distributional issues and the way that the poor can be at least as well off as under Social Security. A stochastic simulation shows that a small increase in the mandatory saving rate would reduce the risk of receiving less than the scheduled level to less than 1 per-

cent. We present separate calculations of the value of the "forward-looking recognition bonds" and "backward-looking recognition bonds" which the government might issue if it decides not to pay future Social Security benefits explicitly.

What Do a Million Banks Have to Say About the Transmission of Monetary Policy?

**Anil K Kashyap and
Jeremy C. Stein**

NBER Working Paper No. 6056
June 1997

Corporate Finance, Economic
Fluctuations and Growth, and
Monetary Economics

In an effort to shed new light on the monetary transmission mechanism, we create a panel data set that includes quarterly observations of every insured commercial bank in the United States over the period 1976–93. Our key cross-sectional finding is that the impact of monetary policy on lending behavior is significantly more pronounced for banks with less liquid balance sheets — that is, banks with lower ratios of cash and securities to assets. Moreover, this result is entirely attributable to the smaller banks in our sample, those in the bottom 95 percent of the size distribution. Among other things, our findings provide strong support for the existence of a "bank lending channel" of monetary policy transmission.

Public Radio in the United States: Does it Correct Market Failure or Cannibalize Commercial Stations?

**Steven T. Berry and
Joel Waldfoegel**

NBER Working Paper No. 6057
June 1997

JEL Nos. H41, L33, L82
Industrial Organization, Law and
Economics, and Public Economics

Radio signals are pure public goods whose total value to society is the sum of their value to advertisers and listeners. Because broadcasters can capture only part of the value of their product as revenue, there is the potential for a classic problem of underprovision. Small markets have much less variety in commercial programs than larger markets, suggesting a possible problem of underprovision. Public funding of radio broadcasting targets programming in three formats — news, classical music, and jazz — with at least some commercial competition. Whether public support corrects a market failure depends on whether the market would have provided similar services in the absence of public broadcasting. To examine this, we ask whether public and commercial classical stations compete for listening share and revenue. We then directly examine whether public stations crowd out commercial stations. We find that public broadcasting crowds out commercial programming in large markets, particularly in classical music and to a lesser extent in jazz. Although the majority of government subsidies to radio broadcasting are allocated to stations without commercial competition in their format (thereby possibly correcting inefficient market underprovision), roughly a quarter of subsidies support direct competition with existing commercial stations.

Tax Rates and Work Incentives in the Social Security Disability Insurance Program: Current Law and Alternative Reforms

**Hilary Williamson Hoynes
and Robert Moffitt**

NBER Working Paper No. 6058
June 1997

JEL Nos. J3, H2
Aging and Public Economics

The Social Security Disability Insurance (SSDI) Program has been criticized by economists for a long time for its apparent work disincentives stemming from the imposition of 100-percent tax rates on earnings. However, the program has been modified in recent years to allow recipients to keep some of their earnings for fixed periods of time. Moreover, additional proposals have been made for lowering the tax rate further and for providing various additional financial work incentives. We use the basic labor supply model to show the expected effect of these reforms on work effort. In addition, we provide a numerical simulation that shows the magnitude of the monetary incentives provided by the reforms for different categories of individuals. We find that the proposed reforms have ambiguous effects on work effort and, contrary to perceived wisdom, possibly could reduce work effort and increase the number of SSDI recipients. However, the simulations show that reforms based on earnings subsidies for private employers are more likely to increase work effort and to lower the caseload.

Were Trade and Factor Mobility Substitutes in History?

**William J. Collins,
Kevin H. O'Rourke, and
Jeffrey G. Williamson**

NBER Working Paper No. 6059
June 1997

JEL Nos. F1, F2, N7
Development of the American Economy
and International Trade and Investment

Trade theorists have come to understand that their theory is ambiguous on the question: Are trade and factor flows substitutes? While this sounds like an open invitation for empirical research, hardly any serious econometric work has been published in this area. We use history to

fill the gap. We treat the experience of the Atlantic economy between 1870 and 1940 as panel data with almost 700 observations. When we extract shorter run business cycles and "long swings" from the panel data, substitutability is rejected soundly. When secular relationships are extracted over longer time periods and across trading partners, substitutability again is rejected soundly. Finally, we explore immigration policy and find that policymakers never behaved as if they viewed trade and immigration as substitutes.

The Gold Standard and the Great Depression

Barry Eichengreen and Peter Temin

NBER Working Paper No. 6060

June 1997

Development of the American Economy and Monetary Economics

This paper, written primarily for historians, attempts to explain why political leaders and central bankers continued to adhere to the gold standard as the Great Depression intensified. We do not focus on the effects of the gold standard on the Depression, which we and others have documented elsewhere, but on the reasons why policymakers chose the policies they did. We argue that the mentality of the gold standard was pervasive and compelling to the leaders of the interwar economy. It was expressed and reinforced by the discourse among these leaders. It was opposed and finally defeated by mass politics, but only after the interaction of national policies had drawn the world into the Great Depression.

Identifying Inflation's Grease and Sand Effects in the Labor Market

Erica L. Groshen and Mark E. Schweitzer

NBER Working Paper No. 6061

June 1997

JEL Nos. E31, E52, J30
Monetary Economics

Inflation has been accused of causing distortionary price and wage fluctuations (sand) as well as having been lauded for facilitating adjustments to shocks when wages are rigid downwards (grease). We investigate whether these two effects in a labor market can be distinguished by the following identification strategy: inflation-induced deviations among changes in employers' mean wages represent unintended intramarket distortions (sand); while inflation-induced, inter-occupational changes in wages reflect intended alignments with intermarket forces (grease).

Using a unique 40-year panel of changes in wages at large mid-western employers, we find evidence to support the identification strategy. We also find some indications that occupational wages in large firms became more flexible in the past four years. These results strongly support other findings that grease and sand effects exist, but also suggest that the effects offset each other in a welfare sense and in terms of unemployment. Thus, at levels up to 5 percent, the net impact of inflation on unemployment is beneficial but statistically indistinguishable from zero. It turns detrimental after that. When positive, the net benefits never exceed 10 percent of the gross benefits.

Does Inflation Harm Economic Growth? Evidence for the OECD

Javier Andrés and Ignacio Hernando

NBER Working Paper No. 6062

June 1997

JEL Nos. E31, F43, O49

Monetary Economics

In this paper we study the correlation between growth and inflation at the OECD level, within the framework of the so-called *convergence equations*. We also discuss whether this correlation withstands a number of improvements in the empirical models, designed to address the most common criticisms of this evidence. Our main findings are: 1) the negative correlation between growth and inflation is not explained by the experience of high-inflation economies; 2) the estimated costs of inflation are still significant once country-specific effects are allowed for in the empirical model; and 3) the observed correlation cannot be dismissed on the grounds of reverse causation (from GDP to inflation).

The Legacy of Deposit Insurance: The Growth, Spread, and Cost of Insuring Financial Intermediaries

Eugene N. White

NBER Working Paper No. 6063

June 1997

JEL Nos. N22, G21, G28

Development of the American Economy and Monetary Economics

Without the Great Depression, the United States would not have adopted deposit insurance. While the New Deal's anti-competitive barriers largely have collapsed, insurance has become deeply rooted. This paper examines how market and political competition for deposits raised the level of coverage and spread insurance to all depository institutions. A comparison of the cost of federal insurance with a counterfactual of an insurance-free system shows that federal insurance ultimately imposed a higher cost but achieved political acceptance because of the distribution of the burden.

Excess Capital Flows and the Burden of Inflation in Open Economies

Mihir A. Desai and James R. Hines Jr.

NBER Working Paper No. 6064

June 1997

JEL Nos. F32, H87, E31

Monetary Economics and

Public Economics

This paper estimates the efficiency consequences of interactions between nominal tax systems and inflation in open economies. Domestic inflation changes aftertax real interest rates at home and abroad, thereby stimulating international capital movement and influencing domestic and foreign tax receipts, saving, and investment. The efficiency costs of inflation-induced international capital reallocations are typically much larger than those that accompany inflation in closed economies, even if capital is imperfectly mobile internationally. Differences among inflation rates are responsible for international capital movements and accompanying deadweight losses, suggesting that international monetary coordination has the potential to reduce the inefficiencies associated with inflation-induced capital movements.

Are International R&D Spillovers Trade Related? Analyzing Spillovers Among Randomly Matched Trade Partners

Wolfgang Keller

NBER Working Paper No. 6065

June 1997

JEL Nos. F12, F2, O3, O4, C15

Productivity

In this paper, I analyze recent findings by Coe and Helpman [1995] on trade-related spillovers of international R and D. I propose a Monte Carlo-based test for robustness which compares the elasticity of domestic productivity with respect to foreign

R and D estimated by Coe and Helpman with an elasticity which is based on counterfactual international trade patterns. I also show that these randomly created trade patterns give rise to positive estimates of international R and D spillovers, which are larger and explain more of the variation in productivity across countries than if "true" bilateral trade patterns are used. This finding casts doubt on the claim that patterns of international trade are important in driving R and D spillovers.

Japanese Research Consortia: A Microeconometric Analysis of Industrial Policy

Lee Branstetter and Mariko Sakakibara

NBER Working Paper No. 6066

June 1997

JEL Nos. F2, L5, O3

Productivity

The existence of strong "spillover" effects of private R and D increases the potential social contribution of R and D but may depress the private incentives to undertake it. R and D consortia offer a potentially effective means of internalizing this externality, and a number of prominent economists have argued for public support of such consortia (for example, Romer, 1993). Governments in Europe and North America have adopted policies to promote the formation of such consortia, motivated less by economic theory than by the perception that the Japanese government has used such policies to great effect [Tyson, 1992]. Despite the existence of a large theoretical literature analyzing the potential benefits and costs of R and D consortia, there has been little corresponding empirical work on their efficacy.

In this paper, we undertake the *first* large-sample econometric study of Japanese government-sponsored research consortia. We use firm-level

data on research inputs and outputs to measure the impact of participation on the *ex-post* research productivity of the firm. We find that frequent participation in these consortia has a positive impact on research expenditure and research productivity. These results hold after controlling for the potential endogeneity of the intensity of participation in consortia to participating firms' research productivity. Furthermore, we find that part of this impact arises from the increased knowledge spillovers that take place within these consortia. Not only are these results useful in providing empirical evidence on the theory of research joint ventures, but they are also useful in shedding light on the question of what role Japanese "industrial policy" played in Japanese technological innovation during the 1980s. We conclude with directions for further research.

Recent Immigrants: Unexpected Implications for Crime and Incarceration

Kristin F. Butcher and Anne M. Piehl

NBER Working Paper No. 6067

June 1997

JEL Nos. F22, K42

Labor Studies

Among 18–40 year-old men in the United States, immigrants are less likely to be institutionalized than the native born, and much less likely to be institutionalized than native-born men with similar demographic characteristics. Furthermore, earlier immigrants are more likely to be institutionalized than more recent immigrants. Although all immigrant cohorts appear to assimilate toward the higher institutionalization rates of the native born as time in the country increases, recent immigrants do not increase their institutionalization rates as quickly as one would predict

from the experience of earlier immigrant cohorts. These results are the opposite of what one would predict from the literature on immigrant earnings, where earlier immigrants typically are found to have better permanent labor market characteristics.

Debt and Corporate Performance: Evidence from Unsuccessful Takeovers

Assem Safieddine and Sheridan Titman

NBER Working Paper No. 6068

June 1997

JEL Nos. G32, G33, G34

Corporate Finance

This paper examines how debt affects firms after failed takeovers. Using a sample of 573 unsuccessful takeovers, we find that, on average, targets significantly increase their debt levels. Targets that increase their debt levels more than the median amount reduce their levels of capital expenditures, sell off assets, reduce employment, increase focus, and increase their operating cash flows. These leverage-increasing targets also realize superior stock price performance over the five years following the failed takeover. In contrast, those firms that increase their leverage the least show insignificant changes in their level of investment and their operating cash flows and realize stock price performance that is no different from their benchmarks. Those failed targets that increase their leverage the least, and fail to get taken over in the future, realize significant negative stock returns after their initial failed takeovers. The evidence is consistent with the hypothesis that debt helps firms to remain independent not because it entrenches managers, but because it commits the manager to making the improvements that would be made by potential raiders.

Intra-National, Intra-Continental, and Intra-Planetary PPP

Charles Engel, Michael K. Hendrickson, and John H. Rogers

NBER Working Paper No. 6069

June 1997

International Finance and Macroeconomics

We build a model of adjustment toward PPP for a panel of real exchange rates. Our model eliminates some inconsistencies in previous models, which implied that a model for the real exchange rate of country B relative to country C was not commensurate with the posited model of the real exchange rate for A relative to B, and A relative to C. Our model allows us to handle in a natural way correlations across exchange rates in a panel. We put restrictions on an underlying model which yields a simple covariance matrix that can be estimated easily by GLS methods. We also put restrictions on the underlying model which allow us to estimate easily a panel PPP model in which the speed of adjustment is not the same for all real exchange rates. Our model, applied to the price levels of eight cities in four countries and two continents, does not find evidence in favor of reversion of PPP.

Intergenerational Earnings Mobility, Inequality, and Growth

Ann L. Owen and David N. Weil

NBER Working Paper No. 6070

June 1997

JEL Nos. O40, J62, J31

Economic Fluctuations and Growth

We examine a model in which per capita income, inequality, intergenerational mobility, and returns to education all are determined endogenously. Individuals' wages depend on their ability, which is a random variable. They purchase an education

with transfers received from their parents, and are subject to liquidity constraints. In the model, multiple steady state equilibria are possible: countries with identical tastes and technologies can reach differing rates of mobility, inequality, and per capita income. Equilibria with higher levels of output also have lower inequality, higher mobility, and more efficient distributions of education.

Money, Sticky Wages, and the Great Depression

Michael D. Bordo, Christopher J. Erceg, and Charles L. Evans

NBER Working Paper No. 6071

June 1997

JEL Nos. N12, E32

Development of the American Economy, Economic Fluctuations and Growth, and Monetary Economics

This paper examines the ability of a simple stylized general equilibrium model that incorporates nominal wage rigidity to explain the magnitude and persistence of the Great Depression in the United States. The impulses to our analysis are money supply shocks. The Taylor contracts model is surprisingly successful in accounting for the behavior of major macroaggregates and real wages during the downturn phase of the Depression, that is, from the third quarter of 1929 through mid-1933. Our analysis supports the hypothesis that a monetary contraction operating through a sticky wage channel played a significant role in accounting for the downturn, and also provides an interesting refinement to this explanation. In particular, both the absolute severity of the Depression's downturn and its relative severity compared to the 1920-1 recession are likely attributable to the price decline having a much larger unanticipated component during the Depression, as well as less flexible wagesetting practices during this lat-

ter period. Another finding casts doubt on explanations for the 1933–6 recovery that rely heavily on the substantial remonetization that began in 1933.

Eurowinners and Eurolosers: The Distribution of Seigniorage Wealth in EMU

Hans-Werner Sinn and Holger Feist

NBER Working Paper No. 6072

June 1997

JEL Nos. E58, F33, F42

Public Economics

The European Monetary Union (EMU) will involve socialization of the existing seigniorage wealth of the national central banks, because the Euro will have to be bought by these banks in exchange for assets which have been accumulated in the historical process of money creation. This socialization will create windfall gains for countries with relatively low monetary bases, such as France and the United Kingdom, and it will be disadvantageous for countries like Germany, the Netherlands, and Spain, that will suffer per capita wealth losses of between 406 and 182 ecus. This paper quantifies the gains and losses in seigniorage wealth under alternative scenarios of membership and bank regulation.

Measuring Market Integration: A Model of Arbitrage with an Econometric Application to the Gold Standard, 1879–1913

Gauri Prakash and Alan M. Taylor

NBER Working Paper No. 6073

June 1997

JEL Nos. N1, F3

Development of the American Economy

A major question in the literature on the classical gold standard con-

cerns the efficiency of international arbitrage. Most authors have examined efficiency by looking at: the spread of the gold points; gold-point violations; the flow of gold in profitable or unprofitable directions; tests of various asset market criteria, including speculative efficiency and interest arbitrage. These studies have many limitations, both methodological and empirical. We offer a new methodology for measuring market integration, based on a theoretical model of arbitrage applicable to any type of market. Our model is econometrically tractable using the techniques of threshold autoregressions. We study the efficiency of the dollar-sterling gold standard in this framework, and we radically improve the empirical basis for investigation by compiling a new, high-frequency series of continuous daily data from 1879 to 1913. Using data at this frequency, we can derive reasonable econometric estimates of the size of transaction-cost bands (as compared with direct cost estimates). We also can estimate the speed of adjustment through which disequilibria (gold-point violations) were corrected. The changes in these measures over time provide an insight into the evolution of market integration in the classical gold standard.

Measuring the Energy Savings from Home Improvement Investments: Evidence from Monthly Billing Data

Gilbert E. Metcalf and Kevin A. Hassett

NBER Working Paper No. 6074

June 1997

JEL Nos. E22, Q40, Q48

Public Economics

An important factor driving energy policy over the past two decades has been the "Energy Paradox," the perception that consumers apply unreasonably high hurdle rates to energy

saving investments. We explore one possible explanation for this apparent puzzle: that realized returns fall short of the returns promised by engineers and product manufacturers. Using a unique dataset, we find that the realized return to attic insulation is statistically significant, but the median estimate (12.3 percent) is close to a discount rate for this investment implied by a Capital Asset Pricing Model analysis. We conclude that the case for the Energy Paradox is weaker than has been believed previously.

Output Price and Markup Dispersion in Micro Data: The Roles of Producer Heterogeneity and Noise

Mark J. Roberts and Dylan Supina

NBER Working Paper No. 6075

June 1997

JEL Nos. L10, D40

Industrial Organization

This paper provides empirical evidence on the extent of producer heterogeneity in the output market by analyzing output price and price-marginal-cost markups at the plant level for 13 homogenous manufactured goods. It relies on micro data from the U.S. Census of Manufactures for 1963–87. The amount of price heterogeneity varies substantially across products. Over time, plant transition patterns indicate more persistence in the pricing of individual plants than would be generated by purely random movements. High-price and low-price plants remain in the same part of the price distribution with high frequency, suggesting that underlying time-invariant structural factors contribute to the price dispersion. For all but two products, large producers have lower output prices. We estimated marginal cost and the markups for each plant. The markup remains unchanged or increases with plant size for all but four

of the products, and declining marginal costs play an important role in generating this pattern. The lower production costs for large producers are passed on, at least partially, to purchasers as lower output prices. Plants with the highest and lowest markups tend to remain so over time, although the persistence in markups overall is less than for output price, suggesting a larger role for idiosyncratic shocks in generating markup variation.

The Home Market, Trade, and Industrial Structure

Donald R. Davis

NBER Working Paper No. 6076

June 1997

JEL Nos. F1, O1, R1

International Trade and Investment

Does national market size matter for industrial structure? This has been suggested by theoretical work on "home market" effects, as in Krugman [1980, 1995]. In this paper, I show that what previously was regarded as an assumption of convenience — transport costs only for the differentiated goods — matters a great deal. In a focal case in which differentiated and homogeneous goods have identical transport costs, the home market effect disappears. I discuss the available evidence on the relative trade costs for differentiated and homogeneous goods and find no compelling argument that market size will matter for industrial structure.

Merger Policies and Trade Liberalization

Henrik Horn and James Levinsohn

NBER Working Paper No. 6077

June 1997

JEL Nos. F12, F15, L4

International Trade and Investment

This paper is about the interactions between what is traditionally considered trade policy and a narrow

but important aspect of competition policy: merger policy. We focus on the links between merger policies and trade liberalization, emphasizing in particular the role that international agreements, such as the GATT, play when merger policies are chosen nationally. Of special concern is the possibility that liberalization of international trade will induce countries increasingly to use competition policies to promote national interests at the expense of other countries. We examine the incentives for a welfare maximizing government to make such a substitution. Interpreting merger policy as a choice of degree of industrial concentration, we investigate how the merger policy that is optimal from the point of view of an individual country is affected by restrictions on the use of tariffs and export subsidies.

Gender and Youth Employment Outcomes: The U.S. and West Germany, 1984–91

Francine D. Blau and Lawrence M. Kahn

NBER Working Paper No. 6078

June 1997

JEL Nos. J31

Children and Labor Studies

This paper examines gender differences in labor market outcomes for hard-to-employ youth in the United States and West Germany during 1984–91. We find that young, less educated American men and especially women are far less likely to be employed than their German counterparts. Moreover, less educated young women and men in the United States have lower earnings relative to more highly educated youth in their own country, and also fare much worse than less educated German youth in absolute terms, after we correct for purchasing power. The relatively high employment rates of less educated German youth combined

with their relatively high wages raise the question of how they are successfully absorbed into the labor market. We show that the large public sector in Germany functions as an employer of last resort in effect, absorbing some otherwise unemployable low skilled youth. Our findings also suggest that the U.S. welfare system accounts for very little of the U.S.-German difference in employment rates.

From Socialist Showcase to Mezzogiorno? Lessons on the Role of Technical Change from East Germany's Post-World War II Growth Performance

Wolfgang Keller

NBER Working Paper No. 6079

July 1997

JEL Nos. O3, O4, P2

Productivity

This paper emphasizes the contribution of technical change, broadly defined, to productivity growth in explaining the relative performance of East and West Germany after World War II. I argue that previous work focused excessively on physical capital investments in determining productivity differentials; this led to an overestimation of East German performance during the Socialist era, and an overly pessimistic assessment of the East German prospects of catching up with West Germany after reunification. I show, first, that the rates of technical change in the manufacturing industries of East German states were significantly below those in Western states. That helps to explain the fact that East Germany was not the socialist showcase it was frequently taken for before German reunification. Second, I demonstrate that the rates of technical change in the East German states have been considerably higher than those in the West since German reunification. This suggests that the Mezzogiorno

prediction for East Germany — that it will stay persistently behind West Germany as Italy's South does relative to its North — based on an analysis of the need for physical capital accumulation alone, will prove too pessimistic.

Contagion and Volatility with Imperfect Credit Markets

Pierre-Richard Agénor and Joshua Aizenman

NBER Working Paper No. 6080

July 1997

JEL Nos. F34, F36

International Finance and Macroeconomics

This paper interprets contagion effects as perceived increases (triggered by events occurring elsewhere) in the volatility of aggregate shocks impinging on the domestic economy. We analyze the implications of this approach in a model with two types of credit market imperfections: domestic banks borrow at a premium on world capital markets; and, domestic producers (whose demand for credit results from needs for working capital) borrow at a premium from domestic banks, which have a comparative advantage in monitoring the behavior of domestic agents. Financial intermediation spreads are determined by a markup that compensates for the expected cost of contract enforcement and state verification and for the expected revenue lost in adverse states of nature. Higher volatility of producers' productivity shocks increases both financial spreads and the producers' cost of capital, resulting in lower employment and a higher incidence of default. The welfare effects of volatility are non-linear. Higher volatility does not impose any welfare cost for countries characterized by relatively low volatility and efficient financial intermediation. The adverse welfare effects are large (small) for countries that are at the

threshold of full integration with international capital markets (close to financial autarky), that is, countries characterized by a relatively low (high) probability of default.

Unemployment Expectations, Jumping (S,s) Triggers, and Household Balance Sheets

Christopher D. Carroll and Wendy E. Dunn

NBER Working Paper No. 6081

July 1997

JEL Nos. D1, D8, D9, E2, E3

Economic Fluctuations and Growth and Monetary Economics

We examine the relationship among household balance sheets, consumer purchases, and expectations. We find few robust empirical relationships between balance sheet measures and spending, but we do find that unemployment expectations are correlated robustly with spending. We then construct a formal model of the consumption of durables and nondurables with an explicit role for unemployment and household debt. We find the model capable of explaining several empirical regularities which are, at best, unexplained by standard models. Finally, we show that a loosening of liquidity constraints can produce a runup in debt similar to that experienced recently in the United States. After such a liberalization, consumer purchases show heightened sensitivity to the uncertainty of labor income, providing a potential rigorous interpretation of the widespread view that the buildup of debt in the 1980s may have played an important role in the weakness of consumption during and after the 1990 recession.

Teen Drinking and Education Attainment: Evidence From Two-Sample Instrumental Variables (TSIV) Estimates

Thomas S. Dee and William N. Evans

NBER Working Paper No. 6082

July 1997

JEL Nos. I12, I18, I2

Health Economics

Recent research has suggested that one of the important, life-cycle consequences of teen drinking is reduced scholastic achievement. Furthermore, it has been argued that state excise taxes on beer and minimum legal drinking ages (MLDA) can have a positive impact on educational attainment. However, there is reason to question whether these results have sound empirical support. Some of the prior research has assumed that the decision to drink is made independently of schooling decisions. Furthermore, estimates that have recognized the potential simultaneity of these decisions may be identified poorly since they rely solely on the cross-state variation in beer taxes and MLDA as exogenous determinants of teen drinking.

A more convincing identification strategy would rely on the within-state variation in alcohol availability over time. To this end, we use the increases in the state MLDA during the late 1970s and 1980s as an exogenous source of variation in teen drinking. Using data from the 1977–92 Monitoring the Future (MTF) surveys, we demonstrate that teens who faced an MLDA of 18 were substantially more likely to drink than teens who faced a higher drinking age. If teen drinking did reduce educational attainment, then attainment within a state should have risen after the MLDA was increased. Using data from over 1.3 million respondents who belong to the 1960–9 birth cohorts in the 1990 Public-Use Micro-

data Sample (PUMS), we find that changes in the MLDA had small and statistically insignificant effects on measures of educational attainment, such as high school completion, college entrance, and college completion. A new technique developed by Angrist and Krueger [1992, 1995] allows us to tie these results together. Using matched cohorts from the MTF and PUMS datasets, we report TSIV estimates of the effect of teen drinking on educational attainment. These TSIV estimates are smaller than the corresponding single-equation probit estimates and are statistically insignificant, indicating that teen drinking does not have an independent effect on educational attainment.

Business Success and Businesses' Beauty Capital

Ciska M. Bosman, Gerard A. Pfann, Jeff E. Biddle, and Daniel S. Hamermesh

NBER Working Paper No. 6083

July 1997

JEL No. J71

Labor Studies

We examine whether a difference in pay for beauty is supported by different productivity of people according to looks. Using a sample of advertising firms, we find that those firms with better-looking executives have higher revenues and faster growth than do otherwise identical firms whose executives are not so good looking. The impact on revenue far exceeds the likely effect of beauty on the executives' wages. This suggests that their beauty creates firm-specific investments, in the form of improved relationships within work groups, the returns to which are shared by the firm and the executive.

Rational Atrophy: The U.S. Steel Industry

Aaron Tornell

NBER Working Paper No. 6084

July 1997

Productivity

During the 1970s and 1980s the U.S. steel industry received trade protection. However, these rents were not used to improve competitiveness. Instead, they were reflected in higher wages and a greater share of profits invested in sectors not related to steel. Moreover, the steel industry failed to adopt technological innovations on a timely basis and was displaced by the minimills. I rationalize these puzzling outcomes using a dynamic game between workers and firms.

Education and Saving: The Long-Term Effects of High School Financial Curriculum Mandates

B. Douglas Bernheim, Daniel M. Garrett, and Dean M. Maki

NBER Working Paper No. 6085

July 1997

JEL Nos. D12, E21, H31

Aging and Public Economics

Over the last 40 years, the majority of states have adopted consumer education policies, and a sizable minority have specifically mandated that high school students receive instruction on topics related to household financial decisionmaking (budgeting, credit management, saving and investment, and so forth). In this paper, we attempt to determine whether the curricula arising from these mandates have had any discernible effect on adult decisions regarding saving. Using a unique household survey, we exploit the variation in requirements both across states and over time to identify the effects of interest. The evidence indicates that mandates have significantly raised both exposure to financial cur-

ricula and subsequent asset accumulation once the exposed students reached adulthood. These effects appear to have been gradual rather than immediate, a probable reflection of implementation lags.

Contract Renegotiation in Agency Problems

**Aaron S. Edlin and
Benjamin E. Hermalin**

NBER Working Paper No. 6086

July 1997

JEL Nos. C78, D23, K12, L23

Law and Economics

We study the ability of an agent and a principal to achieve the first-best outcome when the agent invests in an asset that has greater value if owned by the principal than by the agent. When contracts can be renegotiated, a well-known danger is that the principal can hold up the agent, undermining his or her investment incentives. We begin by identifying a countervailing effect: investment by the agent can increase the value for the asset, thus improving the agent's bargaining position in renegotiation. We show that option contracts will achieve the first best outcome whenever this threat-point effect dominates the holdup effect. Otherwise, achieving the first best outcome is difficult and, in many cases, impossible. In those cases, we show that if parties have an appropriate signal available, then the first best outcome is still attainable for a wide class of bargaining procedures. However, a noisy signal means that the optimal contract will involve terms that courts might view as punitive and thus refuse to enforce.

Physician Fee Policy and Medicaid Program Costs **Jonathan Gruber, Kathleen Adams, and Joseph P. Newhouse**

NBER Working Paper No. 6087

July 1997

JEL No. I18

Health Care and Public Economics

We investigate the hypothesis that increasing access for the indigent to physicians' offices shifts care from hospital outpatient settings and lowers Medicaid costs (this is the so-called "offset effect"). To evaluate this hypothesis, we exploit a large increase in physicians' fees in the Tennessee Medicaid program, using Georgia as a control state. We find that beneficiaries shifted care from clinics to offices, but that there was little or no shifting from hospital outpatient departments or emergency rooms. Thus, we find no offset effect in outpatient expenditures. Inpatient admissions and expenditures fell, reducing overall program spending by 8 percent. Because the inpatient reduction did not occur in diagnoses that were sensitive to ambulatory care, however, we cannot demonstrate a causal relationship with the fee change.

Age Discrimination Laws and Labor Market Efficiency

David Neumark and Wendy A. Stock

NBER Working Paper No. 6088

July 1997

JEL Nos. J14, J18, J26, J71

Aging and Labor Studies

In Lazear's [1979] model of efficient long-term incentive contracts, employers impose involuntary retirement based on age. The model implies that age discrimination laws, which bar involuntary terminations based on age, discourage the use of such contracts and reduce efficiency. Alternatively, by making it costly for

firms to dismiss older workers who are paid more than their marginal product, such laws may serve as pre-commitment devices that make credible the long-term commitment to workers that firms must make under Lazear contracts. Given that employers remain able to use financial incentives to induce retirement, age discrimination laws instead may strengthen the bonds between workers and firms and encourage efficient Lazear contracts.

We assess evidence on these alternative interpretations of age discrimination laws by estimating the effects of such laws on the steepness of age-earnings profiles. If long-term incentive contracts are strengthened or become more prevalent, average age-earnings profiles should steepen for workers who enter the labor market after age discrimination laws are passed, and vice versa. The empirical analysis uses decennial Censuses of Population and state-level variation in age discrimination laws induced by state and federal legislation. The evidence indicates that age discrimination laws lead to steeper age-earnings profiles for cohorts entering the labor market, suggesting that these laws encourage the use of Lazear contracts, and increase efficiency.

"The Bigger They Are, The Harder They Fall": How Price Differences Across U.S. Cities Are Arbitrated

Paul G. J. O'Connell and Shang-Jin Wei

NBER Working Paper No. 6089

July 1997

JEL Nos. F31, C32

International Finance and Macroeconomics and International Trade and Investment

Recent empirical work has made headway in exploring the nonlinear dynamics of deviations from the law of one price and purchasing power parity that are apt to arise from trans-

action costs. However, there are two important facets of this work that need improvement. First, the choice of empirical specification is arbitrary. Second, the data used are typically composite price indexes which are subject to potentially serious aggregation biases.

We examine the evidence for transport-cost-induced nonlinear price behavior within the United States. We address both of the above shortcomings. First, we use a simple continuous-time model to inform the choice of empirical specification. The model indicates that the behavior of deviations from price parity depends on the relative importance of fixed and variable transport costs. Second, we employ data on disaggregated commodity prices, yielding a "pure" measure of the deviations from price parity. We find strong evidence of nonlinear reversion in these deviations. The nature of this reversion suggests that fixed costs of transportation are integral to an understanding of law-of-one-price deviations.

Tariff Policy for a Monopolist Under Incomplete Information

Dobrin R. Kolev and Thomas J. Prusa

NBER Working Paper No. 6090

July 1997

JEL Nos. F13, D82, L12

International Trade and Investment

We examine the incentives for governments to levy optimal tariffs on foreign monopolists. With complete information, the home government uses tariffs to extract rents, therefore implementing a policy of discriminatory tariffs which entails higher tariffs on more efficient firms. By contrast if the government is not completely informed about costs, under reasonable conditions the unique self-enforcing outcome involves pooling, whereby firms export the same quantity regardless of effi-

ciency. Because of the distortions created by incomplete information, we find home country welfare, in general, is higher under a policy of uniform tariffs than under one of discriminatory tariffs. Our results suggest that trade policies that are motivated by rent extraction are not likely to be robust to the introduction of incomplete information.

Environmental Controls, Scarcity Rents, and Pre-Existing Distortions

Don Fullerton and Gilbert Metcalf

NBER Working Paper No. 6091

July 1997

JEL Nos. H2, Q2

Public Economics

Debate about the "Double Dividend Hypothesis" has focused on whether an environmental policy raises revenue that can be used to cut other distorting taxes. In this paper, we show that this focus has been misplaced. We derive welfare results for alternative policies in a series of analytical general equilibrium models involving both clean and dirty goods that might be produced with emissions as well as with other resources, in the presence of other pre-existing distortions, such as labor taxes or even monopoly pricing. We show that the welfare effects of environmental protection can be achieved without exacerbating the labor distortion by taxes that raise revenue, or certain command and control regulations that raise no revenue, and even by subsidies that cost revenue. The pre-existing labor tax distortion is exacerbated instead by policies that generate privately-retained scarcity rents. These rents raise the cost of production and equilibrium output prices, and thus reduce the real net wage. Such policies include both those that restrict quantity command and control, and certain marketable permit policies.

Monetary Policy in Japan, Germany and the United States: Does One Size Fit All?

Menzie D. Chinn and Michael P. Dooley

NBER Working Paper No. 6092

July 1997

JEL Nos. E52, E43

International Finance and Macroeconomics

We study the post-war evidence for Japan to see whether the same specification for both the economy and the monetary policy rule is useful for understanding Japan's economy and monetary policy. A recurrent theme in the literature on Japanese monetary policy is that there are significant differences in policy procedures and objectives as compared to other industrial countries. In this paper, we propose an "out of sample" test of a set of restrictions on a vector autoregression used by Clarida and Gertler [1997] in their analysis of the Bundesbank's behavior. Our interpretation of the evidence is that, with minor adjustments, the same specification provides a useful framework for understanding monetary policy in Japan. Perhaps the most interesting finding is that the Bank of Japan, as compared to other central banks, appears to react to inflation over longer forecast horizons.

Economic Geography and Regional Production Structure: An Empirical Investigation

Donald R. Davis and David E. Weinstein

NBER Working Paper No. 6093

July 1997

JEL Nos. F1, O1, R1

International Trade and Investment

There are two principal theories of why countries or regions trade: comparative advantage and increasing returns to scale. Yet there is virtually no

empirical work that assesses the relative importance of these two theories in accounting for production structure and trade. We use a framework that nests an increasing returns model of economic geography featuring "home market effects" with a Heckscher-Ohlin model. We use these trade models to explain the structure of regional production in Japan. We find economic geography effects in 8 of 19 manufacturing sectors, including such important ones as transportation equipment, iron and steel, electrical machinery, and chemicals. Moreover, we find that these effects are economically very significant. This latter result contrasts with those of Davis and Weinstein [1997], who find economic geography to be of scant economic significance for the structure of OECD production. We conclude that while economic geography may explain little about the international structure of production, it is very important for understanding the regional structure of production.

Financial Fragility and the Great Depression

Russell Cooper and Dean Corbae

NBER Working Paper No. 6094

July 1997

JEL Nos. E32, E44, E41

Economic Fluctuations and Growth and Monetary Economics

We analyze a financial collapse, such as what occurred during the Great Depression, from the perspective of a monetary model with multiple equilibriums. The economy we consider is financially fragile because of increasing returns to scale in the intermediation process. Intermediaries provide the link between savers and firms that require working capital for production. Fluctuations in the intermediation process are driven by variations in the confidence which agents place in the financial system. Our model quite closely matches the

qualitative movements in some financial and real variables (the currency/deposit ratio; ex-post real interest rates; the level of intermediated activity; deflation; employment; and production) during the Great Depression period.

Free Trade, Growth, and Convergence

Dan Ben-David and Michael B. Loewy

NBER Working Paper No. 6095

July 1997

JEL Nos. E1, F1, O4

International Trade and Investment

What is the impact on output of movement towards free trade? Can trade liberalization have a permanent effect on output levels, and more importantly, does it have an impact on steady-state growth rates? The model that we develop emphasizes the role of knowledge spillovers emanating from heightened trade in income convergence and on growth rates over the long run. The model also facilitates an analysis of the dynamic behavior of income levels and terms of trade — as well as of growth rates — during the transition between steady states. Among our results are that unilateral liberalization by one country has a level effect on the liberalizing country, reducing the income gap between it and other wealthier countries. In some cases, the liberalizing country may even leapfrog over initially wealthier countries. From the long-run growth perspective, unilateral (and multilateral) liberalization generates a positive impact on the steady-state growth of all the trading countries.

International Trade and Structural Change

Dan Ben-David and David H. Papell

NBER Working Paper No. 6096

July 1997

JEL Nos. C22, F1

International Trade and Investment

In light of the substantial movement towards trade liberalization during the postwar period, this paper attempts to determine if and when countries experienced statistically significant changes in the paths of their export-GDP and import-GDP ratios. We find that: 1) most trade ratios exhibited a structural break in their time paths; 2) postbreak trade exceeded prebreak trade for the majority of countries; 3) the coincidence in timing between the import and export breaks does not appear to be particularly strong, and; 4) there is little relation between the extent of changes in imports and the extent of changes in exports for most countries.

Social Security and Retirement in the U.S.

Peter Diamond and Jonathan Gruber

NBER Working Paper No. 6097

July 1997

JEL Nos. H55, J26

Aging, Labor Studies, and Public Economics

The largest entitlement program in the United States today is Social Security (SS). We provide an overview of the interaction between the SS system and retirement behavior. We begin by documenting historical trends in labor force participation and program receipt, and contemporaneous patterns of work and income receipt for the current cohort of older persons. We then present an overview of the structure of the SS program in the United States, and review existing evidence on the relationship between SS and retirement. Finally, we present results of a simulation

model which measures the implicit tax/subsidy rate on work after age 55 through the SS system. We find that, for married workers, the system is roughly neutral with respect to work after age 62, but that it heavily penalizes work after age 65. But there are larger tax rates on single workers and on high earning workers.

The Risk and Return from Factors

Louis K. C. Chan, Jason Karceski, and Josef Lakonishok

NBER Working Paper No. 6098

July 1997

JEL No. G12

Asset Pricing

The ability to identify the factors which best capture the covariation of systematic return is central to applications of multifactor pricing models. This paper uses a common dataset to evaluate the performance of various proposed factors in capturing comovements in return. Factors associated with the market, size, past return, book-to-market, and dividend yield help to explain return comovement on an out-of-sample basis (although they are not necessarily associated with large premiums in average returns). Except for the default premium and the term premium, macroeconomic factors perform poorly. We document regularities in the behavior of the more important factors, and confirm their influence in the Japanese and U.K. markets as well.

The Structure of Firm R&D and the Factor Intensity of Production

James D. Adams

NBER Working Paper No. 6099

July 1997

JEL Nos. D21, O32, L23, J23

Productivity

This paper examines the influence of the structure of firm R and D,

industry R and D spillovers, and plant-level physical capital on the factor intensity of production. By the *structure* of firm R and D, I mean its distribution across states and products. By *factor intensity*, I mean the cost shares of variable factors, which in this study are blue collar labor, white collar labor, and materials. I characterize the effect of the structure of firm R and D on factor intensity using a translog cost function with quasi-fixed factors. This cost function gives rise to a system of variable cost shares which depends on factor prices, firm and industry R and D, and physical capital.

I then estimate this system using a sample of plants owned by chemical firms. I find that total firm R and D, industry R and D spillovers, and plant-level physical capital are factor-biased towards labor as a whole, and factor-saving in materials. None of these three factors *consistently* increases the factor intensity of white collar workers relative to blue collar workers. Since white collar workers are the more skilled of the two grades of labor, none of these factors is strongly associated with *skill bias*.

When I turn to the structure of firm R and D, I find that its strongest effect on the factor intensity of white collar workers occurs when the R and D is conducted in the same product area as the plant. Indeed, the skill bias effect of firm R and D in the same product dominates all other variables, implying that skill bias is technologically "localized" within firms. All told, the findings suggest that skill bias is governed by *portions* of the firm's R and D program targeted on particular plants, rather than being transmitted through capital or by general firm and industry know-how.

Changes Over Time in Union Relative Wage Effects in Great Britain and the United States

David G. Blanchflower

NBER Working Paper No. 6100

July 1997

Labor Studies

This paper uses broadly comparable microdata at the level of the individual to examine the extent to which union relative wage effects vary across groups and through time. The main findings are: 1) The union wage gap averages 15 percent in the United States and 10 percent in Great Britain. 2) The gap is correlated positively with the (lagged) unemployment rate, and appears to be un-trended in both countries. Union wages are sticky. 3) The size of the wage gap varies across groups. In both the United States and Great Britain, the differential is relatively high in the private sector, in non-manufacturing, for manual laborers, the young, and the least educated. 4) In the United States there are no differences by race or gender in the size of the differential. In Great Britain it is higher both for women and for non-whites. The fact that the differential has remained more or less constant in both Great Britain and the United States is a puzzle, particularly given the rapid declines in union membership in both countries. The evidence is not consistent with the widely held view that union power has been emasculated.

R&D and Productivity: The International Connection

Elhanan Helpman

NBER Working Paper No. 6101

July 1997

International Trade and Investment

Countries differ greatly in R and D spending, and these differences are particularly striking when comparing developed with developing coun-

tries. This paper examines the extent to which the benefits of R and D are concentrated in the investing countries. I argue that significant benefits spill over to other countries in the world. This argument is supported by quantitative estimates of such cross-country effects.

The Rising Well-Being of the Young

David G. Blanchflower and

Andrew J. Oswald

NBER Working Paper No. 6102

July 1997

Labor Studies

Many observers believe that times are becoming harder for young people in Western society. This paper looks at the evidence and finds that the conventional wisdom is wrong. Using the U.S. General Social Surveys and the Eurobarometer Surveys, we study the reported happiness and life-satisfaction scores of random samples of young men and women. The data cover the United States and 13 European countries. Our main finding is that from the 1970s to the 1990s the well-being of the young increased quite markedly. We consider a number of possible explanations.

Saving, Investment, and Gold: A Reassessment of Historical Current Account Data

Matthew T. Jones and

Maurice Obstfeld

NBER Working Paper No. 6103

July 1997

JEL Nos. F21, F32, N10

International Finance and Macroeconomics and International Trade and Investment

This paper revises pre-World War II current account data for 13 countries by treating gold flows on a consistent basis. The standard sources of historical data often fail to distinguish between monetary gold exports, which are capital-account credits,

and nonmonetary gold exports, which are current-account credits. The paper also adjusts historical investment data to explain changes in inventories. We use the revised data to construct estimates of saving and investment for the period from 1850 to 1945.

Our methodology for removing monetary gold flows from the current account naturally leads to a gold-standard version of the Feldstein-Horioka hypothesis on capital mobility. Our regression results broadly agree with those of Eichengreen, who found a significantly positive cross-sectional correlation between saving and investment, even during some periods when the gold standard prevailed. Despite reaching broadly similar conclusions, we estimate correlations between saving and investment that are somewhat lower and less significant than those that Eichengreen found. In particular, we find that in comparison to other interwar subsamples, the saving-investment correlation is markedly low during the fleeting years of a revived world gold standard, 1925–30.

An Empirical Investigation of Firms' Responses to Minimum Standards Regulations

Tasneem Chipty and Ann Dryden Witte

NBER Working Paper No. 6104

July 1997

JEL Nos. L15, L5, K3

Public Economics

Using firm level data for a nationally representative sample of markets, we study firms' responses to minimum standards and other forms of regulatory intervention on the probability of exit and the distribution of observable product quality. Our empirical work is motivated by the literature on quality and price competition in the presence of mini-

imum standards. We find that minimum standards increase the probability that firms will exit certain markets. Moreover, we find that exit can cause both the average and the maximum quality observed in the market to decline. This perverse regulatory effect occurs when excessively high standards cause high quality firms to exit. When minimum standards do not lead to exit, they can increase the average and maximum quality of products in the market. Such standards not only can force low quality firms to raise their quality, but also may cause high quality firms to increase their quality, presumably in an attempt to alleviate price competition and to differentiate themselves from their now higher quality rivals.

The Sensitivity of Experimental Impact Estimates: Evidence from the National JTPA Study

James J. Heckman and Jeffrey A. Smith

NBER Working Paper No. 6105

July 1997

JEL Nos. C93, H43

Labor Studies

The recent experimental evaluation of the U.S. Job Training Partnership Act (JTPA) program found that training had negative effects on the earnings of disadvantaged male youth and no effect on the earnings of disadvantaged female youth. These findings provided justification for Congress to cut the budget of JTPA's youth component by over 80 percent. In this paper, we examine the sensitivity of the experimental impact estimates along several dimensions of construction and interpretation. We find that the statistical significance of the male youth estimates is extremely fragile, and that the magnitudes of the estimates for both youth groups are sensitive to nearly all the factors we consider. In

particular, accounting for experimental control group members who substitute training from other providers leads to a much more positive picture regarding the effectiveness of JTPA classroom training. Our study indicates the value of sensitivity analyses in experimental evaluations and illustrates that experimental impact estimates, like those from nonexperimental analyses, require careful interpretation if they are to provide a reliable guide to policymakers.

Income, Schooling, and Ability: Evidence from a New Sample of Identical Twins

Orley Ashenfelter and Cecilia Rouse

NBER Working Paper No. 6106

July 1997

JEL No. I21

Children and Labor Studies

We develop a model of optimal schooling investments and estimate it using new data on approximately 700 identical twins. We estimate an average return to schooling of 9 percent for identical twins, but estimated returns appear to be slightly higher for less able individuals. Simple cross-section estimates are marginally biased upward. These empirical results imply that more able individuals attain more schooling because they face lower marginal costs of schooling, not because of higher marginal benefits.

Adverse Selection in Health Insurance

David M. Cutler and Richard J. Zeckhauser

NBER Working Paper No. 6107

July 1997

Health Care and Public Economics

Individual choice over health insurance policies may result in risk-based sorting across plans. Such adverse selection induces three types

of losses: efficiency losses from individuals being allocated to the wrong plans; risk sharing losses since premium variability is increased; and losses from insurers distorting their policies to improve their mix of insureds. We discuss the potential for these losses, and present empirical evidence on adverse selection in two groups of employees: Harvard University, and the Group Insurance Commission of Massachusetts (GIC, which serves state and local employees). In both groups, adverse selection is a significant concern. At Harvard, the University's decision to contribute an equal amount to all insurance plans led to the disappearance of the most generous policy within three years. At the GIC, adverse selection has been contained by subsidizing premiums on a proportional basis and managing the most generous policy very tightly. A combination of prospective or retrospective risk adjustment, coupled with reinsurance for high cost cases, seems promising as a way to provide appropriate incentives for enrollees and to reduce losses from adverse selection.

The Usual Suspects? Productivity and Demand Shocks and Asia-Pacific Real Exchange Rates

Menzie David Chinn

NBER Working Paper No. 6108

July 1997

JEL Nos. F31, F41

International Finance and
Macroeconomics

This paper examines the evidence for a productivity-based explanation for real exchange rate behavior of East Asian currencies. Using data on sectoral output and employment, I calculate relative prices and relative productivities for China, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Time-series regressions of the real

exchange rate on relative prices indicate a role for relative prices for Indonesia, Japan, and Korea. In terms of real exchange rates and relative productivity ratios, there is a relationship for Japan, Malaysia, and the Philippines. Only when augmenting the regressions with real oil prices are significant relationships obtained for Indonesia and Korea. Panel regression results are slightly more supportive of a relative price view of real exchange rates. However, the panel regressions incorporating productivity variables, as well as other demand side factors, are less encouraging, except for a small subset of countries (Indonesia, Japan, Korea, Malaysia, and the Philippines). Surprisingly, government spending does not appear to be a determinant of real exchange rates in the region.

Internal and External Labor Markets: An Analysis of Matched Longitudinal Employer-Employee Data

**John M. Abowd and
Francis Kramarz**

NBER Working Paper No. 6109

July 1997

JEL Nos. J31, D21

Labor Studies

We decompose the real, annual full-time compensation costs of 1.1 million French workers over a 12-year period into one part that reflects their external opportunity wage and one part that reflects their internal wage rate. Using these components of compensation, we investigate the extent to which firm size-wage differentials and interindustry wage differentials are attributable to variability in the external wage (that is, person effects) versus variability in the internal wage (that is, firm effects). For France, we find that most of the firm size-wage effect and most of the interindustry wage effect are attributable to person effects: differences in the external wage rates.

The Costs of Hiring and Separations

**John M. Abowd and
Francis Kramarz**

NBER Working Paper No. 6110

July 1997

Labor Studies

In this article, we estimate the costs of hiring, separation, and retirement of employees for a representative sample of French establishments in 1992. We use data from three sources: the Wage Structure Survey (ESS); the Workforce Movement Questionnaire (DMMO); and the Occupational Structure Survey (ESE). We show that the estimated costs are generally asymmetric (hiring is cheaper than terminations), increasing, and concave functions of the number of entries or exits (either retirements or terminations). There is a fixed component to each of these costs that is related to the structure of the firm's personnel department. Our estimates imply that firms should not adjust gradually to the desired level of employment.

Minimum Wages and Youth Employment in France and the United States

**John M. Abowd, Francis
Kramarz, Thomas Lemieux,
and David N. Margolis**

NBER Working Paper No. 6111

July 1997

JEL Nos. J31, J23

Labor Studies

We use longitudinal individual data on wages and employment for young people in France and the United States to investigate the effect of intertemporal changes in an individual's status vis-à-vis the real minimum wage on employment transition rates. We find that movements in both French and American real minimum wages are associated with relatively important employment effects in general, and very strong effects on

workers employed at the minimum wage. In the French case, albeit imprecisely estimated, a 1 percent increase in the real minimum wage decreases the employment probability of a young man currently employed at the minimum wage by 2.5 percent. In the United States, a decrease in the real minimum wage of 1 percent increases the probability that a young man employed at the minimum wage came from nonemployment by 2.2 percent. These effects get worse with age in the United States, and are mitigated by eligibility for special employment promotion contracts in France.

NBER Historical Papers

Nutritional Status and Agricultural Surpluses in the Antebellum United States

Lee A. Craig and Thomas Weiss

NBER Historical Paper No. 99

April 1997

JEL Nos. N5, I1, Q1

We model the relationship among local agricultural surpluses, nutritional status, and height. We also test the hypothesis that adult height is correlated positively with the local production of nutrition in infancy. We rely on two samples of Union Army recruits: one all white, the other all black. In the white sample, a local protein surplus one standard deviation above the mean yields an additional 0.1 inches in adult height; a similar deviation in surplus calorie production yields an additional 0.2 inches. For blacks, however, the effect is probably negligible.

Manufacturing Where Agriculture Predominates: Evidence from the South and Midwest in 1860

Kenneth L. Sokoloff and Viken Tchakerian

NBER Historical Paper No. 100

April 1997

JEL Nos. N0, N5, O0, Q0

We use the 1860 Census of Manufactures to study rural antebellum manufacturing in the South and Midwest. We find that manufacturing output per capita was similar across regions in counties that specialized in the same agricultural products. The southern deficit in manufactures per capita appears to have been attributable largely to the very low levels of output in counties that specialized in cotton production. This implies that it was the South's capabilities for the highly profitable cotton production, not the existence of slavery per se, that was responsible for the region's limited industrial development, at least in rural areas. Our other major finding is that in both the South and the Midwest, measured total factor productivity was significantly lower in counties that specialized in wheat (the most seasonal of agricultural products in terms of labor requirements). This is consistent with suggestions that agricultural districts in which the predominant crops were highly seasonal in their requirements for labor were well suited to supporting manufacturing during the off-peak periods.

Wages in California During the Gold Rush

Robert A. Margo

NBER Historical Paper No. 101

June 1997

JEL No. N31

The California Gold Rush was a tremendously large unexpected shock

that prompted the costly reallocation of labor to a frontier region. Using newly-collected archival data, this paper presents estimates of nominal and real wages in Gold Rush California. Consistent with a simple dynamic model of labor market adjustment, real wages rose sharply during the early years of the Rush (1848–52), declined abruptly following massive immigration, and then remained constant for the remainder of the 1850s. However, although the Rush itself was a transitory event, it left California wages permanently higher. Estimates based on census data suggest that the supply of labor into Gold Rush California was about half as elastic as the supply of labor into Alaska during the Pipeline Era.

Sears Roebuck in the Twentieth Century: Competition, Complementarities, and the Problem of Wasting Assets

Daniel Raff and Peter Temin

NBER Historical Paper No. 102

June 1997

Sears Roebuck and Co. faced similar challenges in the 1920s and the 1980s. On the strength of the early period's strategic investment decisions, the company grew into the nation's largest retailer and a pervasive factor in the economy. In the later period, unanswered challenges nearly destroyed the company. We analyze the elements that contributed to the success in the 1920s and to the near disaster in the 1980s and place them in a broader and more systematic context. We argue that successful innovations combine a focus on an attractive market with an exploitation and even enhancement of a firm's existing competitive strengths.

NBER Technical Papers

Time-to-Build and Cycles

Patrick K. Asea and Paul J. Zak

NBER Technical Working Paper No. 211

May 1997

JEL Nos. E32, C61

International Finance and
Macroeconomics

We analyze the dynamics of a simple growth model in which production occurs with a delay while new capital is installed (time-to-build). The time-to-build technology yields a system of functional (delay) differential equations with a unique steady state. We demonstrate that the steady state, though typically a saddle, may exhibit Hopf cycles on a measurable set of the parameter space. Furthermore, the optimal path to the steady state is oscillatory. We provide a

counter-example to the claim that "models with a time-to-build technology are not intrinsically oscillatory." We also provide a primer on the central technical apparatus: the mathematics of functional differential equations.

An Efficient Generalized Discrete-Time Approach to Poisson-Gaussian Bond Option Pricing in the Heath-Jarrow-Morton Model

Sanjiv R. Das

NBER Technical Working Paper No. 212

June 1997

JEL Nos. G13, C63

Asset Pricing

Term structure models employing Poisson-Gaussian processes may be used to accommodate the observed

skewness and kurtosis of interest rates. This paper extends the discrete-time, pure-Gaussian version of the Heath-Jarrow-Morton (HJM) model to the pricing of American-type bond options when the underlying term structure of interest rates follows a Poisson-Gaussian process. The Poisson-Gaussian process is specified using a hexanomial tree (six nodes emanating from each node), and the tree is shown to be recombining. The scheme is parsimonious and convergent. This model extends the class of HJM models by introducing a more generalized volatility specification than has been used so far, and inducing jumps, yet retaining lattice recombination, thus making the model useful for practical applications.



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