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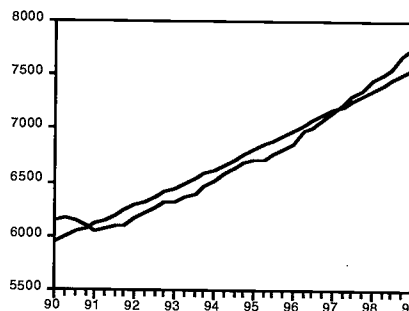
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Program Report

Economic Fluctuations and Growth

Robert E. Hall*

In May 1999, the unemployment rate was 2.5 percent in Boston, 1.6 percent in Minneapolis, 2.2 percent in Denver, 2.5 percent in San Francisco, 3.0 percent in Dallas, and 2.6 percent in Washington, DC.¹ The U.S. economy has not been this healthy since the best years of the 1960s. Graph 1 shows the growth of total output (real GDP) of the U.S. economy since 1990. Since mid-1995, the economy has grown at an exceptional rate, above 4 percent per year, far outpacing its normal trend of growth, shown by the nearly straight line in the graph. Normal growth is a little over 2.5 percent per year.



The last time conditions like this existed in the U.S. economy, the late 1960s, inflation was building. Graph 2 shows the remarkable contrast between the good years of the late 1960s and the good years of the late

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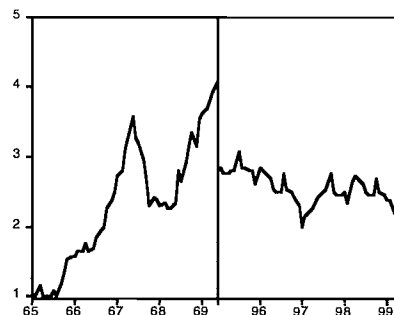
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1990s. Despite incredibly tight conditions, inflation has been on a downward trend in recent years.



These developments have perplexed the Federal Reserve Board. Does the exceptional tightness of the labor market and the growth of output mean that inflation will increase? Or has the economy's natural unemployment rate fallen so much that a 4.5 percent rate of national unemployment no longer implies rising wage inflation? And, has productivity growth risen so much that a 4 percent annual growth rate of GDP is sustainable?

Researchers in the NBER's Program on Economic Fluctuations and Growth have a variety of views on this subject. Robert J. Gordon has shown that recent higher rates of productivity growth derive from special factors, especially the high growth that has been recorded in computer output, but he is skeptical about any long-term rise in overall productivity growth.² I, however, have pointed out that the dramatic rise in the stock market in the 1990s could be interpreted as showing that corporations have built up large amounts of new capital whose contributions to productivity will appear in the future.³

The EFG Program's activities revolve around fundamental research on the performance of modern economies in the short and long runs. During the Great Depression, macroeconomics entered a period of division into schools of thought. The

opposing schools of Keynesian and classical macroeconomics fought ideological as well as scientific battles. These schools have disappeared completely from the field in the past decade. Our program meetings and conferences feature many spirited scientific discussions but never debates between schools of thought.

Macroeconomics also has drawn closer to microeconomic theory in recent years—the long-sought microeconomic foundations for the field have been built. It is fair to say that macroeconomics, like such fields as industrial organization, public finance, and labor economics, is now a branch of applied microeconomics. Although a companion development is increased mathematical formalization—very few papers written within the EFG Program are understandable to readers untrained in modern mathematical economics—our work nonetheless focuses on substantive questions about fluctuations and growth, not on modeling technique.

Research Meetings

The EFG Program holds various types of meetings and conferences. Program members and many other guests attend Research Meetings three times a year: in February in the San Francisco area, in July in Cambridge (in connection with the NBER's Summer Institute), and in October in Chicago. These three geographical areas have the largest concentration of program participants. For a number of years, the Chicago meeting has been hosted by the Federal Reserve Bank of Chicago, and in February 2000, the West Coast meeting will be hosted by the Federal Reserve Bank of San Francisco.

In one day, research meetings cover six papers selected from recent working papers on fluctuations and growth written by authors around the world. Since the Program's inception in 1978, most of the papers we now

consider path-breaking were presented as working papers at our research meetings. A good example is Finn Kydland and Edward C. Prescott's paper that launched the framework—now standard in macroeconomic theory—called dynamic stochastic general equilibrium.⁴ The papers for each research meeting are selected by a pair of organizers with complementary interests. Rotation of the organizing function among a large number of program members ensures a wide variety of topics and authors.

The Macroeconomics Annual

Ben S. Bernanke and Julio J. Rotemberg organize the NBER's Annual Conference on Macroeconomics, which is held in March each year. Whereas the research meetings involve papers intended for publication in scientific journals, *The NBER Macroeconomics Annual* performs a complementary function for this meeting: the organizers commission papers from researchers who recently have opened up new areas of work. Published in an annual volume, the papers summarize and synthesize research and present new results.

Business Cycle Chronology

The EFG Program is responsible for maintaining the semi-official chronology of the U.S. business cycle. The committee that carries out this responsibility meets well after the economy appears to have passed a turning point—a peak or trough in overall activity. The committee last met in 1992 to determine the date of the trough in early 1991. Thus, more than seven years after that date, there is no reason for a meeting anytime soon. This period of inactivity is now almost as long as the one from early 1983 until 1991.

Service in the Nation's Capital

The EFG Program continues to supply public servants to the federal government and to international agencies. Lawrence H. Summers is currently Secretary of the U.S. Treasury. Martin Baily is Chairman-Designate of the President's Council of Economic Advisers. Stanley Fischer is the First Deputy Managing Director of the International Monetary Fund. Joseph E. Stiglitz is Vice President and Chief Economist of the World Bank. John C. Haltiwanger has served as Chief Economist of the U.S. Census Bureau.

Research Groups

The EFG Program encompasses several small research groups that focus on specialized topics. Each group brings together researchers with common interests, ranging from senior graduate students to established researchers. These groups generally meet at the NBER's Summer Institute in July, and sometimes in conjunction with our research meetings in October or February, or independently.

Economic Growth: Charles I. Jones and Alwyn Young, Directors

This group conducts research on a range of topics related to economic performance in the long run. Some of its meetings have focused on one particular topic, such as technical progress and wage inequality, or firm-level productivity growth, while others have considered a wider range of issues, illustrated by the following papers.

Boyan Jovanovic and Rafael Rob⁵ observe that machines are more expensive in poor countries; they seek to understand how much of the income differences between countries can be attributed to distortions asso-

ciated with the price of machines. Daron Acemoglu and Fabrizio Zilibotti⁶ take a different approach to explaining income differences. They argue that even in a world in which the latest technological advances are freely available in all countries, differences in productivity can be substantial. New technologies are developed primarily in rich countries with large quantities of human capital. Therefore, these technologies may be inappropriate for countries with a different skill mix. In particular, countries with low ratios of skilled to unskilled workers will not be properly matched with advanced technologies, thus reducing their productivity.

What is the relationship between economic growth and other indicators of standard of living? This is the question examined in William Easterly's paper "Life during Growth,"⁷ which shows that most measures of physical and social well-being, while being well correlated with the level of income, are not correlated with GDP growth rates. Finally, a number of authors have focused recently on explaining economic growth over the very long run—hundreds or thousands of years instead of decades. Oded Galor and David N. Weil summarize the facts and recent research related to this topic.⁸ They then present a theory to explain the transition from a Malthusian regime in which per capita growth is virtually absent to the modern world of rapid per capita growth and demographic transition.

Impulse and Propagation Mechanisms:

Lawrence J. Christiano and Martin S. Eichenbaum, Directors

This group's research activities revolve around two questions: What are the key sources of business cycle shocks? and What are the key mechanisms by which these shocks are propagated over time? In exploring

these questions, group members have focused on five related activities: empirically identifying the effects of exogenous shocks to the business cycle, with an emphasis on shocks to monetary and fiscal policy⁹; assessing the empirical plausibility of alternative structural business cycle models¹⁰; constructing new general equilibrium business cycle models¹¹; exploring the nature of actual and optimal monetary policy, and analyzing the impact of different institutions within which policy is conducted¹²; and considering the role of monetary, fiscal, and regulatory policy as well as self-fulfilling expectations in causing recent currency crises.¹³

Consumption: Orazio Attanasio, Christopher D. Carroll, and Jose Victor Rios-Rull, Directors

Because consumption accounts for roughly two-thirds of GDP, an understanding of consumption dynamics is essential for any useful model of business cycles. And because saving is the source of capital accumulation, a model for the average level of aggregate consumption is a fundamental requirement for any model of economic growth. In both the business cycle and the economic growth literature, the traditional approach has been to suppose that aggregate consumption levels and dynamics can be explained as the result of an optimization problem by a "representative agent." This agent's characteristics represent an average of the characteristics of individual households within the economy.

The consumption group seeks to explore the relationship between aggregate behavior and the microeconomic consumption problems solved by individual households. A broad theme that has emerged from much of the group's work is that the behavior of a collection of consumers subject to both personal and aggregate

shocks does not usually resemble the behavior of a representative agent who has average preferences and faces only aggregate shocks. Nor will aggregate behavior necessarily resemble the behavior of the individual microeconomic agents comprising that aggregate. Thus, the process of building a model with realistic microfoundations and then aggregating seems to be inescapable.

A paper by Sydney Ludvigson and Alexander Michaelides presented at last year's meeting provides a good example of how such an approach can help us to understand macroeconomic dynamics. The authors construct a model in which household income is subject to both idiosyncratic and aggregate shocks. They then examine whether the dynamics of the aggregated data from their model resemble U.S. time series consumption data. John Y. Campbell and Angus Deaton¹⁴ show that the U.S. data exhibit "excess smoothness" relative to the optimal behavior of a representative agent. Ludvigson and Michaelides show that precautionary saving effects cause the dynamics of the aggregated simulation data to be substantially smoother than the dynamics implied by an identically calibrated representative agent model (though still not as smooth as aggregate data).

The group also has attempted to detect the direct influence of macroeconomic variables on household-level decisions. Papers have been presented on the relationship between aggregate "consumer confidence" and consumption as measured in household surveys¹⁵; on the relationship between regional unemployment risk and household-level home-purchase decisions¹⁶ and saving behavior¹⁷; and on how unemployment spells affect household-level spending on semi-durable goods such as clothing.¹⁸ Other work in the group has explored how idiosyncratic uncertainty has affected the

risksharing characteristics of alternative Social Security arrangements¹⁹; the implications of heterogeneous time preference factors for Social Security reform²⁰; implications of the unequal distribution of wealth for the dynamics of business cycles²¹; the dynamics of aggregated household survey data as compared with the dynamics of national income accounts data²²; the implications of standard microeconomic consumption models for household portfolio structure and the equity premium²³; and the "wealth effect" that stock market movements have on household consumption and saving decisions.²⁴

Income Distribution and Macroeconomics: Roland Benabou, Steven N. Durlauf, and Oded Galor, Directors

The marked rise in inequality in most developed countries over the past 20 years has brought income distribution back to the forefront of economists' and policymakers' concerns. At the same time, a rapidly growing body of theoretical and empirical research has identified many channels through which the distributions of income, human capital, and financial assets affects an economy's aggregate performance in the medium and long run.

The main mechanisms, as studied and discussed in this group, involve: 1) credit market frictions, which imply, for instance, that agents with insufficient net wealth cannot invest efficiently in education or entrepreneurial activities; 2) political economy feedbacks, whereby rising inequality leads to significant changes in taxation and redistribution, or even in political stability; and 3) a wide variety of nonmarket interactions between heterogeneous agents, operating at local or economywide levels. These interactions may be pecuniary (fiscal spillovers in school

finance, the effects of the labor force's educational composition on the nature of technological innovations) or nonpecuniary (neighborhood effects in attitudes toward work and education, demographic implications of fertility decisions, and changes in the family's socioeconomic structure).

Some of these mechanisms are particularly relevant to developing countries, others to advanced countries, but they all share the fundamental property that the evolutions of macroeconomic and distributional variables are jointly determined. To study these issues, the group brings together researchers representing a broad spectrum of approaches, including some who would normally not have many opportunities to interact. This includes, of course, macroeconomists interested in various forms of heterogeneity and market incompleteness, but also development, public finance, and labor economists, as well as econometricians.

Theoretical emphasis has been on "building up" from microfoundations (individual abilities, incentives, wealth constraints, local spillovers, and policy expectations) and on working toward dynamic general equilibrium models. The papers presented show how "poverty traps" tend to arise for individuals, regions, or whole countries; they also study the extent to which government policy may improve or compound these inefficiencies. In several areas, the research has progressed to the stage at which the models allow a quantitative analysis (through calibrated simulations) of various policy or regime changes: local versus state education finance, optimal unemployment insurance, increased socioeconomic sorting in marriages. On the empirical side, the papers presented have ranged from methodological contributions on the econometric identification of credit constraints and local spillovers, to

cross-country regression analyses of the inequality-growth relationship, to panel data studies of the roles of technological progress and trade in magnifying wage inequality.

Some of the broad themes that have emerged in recent years are reflected in the following selected papers. Several papers relate to persistent inequality, social mobility, and growth. For example, how do the rate and nature of technological progress interact with individual ability, effort incentives, and inherited skills to shape the distribution of income? How do these factors, in turn, feed back onto the incentives to innovate?²⁵ In work presented this year,²⁶ Oded Galor and Omer Moav integrate models of human and physical capital accumulation to explain how inequality can impede growth in certain phases of the development process, and yet foster it at other stages. Yona Rubinstein and Daniel Tsiddon present the results from an ongoing empirical project on ability using Panel Study of Income Dynamics data. They show that even after controlling for workers' education and other observable individual characteristics, their parents' education significantly affects their wage and employment prospects over their tenure in the labor market.

In work on endogenous sorting (in neighborhoods, marriages, and firms) and its implications for inequality and efficiency,²⁷ Raquel Fernandez and Richard Rogerson critically revisit the conclusion from a previous paper by Michael Kremer, who found that increased assortative matching in marriages will have little effect on the long-run distribution of income. Timothy Conley and Giorgio Topa use Census data for Chicago to estimate spillovers in employment probabilities attributable to geographical, ethnic, or occupational proximity. William A. Brock and Steven N. Durlauf develop a methodology for the identification of local spillovers in

linear, binary choice, longitudinal and nonparametric models.

In the area of endogenous skill-biased technological progress, Ann P. Bartel and Nachum Sicherman²⁸ presented a paper last year in which they matched industry-level measures of technological change to a panel of young workers from the National Longitudinal Survey of Youth. They show that the wage premium associated with technological change is primarily attributable to the sorting of better workers into those industries. Andrew Bernard and Bradford Jensen²⁹ use data on U.S. states to study the sources of rising wage inequality since the 1970s. They find that changes in industrial composition, and especially the loss of durable manufacturing jobs, are correlated strongly with increases in inequality. This year, Philippe Aghion, Peter Howitt, and Gianluca Violante developed a model of endogenous technical progress in which ex-ante identical individuals experience growing wage disparities, because of accumulated experience on different vintages of capital goods. David Thesmar and Mathias Thoenig presented a model and some empirical evidence (at the establishment level) to support the idea that periods of rapid technological change lead firms to restructure in ways that favor skilled workers, which in turn makes future innovations more profitable.³⁰

Several papers consider the determinants and macroeconomic effects of redistributive public policy. For example, Roland Benabou and Efe Ok³¹ show that the prospects of upward social mobility (intra- or inter-generational) can lead even quite poor agents to oppose long-lasting redistributive policies. Daron Acemoglu and Robert Shimer³² study the trade-off between the costs (lower incentives to find a job) and benefits (risksharing and better matching) of unemployment insurance. Herschel I. Grossman and Minseong Kim³³ ex-

amine the trade-off faced by a developing country's ruling elite, between spending resources on the protection of property and on educating (some of) the poor.

On the broad subject of fertility, family structure, and distribution and growth, Rao Aiyagari, Jeremy Greenwood, and Nazih Guner have used a calibrated general equilibrium model to study the effects on income distribution and aggregate output of marriage, fertility, and separation decisions (via the resources devoted to children's education).³⁴ Daniel Chen and Michael Kremer³⁵ argue that high fertility rates among the poor and low unskilled wages caused by an abundant supply of uneducated workers can be mutually reinforcing phenomena, resulting in a poverty trap at the country level.

Macroeconomic Complementarities: Russell Cooper, Director

This group studies the macroeconomic implications of positive feedback among participants in the economy as a result of complementarities. The group's research has improved our understanding of complementarities, and its quantitative research links these models to the data. Over the past few years, the group has progressed in two directions. First, they have found additional environments in which macroeconomic complementarities are present, including social learning, financial instability, debt rollovers, informational complementarities, and exchange rate/debt crises. Second, they have continued to undertake quantitative evaluations of the implications of these sources of complementarities. For the most part, this includes trying to match the implications of the models with aggregate, microeconomic, and experimental data. For instance, papers on social learning consider the information

conveyed to a representative agent by the actions of others. This includes learning at the plant or firm as well as learning from the investment decisions of other investors. The quantitative implications of learning at the plant level and the aggregate implications of this learning are both important.³⁶

Heterogeneity: Andrew Caplin, Ricardo J. Caballero, and John V. Leahy, Directors

Nine years ago, when this group began to meet, two ideas differentiated it from other groups in the program: belief in the importance of heterogeneity among individuals and firms for explaining aggregate phenomena; and recognition of the importance of nonconvexities, fixed costs in particular, in influencing the behavior of economic actors. At the microeconomic level, fixed costs lead to infrequent and lumpy actions because the small gains associated with small adjustments do not justify paying the fixed costs. This can help to explain why consumers purchase durable goods, including cars, at discrete points in time and why firms invest in periodic bursts. In this view, what becomes important for understanding aggregate fluctuations is the degree of synchronization and coordination in these lumpy microeconomic decisions.

Making progress in understanding the macroeconomic importance of these microeconomic frictions has required the development of new theoretical tools and new empirical techniques. Several studies, many using the Longitudinal Research Database but others working with aggregate data and data from countries other than the United States, have shown that inaction and lumpiness are ubiquitous features of many microeconomic decisions, including firms' labor, investment, and inven-

tory decisions as well as consumer purchases of durable goods. Other studies have shown that accounting for lumpy individual behavior can greatly improve our understanding of macroeconomic time series.

Theoretical developments have evolved in three directions. The first has been to embed heterogeneity and lumpiness into quantifiable general equilibrium models. While these purely neoclassical models are not yet developed to the point at which they can be applied to the U.S. economy with much confidence, all signs point to this being the case in the near future. The other two directions, which currently define the core of this group, emphasize the fact that fixed costs and irreversibilities interact in very powerful ways with informational and contractual frictions. These interactions amplify the effects of shocks and exacerbate the nonlinearities that accompany fixed costs. On the one hand, inaction is a natural information trap; the inaction on the part of some naturally makes others cautious. Information may be bottled up until the lumpy actions of a few trigger a process of information revelation that in turn triggers the lumpy actions of others. On the other hand, irreversible investments are fertile ground for contractual problems such as hold ups and rent bargaining. Underinvestment, unemployment, and inefficient scrapping of capital arise naturally in these settings, and become most severe during recessions.

Forecasting and Empirical Methods in Macroeconomics and Finance:

Francis X. Diebold and Kenneth D. West, Directors

This group focuses on the development and assessment of econometric methods for use in empirical macroeconomics and finance, plac-

ing special emphasis on problems of prediction. It meets jointly with a group on forecasting, led by Diebold under the Committee on Econometrics and Mathematical Economics umbrella with support from the National Science Foundation. These groups meet jointly because they are exceptionally complementary. Finance was added only recently to the group's name, reflecting the explosive growth of interest in empirical financial economics and econometrics (in both the profession and the group), and the crucial links between finance and empirical macroeconomics.

Group meetings have produced several associated symposiums in leading journals, including *Econometric Forecasting* and *Forecasting and Empirical Methods in Macroeconomics and Finance*.³⁷ Additional symposiums are forthcoming in the *Review of Economics and Statistics* and in progress in *Journal of Econometrics*.³⁸

Within the broad outlines of the focus just sketched, centered on predictive econometric issues in macroeconomic and financial contexts, the group's interests range widely. Recent topics include volatility modeling, vector autoregressions, dynamic factor structure, regime switching, Bayesian methods, rational expectations modeling, unit roots and persistence, instrumental variables estimation, long memory, aggregation, and continuous-time methods. Here we describe just a few of the group's contributions, in the areas of forecasting and forecast evaluation, all of which appear in the recent *International Economic Review* symposium.

Forecasting is central to economics. It is important in its own right—as when predicting next quarter's GDP, or interest rate term structure, for example—and therefore improved methods of constructing forecasts are of great interest. Hence, the group has devoted substantial attention to providing tools to facilitate or improve the construction of eco-

nomic forecasts. Vector autoregressions, for example, have emerged as a great workhorse of applied forecasting, and the group has devoted substantial attention to that approach. For example, a paper by Christopher A. Sims and Tao Zha,³⁹ which shows how to construct Bayesian confidence intervals for forecasts from structural vector autoregressions with an informative prior distribution. The authors' methods are computationally feasible even in large models with "unruly" terms such as dummy variables, and they help with the crucial task of quantifying forecast uncertainty in large structural vector autoregressions with priors motivated by economic theory.

The group's interest in forecast construction also extends, for example, to the solution of dynamic rational expectations models, which are central to macroeconomic and financial economic theory. Many macroeconomic and financial models involve identities, which imply that the relevant vector difference equation is singular in a certain precise sense. Robert G. King and Mark W. Watson⁴⁰ characterize the existence of stable solutions to such systems using a canonical variables transformation, which separates dynamics associated with stable and unstable eigenvalues. The King-Watson results are effectively an extension of the popular Blanchard-Kahn canonical variable approach to the singular case, and they complement earlier extensions of other solution methods to the singular case, such as those based on undetermined coefficients and martingale methods.

Forecasting is also an important tool for model evaluation; out-of-sample forecast evaluation analysis is often the most effective way to detect in-sample overfitting in macroeconomics and finance, because of repeated use of a limited body of data, which leads to models that forecast poorly despite the superficial appear-

ance of good fit. Hence, this group focuses not only on forecast construction, but also on forecast evaluation. For example, Kenneth D. West and Michael W. McCracken⁴¹ propose simple regression tests for evaluating the accuracy of point forecasts. Possible measures of accuracy include the degree of unbiased assessment and the ability to encompass an alternative model. The methods are designed to be directly applicable to forecasts that rely on estimated regression parameters, which arise frequently in empirical macroeconomics and finance.

Much of the group's work on forecast evaluation is motivated by the time varying volatility that characterizes high-frequency financial data. For example, Diebold, Todd A. Gunther, and Anthony S. Tay⁴² propose that, although density forecasts (forecasts stated as complete densities rather than simply "best guesses" or confidence intervals) feature prominently in applications to financial risk management and elsewhere, appraisal of such forecasts has been hampered by lack of effective tools. Thus, they develop a framework for rigorously assessing the adequacy of density forecasts under minimal assumptions, and they illustrate their methods by applying them to a variety of density forecasts involving both simulated and actual U.S. equity returns.

Finally, Torben G. Andersen and Tim Bollerslev⁴³ reinterpret the findings of several recent studies that document small correlations between GARCH volatility forecasts and the realized squares of financial asset returns. They show that such small correlations are to be expected, and in particular, that they do not necessarily imply that GARCH volatility forecasts are in any sense poor. The problem, as they make clear, is not with GARCH and related models, but with the use of squared returns to proxy for realized volatility.

An important byproduct of the Andersen-Bollerslev study, driven by the theory of continuous-time diffusion processes, is the insight that superior measures of realized volatility can be constructed by averaging high-frequency intraperiod squared returns.

The Labor Market in Macroeconomics: Richard Rogerson and Randall Wright, Directors

The labor market plays a central role in the analysis of many key issues of macroeconomics and growth, including business cycles, unemployment, income distribution, and capital accumulation. As a result, this group has seen a fairly diverse set of papers during the course of its meetings. Three recent themes are discussed here.

On the broad subject of crime, Ayse Imrohorglu, Antonio Merlo, and Peter Rupert⁴⁴ develop a quantitative general equilibrium model to study the relationship between the crime rate and income distribution. Both income redistribution and police expenditures are determined endogenously via the political process. Crime is obviously a big issue in public policy circles, and there is great interest in identifying the causes for the recent decrease in crime rates throughout the United States. It is important to bring modern economic theory to bear on this issue, and as this paper indicates, one must be very careful about treating statistical relationships as causal in a model in which key policy variables are endogenous. Significantly, the authors find that increased redistribution can actually lead to higher crime. Although the direct effect goes in the other direction, there is an indirect, general equilibrium effect associated with the higher tax rates needed to finance higher levels of redistribution.

In considering the distribution of income per capita across countries, some authors have stressed the need for theories that can account for differences in total factor productivity. Prescott and Stephen Parente⁴⁵ show that when a group of workers has monopoly rights with regard to a technology, they can effectively prevent other groups from adopting superior technologies. In a quantitative assessment, the authors find that these effects can be quite substantial, and, in particular, orders of magnitude larger than the welfare costs of monopolies that have been generated in the past in studies that merely examined the effects of the pricing distortion while abstracting from the effects on technology adoption. Parente, Rogerson, and Wright⁴⁶ tackle another issue in accounting for the distribution of income per capita across countries—how to get larger effects from given differences in policy. The standard growth model implies differences that are far too small for reasonably sized "barriers" or policy differences. The authors show that a model extended to include home production can potentially account for much greater differences in output across countries for a given difference in policy. The mechanics of this derive from how agents allocate their time. If home or nonmarket production is not as capital intensive as market production, then policies that make capital more expensive will encourage agents to devote less time to market production. The authors show that the predictions of the model are consistent with several observations from developing countries as well as the labor market experiences of the Asian miracles.

A number of researchers have described search models of the labor market. Dale Mortensen⁴⁷ integrates two important theoretical structures used to study labor market dynamics. His earlier work with Pissarides has become the standard model for ana-

lyzing how idiosyncratic shocks affect labor market dynamics, while his work with Burdett has become the standard model for analyzing the endogenous determination of wage distributions. This combined structure has rich potential for future empirical and theoretical work as well as for policy analysis.

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Research Summaries

Monetary Policy Regimes, the Gold Standard, and the Great Depression

Michael D. Bordo*

My research over the past decade has largely focused on three related themes: monetary policy regimes in history; the gold standard as a rule; and the Great Depression. In this article, I discuss all three.

Monetary Policy Regimes in History

Historically, two types of monetary regimes have prevailed: one based on the convertibility of domestic currency into specie (gold and or silver),

prevalent until 1971, and the other based on fiat, which has since become the norm. My research, however, focuses on the domestic and international aspects of four monetary regimes: the classical gold standard (1880–1914); the interwar gold exchange standard (1925–39); the Bretton Woods international monetary system (1944–71); and the present system of managed float.¹

In the last quarter of the nineteenth century, most countries abandoned silver and paper standards in favor of gold. Under the convertibility principle, governments attached the highest priority to maintaining the fixed price of their currency in terms of specie.

During the twentieth century, though, the convertibility principle's importance declined steadily, clashing with the increasingly accepted

goal of domestic macro stability.² The techniques and doctrine of monetary policies developed under the gold standard proved insufficient for achieving economic stability during the interwar period, setting the stage for the Great Depression. Although the adjustable-peg exchange-rate system that arose from the Bretton Woods talks maintained an indirect link with gold, the convertibility principle was abandoned after World War II and replaced worldwide by the goal of full employment. That goal, combined with the legacy from the interwar period of inadequate policy tools and theory, set the stage for the managed float and the Great Inflation of the 1970s. That experience convinced monetary authorities in many countries to re-emphasize the goal of low inflation and to commit themselves to convertibility-rule-like behavior.

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