Editors' Introduction and Summary

THIS IS THE NINTH ISSUE OF *Brookings Papers on Economic Activity*. This publication appears three times a year, and contains the articles, reports, and highlights of the discussion from conferences of the Brookings Panel on Economic Activity. Financed by grants from the Alfred P. Sloan Foundation and the Alex C. Walker Foundation, the panel was formed to promote professional research and analysis of key developments in U.S. economic activity. Prosperity and price stability are its basic subjects.

The expertise of the panel is concentrated on the "live" issues of economic performance that confront the maker of public policy and the executive in the private sector. Particular attention is devoted to recent and current economic developments that are directly relevant to the contemporary scene or especially challenging because they stretch our understanding of economic theory or previous empirical findings. Such issues are typically quantitative in character, and the research findings are often of a statistical nature. Nonetheless, in all the articles and reports, the reasoning and the conclusions are developed in a form both intelligible to the interested, informed nonspecialist and useful to the macroeconomic expert. In short, the papers aim at several objectives—meticulous and incisive professional analysis, timeliness and relevance to current issues, and lucid presentation.

The five principal articles and two reports presented in this issue were prepared for the ninth conference of the Brookings panel, held in Washington on November 30–December 1, 1972. These papers generated spirited discussions at the conference. Many of the participants offered new insights

and helpful comments; many had reservations or criticisms about various aspects of the papers. Some of these comments are reflected in the summaries of discussion contained in this issue, some in the final versions of the papers themselves. But in all cases the papers are finally the product of the authors' thinking and do not imply any agreement by those attending the conference. Nor do the papers or any of the other materials in this issue necessarily represent the views of the staff members, officers, or trustees of the Brookings Institution.

Summary of This Issue

In the first article of this issue, William Nordhaus seeks to explain the slowdown in productivity growth that marked the late sixties and to project productivity for the rest of the decade of the seventies. He emphasizes that some slowdown in the growth of output per manhour (labor productivity) has been taking place ever since the immediate postwar years. During 1948–55, the annual growth rate of output per manhour for the entire U.S. economy (private and public) was 3.1 percent, unusually rapid by previous historical standards; for 1955–65, it slowed to a more typical 2.5 percent; and most recently, for 1965–71, it has been only 1.9 percent. The 1971 productivity level was depressed by the weakness of economic activity, but, even with a cyclical correction, Nordhaus estimates the 1965–71 trend rate as only 2.2 percent.

Nordhaus investigates the performance of overall productivity by dividing the economy into twelve major industrial components and analyzing the productivity record within them. He does not find evidence of any pervasive deceleration of productivity growth within individual industries. Rather, the record is mixed: Construction and the sector of finance, insurance, and real estate (FIRE) have experienced a marked recent slowdown; public utilities, communication, and mining display some evidence of slackening; but the service industry and transportation appear to have enjoyed a speedup in productivity growth during recent years. This finding that rates of productivity growth within industries have not generally slowed can be consistent with the slowing growth of aggregate productivity, since changes in the composition of output and employment among industries affect the aggregate performance. For example, a shift of employment from high-productivity to low-productivity sectors can retard the growth of overall productivity.

Nordhaus finds that in the early postwar years the shift of output away from the low-productivity sector of agriculture added about half of a percentage point to the economy-wide growth rate of productivity; another third of a point was added by a shift of output toward FIRE, which has extremely high productivity since its real estate portion uses large amounts of capital in relation to labor.

These two important bonuses from sectoral shifts have waned substantially in recent years. The exodus from agriculture added only 0.15 percentage point to the growth rate of economy-wide productivity during 1965–71, while the FIRE sector expanded merely in pace with overall real output. Meanwhile, an increased output share of the government sector—with relatively low and stagnant productivity as conventionally measured—put a drag on the growth rate of overall productivity of about one-fifth of a percentage point in 1965–71. Finally, shifts into the private service sector have begun to exert a slight—although only a slight—drag on aggregate productivity performance.

Nordhaus considers several other possible influences on productivity but finds in them no convincing reason to amend his results. Among these are changes in the demographic composition of employment (which George Perry has identified as a contributing element in the recent productivity slowdown), changes in the amount of capital input per unit of output, and special cyclical effects associated with the longevity of the 1961–69 expansion.

Looking ahead, Nordhaus expects recent trends in the composition of employment and output to continue. Agriculture is now such a small sector of the economy that its further contraction cannot contribute much of a boost to aggregate productivity, while government and private services will continue to exert a drag. Nordhaus believes these forces will hold the growth rate of overall productivity for the seventies considerably below the average of the postwar period and, indeed (apart from the cyclical rebound), even below the average of 1965–71. His estimate of the trend growth rate of productivity for the entire economy for 1972–80 is approximately 2.1 percent. Allowing for growth in the labor force, he calculates that such a performance would imply a growth rate of potential gross national product (GNP) of approximately 3½ percent in contrast with the 4.3 percent growth of potential estimated by Perry and, independently, used currently in estimates of potential output published by the government series. If Nordhaus is right, the level of real GNP at full employment in 1980 will be roughly $100 billion below these other estimates.

Nordhaus qualifies his results at length and additional qualifications were stressed by some participants in the conference. The sorting out of temporary cyclical influences from enduring trends is necessarily imprecise; the data on demographic composition of employment in individual industries are inadequate; and the problems of measuring output and labor input are especially severe in FIRE, government, and services, three sectors of importance in Nordhaus' assessment of a continuing productivity slowdown.

In the second article of this issue, M. Ishaq Nadiri presents a model of business investment spending that differs substantially from other models of the investment process that have been developed in recent years. Analysis of investment typically specifies that the capital stock that firms desire to have is determined by the rate at which they expect to produce and the relative cost of capital and labor. The investment that will take place in a single year is then determined partly by the difference between this desired level of the capital stock and the actual level, and partly by various incentives and costs that influence the rate at which this difference is narrowed. Nadiri varies the typical formulation in two important ways. First, he takes a more empiricist view of the ways that the expected level of output, wage rates, and the cost of capital may influence the amount of capital that firms will want to hold, rather than relying on a theoretical model that constrains the relative influence of these factors. Second, he allows variations in the utilization of existing capital, in the length of the workweek and in the level of employment to influence the amount of investment that takes place within a year once the desired amount of capital is known. Thus, his formulation allows for extensive substitution between capital and labor even after buildings and machines have been installed. And it allows for a very wide degree of substitution between capital and labor in formulating plans for adding to capacity in order to produce future output.

Since changes in tax policy and in monetary policy designed to influence business investment spending have their direct impact by changing the cost of capital, Nadiri's alternative formulation opens the possibility of getting estimates of the effectiveness of such policies drastically different from those derived from previous analysis. In fact, his estimates of impacts on investment are substantially different from those of most previous models, which attach less weight to expectations of future output growth and greater weight to the cost of capital in relation to wage rates. As a result, he believes that tax changes for business such as the investment credit or

depreciation liberalization, and changes in interest rates engendered by monetary policy, have a smaller influence on investment than previous investigators have believed. On the other hand, Nadiri finds that when the current rate of production changes (perhaps as a result of changes in government spending or in taxes on consumers), the response of investment spending is more rapid than that estimated in most previous studies.

In abandoning some of the restrictive assumptions of earlier studies about the nature of the investment process, Nadiri knowingly accepts some additional statistical difficulties. Some discussants of Nadiri's paper pointed to the wide range of uncertainty about the empirical estimates presented; others found some of the implications about substitution of existing capital for labor implausible. Despite the tentative nature of some of the findings, however, Nadiri's results raise some important questions about other formulations of the investment process and invite further research into the important question of how much impact various policy measures have on investment spending.

Nadiri's forecast of business investment spending for the near future points to substantial increases in investment over the next few years starting in 1973 if business output grows at a constant annual rate of 6 percent. He finds that a change in the relative price of capital and labor would not alter this projection substantially. But the large response of investment to output in his model implies that a noticeable deviation from the 6 percent output growth path assumed in his central projection would have a marked effect on the projections of investment in the future.

In the third article, Stephen Goldfeld and Alan Blinder deal with an important problem of statistical methodology in estimating the potency of fiscal and monetary tools. In understanding as well as designing stabilization policy, it is extremely important to have reasonably reliable estimates of the policy multipliers—the impact on GNP resulting from changes in government expenditures, tax rates, the money supply, the discount rate, or any other stabilization instrument.

The problems of estimating these multipliers are many and severe; the paper addresses itself to the particular set of problems that arise because of the "endogenous" nature of stabilization policy. The econometrician performs a statistical analysis of historical movements in GNP and in the fiscal-monetary instruments in order to determine how much fiscal and monetary actions have influenced the course of GNP. But the historical

record is also affected by the degree to which the course of GNP influenced the stabilization authorities. In the attempts to predict (or at least to respond promptly to) emerging shifts in economic activity, the stimulative or restrictive actions the authorities take may be in part a reaction to, as well as an influence on, the strength of the economy. Goldfeld and Blinder identify the statistical pitfalls from ignoring this reverse influence of the strength of the economy on stabilization action through the "reaction functions" of the policy makers.

The authors find that the estimated policy multipliers are likely to be distorted most seriously when they are derived by the "reduced-form" approach. Reduced-form estimation is an appealing short-cut that, in this context, attempts to relate GNP to fiscal and monetary variables directly without specifying the mechanism by which the instruments influence particular components of expenditures. The method has received widespread attention as a result of studies performed at the Federal Reserve Bank of St. Louis that yield strikingly negative findings on the potency of fiscal policy.

The authors show that the potency of a stabilization tool is likely to be most seriously underestimated by the reduced-form approach if that tool is being used effectively. The better the forecasting record of the stabilization authority, the more rapidly its actions are implemented, and the more accurately it appraises its own effects, the weaker will be the estimated policy multiplier yielded by the reduced-form approach. In the extreme case, if either fiscal or monetary policy did a perfect job of ironing out fluctuations in GNP, no statistical relationship between movements in GNP and shifts in the policy instrument would be observed and consequently the policy multiplier would be estimated at zero by the reduced-form approach. Furthermore, if fiscal and monetary policies are not perfectly coordinated, the severity of the misestimates of policy multipliers also depends on the extent to which each authority takes properly into account the behavior of the other. For example, if the central bank correctly appraises the actions and effects of fiscal policy, while the fiscal authority ignores monetary policy, the reduced-form approach would tend to underestimate the fiscal multiplier.

When, however, multipliers are estimated from a structural model of economic relationships rather than from a reduced-form model, they may be quite accurate for some purposes even if the reaction functions of the fiscal and monetary authorities are not included in the model. If the investigator wants an estimate of the impact on GNP from a given change in fiscal and monetary instruments, quite apart from whether some of those changes

are endogenous responses to fluctuations in economic activity, then structural estimates from such a model would give him reasonable answers. But these answers would not predict the ultimate effects of a particular shift in policy if policy makers continue to respond endogenously to economic activity. For the same reason, these answers would not reveal accurately how fiscal or monetary policy reacted to shifts in economic activity or to other developments in the past. To answer those questions, the investigator must determine the reaction functions of the fiscal authorities and the central bank.

Only a few economists have seriously attempted to determine the reaction functions of the policy-making authorities. The paper reviews the small literature in that area and reports that some limited successes have been scored in finding statistical relations underlying stabilization policy decisions. As a result, the authors conclude that further research can enlarge understanding of the behavior and reactions of the fiscal-monetary authorities.

In the fourth article, Stephen Magee presents a quantitative assessment of the loss of U.S. welfare arising from restrictions on international trade. His numerical estimates are based on a careful analysis of the way tariffs and quotas on imports and exports affect prices, production, and consumption. When a U.S. tariff is levied on imports of any commodity, most of the resulting burden of higher prices on the American consumer represents a redistribution of income to other Americans rather than a net reduction in national welfare: The tariff revenue collected by the U.S. government shifts funds to the public purse; the higher prices paid for domestically produced output transfer income to U.S. producers. But some portion of the added consumer cost is a deadweight loss with no offsetting benefit to other Americans, and thus clearly represents a loss of U.S. welfare.

The deadweight loss arises because the tariff results in inefficient U.S. production at a real cost that exceeds the world price of the commodity, and because it discourages consumption of the protected commodity, inducing consumers to substitute less satisfactory alternative products. In addition to these two types of deadweight losses—uneconomic high-cost production and inefficient substitution in consumption—U.S. quota restrictions impose a special added cost to the extent that some part of the potential tariff revenue forgone by the U.S. government is captured by foreign exporters.

The United States also suffers welfare losses when foreign countries im-

pose tariffs or quotas on U.S. exports: Tax payments are extracted from U.S. producers and some U.S. production that would otherwise be efficient and economical is deterred. For any set of tariffs and quotas, the size of deadweight losses (and of income transfers) depends critically on the elasticities of supply and demand—the extent to which producers and consumers alter the quantities they sell and buy in response to price changes. The most difficult part of Magee's task is to estimate the relevant elasticities for various types of products. He has to rely on bits and scraps of evidence and on heroic assumptions. His dollar estimates must be viewed as gauges of orders of magnitude, rather than as pinpointed amounts.

Magee also estimates the dislocation costs of shifting resources out of import-competing industries were tariffs and quotas to be eliminated. In the short run, Magee estimates that a fairly significant amount of unemployment and loss of payrolls could arise in some import-competing industries, but that effect is entirely transitional. Following generally accepted principles of economic analysis, he argues that trade restrictions do not increase total employment over the long run.

Magee finds that the benefits of free trade start out small and build up over time, while the dislocation costs are initially substantial and then disappear. Because of this changing pattern over time, he summarizes the potential gain from free trade (or the net cost of restrictions) as a discounted present value of the stream of net benefits (or costs) over future years. Using an 8 percent rate of interest, he calculates that existing U.S. restrictions on imports impose a welfare loss of more than $120 billion—measured by the removal of deadweight losses less the dislocation costs. Put another way, with the establishment of free trade for imports, the nation would in effect gain an investment worth $120 billion that yielded an 8 percent rate of interest in perpetuity. The quantitative estimates underline the especially high cost of quota restrictions. Nearly $90 billion of the welfare loss comes from quotas on oil, steel, textiles, sugar, and a few other commodities, while only about $33 billion stems from tariffs.

On the export side, Magee estimates that foreign restrictions on U.S. goods impose a welfare loss on the United States equivalent to losing an investment worth $137 billion at an 8 percent interest rate. Remarkably, $125 billion is associated with foreign restrictions on U.S. agricultural products; these restrictions are extremely costly because our agricultural output could be expanded significantly with very small additional amounts of labor and capital.

Finally, Magee studies the provisions of the Burke-Hartke bill as an illustration of the potential costs of increased U.S. restrictions on imports. Under the provisions of that bill, imports of competitive products would be rolled back initially to their average levels of 1965–69 and would subsequently be precluded from increasing their share of the U.S. market. In combination, these provisions are estimated by Magee to impose a cost of $7 billion a year initially, rising to $10 billion a year by the end of a decade. Beyond 15 years, the cost rises so rapidly that Magee cannot convert the total stream into a present discounted value with an 8 percent interest rate. Even ignoring that portion, Magee finds that the added welfare cost of these Burke-Hartke provisions is equivalent to sacrificing an investment of roughly $130 billion.

In the fifth major article of this volume, Robert Hall analyzes the role of turnover in the labor force and, particularly, its interrelationship with unemployment. Using longitudinal data that track the experience of individuals over time and cross-section data comparing labor market conditions in different cities, Hall addresses a variety of issues and offers several new insights into the workings of labor markets. Hall identifies turnover as a major source of unemployment for many groups in society, and identifies layoffs as a major source of turnover, especially of turnover that results in unemployment.

Hall isolates the importance of several factors determining the amount of turnover. Those who have taken their current jobs recently are far more likely to experience a separation from their jobs than those with longer tenure. Both the frequency of quits and the frequency of layoffs are higher for newly hired workers, suggesting that employer and employee are trying each other out in the early months of a new job. This tendency is observed for mature male workers with new jobs and is not simply a reflection of the relative youth of workers with short job tenures. Hall does find, however, that older workers are far more likely to find stable employment than are young workers: 22-year-old men are nearly half again as liable as 30-year-old men to become unemployed in a given week.

Hall also identifies some of the important differences in the experiences of black and white workers in the labor market. Even after adjusting for differences in characteristics such as skill, age, and marital status, which are known to be associated with differences in average unemployment experience, Hall finds that black men are 73 percent more likely to become unem-

ployed than whites, and, if unemployed, are 25 percent less likely to leave unemployment each week. In analyzing the experiences of mature men, Hall finds no evidence of greater voluntary job instability among blacks than among whites; he has no evidence on voluntary versus involuntary job termination for other groups.

Hall continues his analysis of the role of turnover in comparing the labor market experiences of different cities. He notes that persistent differences exist in unemployment rates and wages between geographic labor markets. Rejecting the view that these differences represent transitory disequilibria in the various markets, he develops a model that rests on the tradeoffs between wage rates and unemployment that confront both employers and workers. Workers are willing to accept a lower wage in order to work in a city with low unemployment since they can then expect to be employed a larger fraction of the year and thus make up for the income disadvantage. To employers, a high unemployment rate discourages quits, reduces personnel costs, and eases recruitment, so they are willing to pay higher wages in a higher-unemployment environment. Since both workers and employers are willing to operate with either combination—low unemployment and low wages or high unemployment and high wages—small differences in other characteristics of the labor market between cities can lead to substantial differences in equilibrium wages and unemployment rates. On this view, the unemployed benefit employers by being available for work when needed, and thus raise the productivity of employed workers. Extending this reasoning to the aggregate economy, Hall argues that unemployment compensation should be paid because unemployment has this social benefit, quite apart from its justification as a form of income maintenance. In contrast to the view that unemployment compensation, whatever its merits, poses a risk of social inefficiency because it may reduce the eagerness of some workers to take jobs, Hall argues that some amount of unemployment compensation is necessary in order to achieve social efficiency: Productivity would be lower throughout the economy if unemployed workers did not have sufficient incentives to wait for a satisfactory job opening.

Hall's findings on differences in turnover emphasize that the labor market is highly compartmentalized, with unemployment doubtless too high for some groups while, at the same time, from the point of view of social efficiency, it may be too low for others in periods of prosperity. Hence Hall concludes that programs for putting disadvantaged workers into good jobs may have social benefits that go beyond the private benefits to the individuals involved.

In the first of two short reports in this issue, F. Thomas Juster and Paul Wachtel examine the recent and prospective behavior of consumer saving rates. Extending the analysis of their article in *Brookings Papers on Economic Activity* (1:1972), they provide estimates of the effect on saving rates of changes in taxes and transfer payments, in unemployment rates, and in actual and expected inflation rates. Inflation that is fully anticipated by consumers, as reflected in responses to household surveys, has a negligible effect on saving. However, unanticipated inflation increases saving rates. Moreover, substantial changes in the rate of inflation are rarely fully anticipated, according to their data. Juster and Wachtel find that *high* unemployment reduces saving rates as people try to maintain their living standards; but *rising* unemployment increases saving rates by causing uncertainty about future job prospects.

Using forecasting equations embodying these results, Juster and Wachtel predict a modest rise in the saving rate during 1973, assuming that the economy expands briskly and that inflation levels off at a fully anticipated rate of 3.0 percent. A substantially faster—and partly unanticipated—inflation rate would increase saving rates further.

In the final report of this issue, George Perry examines the erratic behavior of the official series on real spendable weekly earnings that is published monthly by the Bureau of Labor Statistics. For example, during the last years of the 1960s and the first part of the 1970s, real spendable weekly earnings did not increase at all as measured by this series; in the four quarters after the freeze was instituted, they rose at a spectacular 4½ percent annual rate. Perry isolates several components of this series—including average weekly hours, the demographic mix of employment, the price index, and average tax rates—and shows how variations in these contributed to variations in the earnings series. He argues that the earnings series is conceptually inadequate and often misleading.

By way of illustrating how misleading the earnings series has been for those who interpret it as an indicator of how well wages keep pace with inflation, Perry derives his own real wage index by adjusting the earnings series. He also points out that the Bureau of Labor Statistics itself has been publishing a real wage index during the past year, based on adjustments somewhat different from those he makes. By either measure, wages throughout recent years kept pace with inflation better than the earnings series suggested. And in recent quarters, real wages did rise exceptionally fast.

Perry notes that, for many purposes, other measures of how workers are

faring are as useful as real hourly wages. But he does not include the series on real weekly spendable earnings among them. The problems inherent in that popularly used series are so great that, without adjustment, it is of no practical use.

Participants in the Conference

Participating in the conference and discussing these papers were the members of the Brookings panel, the senior advisers to the panel, and a few guests with special expertise in the material covered. The members of the panel for 1972 are:

Barry Bosworth *Brookings Institution*
William H. Branson *Princeton University*
Stephen M. Goldfeld *Princeton University*
Robert E. Hall *Massachusetts Institute of Technology*
F. Thomas Juster *National Bureau of Economic Research, Inc.*
Stephen P. Magee *University of Chicago*
M. Ishaq Nadiri *New York University*
William D. Nordhaus *Yale University*
Arthur M. Okun *Brookings Institution*
George L. Perry *Brookings Institution*
William Poole *Federal Reserve Board*
Nancy H. Teeters *Brookings Institution*

Senior advisers attending the ninth conference were:

David I. Fand *Wayne State University*
William J. Fellner *Yale University* and *American Enterprise Institute*
R. A. Gordon *University of California, Berkeley*
Robert J. Gordon *University of Chicago*
Walter W. Heller *University of Minnesota*
Charles C. Holt *Urban Institute*
Saul H. Hymans *University of Michigan*
John H. Kareken *University of Minnesota*
Lawrence R. Klein *University of Pennsylvania*
Lawrence B. Krause *Brookings Institution*
Franco Modigliani *Massachusetts Institute of Technology*
Robert M. Solow *Massachusetts Institute of Technology*

Those guests whose writings or comments are incorporated into this volume were:

C. Fred Bergsten *Brookings Institution*
Alan S. Blinder *Princeton University*
Joseph A. Pechman *Brookings Institution*
Alfred Reifman *Library of Congress*
Charles L. Schultze *Brookings Institution*
Beatrice N. Vaccara *Department of Commerce*
Paul Wachtel *National Bureau of Economic Research* and *New York University*
Paul Wonnacott *University of Maryland*

Several others at Brookings contributed to the quality and style of this volume. Mendelle Berenson edited the manuscript; Evelyn Fisher reviewed the accuracy of the facts and figures; Nancy C. Hwang, Robert E. Litan, and Herbert F. Lowrey, Jr., assisted in the research; and Mary Green and Terletto Wright prepared the manuscript.