Editors' Summary

THIS ISSUE OF BROOKINGS PAPERS contains articles, reports, and summaries of discussions presented at the twenty-eighth conference of the Brookings Panel on Economic Activity, which was held in Washington, D.C. on September 28 and 29, 1979. Three articles address economic puzzles of current importance. The first identifies the contrasting behavior of real wages among major industrial countries during the 1970s and examines its causes and consequences. The second explores the reasons why residential construction remained strong between mid-1978 and mid-1979. The third investigates the pronounced slowdown in U.S. productivity. Two shorter reports are also addressed to issues concerning productivity, while a final report presents facts and figures on the 1979 petroleum shortage.

In the first article of this issue, Jeffrey D. Sachs emphasizes the role of wages and especially of real wages (wages in relation to consumer prices) in the macroeconomic performance and policy of seven major industrial economies. He begins by documenting that economy-wide wages in most of these industrial countries accelerated significantly in 1969–73 from their pace in 1962–69. His finding extends previous research by George L. Perry in *BPEA, 2:1975* and by Robert J. Gordon in *BPEA, 2:1977* that analyzed the wage explosions in the manufacturing sectors of Europe and Japan. Consistent with Perry's analysis, Sachs finds that the wage explosions in Europe cannot be explained by the usual statistical determinants of wages, such as the tightness of labor markets and the rate of consumer price inflation. Rather, the acceleration of wages was associated with an increase in union power and militancy following a period in which profits had been unusually high and wages had been con-

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strained by incomes policies. Although wages also accelerated in Japan, Canada, and the United States during that period, those phenomena can be explained by the more usual statistical model or, as Sachs puts it, "in more prosaic economic terms."

The acceleration of nominal wages in Europe and Japan during 1969–73 clearly swelled real wages and labor's share of the national income, rather than merely pushing prices up faster. Sachs interprets that development in the framework of a model in which international competition prevents the sellers of tradable goods (for the countries he includes, mainly manufactures) from passing increases in wage costs fully into prices. The resulting reduction in profitability lowers the output supplied by manufacturing firms and weakens incentives to invest in plant and equipment. Consistent with the implications of that model, manufacturing output in the major industrial countries grew less rapidly in 1969–73 than it had in 1962–69. Meanwhile, partly through increased government expenditure, resources were shifted into sectors producing nontradables, and hence the growth of overall output did not display a general, marked slowdown.

As a consequence of these developments, real wages and labor's share of income were unusually high in most of the major countries when the food and oil shocks of 1973–74 impinged on the world economy. Because of these shocks, nearly all large countries experienced less favorable movements in their "terms of trade" (prices of exports relative to prices of imports) during 1973–75 than they had during 1969–73. Moreover, all the large countries experienced a slowdown in productivity growth, apparently reflecting a worsened fundamental trend as well as the typical adverse effect from recession. In view of both the adverse shift in the terms of trade and the slowdown in productivity, a slowdown of real wages was needed to relieve cost pressures. The full "warranted" deceleration, as Sachs defines it, took place in the United States, where no growth occurred in real wages between 1973 and 1975. But in all the other nations, a persistent growth of real wages exacerbated the squeeze on profits and on the supply of manufactured output.

According to Sachs, the special behavior of real wages in the United States reflects a general sluggishness of the growth of nominal wages, which makes them relatively insensitive both to food and fuel shocks and to a tight labor market. Sachs attributes these characteristics of wage behavior to overlapping long-term contracts in the union sector

and heavy reliance on wage emulation. These characteristics are unique to the United States, according to his statistical tests. Because of them, the United States did not have a structural problem of excessively high real wages in 1975, and it was able to pursue expansionary monetary and fiscal policies without creating such a problem. As a result, the 1975–78 recovery in output, employment, capital formation, and profitability was stronger in the United States than elsewhere.

In international dialogues, the United States repeatedly urged the European countries and Japan to adopt a similar expansionary strategy. Sachs argues that, quite apart from differences among the various countries in attitudes toward inflation, the European nations and Japan may not have had a realistic option of promoting recovery through demand expansion. In those nations, the excessive level of real wages and their resistance to any reduction through higher prices created structural barriers to growth. Surmounting such barriers required austerity to slow real wages rather than expansion. In Sachs' view, it was sensible for these countries to apply a combination of monetary restraint and other measures to moderate wages, including incomes policies and reductions in indirect taxes.

A major theme of the paper is that the appropriate role of monetary policy in any country depends on the nature of its wage-setting institutions. Where nominal wages are sluggish, as in the United States, monetary policy should be concerned with the level of output, and can effectively promote expansion. On the other hand, in Japan and some European countries, which have nationwide annual wage rounds focused on a target for real wages, "monetary contraction is a powerful tool for controlling inflation" with little adverse effect on output. Sachs concludes that, for economies with these characteristics, a structural supply-side analysis of excessive real wages is required as "a modification of the Keynesian, demand-side analysis of the sluggish growth in the 1970s."

Against the background of rapidly rising interest rates on mortgages, U.S. housing activity remained surprisingly strong during the second half of 1978 and the first half of 1979. In the second paper of this issue, Dwight M. Jaffee and Kenneth T. Rosen examine the question of why housing did not collapse during this recent interval, as it had in previous periods of soaring interest rates. They conclude that new "money-market certificates," which were first available in June 1978,

were "the principal factor responsible for the strong showing by housing."

The money-market certificates resulted from a modification of government regulations that allowed savings and loan associations, mutual savings banks, and commercial banks to issue deposit certificates with an interest rate linked to the rate on six-month Treasury bills. The new certificates were established with a maturity of six months and a minimum denomination of $10,000.

To assess the effect of this instrument on home building, Jaffee and Rosen construct a small statistical model of the housing, mortgage, and deposit sectors of the economy. That model is fitted over a sample period ending in the middle of 1978 in order to capture the historical relationships prevailing before the introduction of the money-market certificate. In the model, both single-family and multifamily housing starts display a strong statistical dependence on the availability of mortgage credit. The authors measure mortgage availability by the net flow of deposits into thrift institutions (savings and loan associations and mutual savings banks), which are the main suppliers of funds for residential mortgages.

In previous business cycles, that net inflow of deposits fell dramatically whenever interest rates on government and private securities rose strongly, and savers were increasingly attracted to those securities rather than to thrift accounts that had a ceiling on the interest rate they could pay. The model that tracks experience before the creation of money-market certificates would have predicted a reduction in net deposit flows to a mere trickle late in 1978 and early in 1979, as interest rates on securities rose. In fact, the deposit flows into thrift institutions remained high during that period. And the key reason was the money-market certificate, which offered savers an attractive interest rate.

Specifically, Jaffee and Rosen estimate that the total volume of deposits in thrift institutions as of mid-1979 was higher by $38 billion as a result of the creation of the new instrument. Compared with the outstanding total of money-market certificates at that point of $110 billion, that estimate implies that two-thirds of the funds placed in the certificates were attracted away from passbook deposits and older types of certificates in the thrift institutions. But the remaining one-third that represented "new" funds made a major contribution to the supply of mortgage loans. These added inflows had little effect on the interest rate on mortgages, according

to the findings of the paper. That rate was held down by the increased supply of mortgage funds, but it was raised by a nearly offsetting amount as a result of the "markup effect" whereby thrift institutions increased the interest rates they charged on mortgages to reflect the higher costs of their funds. Thus the new certificate supported housing activity by maintaining the availability of mortgages rather than by lowering their costs.

The authors estimate that, through this process of enhancing availability, money-market certificates generated an additional 291,000 housing starts over the period from mid-1978 to mid-1979, with a somewhat larger increment in multifamily than in single-family units. It follows that, in the absence of the new instrument, residential construction activity in mid-1979 would have been lower by about one-sixth, plummeting much as it had in previous cycles. In that event, overall economic activity would have been much weaker—for better or for worse, depending on how one weighs the competing social concerns about inflation and recession.

Jaffee and Rosen do not attempt to forecast residential construction into 1980. In fact, they caution the reader that the effectiveness of money-market certificates in bolstering housing activity during recent quarters cannot be safely extrapolated into the future; interest rates have risen substantially further, and new developments may weaken the ability or willingness of the thrift institutions to continue marketing the new certificates.

In addition to their study of money-market certificates, Jaffee and Rosen explore the impact of the federal agencies that supply credit to the mortgage market, either by making purchases in the secondary market for mortgages or by advancing loans to thrift institutions. Using 1977 as a benchmark period in which the operation of these agencies was relatively "normal," the authors conclude that the additional supportive actions of the credit agencies between mid-1978 and mid-1979 added 23,000 single-family housing starts, representing an effect that is noticeable but minor in comparison to that of money-market certificates.

In attributing the recent strength of home building largely to the new certificates, the authors explicitly reject an alternative view that rapid inflation has greatly stimulated the demand for home ownership and made it resistant to high interest rates on mortgages. They point out that home ownership has displayed a steadily rising trend over the past two decades, and has not accelerated recently. They perform several statistical tests in which the inflation rate of house prices fails to display a significant stimu-

lative influence on the demand for owner-occupied units. In their view, home ownership is indeed attractive for investment purposes, but may not be much more attractive now than it was in earlier periods. They also suggest that any inflation-induced housing demand may exert more impact on the prices of existing homes than on the number of new units built. The conclusion that single-family housing starts have not been strongly stimulated by inflation-hedging (or speculation) was challenged by several Brookings panel participants and generated a spirited discussion.

The behavior of U.S. labor productivity has been disappointing in recent years. In the nonfarm business economy, productivity growth averaged just over 1 percent a year between 1973 and 1978, far below its growth rate in earlier postwar years. In the third paper of this issue, J. R. Norsworthy, Michael J. Harper, and Kent Kunze provide a comprehensive analysis of productivity growth that is aimed at identifying the factors behind this slowdown.

Labor productivity is defined as the ratio of output to labor input, and is measured most simply as output per hour worked. In principle, the growth of labor productivity comes from three types of developments. One is technical advances, improvements in the way production is organized, and any other innovations that permit more output to be produced with a given bundle of inputs. The second type is increases in (or improved allocation of) the inputs of other factors—most importantly, capital—that are combined with labor in the production process. And the third is increased skills of labor or improved composition of employment among types of labor or industries.

The authors see no way to measure directly the technical and organizational improvements in the first category. Their research strategy seeks to determine the extent to which the other two categories—capital inputs and labor effects—can account for the productivity slowdown.

Building on earlier studies, Norsworthy, Harper, and Kunze divide the postwar years into three subperiods: 1948–65, 1965–73, and 1973–78, beginning and ending in prosperity years to avoid cyclical distortions. Across these periods, they find a distinct and intensifying slowdown of productivity. In the private nonfarm business sector the average annual growth of productivity slowed successively from 2.8 percent to 2.0 percent to 1.1 percent. In manufacturing the productivity slowdown is also

apparent, although less dramatic, with annual productivity growth averaging 3.1 percent, 2.5 percent, and 1.7 percent, respectively.

The authors conclude that the two successive slowdowns in productivity came from different sources. For the first period of slowdown, 1965–73, their analysis of the net contribution from capital and from the composition of employment fails to account for any significant portion of the slowdown. They do identify a modest adverse effect stemming from labor composition that is associated primarily with the particularly rapid increase in the proportion of young workers. On the other hand, they find that capital formation was strong enough during 1965–73 to generate a sharply rising capital-labor ratio that should have helped to stimulate productivity growth both in total private nonfarm business and in its manufacturing sector. They conclude: "The 1965–73 slowdown is largely unexplained by the factors we have considered."

They reach a very different verdict in their analysis of the second period: "The 1973–78 slowdown is dominated by the effects of reduced capital formation." For private nonfarm business, the reduced contribution to productivity growth from capital, which results mainly from slower growth of the capital-labor ratio, accounts for 0.7 percentage point of the observed 0.9 point slowdown in productivity growth. They also find an adverse effect in labor composition arising from a shift of jobs toward industries with relatively low productivity. Thus, for the second period, the productivity slowdown in private nonfarm business is almost entirely explained by the factors considered by the authors. That is not the case within manufacturing, however. The reduced contribution of capital accounts for 0.4 percentage point of the observed slowdown of 0.8 point in that sector for 1973–78. But the effects of labor composition should have strengthened productivity growth, because the mix of jobs among manufacturing industries changed favorably and the trend of hours worked to hours paid improved.

Analyzing some potential reasons for the changing contribution of capital to labor productivity, the authors find that required investment in pollution abatement accounted for no more than 0.1 percentage point of the productivity slowdown in either period, in either the total private nonfarm business or the manufacturing sector. The authors use results from previous research showing that energy and capital were complementary inputs in manufacturing and estimate that higher energy prices were responsible for enough of the slowdown in the growth of the capital-labor

ratio to account for about 0.2 percentage point of the productivity slowdown in the 1973–78 period. They also suggest that the relative costs of labor and capital services may have provided a diminished incentive to substitute capital for labor in the 1973–78 period: labor compensation rose only 1 percentage point a year faster than capital costs during that interval, as compared to a difference of more than 4 percentage points a year in 1965–73.

The discussion of the paper by participants at the conference highlighted some of the conceptual and measurement problems in productivity analysis. Edward F. Denison described the results of his own research. Because he estimates that capital utilization was considerably lower in 1973 than in 1965, he attributes much of the productivity slowdown in private nonfarm business in 1965–73 to cyclical rather than trend forces. The unexplained slowdown in trend productivity is then small for 1965–73, but substantial for the 1973–78 period, just the reverse of the pattern described by Norsworthy, Harper, and Kunze.

Other issues in the analysis of the productivity slowdown are discussed in a report by Peter K. Clark. He points out that the estimated contribution of capital formation to labor productivity growth is sensitive to the way in which capital and labor inputs are defined and measured. For example, the measure of capital services can be based on the capital stock net of depreciation, as it is in the paper by Norsworthy, Harper, and Kunze; this assumes that the productive contribution of a capital good declines steadily as it ages. Alternatively, it can be based on the gross stock, which assumes that capital remains fully productive until it is retired. Clark also raises the question of whether an explicit allowance should be made for "embodiment" of technical change in capital—that is, for new techniques that are usable only with new plant and equipment. Furthermore, he notes that changes in the average workweek of employees may not be properly reflected in the measured capital-labor ratio. For example, if a decline in labor's workweek is accompanied by a corresponding decline in the hours that capital is in use, then measured capital per hour worked increases, even though employees have no more capital to use. In this case, capital per employee rather than per hour would be a more appropriate measure for productivity analysis. He highlights this issue because a marked shortening of the workweek was recorded in the late sixties.

Clark shows that the choice among concepts can make a great difference in assessing the importance of capital in the slowdown of labor productivity. At one extreme, when the capital-labor ratio is based on net capital stock per hour worked, the behavior of that ratio accounts for much of the deceleration in productivity between 1965–73 and 1973–78, as Norsworthy, Harper, and Kunze found. At the other extreme, only 0.15 percentage point of that productivity slowdown can be accounted for by the capital-labor ratio when that ratio is measured by gross capital services per full-time equivalent employee.

In another report on productivity, Robert J. Gordon demonstrates the persistent tendency of productivity to weaken in the late stages of business-cycle expansions. He finds this tendency exists in addition to productivity variations that are associated with operating at different utilization rates or with particularly rapid or slow growth in output. Although Gordon does not find an explanation for this "end-of-expansion" phenomenon, he conjectures that it may be showing up again in the productivity performance of recent quarters. Because this component of cyclical behavior reverses itself early in the upswing of the cycle, he suggests that some of the weakness in productivity in recent quarters may prove to be temporary.

In the final report of this issue, Philip K. Verleger, Jr., examines the U.S. oil supply situation during the first two quarters of 1979. In the first quarter, supplies of crude oil and output of refined products were both near normal, while inventories of crude oil and petroleum products remained relatively low. In the second quarter, despite the interruption of supplies from Iran, total supplies of crude oil available to refiners were actually higher than they had been a year earlier. Verleger pinpoints a large buildup in inventories of both crude oil and products during this quarter as a key source of the product shortage that emerged. He cites a range of actions by the U.S. Department of Energy that encouraged the inventory buildup. He also notes that, quite apart from these actions, the initially low levels of inventories and the clear prospect of rising oil prices created private incentives to expand those inventories.