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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

FALL 1979

Program Report

Economics of the Family

Robert T. Michael

The major objective of NBER research on economics of the family is a better understanding of the behavior of the family over the past thirty years. There are many well-publicized changes in family behavior including patterns of fertility, marriage, divorce, and married women's labor force participation. The baby boom of the 1950s has been followed by historically low birth rates. Women's age at first marriage, which had fallen throughout most of the century, has risen in recent years to its turn-of-the-century level. Divorce rates have doubled in the past fifteen years. Married women's labor force participation rates have tripled since 1950. These changes and the repercussions they have on living arrangements—the number of families headed by a female and the number of children living with only one parent, for example—represent something of a social revolution with important implications for businesses, governments, schools, and many other social institutions.

Despite these changes, there is considerable vitality and stability in the functioning of the family as an institution. A vast majority of men and women continue to marry, and remarriage rates have risen along with divorce rates. A major part of almost everyone's lifetime is still spent within a family, and many of the most important decisions concerning residential location, career choice, avocational activities, and child bearing and rearing take place within the family. Moreover, vast amounts of resources are allocated by decisions made within a family context.

Accordingly, our research addresses two questions: (1) What are the dimensions and causes of changes in family structure in the postwar era? and (2) What has contributed to the persistence and stability of the family as a social institution?

The research is directed by Gary S. Becker and Robert T. Michael and includes work by NBER Research Asso-

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This issue of the **Reporter** highlights the Bureau's program of research on economics of the family. Next Richard Freeman and David Wise summarize their work on the youth employment problem, and Anna Schwartz analyzes monetary trends of the last century in the United States and the United Kingdom. Following the quarterly Economic Outlook Survey are a section of biographical sketches, news of NBER conferences, and other NBER news and reports. Short summaries of recent NBER Working Papers constitute the final section of the **Reporter**.

ciates Victor R. Fuchs, William W. Gould, Reuben Gronau, Edward P. Lazear, and Robert J. Willis, in addition to studies by John Cogan, Kyle Johnson, and Lawrence W. Kenny.

Postwar Demographic Change

Rising divorce rates have been a focus of study for Becker and Michael.¹ In December 1977, the **NBER Reporter** summarized several of their findings, including those in a joint paper with Elizabeth Landes. Those studies showed that the presence of young children in the home tends to lower the likelihood of divorce, while un-

¹R. T. Michael, "Factors Affecting Divorce: A Study of the Terman Sample," NBER Working Paper No. 147, August 1976; G. S. Becker, Elizabeth M. Landes, and R. T. Michael, "Economics of Marital Instability," NBER Working Paper No. 153, October 1976; R. T. Michael, "Two Papers on the Recent Rise in U.S. Divorce Rates," NBER Working Paper No. 202, September 1977; and R. T. Michael, "Causation among Socioeconomic Time Series," NBER Working Paper No. 246, May 1978.

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expected events, such as exceptionally high or low income of the husband, protracted unemployment, or infertility, tend to cause divorce. In one study, Michael argues that the vastly improved birth control techniques marketed in the early 1960s had much to do with the rising divorce rate in the late 1960s and 1970s. He argues that improved contraception not only lowered birth rates among married couples but also increased women's incentives to undertake major career commitments by reducing the risk of unwanted pregnancies. The combination of the lower birth rates and the increased labor market orientation have contributed to the rising divorce rate.

Since 1950, the proportion of adults who live alone has risen from less than 4 percent to over 11 percent of the population. Fuchs, Michael, and Sharon Scott have studied this increase in persons living alone and found it to be a widespread phenomenon among all age groups and among single, divorced, and widowed men and women.² The growth in the number of persons living alone between 1950 and 1976 is especially pronounced among young single men and women, ages 25 to 34; their frequency of living alone rose from about one person out of twenty to one out of three. Among elderly widowed women (65 years and older), the frequency rose from one out of four to an astonishing two out of three. Investigating the causes of this increase in living alone and the differences in its prevalence among U.S. states in 1970, Fuchs, Michael, and Scott find increased mobility of the population, higher levels of education, and fewer children with whom the elderly can live as factors that increase the tendency to live alone. But the overwhelmingly important influence seems to be higher levels of real income. Apparently, adults who are not currently married prefer to live alone when they are financially able to do so.

Other studies include Kenny's analysis of the recent decline in fertility rates.³ He finds that the pattern, as well as the level, of adult wages over the childbearing years has a significant influence on fertility rates. Using the actual patterns of wages as they occurred over the past several decades, Kenny is able to "predict" the growth in postwar fertility and its subsequent decline. Although other studies with alternative models have also successfully traced the postwar fertility pattern, no single explanation of these sizable fluctuations has gained general acceptance. Kenny's study represents an important additional piece of evidence that the value of parental time when fertility decisions are made is an important determinant of those decisions.

The ratio of female wages to male wages has risen only slightly over the decade since the mid-1960s. Lazear has studied the wages of young workers and concluded that this finding is somewhat misleading. He contends that there are actually two components to one's wage—a dollar wage and a job-training component—

²R. T. Michael, V. R. Fuchs, and S. R. Scott, "Changes in Household Living Arrangements 1950-76," *NBER Working Paper No. 262*, July 1978.

³L. W. Kenny, "Explaining Movements in Completed Fertility across Cohorts," *NBER Working Paper No. 270*, August 1978.

and that although the female-male ratio rose only slightly in terms of dollar wages, it rose substantially in terms of the other component. So, Lazear argues that taking the whole wage (both components) into account, there has been a significant increase in the wages of women relative to men in the past few years. Most of the relative gain to women has come not in higher dollar wage rates on specific jobs but rather from higher promotion rates and more job training.

The Functions of the Family

In a major effort to better understand the incentives to form and sustain families, Gary Becker has been analyzing the functions performed by a family. In an early draft of an upcoming NBER book, *A Treatise on the Family*, Becker studies the central roles played by child bearing and rearing, the allocation of resources among family members as family size changes, and the reactions of parents to differences in the endowments of ability and other characteristics of children. The book will include chapters dealing with marriage, including monogamy, polygamy, and assortative mating; with the quantity and quality of children; and with division of labor within households. Also, Becker analyzes the determinants of the distribution of income among generations of the same family and links that analysis to the study of inequality of incomes across families of a given generation. Becker also addresses issues related to the changing functions performed by the family and by the state and the impact of these changes on the family.

The interplay between capital markets and the family has received attention in two quite different studies. Robert Willis has begun a large-scale study on the use of children in developing countries as a form of investment for old age security. In the absence of either a well-developed capital market (in which one can save during the productive years in anticipation of one's needs during less-productive old age) or a specific social security scheme for old age, agreement, perhaps implicit, between generations for transfers from the generation in its productive years to the younger and older family members is a major mechanism for old age security. Willis details how, in traditional societies today, this function is performed within the family and how, in many developed countries, it is increasingly performed by governments. In a similar project, Laurence Kotlikoff and Avia Spivak consider the role of the family in providing income annuities in the face of risk of death.⁴ They argue that the ability to share risks (among family members) helps to overcome many potential problems for the family.

Lazear uses U.S. data on young men to infer whether their family background significantly affects the interest rates they must pay to finance their education. He concludes that there is evidence that young men from poorer families do face higher, but only trivially higher, borrowing costs and consequently receive slightly less schooling than comparable young men (comparable in terms of IQ, number of siblings, race, mother's education, and city size) from wealthier families.

⁴L. J. Kotlikoff and A. Spivak, "The Family as an Incomplete Annuities Market," NBER Working Paper No. 362, June 1979.

Economies of scale in household size represent another economic incentive to form families. Lazear and Michael have estimated these scale economies with U.S. expenditure data and found them to be substantial.⁵ They are now attempting to determine whether scale economies in households have changed in any way over the past twenty years as a result of higher real incomes, increased women's labor force participation, or other phenomena. Independent work by Kyle Johnson has tended to confirm the estimates of the magnitudes of these scale economies.

Complementarity between spouses is another area under study. Lawrence Kenny has studied the effects of one spouse on the wage earnings of the other.⁶ The research underway on the family clearly complements other NBER programs, especially those dealing with social insurance, health economics, and labor.

⁵E. P. Lazear and R. T. Michael, "Family Size and the Distribution of Per Capita Income," NBER Working Paper No. 230, January 1978.

⁶L. W. Kenny, "Male Weight Rates and Marital Status," NBER Working Paper No. 271, August 1978.

Research Summaries

The Youth Employment Problem: Its Nature, Causes, and Consequences

Richard B. Freeman and David A. Wise

In recent years, with large numbers of youths entering the job market, and with some groups of young persons employed less and some unemployed more than comparable groups in the past, there has been rising concern about the youth labor market.

Under the auspices of NBER, economists from several universities have been engaged for the past year in an extensive investigation of the nature and consequences of youth unemployment and of the causes of changes over time, and differences, in individual employment experiences. This paper summarizes and describes the results of the NBER analysis.¹

The Nature of the Youth Employment Problem

The employment rate of white male youths has changed only modestly in the past two decades, with an upward

¹The papers cited in this article were presented at the NBER Conference on Youth Joblessness and Employment held in May 1979. A complete listing of the papers presented at the conference appears in the **NBER Reporter**, Summer 1979, on page 18. The conference papers will appear individually as NBER Conference Papers and in total as a book, *The Youth Employment Problem: Its Nature, Causes, and Consequences*, edited by R. B. Freeman and D. A. Wise. In addition, an NBER Summary Report, "Youth Unemployment," which reports the findings of the Youth Unemployment Project, will be available in 1980. Requests for the individual papers or the summary report should be addressed to Conference Papers (Summary Report), National Bureau of Economic Research, Inc., 1050 Massachusetts Avenue, Cambridge, Mass. 02138.

trend since the mid-1960s. However, the percentage of white females employed has risen substantially, even in the 1970s.

On the other hand, approximately equal percentages of black and white male youths were employed and unemployed in 1954. Since then, the employment rate of young blacks has fallen dramatically and their unemployment rate has increased correspondingly. Similarly, the data show a worsening position for young black women relative to young white women. Thus it appears that, to the extent that the trends signify a worsening position for youths, the decline in employment is concentrated among black youths. Nonetheless, because a much greater proportion of the population is white, the vast majority of unemployed youths are white.

More detailed data show that youth unemployment is highly concentrated by educational attainment as well. Rates of nonemployment and unemployment are much higher, 57 and 51 percent respectively, among high school dropouts than among high school graduates. Not only is unemployment concentrated among high school dropouts, with higher rates among blacks than whites, but it is also concentrated among relatively few persons. Among out-of-school male teenagers in 1974, 54 percent of unemployment and 76 percent of nonemployment was attributable to persons out of work more than 6 months.² Comparable figures for the year ending in March 1976 show that 51 percent of all unemployment was accounted for by those unemployed six months or more, although less than one in ten out-of-school teenagers incurred six months of unemployment or more during the year.³

Although teenagers change jobs often (the average duration of all teenage jobs is about three months), roughly half of all job changes occur without intervening unemployment. Moreover, most spells of unemployment are quite brief. The mean duration of teenage unemployment spells is about the same as the mean duration of adult spells.

Two ideas emerge here. First, the teenage unemployment rate is higher than the adult rate not because teenagers have longer spells of unemployment but because they change jobs more often and thus are, on average, more frequently unemployed. As youths accrue tenure on the job, their rate of unemployment drops significantly.⁴ Second, most youth unemployment is accounted for by small numbers of young persons who experience long spells of unemployment.

In short, the data suggest not that most teenagers have serious employment difficulties but that for a minority of youth, long-term nonemployment and unemployment are severe problems. This group is composed primarily of high school dropouts. Among this group, unemployment rates are much higher and employment rates much lower for blacks than whites. Still, the majority of all unemployed youths are white.

²Kim B. Clark and Lawrence H. Summers, "The Dynamics of Youth Unemployment," also NBER Working Paper No. 274, August 1978.

³Martin Feldstein and David Ellwood, "Teenage Unemployment: What Is the Problem?," also NBER Working Paper No. 393, September 1979.

⁴Jacob Mincer and Linda Leighton, "Labor Turnover and Youth Unemployment," also NBER Working Paper No. 378, August 1979.

Finally, we emphasize that the interpretation of all of these data is complicated by uncertainty about the accuracy of their magnitudes. Recent large-scale longitudinal surveys yield higher rates of employment and different unemployment rates than those calculated from Current Population Survey (CPS) data. A large portion of the difference between CPS and longitudinal surveys can be attributed to differences in respondents: the CPS relies on interviews with a household member, often the youth's mother or the female head of the household, while the longitudinal surveys rely on responses from the youths themselves.⁵

The Causes: Market Determinants

Whether or not youths are employed depends, in part, on both their individual differences and on the state of the aggregate economy and demographic conditions. The most important aggregate determinant is the level of economic activity. There is strong evidence, based on fluctuations over time in the nation as a whole and on differences among regions, that the proportion of youths who are employed rises substantially with upsurges in aggregate economic activity.

A useful indicator of the level of aggregate economic activity is the unemployment rate for adult males. Analysis of differences among 125 metropolitan areas, based on 1970 census data, indicates that an increase of 1 percentage point in the adult male unemployment rate is associated with approximately a 5 percent decrease in the proportion of young men aged 16 to 17 who are employed, a 2 percent decrease for those aged 18 to 19, and a 3 percent decrease for those aged 20 to 24.⁶ For out-of-school male youths in the three age groups, the decreases are 5 percent, 3 percent, and 3 percent respectively. Thus, the strongest effect is on the youngest group.

Another indicator of aggregate economic activity, the growth rate of personal income, shows a substantial positive relationship to youth employment according to comparisons across metropolitan areas. If these indicators are taken to reflect aggregate demand, then demand forces have a substantial effect on youth employment.

Two other measures of aggregate market conditions that are strongly related to youth employment are the industrial mix of the economy and the economic status of the area in which youths reside. Based on comparisons across metropolitan areas, youth employment appears to be higher in those areas with industries that have traditionally employed relatively large numbers of young workers. The effect of industrial mix is approximately equivalent to the effect of aggregate demand (as measured by the adult unemployment rate) on the employment of teenagers aged 16 to 19. For workers aged 20 to 24, the effect of industrial mix is approximately half as large as the effect of aggregate demand.

⁵Richard B. Freeman and James L. Medoff, "Why Does the Rate of Youth Labor Force Activity Differ across Surveys?"

⁶R. B. Freeman, "Economic Determinants of Geographic and Individual Variations in the Labor Market Position of Young Persons."

In addition, the extent of poverty in an area affects the employment chances of youths. Those areas having greater proportions of poor families, and those in officially designated poverty areas, tend to have lower rates of employment and higher rates of nonemployment after controlling for other variables.⁷

Another frequently mentioned aggregate determinant of youth employment experience is the relative proportion of youths in the population. It is argued that production technologies and institutional arrangements may make the economy slow to adapt to large changes in the relative numbers of younger versus older workers. However, the labor market accommodates large increases in the number of teenagers during the summer months, with no increases in youth unemployment.

It may well be that the greatest effect of the relatively larger numbers of youths has been a decrease in their wages relative to adult wages, rather than a decrease in youth employment. The earnings of young men in age groups from 18 to 24 declined rather dramatically relative to adult wages between 1967 and 1977. On the other hand, the earnings of black youths have not changed much, on average, relative to adult earnings. Thus the market adjustment to larger numbers of youths apparently has been reflected to some extent in relatively lower wages for youths. Indeed, for white youths, wages may have been the primary equilibrating mechanism, allowing the employment ratio to be maintained in the face of large increases in the relative number of youths in the population. Although the employment ratio of black relative to white youths deteriorated over this period, the wages of black youths—both male and female—rose relative to wages of white youths.⁸ This may have contributed to the deterioration in black versus white youth employment.

Finally, it is important to recognize that while the youth market is affected by aggregate demand, demographic conditions, and minimum wage factors, patterns of change over time in the employment of white youths have been dominated by trends whose underlying causes remain unclear. Moreover, the deterioration in the employment of black youths relative to white youths has not been satisfactorily explained as yet.

The Causes: Individual Determinants

Among the most important determinants of youth employment and wages, once aggregate factors are controlled for, are education, family background, and race.

Education. As noted earlier, high school dropouts work much less on average than out-of-school youths of the same age who have graduated from high school. In addition, youths with education below the average for their age group do noticeably worse than others. By contrast, youth wages, which were once greatly affected by education, appear to depend less on education now than in the past.

⁷Albert E. Rees and Wayne Gray, "Family Effects in Teenage Employment."

⁸Michael Wachter and Choongsoo Kim, "Time-Series Changes in Youth Joblessness," also NBER Working Paper No. 384, August 1979.

Particular educational experiences may also affect employment and wages. Academic training is apparently more important than vocational training, even for persons who obtain no further education after leaving high school. Indeed, according to data in the National Longitudinal Study of the High School Class of 1972, vocational training in high school is unrelated to either employment or wage rates during the first four years after high school graduation. Persons who work while in high school, however, are employed much more and have higher wage rates when they enter the labor force after graduation than those who do not work in high school.⁹ In addition, high school academic success is positively related to employment and wage rates immediately following high school graduation. Thus there appears to be a substantial carry-over to the labor market of attributes associated with or developed through effort, while in high school, devoted either to doing well in school or to working outside of school.

Family Background. For all youths, and for high school graduates, family background as measured by parents' income shows little relationship to employment. However, youths whose brothers or sisters have jobs are more likely to work than other youths, suggesting that local market conditions, family characteristics, or sibling employment influence chances for a job. At the same time, persons from wealthier families obtain jobs that pay more per hour than persons from poorer families. Possibly, wealthier parents are able to find, or help to find, better paying jobs for their children. In addition, youths in households headed by females and in households on welfare are employed less than youths from other families, after controlling for race and other variables. Once a youth is employed, however, these family characteristics are not related to wage rates.

Race. As noted earlier, blacks tend to be employed less than whites, although the National Longitudinal Study of the Class of 1972 shows only modest differences among high school graduates. By contrast, black and white youth wage rates tend to be quite similar.

The Consequences

Persons who have unusually low levels of employment early in their working lives are also likely to work less than others in later years.¹⁰ This effect is due almost entirely to persistence over time of individual differences—for example, education, academic ability, and characteristics like motivation that may be measured by work experience or class rank in high school. Once these individual differences are controlled for, there is little relationship between employment experience in a given year and employment experience three or four years later. This conclusion holds for widely differing groups of young men. It is supported by evidence on young men with less than fourteen years of education, including

⁹Robert H. Meyer and D. A. Wise, "High School Preparation and Early Labor Force Experience," also NBER Working Paper No. 342, May 1979.

¹⁰Charles Brown, "Dead-End Jobs and Youth Unemployment."

high school dropouts, who were followed in the Parnes National Longitudinal Study,¹¹ and by evidence from the National Longitudinal Study of the High School Class of 1972. Comparable evidence based on young women in the Parnes survey supports this conclusion as well.¹² Thus we have found no support for the frequently expressed fear that unemployment in early years in the labor force will in itself lead to massive unemployment several years later.

The same result pertains to wage rates. Once lasting individual differences are controlled for, there is virtually no relationship between wage rates early in a person's labor force experience and wage rates several years later. Given individual characteristics, a low-paying job one year will not in itself lead to a low-paying job three or four years later, according to our findings. Since wage rates increase with experience, there is, however, a cost associated with not working. Individuals who are unemployed in their youth obtain lower wages in subsequent years because they have accrued fewer years of experience. In short, unemployment does not itself foster later unemployment, low wages do not in themselves foster low wages in the future, but the effect of unemployment is felt in lower future wages.

¹¹D. Ellwood, "Teenage Unemployment: Permanent Scar or Temporary Blemish?"

¹²Mary Corcoran, "Attitudes of Women and Changing Employment Patterns."

Monetary Trends

Anna J. Schwartz

About a decade ago, Milton Friedman and I completed a first draft of a volume that we titled "Trends in Money, Income, and Prices in the United States." We did not publish it then because we decided to extend its scope to cover the United Kingdom so that we could add geographical evidence to our temporal evidence. The revision and extension have taken much longer than we anticipated, partly because the scope of the study became more ambitious and partly because we encountered problems with the British money and income data that we resolved only after some travail. The study, now tentatively titled "Monetary Trends in the United States and the United Kingdom: Their Relation to Income, Prices, and Interest Rates," covers roughly a century for both countries.

Measuring Long-Period Movements

As the title suggests, the study analyzes long-period movements in the money stock in the United States and the United Kingdom and their relation to long-period movements in income, prices, and interest rates. One of our purposes is to test some of the general propositions incorporated in monetary theory, expanding upon mate-

rial originally published in Milton Friedman's *NBER Occasional Paper No. 112*, "A Theoretical Framework for Monetary Analysis." Another purpose is to test, elaborate, and make more precise some of the empirical generalizations suggested by our study of U.S. monetary history.

In order to isolate long-term relations, it is essential to free the data, so far as is possible, from the effects of short-term movements we call business cycles. These are brief in duration when compared with the length of our series. (In the United States, the period from 1867 to 1975, for which we have continuous data, contains twenty-six full reference cycles running from trough to trough, according to the National Bureau chronology. In the United Kingdom, the century from 1874 to 1975, for which we have continuous data, contains eighteen and one-half full reference cycles.) Although brief, the cyclical fluctuations are often large relative to the more gradual long-period changes. Hence, comparisons between dates separated even by decades can be seriously distorted if the initial and terminal dates refer to different stages of the business cycle. The device that we have used to free the data from cyclical fluctuations is an average over a cycle phase—that is, our basic observation is either an average of an expansion from cyclical trough to cyclical peak or a contraction from cyclical peak to cyclical trough, sometimes referred to as half-cycles.

Trends in Money Balances

We begin the empirical analysis by comparing money balances in the United States and the United Kingdom at the beginning and end of the century we cover, examining the effects of statistical errors in the data, differences in the degree of financial sophistication, and differences in real income and in the cost of holding money in the two countries over this extended period. The long-term trends in money and income can each be regarded as influenced by three elements: changes in population, changes in prices, and changes in the real magnitudes of money and income per capita. We present this decomposition for trends and fluctuations about trends and for levels of the series and their rates of change. One striking result of the study is the extraordinary parallelism in the movements of money and income, both nominal and real.

The central element in the quantity theory of money is the existence of a stable function relating the real quantity of money demanded by holders of money to a small number of other economic variables. We bring our secular data to bear on this issue by identifying common shifts in the demand functions for the two countries in response to wars and to economic uncertainty associated with depressions. We combine the data for the two countries into a single analysis, something without precedent in the literature on money demand functions. Later, we examine the issues raised in using the exchange rate to pool U.S. and U.K. data and describe the results of incorporating the term structure of interest rates into the regression equation for the U.S. demand for money. Previously unavailable estimates that we have construct-

ed for the term structure for the period 1873-99 are also presented.

We also probe deeply into the question of the interrelations between the United States and the United Kingdom. We try to account for the similarities between the determinants of the demand for money in the two countries as well as for the differences. We distinguish the links between the countries during the period when the gold standard was used, which we date as ending in 1914, from the links between countries during the subsequent period when variable exchange rates were used. We construct a measure of the dollar-pound exchange rate related to purchasing power parity and discuss the behavior of the series.

Monetary Influences on Income

We then discuss monetary influences on nominal income in the two countries and estimate the quantitative reaction of the level and rate of change of nominal income to contemporaneous and earlier monetary levels and rates of change. Transient effects of money are distinguished from persistent effects. There is enough similarity in the patterns for the two countries to encourage us to believe that we have isolated a significant relationship.

Neither the quantity theory nor the income expenditure theory provides a satisfactory explanation of the division of changes in nominal income between prices and output. We examine the division empirically and test a number of alternative hypotheses that might explain it. Based on the evidence, we reject some widely held beliefs, but we can provide no clear-cut evidence of a simple and satisfactory alternative answer.

One significant difference between the United States and the United Kingdom is that price and output changes are negatively correlated in the United Kingdom in the three peacetime periods we isolate: pre-World War I, interwar, and post-World War II. For the United States, the correlation coefficient is negative only for the post-World War II period. These results suggest a positive postwar Phillips curve for the United States. For the United Kingdom, the negative results are more marked when change in output lags behind change in price by one phase. This may reflect the greater importance that international trade has in U.K. experience than in U.S. experience. A rise in prices in a given phase in the United Kingdom would result in a decline in output in the following phase.

Money and Interest Rates

The relation between money and interest rates is an ancient topic that has received special and renewed attention in recent journal articles. Keynesian analysis treated the relation as settled and known, determined by the liquidity preference function relating the quantity of money balances people desired to hold to the rate of interest they could earn on alternate assets. We demonstrate that this simple interpretation is belied by the evidence: while the liquidity preference relation does play a

role, it is but one element in a much more complex pattern of distinguishable types of effects of monetary disturbances on nominal interest rates.

We have no theory classifying the effect of real disturbances on nominal interest rates into a small number of distinguishable types and no satisfactory analysis of the time pattern or magnitude of their likely impact on the relation between nominal and real rates.

Our theoretical framework provides important insight into the empirical behavior of interest rates, but it does not produce a simple empirical generalization covering a wide range of episodes. Our empirical analysis has been devoted largely to two related themes: (1) the relation between yields on nominal and on real assets and (2) the relation between the level and rate of change of prices and interest rates.

In order to study the relation between the yields on nominal and real assets, we have employed the rate of change of income as a proxy for the yield on real assets; the rate of change of *nominal* income as a proxy for the *nominal* yield on real assets; and the rate of change of *real* income as a proxy for the *real* yield on real assets. Such evidence as we could assemble indicates that our proxy, which we initially used in the analysis of the demand for money, serves its purpose reasonably well, certainly far better than any available alternative. We compare differences in yields between the two classes of assets and in the two countries in peacetime episodes, wartime episodes, and over the full period.

Two principal explanations have been offered for the relation between the level of prices and interest rates. By extrapolating past price changes, Irving Fisher emphasizes the relation between interest rates and the anticipated rate of price change, plus the delayed formation of anticipations. Wicksell, and later Keynes, explained the relation between interest rates and prices as a reflection of fluctuations in the real yield on capital that are transmitted to both prices and nominal interest rates through commercial banks, delaying the impact of changes in real yields on nominal rates by altering the quantity of money.

Our analysis supports rejection of the Wicksell-Keynes explanation, partly on the basis of earlier studies by others, partly because we cannot detect in our data the Gibson phenomenon for real yields, as well as nominal yields, that is implied by their explanation. Our analysis does not, however, support the rejection of the Fisher explanation by prior investigators. They have been misled because they tested the explanation largely for periods for which the Gibson phenomenon is nonexistent.

Long Swings

Finally, we examine the view that there have been long swings in the rate of growth of the United States and the United Kingdom as well as other economies. Our emphasis is not on testing the existence of long swings, but on whether long swings are best interpreted as episodic or as reflecting an underlying cyclical mechanism. We conclude that the monetary data support the episodic interpretation.

Economic Outlook Survey

Third Quarter 1979

Victor Zarnowitz

A group of about fifty professional economic forecasters, surveyed by NBER and the American Statistical Association in August 1979, believe that the economy is in a recession that will last a year, ending in the spring of 1980.¹ The median forecast covered by the survey predicts the total decline in real GNP between 1979:1 and 1980:1 to be 2.3 percent. The rate of unemployment is expected to rise from 5.7 percent in 1979:2 to 7.3 percent in 1980:2. The rate of inflation, in terms of the GNP implicit price deflator, is estimated at an annual rate of 9.1 percent in the current quarter and projected to remain near 8 percent or higher in the next three quarters; in 1980:3, it will decline to about 7 percent.

Probability and Size

In the previous (May) survey, as many as 40 percent of the forecasters did not anticipate a recession this year, although slower growth was generally predicted, and a small majority expected a mild decline. By now, few doubt that a recession is under way. The estimated probabilities that real GNP will decline average 65 percent or more for the quarters 1979:3 and 1979:4 and slightly more than 50 percent for 1980:1 (but they decline sharply, to 30 and 17 percent for 1980:2 and 1980:3, respectively).

The projected 2.3 percent decline in real GNP would be smaller than the corresponding changes in three of the previous post-World War II recessions (3.3 percent, 3.2 percent, and 6.6 percent in 1953-54, 1957-58, and 1973-75, respectively), but larger than the contractions of total output registered on three other occasions (1.4 percent, 1.2 percent, and 1.1 percent in 1948-49, 1960-61, and 1969-70). In terms of duration, the predicted four-quarter contraction also would be about average.

Reduced Inflation Rates

The implicit price deflator is expected to increase 2.2 percent in the current quarter, that is, at an annual rate of 9.1 percent, but the rates of inflation in the year ahead, although high, are expected to show a slow downward drift. The median predictions put the rise in the GNP price index at 8.2 percent in 1979:4, 7.8 percent in 1980:1, 8.7 percent in 1980:2, and 7.0 percent in 1980:3 (at annual rates).

¹The opinion survey is, of course, quite different from the official NBER business cycle-dating process.

The rate of inflation in the year ahead (1979:3-1980:3) is forecasted at 8 percent per annum in these terms. However, the distribution of the forecasts is skewed toward higher inflation rates: according to the lower-quartile predictions, the rise in prices will be 7.9 percent; according to the upper-quartile predictions, it will be 11.7 percent.

The reported probabilities that the GNP price index will rise 8 to 10 percent in 1980, as compared with 1979, average as high as 58 chances in 100; still larger increases are given a mean probability of about 20 chances in 100.

Nominal GNP is projected to rise by 8.5 percent in 1979:3-1980:3, nearly all of it reflecting inflation (about 0.35 of 1 percent real growth).

Future Unemployment Increases

The unemployment rate, estimated to average 6 percent in the current quarter and projected at the same level for the year 1979 as a whole, will increase to 6.5 percent at the end of the year and will stay at, or near, 7.3 percent in 1980:2 and 1980:3. These are the median forecasts, but the dispersion of the individual predictions does not suggest that many respondents fear much higher unemployment rates. For example, the interquartile range for 1980:3 is 6.5 percent to 7.8 percent, and the highest rate predicted is 8.3 percent.

Production and Profits

The industrial production index (1967 = 100) will reach a trough of 146 in 1980:1, down 3.6 percent from its 1979:1 level of 151.5. It will then stage a partial recovery to reach 149 in 1980:3. Its average for the year will be 149.8, 3.2 percent above the level for 1978.

Corporate profits after taxes were reported at \$139.7 billion (current dollars) in 1979:1; a preliminary value for 1979:2 is \$127.1 billion. The median forecast has profits declining from \$135 billion in the current quarter to \$130 billion in 1979:4, then rising again to \$135 billion in 1980:2 and \$140 billion in 1980:3. This describes a very mild and brief fluctuation by historical standards, even after allowing for the fact that profits in constant dollars would, of course, show a significantly greater decline.

Business and Inventory Investment

Expenditures on plant and equipment are estimated to be \$172 billion in the year 1979, 11.8 percent above their level in 1978. They are expected to continue to increase in current dollars, but at declining annual rates: 7.3 percent for the four quarters ending 1980:1, 6.3 percent for the four quarters ending 1980:2, and 5.8 percent for the four quarters ending in 1980:3. Their level in 1980:3 will be \$184 billion (at annual rates). Thus, after adjustments for the prospective rise in capital goods prices, real fixed capital investment by business would decline, but probably not strongly.

Projections of GNP and Other Economic Indicators, 1979-80

	Annual				
	1977 Actual	1978 Actual	1979 Forecast	Percent Change	
				1977 to 1978 Actual	1978 to 1979 Forecast
1. Gross national product (\$ bil.)	1887.2	2127	2346	12.7	10.3
2. GNP implicit price deflator (1972 = 100)	141.6	152.1	165.7	7.4	8.9
3. GNP in constant dollars (bil. 1972\$)	1332.7	1399.2	1420.6	5.0	1.5
4. Unemployment rate (percent)	7.0	6.0	6.0	-1.0 ¹	0 ¹
5. Corporate profits after taxes (\$ bil.)	102.1	121.5	133.5	19.0	9.9
6. Plant and equipment expenditures (\$ bil.)	135.8	153.8	172.0	13.3	11.8
7. New private housing units started (ann. rate mil.)	1.99	2.02	1.68	1.5	-16.8
8. Change in bus. inventories GNP accounts (\$ bil.)	15.6	14.1	15.8	-1.5 ³	1.7 ³

	Quarterly						Percent Change	
	1979 Q2 Actual	1979 Q3 Forecast	1979 Q4 Forecast	1980 Q1 Forecast	1980 Q2 Forecast	1980 Q3 Forecast	Q2 79 to Q2 80	Q3 79 to Q3 80
1. Gross national product (\$ bil.)	2327	2366	2400	2442	2500	2568	7.4	8.5
2. GNP implicit price deflator (1972 = 100)	164	167.6	171	174.3	178	181	8.5	8.0
3. GNP in constant dollars (bil. 1972\$)	1418	1413	1402	1398	1405	1418	-1.0	+0.4
4. Unemployment rate (percent)	5.7	6.0	6.5	7.1	7.3	7.2	-1.6 ¹	1.2 ¹
5. Corporate profits after taxes (\$ bil.)	127.1 ²	135	130	131	135	140	6.2	3.7
6. Plant and equipment expenditures (\$ bil.)	170.3	174	178	178	181	184	6.3	5.7
7. New private housing units started (ann. rate mil.)	1.84	1.70	1.58	1.59	1.65	1.73	-10.4	-2.3
8. Change in bus. inventories GNP accounts (\$ bil.)	16.8	20	14.0	10	8.2	12.0	-8.4 ¹	-8.0 ¹

SOURCE: American Statistical Association and National Bureau of Economic Research, Business Outlook Survey, August 1979. The figures on each line are medians of 33 to 34 individual forecasts.

¹Change in rate, in percentage points.

²Actual not available. Based on BEA survey of anticipations.

³Change in billions of dollars.

The current-dollar change in business inventories (GNP accounts, annual rates) is expected to decline from \$20 billion in 1979:3 to \$14 billion, \$10 billion, and \$8 billion successively in the next three quarters, then to rise to \$12 billion in 1980:3. This, too, would be a very mild decline compared with past recessions, as inventory investment is seen as remaining positive throughout.

Housing and Durables

New private housing starts are estimated at an annual rate of 1.7 million units in 1979:3 and predicted to decline to 1.6 million in 1979:4. In the first three quarters of 1980, most forecasters predict a modest recovery in starts: the median figures (in millions) are 1.59, 1.65, and 1.73. Thus, if the consensus forecast is right, the decline in residential construction is going to be relatively mild during this recession, and most of that decline is already behind us.

Consumer expenditures for durable goods will decline slightly in 1979:3 to an annual rate of \$206 billion, remain at this level in 1979:4, then rise to \$208 billion in 1980:1, \$212 billion in 1980:2, and \$219 billion in 1980:3. This implies a decline of 6.3 percent between 1979:1 and 1979:4, then a similar rise between 1979:4 and 1980:3.

According to these forecasts, consumer durables would play a relatively large role in this period of recession and initial recovery.

Assumptions

Eighteen of the forecasters state they expect a tax cut "early in 1980"; only four make the contrary premise that tax rates will remain unchanged. This is a major shift from the May survey when very few anticipated another tax reduction. However, it should be noted that many survey respondents do not report their assumptions. On monetary policy, the views are about evenly divided: seven respondents say it will be tighter, eight say it will be easier, and three say it will be unchanged. The most common assumption on energy is that the supply of oil will be "stable." A major strike in the automobile industry is explicitly assumed by seven forecasters and not assumed by four.

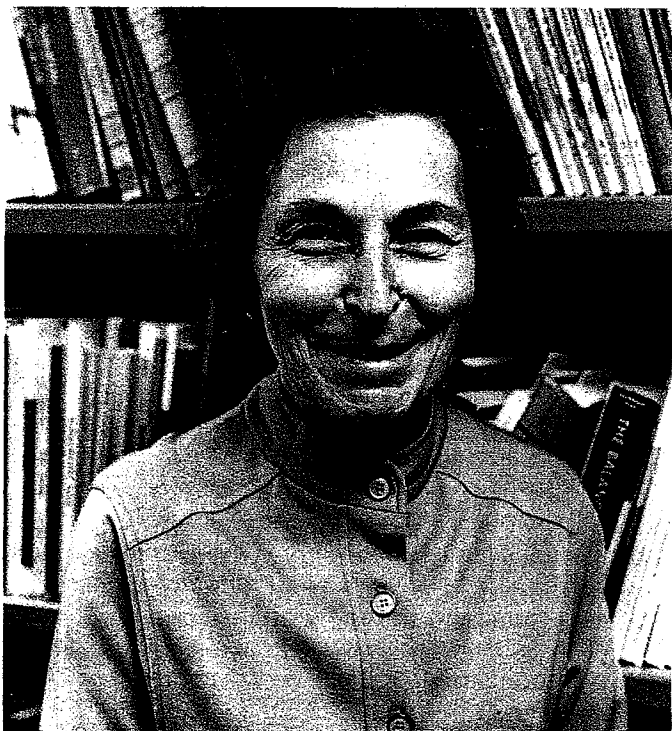
This report summarizes a quarterly survey of predictions by about fifty business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate School of Business of the University of Chicago and NBER and James Poterba of NBER were responsible for tabulating and evaluating this survey.

Anna Schwartz

Research Associate Anna Schwartz, who has been affiliated with NBER since 1941, is a member of the Bureau's Program in International Studies and the Program in Financial Markets and Monetary Economics. Dr. Schwartz has written many journal articles and books, but she is perhaps best known for her work with Milton Friedman on monetary economics.

A native of New York City, Dr. Schwartz received a B.A. from Barnard College and an M.A. and, in 1964, a Ph.D. from Columbia University. Before joining the Bureau staff, she did research for the U.S. Department of Agriculture and the Columbia University Social Science Research Council.

In addition to her research, on which she spends the majority of her time, Dr. Schwartz has taught at Baruch College, Brooklyn College, Hunter College's Graduate Division, and most recently, at New York University's Graduate School of Arts and Sciences. She is currently on the board of editors of the *Journal of Monetary Economics* and has previously served on the editorial boards of the *American Economic Review* (1972-78)



and the *Journal of Money, Credit and Banking* (1974-75). Dr. Schwartz is also a member of the Shadow Open Market Committee, a group of academic and business economists who have been meeting twice a year for the last six years to monitor policy decisions made by the administration and the Federal Reserve System. The committee suggests policy directions that it believes could improve economic performance.

Married and the mother of four children, Dr. Schwartz resides in Manhattan. A devotee of opera, concerts, and ballet, she proudly states, "I love the Apple."

Robert T. Michael

Robert T. Michael, director of NBER's Palo Alto office and codirector of the NBER Program in Economics of the Family, has been associated with the Bureau since 1966. Like many other researchers in NBER's long history, Michael began as a research assistant, and he progressed to the position of director of NBER West in 1978.

Born in Gallipolis, Ohio, in 1942, Michael received a B.A. with honors from Ohio Wesleyan University and a Ph.D. with distinction from Columbia University in 1969. From 1969-73, he was an assistant and then associate



professor at UCLA. After taking one year off from teaching to work full time for NBER in New York, Michael moved back to California. He has taught economics at Stanford University since 1974 and was appointed professor in 1979.

Michael was also a visiting research associate at the University of Chicago in the fall quarter of 1976. His major field of interest is family economics with particular emphasis on the study of fertility behavior, divorce, living arrangements, and changes in demographic behavior since World War II. He has also written numerous articles on the economics of education.

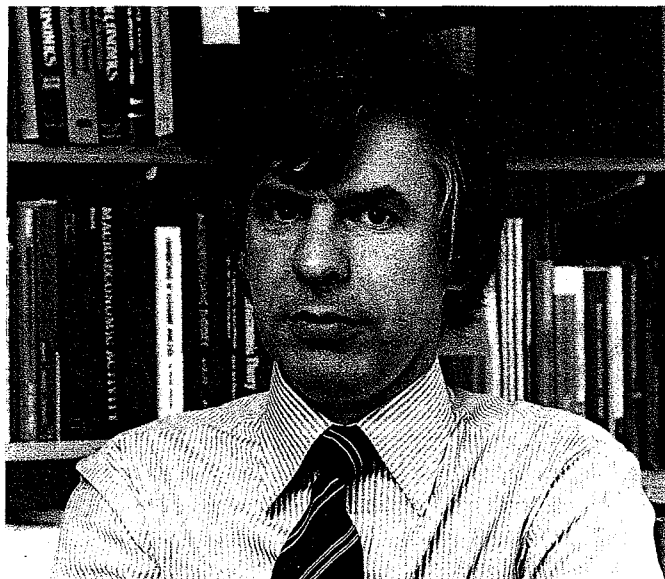
Michael, his wife Nancy, and their children, Alice and Tom, live in Los Altos, California. His hobbies include photography, backpacking, and swimming.

David A. Wise

David A. Wise, Stambaugh Professor of Political Economy at Harvard's John F. Kennedy School of Government, is a research associate in NBER's Program in Labor Studies. Wise holds a B.A. from the University of Washington and an M.A. in statistics and a Ph.D. in economics (1972) from the University of California at Berkeley.

After working for the Department of Labor in Washington, D.C., for six years, Wise returned to the West Coast for graduate studies. While pursuing his Ph.D., Wise served as a teaching assistant and an assistant research economist.

He came to the Kennedy School in 1973 as an assistant professor and was made an associate professor in



1976. He was promoted to professor in 1979. In addition to his teaching duties, Wise served as economics editor of *Public Policy* from 1973-75. His research has focused on issues in labor economics, education, econometric methodology, and human resource economics.

Currently, Wise is engaged in research on youth employment, student financial aid, income maintenance programs, and the demand for physicians. He is married and has two children, Mark and Karleen. Wise resides in Newtonville, Massachusetts; he enjoys tennis, hiking, and photography in his leisure time.

lic finance. A group of nine economists from the United States and twenty-three economists from British universities met at Cambridge University in England on June 14-16. The focus of the conference was on the development of new sources of data and new methods of econometric analysis. The conference was the first joint meeting of British and American economists concerned with public finance in which current developments in econometric methods and data source issues could be discussed. It was organized by Mervyn King, University of Birmingham, England, and David Bradford, Princeton University, both research associates of NBER.

Empirical studies of tax issues in Britain have recently begun to use data collected in the annual family expenditure survey. At the conference, these data were used to study the effects of switches between income taxes and value added taxes ("Labour Supply, Commodity Demands, and the Switch from Direct to Indirect Taxation," by Anthony B. Atkinson and Nicholas H. Stern) and to study the effects of housing policy ("An Econometric Study of the Demand for Housing in the United Kingdom," by Mervyn A. King).

Prominent in the conference program was the analysis of labor response to economic incentives, especially as conditioned by taxes and such quasi-taxes as the negative income tax, Social Security earnings test, and unemployment compensation. Papers dealing with these issues were: "Market Wages, Reservation Wages, and Retirement Decisions," by Alan S. Blinder, Roger H. Gordon, and Donald E. Wise; "Social Security and the Choice between Full-Time Work, Part-Time Work, and Retirement," by A. Zabalza, C. Pissarides, D. Piachaud, and M. Barton; "The Effect of Wages, Taxes, and Fixed Costs on Women's Labor Force Participation," by Jerry A. Hausman; "The Social Security Earnings Test, Labor Supply Distortions, and Foregone Payroll Tax Revenue," by Anthony J. Pellechio; "The Analysis of Reemployment Probabilities for the Unemployed," by Tony Lancaster and Stephen Nickell; and "Labor Supply Responses to Tax Changes—A Simulation Exercise for the United Kingdom," by K. W. Glaister, A. McGlone, and D. Ulph. Other papers presented at the conference were "Stock Market Valuation of Dividends: Links to the Theory of the Firm and Empirical Estimates," by Roger H. Gordon and David F. Bradford, and "International Differences in Social Security and Saving," by Martin Feldstein.

The group devoted considerable time to recent methodological developments that have advanced the science of empirical research and are relevant to problems of public finance. For example, an important methodological issue that arose in several papers on the statistical analysis of labor supply is the "nonconvexity of the household budget constraint." Because of tax and transfer programs and the fixed costs of going to work, it is inappropriate to use traditional linear specifications of the budget constraint for a household considering choices between labor and leisure. Alternative approaches to this problem were presented and discussed by the participants.

Another advance is the use of more complicated theo-

Conferences

Econometric Studies in Public Finance

The National Bureau and the British Social Science Research Council recently organized a research conference on the application of econometric methods to pub-

retical descriptions of household choices to avoid restrictions on specifications of functional forms implied by simpler models. In particular, the paper by Atkinson and Stern used Gary Becker's notion that consumption activities require the input of time as well as goods. This notion avoids the assumption of additive separability in consumption functions, which severely limits the flexibility of parameters in estimated equations. By using an analysis based on the Becker approach, the risk of imposing an answer on the data, rather than using the data in a meaningful way, is avoided.

Among the preliminary findings suggested by data analyzed at the conference are the following: (1) contrary to popular impressions, a small increase in the value added tax offset by a decline in the income tax may have little effect on labor supply and might even reduce it; (2) responses to taxation differ substantially by income cohorts; (3) in negative income tax experiments, the labor force participation of nonwhite female heads of households seems to be more sensitive to the level of income that is guaranteed than to marginal tax rates; (4) in response to the Social Security earnings test, the labor supply of retirement-aged men is more sensitive to the exempt amount than to the implicit tax rate.

The papers described here will, after further revision, become part of the NBER Conference Paper series. To place advance orders for copies, write to: Conference Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, Mass. 02138. There is a charge of \$1.50 for each copy of a paper requested.

Information and Uncertainty

The 1979 Universities-National Bureau of Economic Research (U-NBER) Conference was held in Boston on June 14-16. The U-NBER Committee was formed in 1936 as a forum for the exchange of ideas between economists at various universities and the Bureau. This year's conference on "The Economics of Information and Uncertainty" was organized by Professor John McCall of UCLA. The following papers were discussed:

William Brock, University of Chicago, "Asset Prices in a Production Economy"

Discussant: Edward Prescott, Carnegie-Mellon University

David Kreps, Stanford University, "Multiperiod Securities and the Efficient Allocation of Risk: A Comment on the Black-Scholes Option Pricing Model"

Discussant: Donald Brown, Yale University

Sanford Grossman, University of Pennsylvania, and Oliver Hart, Churchill College, Cambridge, England, "Corporate Financial Structure and Managerial Incentives"

Discussant: Hayne Leland, University of California at Berkeley

Jerry Green, Harvard University and NBER, "Statistical

Decision Theory Requiring Incentives for Information Transfer"

Discussants: Andrew Postlewaite and John Riley, UCLA

Richard Kihlstrom, University of Illinois, and Jean-Jacques Laffont, L'Ecole Polytechnique, Paris, "A Competitive Entrepreneurial Model of a Stock Market"

Discussant: David Levhari, Hebrew University, Jerusalem

Dennis Carlton, University of Chicago and NBER, "Planning and Market Structure"

Discussants: Jean-Jacques Laffont and Joseph Ostroy, UCLA

Michael Spence and Michael Porter, Harvard University, "Evolution of Growing Industries under Uncertainties"

Discussant: Sidney Winter, Yale University

Dale Mortensen, Northwestern University, "The Matching Process as a Noncooperative Bargaining Game"

Discussant: Steven Lippman, UCLA

The Brock paper develops a theory of capital asset pricing designed to answer such questions as: What is the impact of corporate income tax increases or increased progressivity in individual income tax rates on the relative prices of risky assets? Kreps shows that with repeated trading of a limited number of securities, financial markets could provide all of the risk-spreading possibilities for investors that a much more elaborate system of financial instruments could offer. Grossman and Hart study the effect of a threat of bankruptcy (as reflected in the level of outstanding debt) on the quality of management in a widely held corporation. Green looks at a model of an organization where individuals differ in their functions: one gathers information and transmits it to another who makes the decisions. He asks whether improved quality of information would benefit one or both of the individuals. Kihlstrom and Laffont develop a model to deal with the basic questions of the function of a firm under uncertainty and the stock market's allocation of risk. Carlton's paper examines market structure where planning is believed to be both profitable and socially beneficial. Spence and Porter analyze innovations in the wet-milling process used in the corn industry. They study which firms first adopt this new process, how their competitors then respond, and what the overall level of investment is after the innovation is introduced. Finally, Mortensen looks at the process by which individuals are matched to jobs and the strategic decisions that individuals make regarding job offers.

When revised, the individual papers from the conference will appear as part of the NBER Conference Paper series. To place advance orders for copies, write to: Conference Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, Mass. 02138. There is a charge of \$1.50 for each copy of a paper requested.

International Macroeconomics

The International Seminar on Macroeconomics, a joint project of NBER and the Maison des Sciences de l'Homme in Paris, had its second annual meeting on September 10 and 11. The conference brought together twenty-five economists from Belgium, France, Germany, Italy, Japan, the Netherlands, the United Kingdom, and the United States. Organizers of the conference were Robert J. Gordon of NBER and Northwestern University and Georges de Menil of the Maison des Sciences de l'Homme (Paris Centre d'Economie Quantitative et Comparative of the Ecole des Hautes Etudes en Sciences Sociales).

A major focus of this year's conference was the behavior and role of the international exchange rates. Four papers dealt with this subject:

Pieter Korteweg and Eduard Bornhoff, Erasmus Universiteit, "The Sources of Exchange Rate Variability"

Discussants: John Bilson, University of Chicago and NBER, and Giorgio Basevi, Instituto de Scienze Economiche, Bologna

Vivien Levy-Garboua, Bank of France, and Henri Sterdyniak, INSEE, Paris, "The Dollar, the EMS, and Macroeconomic Policy"

Discussants: John Flemming, Nuffield College, Oxford, and Jacob Frenkel, University of Chicago and NBER

Paul de Grauwe and Paul Van Den Bergh, Katholieke Universiteit Leuven, "Financial Policies in the Industrialized Countries and the Volatility of Exchange Rates"

Discussants: Paul Armington, Wharton Economic Forecasting Associates, and Uwe Westphal, Universitat Hamburg

Paul Armington, Wharton Economic Forecasting Associates, "Exchange Rate Dynamics and Potential Strains on the New EMS System"

Discussants: William Branson, Princeton University and NBER, and Terry Burns, London School of Economics

Their common theme was an attempt to explain why exchange rates have fluctuated so much during the 1970s.

Korteweg's paper reported on the sources of exchange rate variability in the period since 1973. It asked why exchange rates have behaved so differently from real inflation rates, violating the usually accepted theory of "purchasing power parity."

The papers further focused on the implication of recent exchange rate behavior for the likely success of the new European Monetary System (EMS), a system that ties the exchange rates of major European countries to each other. Levy-Garboua and Sterdyniak discussed their research on the relation of the dollar and the EMS. The discussion that followed led to considerable skepticism that the EMS could be sustained for long in light of the widely different behavior of inflation that is likely to occur in the major countries.

The paper by de Grauwe and Van Den Bergh analyzed the ways in which the financial policies of major industrialized countries affect the volatility of exchange rates and each others' interest rates. One important aspect of their work was a simulation of the effects of managed float in countries that lean away from exchange rate pressures and sterilize the resulting changes on domestic money stocks.

Finally, Armington presented a new multinational model of the determination of exchange rates and interest rates in a context in which the stabilization policies of the countries are treated as endogenous.

Another paper emphasized the fundamental difference in the inflation process among the main industrial countries:

William Branson, Princeton University and NBER, and Julio Rotemberg, Princeton University, "International Adjustment with Wage Rigidity"

Discussants: Richard Portes, Maison des Sciences de l'Homme, and Jeffrey Sachs, NBER

The rising price level has sharply reduced the growth of real wages during the past six years in the United States. In contrast, European real wages have shown little response to rising price levels. Branson and Rotemberg emphasized this European real wage rigidity in their explanation of the difference between the response of the U.S. economy and the European economies to expansionary macroeconomic policy.

The final two papers attempted to bring new empirical evidence to bear in areas of recent heated controversy in macroeconomics:

John Muellbauer, Birkbeck College, London, and David Winter, University of Bristol, "Employment, Production, and Exports in British Manufacturing: A Disequilibrium Analysis"

Discussants: Robert J. Barro, University of Rochester and NBER, and Edmond Malinvaud, INSEE, Paris

John Bilson, University of Chicago and NBER, "The Rational Expectations Approach to the Consumption Function: A Multi-Country Study"

Discussants: Robert E. Hall, Stanford University and NBER, and Heinz Konig, Universitat Mannheim

Muellbauer and Winter's paper provided evidence on the disequilibrium adjustment of employment and exports in British manufacturing. They noted that, among other things, both home demand and labor shortages have negative spillover effects on exports.

Bilson's paper provided empirical tests for the United States, United Kingdom, and West Germany of the recent rational expectations version of the permanent income hypothesis of consumption behavior. His analysis found, in all three countries, that consumer spending appears to respond to anticipated as well as unanticipated changes in personal income.

Several of the conference papers and the remarks of the discussants will be published in a special issue of the *European Economic Review*.

N.Y. Research Conference

About one hundred corporate chief economists and senior financial executives attended NBER's first annual research conference in New York on October 9. The one-day program was designed to inform them of the results of recent Bureau research and new work under way. Four NBER research associates discussed their own research and analyses.

Benjamin Friedman, program director of the Financial Markets and Monetary Economics Program, discussed several aspects of the role of debt and equity in financing U.S. capital formation. Friedman emphasized the apparent regularity in the U.S. economy's debt capacity in relation to nonfinancial economic activity, including both private and public sector debt. He noted that during most of the post-World War II period, a decline in outstanding federal government debt relative to gross national product has mirrored the rise in indebtedness of private borrowers, especially the corporate business sector. Recently this trend has slowed, however, so that prospects for a continuation of rapid U.S. economic growth may depend more on the corporate sector's equity base than has been the case in the past.

Robert Hall, director of the Economic Fluctuations Program, focused on labor markets in recession and recovery. He explained that labor markets have been very tight throughout the 1970s with the exception of the 1975 recession. In light of that, continued wage inflation is not surprising. Moreover, given the experience of the last recession, there is no reason to expect a large deceleration of wage inflation in the current downturn.

William Branson, director of the NBER International Studies Program, spoke on comparative macroeconomics and exchange rates in stabilization policy. Specifically, he addressed the questions of why OECD economies are stuck in a seemingly permanent recession and what can be done about it. Branson's remarks also concerned the ways in which a consistent system of managed exchange rates might be reconstructed.

Finally, Bureau President Martin Feldstein spoke on the taxation of capital income and its relationship to capital formation. He stressed the several ways in which the interaction of inflation and existing tax rules have raised effective tax rates on capital income. He indicated how this has reduced the growth of the capital stock and described some of the implications of possible changes in tax rules. Feldstein also noted how the interaction of inflation and tax rules makes it virtually impossible to guide monetary policy by any type of interest rate guidelines.

Latin American Trade

"Trade Prospects among the Americas: Latin American Export Diversification and the New Protectionism" is the subject of an NBER conference to be held in Sao Paulo, Brazil, on March 23-26, 1980. The conference,

one in a series sponsored by IBM, is being coordinated by NBER and the Institute of Economic Studies of the University of Sao Paulo (FIEP). Dr. Malcolm Gillis organized the conference and is handling arrangements in the United States for NBER; Dr. Carlos Longo of FIEP is the Latin American coordinator.

The chief motivation for the conference, which will address key issues in international trade as they bear upon prospects for export growth and diversification in Latin America, was the recent shift within most Latin American countries from import-substitution policies toward export-led growth. Gillis draws an analogy between the current Latin America trade setting and that of Germany after the Treaty of Versailles: heavy reparations burdens were imposed on Germany; at the same time, that nation's ability to fulfill its obligations was severely undermined by the Allies' systematic dismantling of much of German industrial capacity. Similarly, many Latin American countries have a burdensome level of external commercial debt that will have to be serviced through export earnings, but rising protectionism in other countries may measurably reduce their ability to meet debt service obligations over the next ten years. Given that setting, the conference will address both current and future concerns such as: (1) What is the world setting in which growth of Latin American exports may take place from 1980 to 1990? (2) What are the implications of the level of external debt for the Latin American nations, particularly those with limited natural resources, especially energy and endowments? and (3) How might rising export competitors from new industrial countries, particularly in Asia, inhibit Latin American penetration of world export markets?

The following papers, grouped by topic, will be presented:

1. *External Macroeconomic Dimensions* (the external setting in which growth of exports may take place)

Gordon Smith, Rice University, "External Debt and the Trade Imperative for Non-Oil Exporters in Latin America"

Donald Keesing, World Bank, "Prospects for World Economic Growth and Latin American Exports, 1980-1990"

Gustav Ranis, Yale University, "Challenges and Opportunities Posed by Asia's Super-Exporters: Implications for Manufactured Exports from Latin America"

2. *Export Expansion and Diversification: Domestic Policies in Latin America* (What is the relative effectiveness of various export promotion policies and what are the likely responses of importing nations?)

Abel Beltran del Rio, Wharton Econometric Forecasting Associates, "Mexico's Resistance to Dutch Disease and Kuwait Effect"

Eliana A. Cardoso, IPEA-IPNES, Rio de Janeiro,

Economic Cycles Discussed

NBER's Committee on Business Cycle Dating—Robert Hall (chairman), William Branson, Martin Feldstein, Benjamin Friedman, Robert Gordon, and Geoffrey Moore—met on July 26 in response to growing evidence in the economy that a cyclical peak might have been reached in recent months. However, the consensus of the group was that the evidence was not sufficiently strong to determine whether, or when, a recession had begun; another meeting was scheduled for October.

There were several reasons for the committee's caution, including: (1) the conflict between the small decline in the Federal Reserve's industrial production index and the much larger decline in GNP; (2) the continued strength of employment and the decline in the unemployment rate; and (3) the erratic behavior of automobile and truck production due to gasoline shortages and the trucking industry's work stoppage.

The business cycle group is responsible for maintaining NBER's chronology of U.S. business cycles, which is widely used among economic and business analysts. Historically, NBER's first announcement of a peak and onset of a recession occurs only when the evidence about the actual behavior of the economy becomes available for a long enough period to resolve the ambiguities created by special events.

Summer Institute 1979

Economists from ten foreign countries and the United States, representing nearly thirty universities, met at NBER's second annual Summer Institute in Cambridge this July. The institute focused on two areas: macroeconomic fluctuations and exchange rate policy.

The macroeconomic group, led by NBER Program Director Robert Hall of Stanford University, dealt with empirical work that can enhance our ability to understand and control economic fluctuations. Meeting in formal sessions twice a week, and informally as needed, group members discussed their research in such areas as stagflation, monetary policy implications, and the role of national expectations in models of the economy.

The international group, led by NBER Program Director William Branson of Princeton University, met each morning to discuss their research. Four of the papers presented dealt with some aspect of international trade. Other topics included the behavior and prediction of exchange rates, various systems for determining rates, and the importance of international reserves.

In addition to the formal Summer Institute proceedings, meetings between members of the Bureau's Program in Business Taxation and Finance and economists from France, Germany, and Sweden took place during

"Economic Growth, Balance of Trade, and Foreign Debt: Aspects of the Recent Brazilian Experience"

Roberto Fendt, Jr., Funcex, Rio de Janeiro, "Assessment and Effectiveness of Brazilian Fiscal Incentives for Export Promotion"

Bela Belassa, World Bank and Johns Hopkins University, "Policy Reactions to External Shocks"

M. B. de P. Pinto, FIPE, "The Effects of Fiscal Incentives on the Structure of Manufactured Exports"

3. *Role of Intraregional Cooperation* (regional trading arrangements)

Miguel Urrutia M., Fedesarrollo, Bogota, "The Role of the Andean Common Market in the Expansion of Member Countries"

4. *Microeconomic Dimensions: Trade Diversification and Industrial Structure* (What types of industries can contribute to export diversification and expansion?)

Raymond Vernon, Harvard University, "State Owned Enterprises in Latin America's Exports"

Jorge Katz and E. Albin, BID-CEPAL, Buenos Aires, "From Infant Industry to Technology Exports: The Argentine Experience in the International Sale of Industrial Plants and Engineering Works"

D. Alves and Fernando B. H. De Mello, FIPE, "Brazilian Agriculture: Export Promotion vs. Nutrition"

Adolpho Figueroa, Univ. Pontificia Catolica, Lima, "Effects of Changes in the International Division of Labor on the Level and Structure of Agricultural Production"

5. *The New Protectionism and Receptivity in Developed Country Markets* (trade restrictions and multilateral adjustment schemes)

Rachel McCulloch, University of Wisconsin, "Latin America's Stake in Trade Liberalization Measures in Developed and Developing Countries"

J. Michael Finger, Office of Trade Research, U.S. Treasury, "Dumping, Countervailing Duties, and Other Aspects of 'Administered' Protection: Implications for Latin America"

Jere R. Behrman, University of Pennsylvania, "Commodity Exports and NIEO Proposals for Buffer Stocks and Compensatory Finance: Implications for Latin America"

All of the papers presented at the conference will be published in a special issue of the *Quarterly Review of Economics and Business* of the University of Illinois. They will also appear in a book published by the University's Bureau of Economic and Business Research and will be available in Spanish and Portuguese.

the month of August. These sessions dealt mainly with the taxation of capital, both in the United States and abroad. NBER Program Director David Bradford of Princeton and Research Associate Mervyn King of the University of Birmingham, England, organized the meeting devoted to international tax comparisons.

Additional papers on dividends, capital gains, and stock values, particularly as they are affected by inflation and taxes, were discussed by members of the Business Taxation and Finance Program.

Juster Heads I & W

F. Thomas Juster was named chairman of NBER's Conference on Income and Wealth at its May meeting in Washington, D.C. (Details of the conference appear in the **Reporter**, Summer 1979.) Juster was previously associated with NBER, as a member of the research staff and as vice president of research, from 1959-1973. He holds a Ph.D. from Columbia University (1956) and is a professor of economics and director of the Institute for Social Research of the University of Michigan.

Juster is currently the program director of the University of Michigan's Survey Research Center and editor of its publication, *Economic Outlook, USA*. He has served as a consultant to the Council of Economic Advisers and, since 1976, has been on the Advisory Committee of the Congressional Budget Office. He is the author of numerous books and articles, particularly on the subject of the economic behavior of consumers.

On future plans for the Conference on Income and Wealth, Juster says, "The next income and wealth conference, which will be held during 1980, will be concerned with transfer payments. In this area, as in others, the principal focus of the conference will be on careful articulation of conceptual and measurement problems rather than on analysis of causal relationships or prediction."

The Changing Roles of Debt and Equity

A meeting on May 9 at NBER's Cambridge office formally launched a new Bureau project on the changing roles of debt and equity financing in the U.S. economy. The project, sponsored by the American Council of Life Insurance, is intended to examine how the roles of debt and equity are evolving in response to changing economic forces, including private sector financing requirements and attitudes, rapid and volatile price inflation, advancing financial technology, governmental influences, and the increasing internationalization of capital.

Coordinated by Benjamin Friedman of Harvard University, director of the Bureau's Program in Financial Markets and Monetary Economics, the debt and equity project is one aspect of the Bureau's extensive research

effort in the area of capital formation. In addition to Friedman, current project participants include Gerald Pogue of Baruch College; Vance Roley of the Council of Economic Advisers; NBER Research Associates Zvi Bodie, David Bradford (director of the NBER Program in Taxation), Roger Gordon, David Hartman, Edward Kane, Burton Malkiel, Robert Merton, Stewart Myers, Robert Shiller, John Shoven; and Bureau President Martin Feldstein.

The group plans to hold meetings several times a year to present preliminary research findings for closer examination. The first year's topics and authors are as follows:

Inflation, the Term Structure of Corporate Debt, and Capital Formation: Past Trends and Future Prospects—Zvi Bodie

Pension Funding, Share Values, and National Saving—Martin Feldstein

Denison's Law, Capital Formation, and the Debt-GNP Ratio—Benjamin Friedman

Stock Market Valuation of Dividends: Links to the Theory of the Firm and Empirical Estimates—Roger Gordon and David Bradford

Internationalization of U.S. Debt and Equity Markets—David Hartman

Inflation, Disintermediation, and Household Debt—Edward Kane

The Financial Structure of Corporations—Burton Malkiel and Roger Gordon

Measuring the Market Price of Risk and Forecasting the Expected Return of the Market—Robert Merton

The Market Price of Risk—Stewart Myers and Gerald Pogue

The Role of Federal Debt Management Policy in the Determination of Corporate Bond and Equity Yields—Vance Roley

Measuring Changes in Volatility of Financial Asset Returns—Robert Shiller and Christine Amsler

The Volatility of Corporate Stock Prices Relative to Information about Future Dividends—Robert Schiller

Pension Project

NBER recently launched an extensive study of private pensions under the direction of Research Associate John Shoven of Stanford University. Research Associates Kim Clark of the Harvard Business School and Zvi Bodie of the Boston University School of Management will coordinate the two major areas of research: (1) pensions, the labor market, and retirement decisions and (2) the capital and financial market implications of pensions. More specific topics will include: demographic variables and macroeconomic performance; private pensions and social security; state and local government pension

plans; pensions and inflation; financial markets, corporate finance, and labor; and life cycle planning and the provision for retirement.

Bureau research associates who are expected to participate in the pension project include: Ann Bartel, Zvi Bodie, Michael Boskin, Phillip Cagan, Kim Clark, Martin Feldstein, Benjamin Friedman, Richard Freeman, Mervyn King, Laurence Kotlikoff, Mordecai Kurz, Edward Lazear, Peter Mieszkowski, Anthony Pellechio, John Shoven, Joseph Stiglitz, and Kip Viscusi.

According to current plans, the first formal meeting of the research group will be held in January 1980. During the course of the three-year project, participants are expected to meet at the Bureau's 1981 summer institute and to hold a conference for lawyers, actuaries, business and labor representatives, and policymakers in 1982.

Reprints Available

The following articles in the series of NBER reprints, intended for nonprofit educational and research purposes, are now available. (Reprints Nos. 1-15 are listed in the Summer 1979 **Reporter**.)

16. *Some Direct Evidence on the Dividend Clientele Phenomenon*, Wilbur G. Lewellen, Kenneth L. Stanley, Ronald C. Lease, and Gary G. Schlarbaum, 1978.
17. *Economics, Health, and the Postindustrial Society*, Victor R. Fuchs, 1979.
18. *Substitution and Expectation Effects on Borrowing Behavior*, Benjamin M. Friedman, 1979.
19. *Labor Market Dynamics and Unemployment*, Kim B. Clark and Lawrence H. Summers, 1979.
20. *The Effect of Social Security on Early Retirement*, Michael J. Boskin and Michael D. Hurd, 1979.

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others, there is a \$1.00 charge per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than \$10.00. Reprints must be requested by number, in writing, to: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, Mass. 02138.

Technical Papers Series

The first studies in a new series, NBER Technical Working Papers, are now available. Like NBER Working Papers, these studies may be obtained by sending \$1.00 per paper, ordered by number, to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, Mass. 02138. Presently available are:

1. *A Stochastic Approach to Disequilibrium Macroeconomics*, Seppo Honkapohja and Takatoshi Ito.
2. *Issues in Controllability and the Theory of Economic Policy*, Willem H. Buiter and Mark Gersovitz.

A Stochastic Approach to Disequilibrium Macroeconomics

Seppo Honkapohja and Takatoshi Ito

Technical Working Paper No. 1

September 1979

In this paper, our aim is to develop an alternative approach to analyzing a macroeconomic model where markets do not clear. Earlier approaches have had difficulties in interpreting effective demand, a key concept in disequilibrium macroeconomics. We propose a new definition of effective demand similar to that of Svensson, Gale, and Green. Given the states of the markets, there is, in general, uncertainty about the amount of trades individuals can complete. Considering this uncertainty, each individual has to make binding trade offers (effective demands), a fraction of which will be actually transacted. Using the newly defined effective demand, we define the rationing equilibrium as a fixed point of disequilibrium signals.

We analyze various regimes of rationing equilibria. The most startling conclusion is the multiplicity of equilibria: (1) given wages and prices, more than one type of equilibrium may exist and (2) even at Walrasian prices, non-Walrasian equilibria may exist, and these are usually stable with respect to a quantity adjustment mechanism, while the Walrasian equilibrium is unstable. We also considered the comparative static properties of policy, and they are comparable to those of the earlier approach.

Issues in Controllability and the Theory of Economic Policy

Willem H. Buiter and Mark Gersovitz

Technical Working Paper No. 2

October 1979

This paper demonstrates that the concepts of dynamic controllability are useful for the theory of economic policy. First, dynamic point controllability is a central concept in stabilization policy because it implies "stabilizability." Second, the ability to achieve a target state, even if it cannot be maintained, may be of economic interest. Third, dynamic controllability is of special interest for historical models for which the long-run equilibrium is not independent of the initial conditions. Fourth, the conditions for any notion of dynamic controllability are distinct from, and weaker than, those for Tinbergen static controllability.

Current Working Papers

Individual copies of NBER Working Papers are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies of the Working Papers by sending \$1.00 per copy to Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, Mass. 02138. Please make checks payable to the National Bureau of Economic Research, Inc.

Abstracts of all Working Papers issued since June 1979 are presented below. For earlier Working Papers, see previous issues of the NBER **Reporter**. The Working Papers abstracted here have not been reviewed by the Board of Directors of NBER.

Why Is There a Youth Labor Market Problem?

Richard B. Freeman

Working Paper No. 365

June 1979

This paper examines the causes of high and increasing levels of youth joblessness and related problems in the youth labor market. Partly because of inconsistencies in reported rates of youth employment across surveys and partly because of problems in measuring key social variables, it is difficult to reach firm conclusions about these problems. As far as can be told, much of the relatively high rate of youth joblessness can be attributed to turnover and mobility patterns that are normal in the U.S. economy. However, much of the problem is also directly related to a dearth of jobs. Demand forces, which have come to be neglected in favor of supply forces in much popular discussion, are major determinants of variation in youth employment over time and among areas. For groups facing the most severe joblessness problems, however, the lack of jobs appears to be compounded by problems of employability related to deleterious social patterns. Surprisingly, perhaps, the factors that determine the probability of employment for young persons differ substantively from those factors that determine wages.

This paper explains the decline in the earnings of young workers relative to old workers in terms of the increased number of young persons. It speculates that the decline in relative wages may have contributed significantly to the stable ratio of employment to population among young whites. The causes of the downward trend in youth employment for nonwhites—which constitutes one of the major developments of the period—remain a conundrum.

The Determination of Long-Term Interest Rates: Implications for Monetary and Fiscal Policies

Benjamin M. Friedman

Working Paper No. 366

June 1979

This paper reports the implications, for the effectiveness of monetary and fiscal policies, of treating the determination of long-term interest rates by an explicit supply-demand approach instead of the more familiar unrestricted reduced-form term-structure approach. In particular, the new research tool applied in this paper is an altered version of the MIT—Penn—SSRC econometric model from which the usual single term-structure equation has been deleted and into which a supply-demand model of the bond market has been substituted in its place.

Since long-term asset yields and prices are a key part of the bearing of financial market developments on non-financial economic activity, simulation experiments based on the altered model suggest interesting implications for monetary and fiscal policies. Simulation results indicate that, in the short to intermediate run, fiscal policy may have somewhat larger real-sector effects and monetary policy somewhat smaller real-sector effects than conventional U.S. macroeconomic models have shown. The results also indicate that these differences (for both fiscal and monetary policies) are more pronounced when the Federal Reserve System implements monetary policy by setting the monetary growth rate than when it does so by setting interest rate levels.

Fixed and Flexible Rates: A Renewal of the Debate

Jacques R. Artus and John H. Young

Working Paper No. 367

June 1979

This paper reviews the extent to which a decade of analysis and experience has altered thinking about the choice of an exchange rate system. The advantages of flexible rates are viewed to have been exaggerated. They do not permit governments to have permanently higher rates of economic activity at the expense of higher inflation as some thought. Further, the slow speed of adjustment to relative price changes limits the contribution of flexible rates to external adjustment in the short run and the degree of insulation from external influences that they provide. Finally, flexible rates tend to be fluctuating rates, and although there is little empirical evidence so far showing that the fluctuations have had adverse effects on trade and capital flows, the instability of exchange rates, more than any other factor, has led to a certain disillusionment with the floating rate system. Notwithstanding the drawbacks of flexible rates, there will be a continuing need for exchange rate flexibility over the next few years. This paper also gives some anal-

ysis of the problems of achieving greater stability under flexible rates or the requisite amount of flexibility under pegged rates.

Optimal Tax Treatment of the Family: Married Couples

Michael J. Boskin and Eytan Sheshinski
Working Paper No. 368
July 1979

This paper examines the appropriate tax treatment of the family in a series of analytical models and numerical examples. We derive the optimal tax rates for each potential earner for a population of taxpaying couples who differ in earning capacity. These rates depend crucially upon own- and cross-labor supply elasticities and the joint distribution of wage rates. Our results suggest that the current system of income splitting in the United States, under which husbands and wives face equal marginal tax rates, is nonoptimal. Using results from recent econometric studies and allowing for a sensitivity analysis, the optimal tax rates on secondary workers in the family are much lower than those on primary earners. Indeed, our best estimate is that the secondary earner would face tax rates only one-half as high as primary earners.

Energy Prices, Inflation, and Recession, 1974-75

Knut A. Mork and Robert E. Hall
Working Paper No. 369
July 1979

The energy price shock depressed real output by 2 percent in 1974 and by 5 percent in 1975, according to our results. Prices rose by 4 percent in 1974 and by another 2 percent in 1975. These conclusions are derived from an aggregate model of the U.S. economy with an explicit role of energy in production. The distinction between expected and unexpected shocks is an important part of the model. We also examine monetary and fiscal policies that might have offset the energy shock.

The Decline in Aggregate Share Values: Inflation and Taxation of the Returns from Equities and Owner Occupied Housing

Patric H. Hendershott
Working Paper No. 370
July 1979

With a neutral tax system, an increase in observed and anticipated inflation would not be expected to alter either real aftertax yields on bonds and equities or the ratio of the market value of equities to the replacement cost of real corporate capital. In the real world, however, declines in real aftertax bond yields and the relative value of shares have been observed. Feldstein (1976, 1978) has attributed both of these phenomena to the use of de-

preciation based on replacement cost and the taxation of nominal capital gains. Our analysis supports his conjecture regarding the decline in real aftertax debt yields, but rejects his analysis of the cause of the decline in share values.

The decline in share values can be attributed to many factors, but the most important is probably the favorable taxation of income from owner occupied housing (no taxation of either implicit rents nor real capital gains). As a result, housing has become more attractive with the acceleration of inflation, and households have substituted housing for equity shares. Other possible sources of the decline in share values are reduced profitability of existing capital, owing to increased regulatory costs and real energy prices, and a greater perceived risk in business operations.

Sorting Models of Labor Mobility, Turnover and Unemployment

W. Kip Viscusi
Working Paper No. 371
July 1979

Utilizing a model in which individuals search among lotteries on likely success at different jobs, this paper analyzes both the search decision when unemployed and the implications of the sorting process. The model correctly predicts both the direction and convexity of the age-unemployment relationship and the impact of experience on turnover and wages. Actions taken when unemployed have an important impact on equilibrium turnover rates, unemployment rates, and the work history of the pool of unemployed. The sorting model is used to analyze racial differences in youth unemployment and major empirical features of low-income labor markets.

The Old Age Security Hypothesis and Population Growth

Robert J. Willis
Working Paper No. 372
July 1979

In traditional societies, it is often argued that parents' desire for old age security in the form of transfers from their children provides an important motive for childbearing. Some doubt has been cast on this old age security hypothesis by recent estimates that suggest that the rate of return on investments in children tends to be negative in most developing countries.

This paper presents a theoretical model that integrates micro-level decision making about fertility and life cycle consumption into a dynamic, macro-level model of overlapping generations in order to investigate the implications of this hypothesis. In this model, observation of a negative rate of return to children and positive population growth in a traditional society may imply (1) that the old age security motive for childbearing is, in fact, very strong; (2) that the rate of population growth is too high from a Paretian point of view; and (3) that each individual

in current and all future generations could be made better off if the rate of population growth were lower and the level of old age compensation were increased, but that a reduction in population growth alone would reduce welfare. A social security tax and transfer policy could be devised to induce a Pareto optimal rate of population growth and distribution of life cycle consumption only if measures are taken to offset the divergence between the private and social rate of return to children created by the social security scheme.

Inflation Risk and Capital Market Equilibrium

Zvi Bodie

Working Paper No. 373

July 1979

This paper investigates the effect of uncertainty about inflation on the portfolio behavior of households and the equilibrium structure of capital market rates. The theoretical framework used is the continuous-time, dynamic, stochastic programming model pioneered by Merton (*Econometrica*, 1973) and applied by Fischer (*JPE*, 1975) in his study of the demand for index bonds.

The principal findings regarding portfolio behavior are:

1. In the presence of uncertainty about inflation, households will have an inflation-hedging demand for assets other than riskless nominal bonds in direct proportion to the covariance between the rate of inflation and the nominal rates of return on these other assets.
2. An asset is a perfect inflation hedge if and only if its nominal return is perfectly correlated with the rate of inflation.
3. There is an optimal inflation-hedging portfolio, which when combined with the riskless nominal bond and the nominally optimal combination of risky assets, allows investors to span the *real* efficient portfolio frontier.
4. An increase in uncertainty about inflation will cause an investor's demand for nominal bonds to fall if he initially is a net creditor, that is, if he holds a positive amount of bonds.

The principal findings regarding capital market rates are:

1. The equilibrium real risk premium on any security with uncertain nominal returns is in direct proportion to the difference between the covariance of its nominal rate of return with the market portfolio and its covariance with the rate of inflation.
2. The higher the ratio of nominally risky assets to total private wealth is, the higher the risk premium will be on any security that is positively correlated with the market portfolio.

3. Unless households treat government bonds and fiat money as liabilities as well as assets, an increase in inflation uncertainty will lower the risk premiums on all nominally risky assets.

Colonial and Revolutionary Muster Rolls: Some New Evidence on Nutrition and Migration in Early America

Kenneth Sokoloff and Georgia Villaflor

Working Paper No. 374

July 1979

It is widely acknowledged that investment in human capital has made an important contribution to the increase in labor productivity and per capita income during the last several centuries. While much of the research on this issue has focused on education, the significance of improvements in nutrition has also attracted the attention of many scholars. Until recently, efforts to study this subject have been hampered by a lack of evidence, but it now appears possible to construct indexes of nutrition from data that relate height and age. This paper employs a relatively underutilized type of historical document to investigate the level of nutrition in early America. The same material also provides a rich source of information about patterns of migration during this period.

The authors find that native-born Americans approached modern heights by the time of the Revolution. On average, colonial Americans appear to have been two to four inches taller than Europeans, with southerners considerably taller than northerners and the rural population of greater stature than the urban. These differences may indicate that other factors besides nutrition were important in accounting for the dramatic changes in U.S. mortality rates during the nineteenth century.

The Work and Wages of Single Women: 1870 to 1920

Claudia Goldin

Working Paper No. 375

July 1979

Single women in the United States dominated the female labor force from 1870 to 1920. Data on the home life and working conditions of women in 1888 and 1907 enable us to estimate their earnings functions. For these women, work in the manufacturing sector was task oriented, and payment was frequently by the piece. Earnings rose steeply with experience and peaked early; learning was mainly on the job. The early termination of human capital investment was a function of the life cycle labor force participation of these women. The role of the family was also critical. Sex segregation of employment is seen as a partial product of the method of payment.

Toward a Reconstruction of Keynesian Economics: Expectations and Constrained Equilibriums

J. Peter Neary and Joseph E. Stiglitz

Working Paper No. 376

August 1979

A two-period model of temporary equilibrium with rationing is presented in which particular attention is paid to agents' expectations of future constraints. It is shown that with arbitrary constraint expectations, many different types of current equilibriums may be consistent with the same set of (current and expected future) wages and prices. Constraint expectations tend to be self-fulfilling; for example, a higher expectation of Keynesian unemployment tomorrow increases the probability that it will prevail today.

In addition, *rational constraint expectations*, (that is, perfect foresight of future constraint levels) are shown to enhance, rather than reduce, the effectiveness of government policy.

Exchange Rates and Portfolio Balance

John R. Martin and Paul R. Masson

Working Paper No. 377

August 1979

In this paper, we develop an open economy, portfolio balance model for a world of many countries that describes allocation among money, a domestic bond, and a traded foreign currency bond. A special role is attributed to the dollar, namely that all internationally traded bonds are denominated in that currency. It is shown that in the short run with real variables exogenous and expectations static, stability requires that all countries except the United States be net creditors in dollar-denominated bonds.

What data are available on intercountry claims suggest that some countries may well be net debtors abroad in foreign currency. In particular, if one excludes direct investment claims, private claims on the rest of the world by Japan and Canada have been negative over the period of floating rates since 1973. However, some preliminary reduced-form regression equations for the dollar exchange rates of these two countries do not support the implications of the portfolio balance model in the debtor case. On the other hand, an equation for a composite of Western European currencies (by our calculations, this group of countries is a net creditor) gives more promising results.

Labor Turnover and Youth Unemployment

Linda Leighton and Jacob Mincer

Working Paper No. 378

August 1979

The main question addressed in this paper is why youth unemployment is high relative to adult unemployment. This analysis is based largely on longitudinal mi-

cro data in the NLS and MID panels of men, surveyed in 1966-76.

Since the duration of unemployment *increases* with age, the probability of experiencing unemployment is the main focus of our analysis. The basic finding is that the first rapid, and then decelerating, decline with age in the probability of unemployment stems from a similarly shaped relation between the probability of separation (from a job) and working age. The age patterns are, in turn, mainly due to the decline of probabilities as tenure lengthens. Indeed, at given levels of tenure, the incidence of unemployment does not decline at all with age, except among blacks and in periods of high unemployment. We conclude that the short tenure level of the young is the main reason for the age differential in unemployment. To check this, we compare youths with short-tenured groups who are not adversely selected; migrants who were not unemployed before migration; and immigrants. The comparison reveals that youths are in the same situation as others with little accumulated tenure. We do note, however, that unemployment declines more slowly for youths than for others, reflecting the gradually increasing commitment to work that takes place in the transition from school to work and from parental to own household.

Increases in the duration of unemployment with age are ascribed, within a search model framework, to a decline in the probability of finding job vacancies among older movers. The inference that it is increasingly difficult to find a job is also consistent with observed increases in the probability of unemployment conditional on separation, declines in the quit-layoff ratio, and wage gains from moves as workers age.

A Strategic Theory of Inflation

Mordecai Kurz

Working Paper No. 379

August 1979

A strategic mechanism of price adjustment is introduced to explain periods of inflation in the United States during 1909-74. The mechanism follows from our theory that when the profit rate is above the normal target rate, competitive forces operate to lower prices. If the profit rate is below the target, a correlated strategy among firms operates to generate a rise in prices as a strategy for improving profitability. The notion of "correlated strategy" is adopted from game theory. The mechanism may operate in harmony or against demand, and the net effect is what we call the basic inflation. Contrary to a priori notions of positive association between inflation rates and profit rates, our theory proposes a critical test of a *negative* association between these variables. Such a relationship is, in fact, empirically established.

The analysis shows that large and persistent inflationary pressures are generated by low profitability. During 1971-77, these pressures accounted for some 20 to 50 percent of total inflation. These pressures would have been present even if no increase in cost occurred. This suggests that an important cause of inflation in the 1970s

is the low profit rate in the private sector and that any public policy against inflation will fail if it does not aim, at the same time, to raise the profit rate on private capital.

The Canadian Dollar, 1971-76: An Exploratory Investigation of Short-Run Movements

Charles Freedman

Working Paper No. 380

August 1979

This paper examines the movement of the Canadian dollar during 1971-76. Although Canadian prices increased substantially more than U.S. prices in this period, there was no tendency for a systematic depreciation of the Canadian dollar. To explain this phenomenon, other factors must be introduced into the exchange rate equation. Among the variables that prove significant are the Canadian terms of trade, measures of long-term borrowing, the relative cyclical position of Canada and the United States, and the market's errors in forecasting the current account balance. When used together with relative prices, these variables track the movement of the Canadian dollar very satisfactorily during the period.

Inventories, Rational Expectations, and the Business Cycle

Alan S. Blinder and Stanley Fischer

Working Paper No. 381

August 1979

The simplest macroeconomic models, in which markets clear instantaneously and expectations are rational, preclude the existence of business cycles, that is, of serially correlated deviations of output from trend. This paper studies one of several mechanisms that can be used to make these so-called new-classical models produce business cycles: the gradual adjustment of inventory stocks.

We formulate two microeconomic models of inventory holdings. Both imply that (1) current output should be a decreasing function of the stock of inventories and (2) inventories, once perturbed from equilibrium levels, should adjust only gradually. These two features are then embedded into an otherwise standard macroeconomic model. We reach two principal conclusions: (1) disturbances, such as unanticipated changes in money, will set in motion serially correlated deviations of output from trend; (2) if desired inventories are sensitive to the real interest rate, then even fully anticipated changes in money can affect real variables.

Supply Versus Demand Approaches to the Problem of Stagflation

Michael Bruno and Jeffrey Sachs

Working Paper No. 382

August 1979

We develop a model of aggregate supply and demand in the open economy to explain the important character-

istics of international macroeconomic adjustment in the 1970s. Traditional demand oriented models cannot account for the worldwide phenomenon of rising inflation and unemployment in the mid-1970s, or for the failure of most industrialized economies to recover from the deep recession of 1974-75. When aggregate supply is carefully treated, it is found that much of the inflation and sluggish output performance may be attributed to the jump in the real costs of intermediate inputs and the failure of real wages to adjust downward after the input price shock. A simulation model shows that fuel inputs are sufficiently important in production that a large part of the worldwide recession may be attributed to the change in the relative price of oil since 1973. In an empirical section, it is suggested that countries differ in their response to supply shocks and macro policies because of differences in key structural relationships, particularly in wage determination.

Inflation and the Benefits from Owner Occupied Housing

Patric H. Hendershott and Sheng Cheng Hu

Working Paper No. 383

August 1979

While inflation may be public enemy number one for many Americans, most homeowners have reaped enormous benefits from inflation during the past decade and a half and will likely continue to do so in the future. These benefits take two forms. First, unanticipated inflation raises the capital gain earned at the time of sale above that anticipated at the time of purchase. The realized real aftertax return on the equity investment in the house exceeds the anticipated real aftertax return to the extent that (1) the house purchase is financed by a mortgage and/or (2) unanticipated inflation in housing prices exceeds unanticipated general inflation. Second, the eventual increase in anticipated inflation lowers the cost to the user of capital for owner occupied housing due to declines in real aftertax interest rates. As a result, more housing is purchased, and the consumer surplus earned on housing rises. Thus, homeowners first earn an extraordinary real monetary return and then receive enormous benefits in kind from occupying larger, higher quality houses. The present paper provides estimates of these benefits and returns for homeowners in different marginal tax brackets for different periods during the last fifteen years and draws some public policy conclusions from the estimates.

Time-Series Changes in Youth Joblessness

Michael Wachter and Choongsoo Kim

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This study presents a time-series analysis of the youth unemployment problem stressing the cohort overcrowding effect, a result of the imbalance between younger and older workers induced by the baby boom. Several

techniques are used to study the problem. First, reduced form unemployment equations are estimated for the disaggregated youth groups. The results indicate that secular swings in unemployment rates for female and white youths do track well with the cohort imbalance hypothesis. However, relative increases in unemployment for black males remain unexplained by this model. Second, alternative measures of youth unemployment are developed that treat school enrollment and military service as equivalent to employment. In addition, several employment-to-population ratio measures are explored. Third, equations for employment, unemployment, schooling, and a residual category are estimated together. This allows one to analyze flows into and out of the four states with respect to changes in explanatory variables.

The results suggest that youth unemployment rates, with the exception of those for the group of black males, peaked in relative terms in the early 1970s. A detailed analysis of the declining labor market position of blacks, however, uncovers puzzling results. Although unemployment rates for black males are growing, and employment rates are declining, relative wages and school enrollment rates are increasing. In fact, at least half of the decline in employment ratios for blacks can be associated with increasing school enrollment rates.

Labor Supply and Aggregate Fluctuations

Robert E. Hall

Working Paper No. 385

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One view of aggregate fluctuations interprets changes in employment as movements along a reasonably elastic labor supply schedule. Observed levels of employment represent equality of supply and demand. An opposing view interprets fluctuations as movements away from an inelastic labor supply function. This paper examines the behavior of employment, wages, and interest rates to determine whether the market-clearing view can account for joint movements of the key variables. Specifically, it asks if the labor supply function implicit in the aggregate data is consistent with microeconomic evidence about labor supply. The verdict here is favorable. However, one of the implications of the market-clearing view, that the labor supply function is insensitive to the money stock, is clearly refuted. Some modifications of the market-clearing model are discussed. The weak theoretical grounding of nonmarket-clearing models is also noted. Neither model combines both a convincing economic analysis and a full explanation of the facts.

The Role of Prevailing Prices and Wages in the Efficient Organization of Markets

Robert E. Hall

Working Paper No. 386

August 1979

One way a product or labor market might operate is that all firms might quote the same price or wage. Cus-

tomers or job-seekers search among sellers or employers until they find one willing to sell to them or to employ them. They do not need to consider the possibility that another seller or employer might offer a better deal, since all offers are identical. Under prevailing prices or wages, the small participants in the market—customers and job-seekers—have very limited responsibilities for processing information. In contrast, when markets are equilibrated by the conscious search for the best price or wage, the small participants face complex problems of gathering and interpreting information. Adherence to prevailing prices and wages may explain part of the macroeconomic puzzle of price and wage stickiness and the sensitivity of real variables to nominal disturbances.

The Estimation of Labor Supply Over Kinked Budget Constraints: Some New Econometric Methodology

Anthony J. Pellechio

Working Paper No. 387

August 1979

Most programs of taxation and income maintenance imply that the tax rate faced by an individual changes at different levels of labor supply. As a result, the individual's budget constraint is kinked, presenting problems for the empirical study of labor supply. This paper develops econometric methodology for estimating labor supply in the presence of taxes. Equations for market wage and shadow price are used to describe labor supply choices given a kinked budget constraint. This approach makes a distinction between the discrete choice of which segment of the kinked constraint on which to work and the selection of the actual number of hours of work along linear segments. A consistent procedure is derived that uses all the tax rates faced by the individual and relies on no more structure than has been used in the previous literature on labor force participation. This procedure summarizes the individual's kinked budget constraint by calculating the expected value of variables that assume different values for different sections of the constraint. Techniques for estimating the model based on a probit analysis of the decision to work above or below certain corners of the budget constraint are presented. Maximum likelihood estimation is also discussed.

Notes on Optimal Wage Taxation and Uncertainty

Jonathan Eaton and Harvey S. Rosen

Working Paper No. 388

August 1979

Most contributions to optimal tax theory have assumed that all prices, including that of leisure, are known with certainty. The purpose of this paper is to analyze optimal taxation when workers have imperfect information about their wages at the time they choose

their labor supplies. Both efficiency and redistributive aspects of the problem are considered.

The paper begins with a discussion of the positive theory of wage taxation and labor supply under uncertainty. This is followed by a discussion of optimal taxation when individuals are identical, but their wages are stochastic. Finally, the case of simultaneous uncertainty and inequality is discussed. In this part of the paper, it is assumed that the government's objective is to maximize a utilitarian social welfare function.

A Model of Trade and Exchange Rate Projections

Hannu Halttunen and Dennis Warner

Working Paper No. 389

August 1979

This paper develops and applies a model of world trade and exchange rates in order to analyze the dynamic interaction of the current account and the exchange rate. The model is designed to concentrate on the determination of trade flows, prices, and exchange rates for the OECD member countries, but it also covers oil-exporting countries, other developing countries, and centrally planned economies.

The model contains exchange rate equations, based on the asset market approach, for major OECD countries and adjustable pegging rules for small OECD countries and for LDCs that do not produce oil. These equations and rules provide the link from asset accumulation through the current account to the exchange rate. Once exchange rate equations have been integrated into the trade model, it can be used to analyze the outcomes of different exchange rate regimes and alternative growth prospects in the OECD area.

Simulation results indicate that the model produces a smooth and slow adjustment process for exchange rates and current accounts. They also show that with the higher growth target for an individual country, large current account deficits can occur and large changes in real exchange rates are needed to reach the external equilibrium.

A Model of Trade and Exchange Rate Projections: Equations and Parameters

Hannu Halttunen and Dennis Warner

Working Paper No. 390

August 1979

This paper contains a detailed description of a model of trade and exchange rates. A verbal summary of the model may be found in Working Paper No. 389.

The model contains equations for import demands, bilateral trade flows, and trade prices for twenty-six regions and three commodities. A simple exchange rate model uses developments in current accounts to simulate changes in nominal exchange rates. The regions cov-

ered are the twenty-three OECD countries (Belgium and Luxembourg are combined, and Yugoslavia is included in the CPE region) and three non-OECD regions: LDCs, OPEC, and the centrally planned economies (CPEs).

Section A contains an algebraic description of the model and a glossary of variables and parameters. Section B is a detailed discussion of the equations and the sources of the parameter values.

Cross-Country Effects of Sterilization, Reserve Currencies, and Foreign Exchange Intervention

Richard C. Marston

Working Paper No. 391

August 1979

This study examines the international repercussions of national sterilization policies under fixed exchange rates and managed flexibility. The effects of sterilization on the country pursuing the policy are well known, but the adverse effects on other countries have not been adequately explored.

In this study, a stochastic framework is used to analyze the impact of balance-of-payments disturbances on key financial variables in the domestic and foreign countries. The effects of sterilization are explored under fixed rates, and the combined effects of foreign exchange intervention and sterilization are similarly investigated in a regime of managed flexibility. In either regime, sterilization by the foreign country imposes costs on the domestic country by magnifying the impact of balance-of-payments disturbances on the domestic financial market. The analysis has important implications for the use of reserve currencies: countries issuing reserve currencies benefit from the automatic sterilization of their balance-of-payments surpluses or deficits, while countries using reserve currencies encounter the same cross-country effects as with discretionary sterilization.

The Social Security Disability Program and Labor Force Participation

Jonathan S. Leonard

Working Paper No. 392

August 1979

In the last twenty years the labor force participation rates of 45- to 54-year-old men have fallen 10.6 percentage points among nonwhites and 4.4 percentage points among whites. I find that nearly half of this puzzling decline can be explained by the growth of the Social Security disability program. By 1975, 6.22 percent of the prime-age nonwhite men and 3.57 percent of the prime-age white men were beneficiaries of Social Security disability. Despite the medical screening of applicants, I find in cross-section estimates an elasticity of .35 for beneficiary status with respect to benefit levels. As eligi-

bility requirements have eased and as benefit levels have increased relative to earnings, more men have dropped out of the labor force and become beneficiaries of Social Security disability.

Teenage Unemployment: What Is the Problem?

Martin Feldstein and David Ellwood

Working Paper No. 393

September 1979

This nontechnical paper was prepared as a background study for the NBER Conference on Youth Joblessness and Employment. Our analysis of data collected in the March 1976 and October 1976 Current Population Surveys leads us to the conclusions presented below.

Unemployment is not a serious problem for the vast majority of teenage boys. Less than 5 percent of teenage boys are out of school, unemployed, and looking for full-time work. Many out-of-school teenagers are neither working nor looking for work, and most of these report no desire to work. Virtually all teenagers who are out of work live at home. Among those who do seek work, unemployment spells tend to be quite short; over half of these spells end within one month when these boys find work or stop looking for work. Nevertheless, much of the total amount of unemployment is the result of quite long spells among a small portion of those who experience unemployment during the year.

Although nonwhites have considerably higher unemployment rates than whites, the overwhelming majority of the teenage unemployed are white. Approximately half of the difference between the unemployment rates of whites and blacks can be accounted for by demographic and economic differences.

There is a small group of teenagers with relatively little schooling for whom unemployment does seem to be a serious and persistent problem. This group suffers most of the teenage unemployment. Although their unemployment rate improves markedly as they move into their twenties, it remains very high relative to the unemployment rate of better educated and more able young men.

Specific Information, General Information, and Employment Matches under Uncertainty

W. Kip Viscusi

Working Paper No. 394

September 1979

Employment matches under uncertainty are typically accompanied by opportunities for information acquisition. Workers can acquire specific information about productivity lotteries at the firm or general information affecting their probabilistic beliefs about work elsewhere. Enterprises can acquire specific information concerning the productivity of a particular worker or general

information about different groups of workers in a production process. In all cases, the market equilibrium with flexible wages is efficient. Moreover, there is no opportunity for strategic behavior that would alter this result. Both forms of information are associated with rising earnings profiles over time, but the steepness is greater in the general case. The negative turnover-wage relation is attributable in part to the lower match termination rate of workers with productive job histories, who earn higher wages than their less productive counterparts. General information is associated with more termination of employment matches by employers and employees than is specific information. The implications of specific and general information for matching processes in many respects parallel the role of that distinction in human capital theory, strengthening the link between matching theories and earlier human capital analyses.

Adjusting Depreciation in an Inflationary Economy: Indexing Versus Acceleration

Martin Feldstein

Working Paper No. 395

September 1979

With the existing "historic cost" method of depreciation, higher inflation rates reduce the real value of future depreciation deductions and therefore raise the real net cost of investment. The calculations in this paper show that this rise in the net cost can be quite substantial at recent inflation rates; for example, the real net cost of an equipment investment with a thirteen-year tax life is raised 21 percent by an 8 percent expected inflation rate if the firm uses a 4 percent real discount rate.

The effects of inflation on the net cost of investment can be completely eliminated by indexing depreciation. A more accelerated depreciation schedule can also lower the net cost of investment and make that net cost less sensitive to the rate of inflation. The current paper examines a particular acceleration proposal and finds that, for moderate rates of inflation and real discount rates, the acceleration proposal and full indexation are quite similar. For low rates of inflation, high discount rates, or very long-lived investments, the acceleration proposal causes greater reductions in net cost than would results from complete indexing. Conversely, for high rates of inflation, low discount rates, or very short-lived investments, the acceleration method fails to offset the adverse effects of inflation.

Since the acceleration and indexation methods have quite similar effects under existing economic conditions, the choice between them requires balancing the administrative simplicity and other possible advantages of acceleration against the automatic protection that indexation offers against the risk of significant changes from the recent inflation rates and discount rates.

Family Effects in Youth Employment

Albert Rees and Wayne Gray

Working Paper No. 396

October 1979

The authors begin with the hypothesis that parental contacts play a major role in finding jobs for youth. This hypothesis is tested with a model of youth employment that includes characteristics of other family members in addition to a large number of control variables. Particular attention is paid to parental characteristics that might indicate a parent's ability to assist the youth in finding a job, including occupation, industry, and education. The effects of such variables are generally not significant and do not support the initial hypothesis. However, the probability that a youth will be employed is significantly affected by the presence of employed siblings, indicating the presence of some intrafamily effects.

The Duration of Youth Unemployment in West Germany: Some Theoretical Considerations

Wolfgang Franz

Working Paper No. 397

October 1979

This paper presents a theoretical model dealing with the duration of youth unemployment in West Germany. Duration can be expressed in terms of the underlying hazard function. After a brief discussion of the reasonable shape of the hazard function, a distinction is made with respect to the probabilities of receiving a job offer and of accepting it. Determinants of the latter decision are developed using a unified model of consumption, leisure, and job search. Uncertainty and some restrictions, such as standard work time and entitlement to employment compensation, are taken into account. The probability of receiving a job offer depends, among other factors, on the screening process undertaken by the firms offering employment.

Adolescent Health, Family Background, and Preventive Medical Care

Linda N. Edwards and Michael Grossman

Working Paper No. 398

October 1979

This paper investigates the health of white adolescents, focusing particularly on the roles of family background and preventive medical care. This emphasis is motivated in part by our desire to study adolescent health in the context of the nature-nurture controversy. The

findings indicate (1) that family characteristics (especially mother's schooling) do have significant impact on adolescent health and (2) that preventive care is an important vehicle for this impact in the case of dental health, but not in the case of physical health measures. Similarly, the greater availability of dentists has a positive impact on dental health, but greater availability of pediatricians does not alter the physical health measures. On the basis of these results, we predict that government efforts to improve the dental health of adolescents with policies to lower the cost of dental care or increase the availability of dentists are much more likely to be successful than similar policies directed at improving the physical health of adolescents.

Teenage Unemployment: Permanent Scars or Temporary Blemishes?

David T. Ellwood

Working Paper No. 399

October 1979

This paper examines the persistence and long-term impacts of early labor force experiences. The paper reports a rise in employment rates for a cohort of young men as they age, but points out that those persons with poor early employment records have comparatively poor records later. In order to assess the extent to which differences in later employment and wages are causally related to these earlier employment experiences, the methodologies of Heckman, Chamberlain, and others are extended to account for Markov type persistence. A straight forward estimation technique results. In addition, a Sims type causality test is used to measure the true impact of work experience on wages.

The paper concludes that the effects of a period without work do not end with that spell. A teenager who spends time out of work in one year will probably work less in the next year than he would have if he had worked the entire previous year. Furthermore, the lost work experience will be reflected in considerably lower wages. At the same time, the data provide no evidence that early unemployment sets off a vicious cycle of recurrent unemployment. The reduced employment effects die off very quickly. What appear to persist are the effects of lost work experience on wages.

The Effect of Unionism on Worker Attachment to Firms

Richard B. Freeman

Working Paper No. 400

October 1979

This study uses several data sets on individual workers to analyze the impact of unionism on the length of attachment between workers and firms. It finds that union-

ism substantially raises tenure and reduces probabilities of separation. The increase in worker attachment to firms resulting from unionism is *not* due largely to monopoly wage increases nor to reductions in employer initiated separations nor to unionization of more stable workers. Rather, it is due to changes in worker behavior induced by unionized work settings. Among the conditions of the work place that appear to raise tenure with a firm are the presence of grievance systems and of specific work rules such as seniority.

These findings provide some support for the "exit-

voice" model of the union and for the traditional industrial relations view of unionism as a complex institution that causes wide-ranging changes in the job market. They suggest that modern empirical research on trade unionism, which currently focuses almost exclusively on estimating monopoly effects, should be extended to analyze the nonmonopoly wage voice or industrial jurisprudence impacts of unions. Unions have monopoly wage effects, but they also have more subtle economic effects, potentially beneficial to society, that deserve attention.

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