Editors' Summary

THIS ISSUE of Brookings Papers on Economic Activity contains papers and discussions presented at the forty-eighth conference of the Brookings Panel on Economic Activity, which was held in Washington, D.C., on September 14 and 15, 1989. The first major paper, by William D. Nordhaus, examines theories of the political business cycle that model how political administrations may manipulate the economy to enhance their reelection prospects. The second major paper, by Steven N. Durlauf, analyzes the persistence of shocks to aggregate output, and discusses the implications of persistence for stabilization policy. The first report, by Benjamin M. Friedman and David I. Laibson, looks at the extreme movements in prices on the U.S. stock market and presents a statistical model for characterizing them. Two reports, by Daniel J. B. Mitchell and by Michael L. Wachter and William H. Carter, assess current wage and labor market conditions in an attempt to forecast whether inflation is likely to accelerate over the next few years. Finally, a symposium of four reports, by Richard N. Cooper, Rudiger Dornbusch, Vittorio Grilli, and Merton J. Peck, examines issues surrounding Europe 1992.

IN SPITE OF the skepticism among many economists about the capacity of policymakers to control the economy, much of the public holds the administration in power responsible for economic conditions, and there is substantial evidence, formal and informal, that economic factors help determine the outcome of elections. Although the public has long suspected politicians of manipulating the economy for political advantage, and although the potential importance of the interaction among voters, politicians, and the economy is evident, the precise mechanisms of the political economic process are by no means transparent. Over the past 15 years, political scientists and economists have developed a variety of formal models designed to illuminate these phenomena. In the first paper of this volume, William D. Nordhaus examines both theory and evidence concerning the political business cycle (PBC), and provides his own model of political parties' behavior and voters' reactions.

All PBC models have to make assumptions about the preferences and capabilities of voters and political parties and about the structure of the economy in which they operate. Are voters and politicians rational, competent, and well informed? Do voters care about economic variables like inflation and unemployment? Do parties care only about getting elected, or are they ideological, caring about economic and social outcomes? Does the economy respond to policy actions by the party in power, and is that response immediate, or do some or all of the consequences come only with a long and uncertain lag? Are economic and political outcomes deterministic, or are economic and political shocks important?

Nordhaus identifies five main types of models in the PBC literature, each implying a particular set of assumptions about these characteristics of parties, voters, and the economic structure. One of the simplest models to analyze, and the first to be systematically explored, assumes that parties are simply interested in winning votes (they are opportunistic) and that voters are nonrational, evaluating what has happened to them in the past but not predicting future performance. When such voters and parties interact in an economy where the policymaker can deliver current employment and output at the cost of future inflation, they produce an "opportunistic" cycle in which parties engage in anti-inflation policies early in the electoral cycle and stimulate the economy as the election approaches. Because voters are retrospective, these models also predict a high-inflation equilibrium.

If instead of being purely opportunistic, parties are ideological, caring about social and economic outcomes as well as about getting elected, policies will reflect both priorities. Because these ideological parties want to get elected so that they can implement the programs they care about, they will vary policies over time to manipulate the economy to enhance their election prospects. It would be possible to conceive of purist parties that have no concern for getting elected, but Nordhaus does not model such an unrealistic case.

These first two models assume voters are nonrational, imperfectly informed, and not fully using available information. At the other extreme are models that assume voters have perfect memories, and are fully

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informed and forward looking—what Nordhaus calls "ultrarational." Because parties cannot systematically "fool" such voters by manipulating the economy, such models typically do not generate a political business cycle.

While differing in their view of voters' competence and knowledge, all these models assume that parties are perfectly competent, effectively using all available information. Furthermore, in these models parties control economic events, so it is rational for voters to credit or blame parties for their economic welfare. Nordhaus identifies two other classes of models in which parties are less omniscient and omnipotent. One type, the "external shock" models, allows external events such as war or revolution to influence or control economic outcomes. How the presence of such shocks affects political events obviously depends on the perception of voters. Poorly informed voters will vote out parties as a result of adverse economic conditions whether or not the party in power is responsible. By contrast, ultrarational voters will not blame or credit parties for matters beyond their control, so such shocks will not alter the political dynamics. However, even ultrarational voters may change their vote in the belief that one or the other party's objectives better match their own views given changed external circumstances. The second type of model in which parties have limited capacities emphasizes differences in the competence of parties to deal with events. Voters may choose between parties on the basis of differences in perceived competence, as well as because of differences in party ideology.

Nordhaus presents his own formal model in which parties display a blend of opportunistic and ideological behavior. Because parties have different ideologies, they care about economic outcomes, but they recognize that their capacity to influence those outcomes depends on their getting elected. They are thus pragmatic ideological parties whose policies differ from those they would espouse if there were no need to worry about elections. By assuming an objective function that places weight both on achieving ideological objectives and simply on being elected, Nordhaus is able to illustrate how the relative importance of ideology can affect political outcomes. When parties are purely opportunistic, the familiar Downs-Hotelling result emerges, with the policies of parties converging. But when sufficient weight is placed on achieving ideological objectives, the result can be a stable equilibrium in which parties' policies are different. The precise nature of the outcome depends on how the parties' preferences align with those of the voters. Nordhaus summarizes voters' preferences by a function indicating how the probability of a given party winning depends on the divergence of each party's policy from the policy preference of the median voter. For example, if the opposing party is "extreme" and badly out of tune with the electorate, a party can be practically guaranteed of being elected with a policy that is closer to its own preferences than to those of the electorate. Even with Nordhaus's relatively simple specifications, however, the optimal policy of one party depends in a complex way on the behavior of the other.

Nordhaus calculates the Nash equilibrium for a variety of cases. One expected, robust result is that ideological parties are less responsive to changes in voters' preferences than are purely opportunistic parties; in equilibrium, the latter adopt policies that align perfectly with median voter preferences. When the parties' ideologies are symmetric around the median voter's preferences, the policy averaged over administrations can correspond to the median voter's preference, even though as parties become more ideological their policies diverge from the tastes of the median voter. However, the variance of policies and outcomes in this case will be much greater than it is in the case of more opportunistic parties, presumably with some cost to voters. A corollary is that the response of average policy to shifts in voter preferences will be almost complete; although each party's responses may be heavily damped by its ideology, the time in office of the party more closely aligned to the new voter preferences will increase, thereby shifting the average policy in the direction of the new voter preference.

Nordhaus's model predicts other important ways in which the equilibrium behavior of ideological parties differs from that of opportunistic parties. For example, as parties become more ideological, they tend to move away from the center of the ideological spectrum; similarly, the less sensitive or predictable is voters' response to outcomes, the further from the median voter's preferences will ideological parties position themselves. Nordhaus notes that, despite such theoretical differences in parties' behavior, it is difficult to distinguish ideological from opportunistic behavior because ideological parties care about being elected and temper policies to enhance the chances of voter acceptance. And because ideological parties care about getting elected, "opportunistic" cycles can occur even with ideological parties.

To examine the nature of the PBC that will result from the interaction of various types of parties and voters, Nordhaus turns to a model in which voters care about inflation and unemployment, which, in turn, are related as in a conventional natural-rate model. The key is the model's intertemporal structure. Increases in demand first increase employment with little effect on inflation; over time inflation increases and the employment gains disappear. Nordhaus first shows how opportunistic parties confronted with myopic voters who pay little attention to the distant past or future will generate the traditional political business cycle. Although from some initial conditions it may take time for the cycle to take hold, eventually elections are followed immediately by high unemployment, with expansion and lower unemployment coming before the next election. Recognizing exogenous supply shocks in the model gives a more realistic appearance to the cycles the model generates but does not alter them in essential ways.

Ideological cycles are both more difficult to analyze and more interesting. While each party will do some manipulating while it is in power, just as in the opportunistic case, policies also differ according to which party gets elected. Voters regularly turn out the administration in power, and the economy fluctuates around the outcomes "preferred" by the electorate. Nordhaus's simulations also demonstrate the sensitivity of economic performance to changes in the preferences of parties or voters, or to economic shocks. A small change in either may change who governs for at least one electoral cycle, and such a discrete change may make a large difference in economic outcomes.

Nordhaus shows how a predominance of ultrarational voters dramatically changes the system. Because such voters see through the veil of economic shocks, and properly credit or blame the governing party, there will be no electoral-period cycle. This striking difference in the performance of economies with ultrarational as opposed to myopic, poorly informed voters motivates Nordhaus's main empirical investigation. Since PBCs occur only in the absence of ultrarational voters, he looks for evidence about voters' horizons and rationality. One important source of information is the Gallup poll on presidential performance. Nordhaus first notes that the Gallup approval ratio, the ratio of approval to disapproval excluding those with no opinion, shows the same strong dependence on economic events revealed in studies of electoral returns. The approval ratio of general performance has a 0.94 correlation with the approval of economic management, and both unemployment and inflation have important effects on popularity in the United States. Similar effects appear in the United Kingdom and West Germany. Nordhaus notes that the highly significant effect of unemployment on both general and economic approval is inconsistent with the joint hypothesis of ultrarational voters and a new classical structure of the economy. In such an economy policymakers can affect only inflation, and should not be credited or blamed for unemployment or real output. There is little doubt of the irrelevance of the new-classical model in the minds of the voters.

A second test of ultrarationality comes from what Nordhaus calls the "honeymoon" effect. If voters are ultrarational it is hard to see why popularity should be systematically high soon after elections with popularity then eroding after a few months. As Nordhaus puts it, after a couple of political marriages have gone sour, voters should remember their past disillusionment and so should not experience post-election euphoria. The data speak with clarity; for the first eight postwar U.S. presidents, the approval ratio initially rises by a factor of about eight. It then decays by about an estimated 20 percent per month for 10 months. Nordhaus finds it difficult to imagine an unbiased and efficient method of processing political information and choosing among candidates that would induce such consistently large and predictable swings in voter attitudes. He notes other evidence that seems inconsistent with ultrarationality: popularity appears to be serially correlated rather than to follow a random walk, and studies of election returns show that the importance voters place on recent unemployment is neither a good summary of historical experience nor an optimal forecast of the future. Nordhaus concludes that the ultrarational model of the voter is highly implausible, and suggests that in a world where voting has little economic value to the individual and reliable forecasts about the future are costly to obtain, retrospective evaluation of incumbents based on simple indexes such as unemployment and inflation may be a reasonable way for many voters to make political decisions.

The literature on the PBC contains an array of studies that purport to detect one or the other of the varieties of political behavior, ranging from purely ideological to totally opportunistic. Nordhaus reports on several studies that found evidence that government policy responds to both reelection proximity and the government's ideology, both in the United

States and in a variety of other countries. He finds that these studies provide clear evidence of the importance of PBC effects, but is not persuaded that they distinguish adequately between opportunistic and ideological models. Similarly, he finds evidence that some fiscal variables, such as the social security tax rate, have moved in accord with the opportunistic model. However, measures of opportunistic or ideological behavior explain only a small fraction of the behavior of transfer payments. He does find what he calls a "foxhole" effect in monetary policy: remarkably, the discount rate has never been changed in the month preceding a presidential election. In Nordhaus's view one clear case of an opportunistic cycle was the 1972 election, where it appears that a number of steps were taken by the Nixon administration purely to enhance its election prospects. Other administrations appear to have intentionally pursued politically costly preelection economic policies.

Nordhaus concludes that no simple model explains political business cycles. In his view these cycles have reflected a wide variety of party behavior—ideological or opportunistic or both or neither—depending upon the electoral regime, individual personalities, and particular economic circumstances. But while the protean nature of the political cycle makes it difficult to model, it also assures that it will continue to exist.

TRADITIONALLY most macroeconomists have analyzed the trend and cyclical behavior of GNP separately. They viewed the trend as a reflection of gradually changing determinants of potential output, labor force growth, capital accumulation, and technical change, and cycles as fluctuations of output around that trend. Most of the uncertainty about short-run output fluctuations was attributed to the cyclical component. Recent econometric studies have characterized output with a quite different statistical model, in which trends and cycles are intertwined and in which a single stochastic element explains both the short- and long-run behavior of output. Using this model, many investigators find that the estimated time series process for GNP, as well as for many related economic series, is consistent with the presence of a "unit root," indicating that a part of a typical shock to GNP is permanent. For example, a GNP change that traditional models would have characterized as a cyclical downturn relative to the trend of GNP would be characterized by the new model as a permanent reduction in the level of GNP. This new statistical interpretation of the time series of GNP has been thought by many economists to have important implications for interpreting GNP fluctuations and the conduct of policies.

In the second paper of this issue, Steven N. Durlauf reexamines the evidence on the persistence of output shocks, and its relevance to understanding the sources of economic fluctuations and the role of stabilization policy. Like other recent analysts, Durlauf concludes that it is appropriate to regard unit roots as a stylized fact. Persistence seems to characterize economic shocks to the economy. But unlike some analysts, he doubts that such persistence comes from technological or other supply-side phenomena. Supply-side interpretations, such as those given in the real business cycle literature, seem to leave little room for active government policy. Durlauf suggests, on the contrary, that active policy may be even more important if output shocks persist than if they are transient.

Durlauf begins with a discussion of the conceptual issues involved in the investigation of persistence. He suggests that much of the debate about the presence of unit roots is ill-posed. Most analysis has followed classical statistical methodology, testing whether the data reject a null hypothesis that output follows a random walk, or contains a unit root. Given the length of sample periods used, such tests have low power to discriminate among alternative hypotheses; that is, they have a low probability of rejecting a false null hypothesis under a variety of possible alternatives. Hence observers looking at the same data, but with different prior beliefs and testing different null hypotheses, all find the data consistent with their beliefs. Durlauf also argues that whether or not shocks to GNP are literally permanent is less relevant than whether they have an economically meaningful life. In particular, he proposes using a measure of persistence that explicitly discounts future consequences of a current shock. With this measure, a "transitory" shock, whose effect is concentrated in the first few years, could be more "persistent" in practical terms than a shock whose effect contains a unit root, but whose permanent effect does not become large for many periods. If the effect of shocks vanishes, but only after a long time, then distinguishing such mean reversion from the case where a shock never vanishes has virtually no consequences for social welfare.

Durlauf proceeds with a spectral analysis of GNP for the period 1870 to 1987, decomposing the changes in GNP and in his discounted welfare measure into component series with different cyclical frequencies. The

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resulting spectral distribution function displays the weight assigned to the various component series in order to best characterize the original time series. Durlauf takes as his null hypothesis the assumption that the full effect of a shock to output is felt immediately and persists forever. He gets several interesting results. First, the data do not reject the hypothesis that GNP follows a random walk for the pre-Depression or postwar periods, but do reject it for the period as a whole, when the Depression is included. Thus whether one regards the Depression and wartime recovery as an anomaly, or as evidence of a tendency of the economy to revert eventually to normal output, is important in interpreting the behavior of GNP more generally. Setting aside the Depression, there appears to be little evidence that the economy's performance was much different in the postwar period than in the pre-Depression years. All these results are closely paralleled when the discounted welfare measure is analyzed.

Some authors have argued that output persistence is evidence that real factors affecting the supply side of the economy, primarily technological changes, play a primary role in fluctuations of GNP. If that is so, demand management should get little credit or blame for the performance of real output; the only important role for policy in the short run would be in promoting price stability. Durlauf presents several arguments questioning this interpretation of persistence. He argues that if the shocks are technological, one would expect innovations to migrate across countries, particularly those at similar stages of industrial development. Thus if the process governing technology shows persistencecontains a unit root-then a related persistence should be present in other countries with similar technology. Durlauf tests this hypothesis for pairwise combinations of Japan, West Germany, France, the United Kingdom, Canada, and the United States. Only in two cases-the United Kingdom and Canada, and the United States and Canada-was there reason to accept the hypothesis that the countries' outputs were so related. This lack of close connection is confirmed by an investigation of how much of a country's output can be explained by other countries' output changes, past, present or future, once the country's own history is known. With few exceptions, he finds little evidence of such crosscountry interactions. While recognizing that models could be devised that would reconcile these facts with a technological explanation of output fluctuations, Durlauf prefers the more straightforward conclusion

that fluctuations in output arise from sources other than technology shocks.

Durlauf examines innovations of output in different sectors of a single economy for additional evidence on the nature of output disturbances. Two findings are noteworthy. First, unit roots and random walk behavior exist at the sectoral level, mimicking the aggregate output series. Second, innovations are substantially cointegrated among different sectors. Technological shocks, Durlauf argues, can hardly explain such cointegration because sectors as dissimilar as mining and nondurable manufacturing or agriculture and electricity should not be subject to common shifts in technology.

Having questioned the supply or productivity interpretation of unit roots, Durlauf explores the possibility of a demand interpretation. The supply interpretation rests, in part, on older macroeconomic theories in which demand shocks can only be transitory and in which long-run growth reflects technology and capital accumulation. Durlauf describes a variety of new theoretical macroeconomic models that could generate persistence in output changes. These models can all be characterized as exhibiting coordination failures reflecting externalities of individual or firm behavior. Such externalities can arise from imperfectly competitive markets, incomplete markets, or economywide increasing returns to scale that cannot be captured by individual firms, and all give rise to the possibility of multiple steady-state levels of economic activity. Because a shock can move the economy from one equilibrium to another, with no tendency to return to the original position, such models provide a straightforward explanation of persistence. Durlauf presents a specific model characterized by coordination failure among interdependent industries and shows that it can generate rich dynamics, including aggregate output dynamics and cross-sectoral correlations much like those observed in actual data. He reports that for models of this sort it is possible to generate an aggregate output series that is precisely a random walk. Depending on whether the interdependence among industries is a demand or supply phenomenon, the resulting behavior can be generated by either demand or supply shocks. But Durlauf recognizes that the profession cannot distinguish more conventional explanations of persistence from models of coordination failure such as the one he presents.

Durlauf offers some lessons for the conduct of policy in light of such

uncertainty in identifying the economic structure. Although such uncertainty implies that policy must weigh the outcomes that would result from the different structures, he reasons that the evident persistence in output argues for more active countercyclical policy. Durlauf notes that most observers agree that demand policies have an immediate effect on output. Taken together with his evidence that shocks to output, from whatever source, appear to be persistent, this means that demand policies have long-lasting effects on output. Monetary policymakers should not avoid stabilizing actions on the grounds that their only long-lasting effect would be on the price level.

THE MOVEMENTS of stock prices fascinate and frustrate investors and challenge economic and financial analysts. Understanding the statistical properties of stock price movements is important to intelligent investing and to understanding the financial behavior of the economy. A convenient and popular way to summarize the movement of the market and of individual securities is by the mean and variance of returns. Not only are these statistics simple to calculate, but, if asset returns are normally distributed, they are all that is needed to describe completely the distribution of returns. Furthermore, optimal portfolio management is delightfully simple when asset returns are normally distributed. Unfortunately, as Benjamin M. Friedman and David I. Laibson observe at the outset of the first report in this issue, stock prices "sometimes behave in strange ways" that are not well described by a normal distribution. In particular, there are more "outliers," very large positive or negative returns, than there should be if distributions were normal.

Some financial analysts have ignored this problem, continuing to summarize the characteristics of the market and of individual securities by the mean and variance of returns. Others have attempted to find and use alternative statistical models that better describe the data. One drawback of many of these attempts is that the alternatives sacrifice the simplicity of the normal distribution. Another is that it is often difficult to relate the features of the alternative distribution to economic behavior. Friedman and Laibson present a new model of stock market returns. They show that their model has distinctive implications for the evaluation of the efficiency and volatility of the market, for portfolio behavior, and, potentially, for the way the stock market influences, and is influenced by, the macroeconomy.

Friedman and Laibson begin with a description of stock return data since World War II. The average pretax return for the Standard and Poor's 500 for 1946-88 was 12.6 percent per year, an excess annual return over Treasury bills of 7.9 percent. The variation of returns, either total or the excess over Treasury bill yields, is also very large. Over the same period, the standard deviation of excess returns was nearly 8 percent on a quarterly basis, or well over 30 percent at an annual rate. Two special features of the data stand out. First, although the 22.6 percent one-day decline in stock prices on October 19, 1987, was uniquely large, there were a number of extremely large positive or negative returns over periods as long as a quarter. In 8 of the 168 quarters in the period. excess returns were more than two standard deviations above or below average returns. Under the usual assumption that the returns are normally distributed and independent, the chance of so many observations in the tails of the distribution is less than 1 percent. Similar features characterize stock prices for the period 1927-88 and for other intervals throughout the nineteenth and twentieth centuries. Second, these exceptionally large movements have more often been crashes than rallies: six of the eight exceptional quarterly observations in the postwar years were negative, including the only two quarterly returns that were more than three standard deviations from the average; skewness toward negative returns is statistically significant at the 0.01 percent level.

The fact that U.S. stock returns have too many extreme observations to fit the normal distribution leads Friedman and Laibson to model market returns as the sum of two components, one drawn from a normal distribution each period and another that appears infrequently, but is very large when it does appear. The authors see no reason in principle that the first of these two components could not exhibit predictable behavior, such as serial correlation or time-varying volatility. But they regard the second component as inherently irregular and unpredictable. In their view, these extraordinary returns could reflect a variety of unpredictable phenomena—unexpected but dramatic developments in the economic or political sphere, the bursting of "bubbles," the beginning or end of fads and fashions.

To make this two-component model operational, the authors need a specific statistical model for the extraordinary-returns component to add to the ordinary returns that are assumed to be normally distributed. They assume the extraordinary component follows a serially indepen-

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dent Poisson distribution. Under this assumption, an extraordinary event may or may not occur in any given period. If one does occur, its actual value is a random draw from a normal distribution with a different mean and variance than that characterizing ordinary returns. Although in principle a number of extraordinary events could occur in any particular period, estimates of the model imply that extraordinary events are rare. When the two components are combined, the stock market appears to be adequately described as containing an ordinary level of market return and risk, punctuated by occasional crashes. The "ordinary" returns average 2.46 percent per quarter with a standard deviation of 6.93 percent, whereas the occasional extraordinary return is a crash with a value of -23 percent at a quarterly rate and with zero variance. The frequency of such crashes is estimated to be about once every 31 quarters.

The model identifies four crashes in the postwar period. Each corresponds to an actual market crash, and three of the four correspond to recognized nonmarket events: the "Kennedy crash" in the second quarter of 1962 when his administration battled with the steel industry; the "credit crunch" and default of Penn Central in the second quarter of 1970; the cluster of events around the third quarter of 1974—OPEC, tight money, Watergate, the failure of Franklin National Bank. The fourth identified crash is that of the fourth quarter of 1987.

Not surprisingly, the distribution of ordinary returns implied by removing the extraordinary component has noticeably different statistical properties than the raw return series. The distribution no longer has "fat" tails and significant skewness. Similarly, using the authors' model modifies one's view both of the serial independence of returns, which is central to the issue of market efficiency, and of the persistence of "volatility" shocks. The authors present simple autoregressions showing that while there is only weak evidence of serial correlation of raw returns, ordinary returns show clear and statistically significant firstand higher-order autocorrelations. Similarly, the evidence of persistence in volatility is very weak in the raw returns and is much stronger in the ordinary component.

Friedman and Laibson buttress the results on volatility persistence with a conventional autoregressive conditional heteroskedastic (ARCH) model that specifies the particular way in which variances themselves vary over time. Although there are slight differences using this approach, in all cases the evidence for persistence is greater for ordinary returns than it is for the raw return series that includes the extraordinary component.

The authors recognize that other statistical specifications could rationalize the salient features of the basic return series. This leads them to present an alternative model, a modified ARCH, or MARCH, model in which the current volatility of returns may depend in a highly nonlinear way on last period's volatility. This model is statistically superior to the standard ARCH model and implies the same qualitative behavior of persistence as the authors' two-component model. The MARCH model, just like their two-component model, in effect distinguishes between extraordinary and ordinary movements. Extremely high volatility levels decay relatively quickly, while moderately high levels decay much more slowly. The authors conclude that the linear structure imposed in the simpler ARCH models masks the persistence of volatility that exists for modest shocks. The more flexible MARCH model confirms the relatively high persistence for such shocks found in the simpler autoregressive tests of the two-component model.

The success of the author's two-component model in capturing important features of the market leads them to investigate its implications for the behavior of an investor maximizing a mean-variance utility function. They assume the investor chooses how to allocate wealth between stocks and Treasury bills, which are assumed free of risk, and estimates likely outcomes using the MARCH model. Given the degree of risk aversion implicit in the estimates of the MARCH model, in the first quarter of 1989 the typical investor would choose to hold approximately one-third of wealth in stocks, the rest in Treasury bills.

Investors' estimates can reflect only their experience to date; their estimates evolve as experience accumulates. A crucial parameter for the investor is the probability and size of the extraordinary (adverse) event. The authors show that, although the estimated size of extraordinary events does not change much over the period, each occurrence dramatically alters the estimated probability of another occurrence. As a result, the proportion of stocks in the optimal portfolio dramatically falls after each crash. Then, as time goes by without another crash, estimates of the probability of another one gradually decline, and the portfolio shifts gradually into stocks. Interestingly, Friedman and Laibson show that their calculated optimal stock portfolio, using these

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"rolling" estimates, has a correlation of -0.7 with the spread between Baa-rated corporate bond yields over U.S. Treasury bond yields, a spread that presumably reflects investors' estimates of the risk of a major financial collapse.

The authors find that the behavior implied by their model parallels the financial instability hypothesis developed by Hyman Minsky. According to Minsky, stable periods create a false sense of security, and institutions' and individuals' attitudes evolve in ways that make the financial system increasingly fragile and vulnerable to shocks. The authors' model, like Minsky's, attributes myopia to investors. Investors perceive that the probability of a crash is declining, whereas in fact it is constant. And like agents in Minsky's world, investors take more and more exposed positions as time passes since the most recent market crash. Even though their model does not provide an explanation of extraordinary shocks, it does explain why a shock might be amplified by investors' reactions. And it could provide an element in a richer model, in which the increased exposure of investors would gradually raise the probability of a major decline in prices. The authors note that in such a model, myopic investors would actually cause prices to be autocorrelated, generating slow mean reversion that some have detected in actual market prices.

As THE LONG EXPANSION of the 1980s has continued, bringing unemployment rates well below 6 percent, analysts and policymakers have searched for clues to whether inflation might be accelerating. Two reports in the present issue examine wages and labor market conditions in an attempt to cast light on that question.

In the first report, Daniel J. B. Mitchell takes the position that the nonaccelerating inflation rate of unemployment—NAIRU—should be viewed not as a constant but as a variable that is importantly influenced by institutional, demographic, and political changes. Based on the experience of the 1970s, many observers expected inflation to accelerate when unemployment fell to 6 percent in 1988. But Mitchell notes that the 1970s may have been exceptional. Productivity growth slowed, but wage-setting did not slow correspondingly; demographics pushed up average unemployment rates associated with any given amount of overall tightness in the labor market; and rapid increases in food and energy prices helped push up the average price level. Thus Mitchell regards comparisons of present labor markets with those of the mid-1960s as

more relevant for assessing the present situation, and in particular compares conditions in 1988, when unemployment averaged 5.5 percent, with those in 1964, when unemployment averaged 5.2 percent and inflation remained subdued, worsening only after markets tightened substantially in 1965 and later.

Mitchell shows that demographic changes, which were important in raising the level of the NAIRU in the 1970s, do not signal tighter labor markets in 1988 than in 1964. Indeed, the unemployment rate for men aged 25 to 54, the prime working ages, was substantially higher in 1988 than in 1964—4.4 percent as against 3.2 percent. Mitchell shows that any unemployment indicator, such as Perry-weighted unemployment, that assigns weight to this demographic group shows much more slack in the 1988 labor market. But he also warns that the prime-age male cohort may not have the same importance today that it did in the 1960s because of other institutional changes in the labor market.

Mitchell turns to some indicators of labor market efficiency for more evidence on the NAIRU. Updating Katharine Abraham's adjusted index of help-wanted advertising (*BPEA*, 1:1987), Mitchell estimates that this indicator of job vacancies, which had apparently worsened through the middle of this decade, has fallen back in line with unemployment rates, measuring 94 in 1988 on a scale where 1964 equals 100. He also shows that unemployment insurance, which is sometimes thought to discourage job search, is less important today than in the past. Since 1964, the ratio of average UI benefits to average earnings has fallen from 39 percent to 35 percent. Perhaps because of this change, and changes in eligibility, insured unemployed workers currently make up only 35 percent of all jobless workers, compared with 42 percent in 1964. The one development that might indicate a tighter overall labor market at present is that regional variations in unemployment were greater in 1988 than in 1964.

Mitchell believes the most significant institutional change in the labor market is the erosion of what he calls "the big firm, big union, Galbraithian economy." One striking indicator of this change is that the proportion of private compensation that was union-negotiated fell from 39 percent in 1963–64 to 21 percent in 1988. As a consequence, quite apart from any pattern-setting influence that union wages may have on other wages, a 1 percent increase in union wages, which would have directly raised economywide compensation 0.4 percent in the early 1960s, would raise it only 0.2 percent today. Union strength at the bargaining table has also

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eroded. Whereas in 1964 only 8 percent of settlements had no first-year wage increase, 37 percent had none in 1986. Although the proportion of such settlements was highest in 1986, some 20 percent of settlements had no increase as late as the first half of 1989.

Mitchell does not regard unions as the source of all inflation in the past, nor as the only place to look for a new inflation outbreak at present. But he does conclude that unions at present are unlikely to be an independent source of renewed wage inflation. Relatedly, he sees other developments in the job market as making for a quicker response of wages and jobs to employment conditions. He notes an apparent shift toward shorter job tenure and less permanent attachment between workers and firms. He conjectures that firms have been turning increasingly toward "contingent" workers to fill their employment needs and notes that the proportion of part-time employees in the work force has risen from 14 percent in 1964 to 18 percent recently. Similarly, he suspects that contingent pay has increased as a proportion of total compensation, noting that 21 percent of full-time employees in medium to large firms had profit-sharing in 1988.

Mitchell concludes that today's NAIRU may have settled in the neighborhood of 5–5.5 percent. He observes that, in addition, changes in labor market institutions have made today's wage-setting more competitive and thus reduced the long lags in the response of wages and inflation to labor market conditions that sometimes characterized the economy in the past. Consequently, if markets now become too tight, the resulting acceleration in wages should be more immediately apparent and, conversely, more easily reversed.

IN THE SECOND REPORT on the wage outlook, Michael L. Wachter and William H. Carter focus on the relation between union wages and economywide wages as one key to prospects for wage inflation. Since data comparing union and nonunion wages are available only for the latter part of the postwar period, the authors first extend these data throughout the postwar period using various proxies for union and nonunion wages. The long series reveal an interesting pattern. The union wage premium rose from the early postwar years through the 1950s. It then declined during the decade of the 1960s, contributing to wage moderation, and then rose substantially during the 1970s and into the early part of this decade, contributing to inflation. Because union wages

have risen more slowly than nonunion wages since 1982, some observers have looked to a breakout in union wages as a possible source of a renewed acceleration of general inflation. But the authors' data reveal that the level of the union premium is still high by historical standards even though it has fallen noticeably from its peak in the early 1980s. By either of two measures of the union premium that the authors provide, that premium was a little more than 30 percent in early 1989. That is about 10 to 13 percentage points higher than it was at the end of the 1960s, just before a sharp acceleration of union wages started to enlarge the premium and contributed to the stepped-up inflation of the 1970s. The present premium is near levels at the start of the 1960s, a decade when reductions in the union wage premium helped moderate overall inflation.

Other indicators of union strength and the strength of union bargaining positions confirm the implications of Wachter and Carter's union premium analysis that union wages are not likely to increase sharply. Not only has union employment as a share of total employment declined noticeably, but the union share of employment has declined in traditional union strongholds. As late as the early 1970s, unions represented 47 percent of full-time, nonexecutive, nonprofessional employment in construction, mining, durable good manufacturing, and transportation and public utilities. By 1987 this figure had fallen to 31 percent. Thus even in the most traditionally heavily unionized industries there is today a substantial presence of nonunion workers and firms. The authors add that when international capacity is included in traded goods sectors, the proportion of relevant capacity associated with union labor is even smaller. As another indication of changed labor market conditions, the authors note that there have been only a tenth as many strikes recently as there were in 1967. The few that have occurred have been unusually prolonged, with employers resisting wage demands and replacing strikers with other workers. Another important change is that replacements hired during a strike often become permanent employees.

The authors note that these new conditions are a result of a change in the atmosphere of labor relations rather than of legal changes. A 1938 court case, *MacKay Radio*, established that firms could hire replacement workers during a strike and offer them permanent jobs. But until recently, firms rarely made use of that ruling to hire permanent replacements. Management opposition to unions in the new atmosphere has been more

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aggressive in other ways as well. The authors show that both charges of unfair labor practices brought before the National Labor Relations Board and decertification petitions have been higher in the 1980s than in the past several decades. Taken together with the evidence that the union wage premium is still high by historical standards, these indicators of the change in the negotiating environment suggest that union wages are not likely to lead the way to more rapid wage inflation in the near future.

Finally, the authors provide some empirical estimates of likely wage developments over the next few years. With unemployment maintained at approximately its present level, and with price inflation between 4.5 percent and 5 percent, they project some further narrowing of the union wage premium between now and 1992, along with a modest increase in average rates of inflation.

UNDER THE INITIATIVE known as Europe 1992, the twelve nations of the European Community aim to eliminate most commercial and financial barriers among themselves, thus forming an internal market. Although many proposals are still being negotiated, prospects for the internal market are already credited with spurring investment and economic expansion in Europe. Four reports, by Richard N. Cooper, Rudiger Dornbusch, Vittorio Grilli, and Merton J. Peck, presented as part of a symposium on 1992 at the Panel meeting, examine what 1992 is likely to mean, both for Europe and for its trading partners.

The widely publicized Cecchini report, produced by Michael Emerson and his colleagues under the supervision of Paolo Cecchini, provides the official estimates of Europe's expected economic gains around which the papers of the symposium are organized. In the first paper, Merton J. Peck takes a critical look at the assumptions and projections in the report. He explains how the report predicts the likely microeconomic gains from the removal of trade barriers and other barriers affecting production, the realization of economies of scale, and productivity improvements from increased competition that forces more efficient use of inputs. Using alternative assumptions and data sources, the report estimates an increase in Europe's economic welfare of between 4.3 percent and 6.4 percent of potential GDP. Peck notes that the gain from the 1968 elimination of tariffs within the Community was estimated at roughly 1 percent of GDP, and reasons that the 1992 gains should exceed that figure because the reforms are more comprehensive. Yet, although he finds the methodology behind the present estimates reasonable, he believes they are biased upward. For one thing, at various stages of estimation, where a range of estimates was available, the Emerson team typically used the high estimate. In the automobile sector, for example, Peck shows that four alternative assumptions about oligopoly behavior produce estimates of gains, measured in billions of ECU, of 0.9, 0.9, 1.3 and 12.0, respectively. The estimate of aggregate gains builds on the 12.0 billion. For another, alternative methods of projecting 1992 effects, provided by the Cecchini report itself, show smaller though still noticeable gains in welfare. Peck concludes that the welfare gain from 1992 is likely to be nearer 2 percent of GDP than the 4.3 percent to 6.4 percent estimated by the report. But he agrees with the main thrust of the Cecchini report and is confident that an integrated market would noticeably raise real incomes.

Peck also questions whether all the economic changes envisioned in the plan for 1992, and implicitly assumed in the economic estimates, will materialize. He sees the political desire to protect endangered firms and sectors as the main obstacle to creating the open internal market envisaged by 1992. He wonders, for example, whether it will be feasible to open public procurement fully to foreign competitors. He also suggests it may prove difficult to harmonize technical standards unless they are specified by law. While finding it easy to identify political difficulties like those that have deterred integration in the past, Peck points out that the enormous enthusiasm for Europe 1992 among Europeans greatly enhances the prospect that it will succeed.

IN THE SECOND symposium paper, Vittorio Grilli focuses on the implications of 1992 for financial markets. He identifies a range of current restrictions in European capital markets that either limit the movement of securities across borders so that domestic and foreign assets are not treated alike or limit the activities that foreign firms or agents are allowed to undertake in domestic capital markets. He examines the 1992 initiatives that are designed both to eliminate existing impediments to trade in financial services and instruments and to facilitate the creation of a unified market by the adoption of common rules and standards. He evaluates official estimates of the benefits to be expected from integration and looks at some difficulties that integration may bring.

The directives aimed at creating an integrated banking system would

provide for common capital requirements, a common banking license and list of permissible banking activities, and would guarantee the freedom of banks from one member state to operate throughout the community. A likely consequence is that the "European Bank" will be organized along the most liberal lines, with banks permitted to undertake all banking and securities-related activities. Banks and other financial institutions from countries outside the Community can count on being able to operate branches within the EC if their country, in turn, does not discriminate against foreign branches. Thus Grilli sees no protectionist risk to U.S. financial institutions from 1992. But he notes that some problems are likely to arise. In particular, the principle of home country control, whereby a bank is expected to be regulated and supervised by its home country, might conflict with the need for other nations in which the bank operates to control their own monetary policies, including supervising the liquidity of banks and regulating their reserves.

Grilli points out several economic advantages cited by the European Commission in support of financial market integration. A large, unified financial market would more effectively compete with the United States and Japan; savers would benefit from access to the wider array of financial products; and nonfinancial businesses would benefit from a larger, more competitive banking sector. While agreeing with each of these potential benefits, he questions the Commission's quantitative estimate that they would produce gains in European welfare of 0.3 percent to 1.0 percent of GDP.

The benefit estimates assume that the prices of financial services, which vary widely in Europe, will tend to settle near the lowest prices now observed. Grilli doubts that price reductions will be this large. He notes that the prices of financial service vary widely even within countries with fully liberalized financial sectors. Paradoxically, the two countries with the biggest projected gains in the Commission's estimates are West Germany and the United Kingdom, both of which, Grilli notes, already enjoy the benefits of highly competitive financial systems and so may have little room for further improvement. Thus the gains assumed to flow from the liberalization across Europe may be smaller than the Commission projects. Finally, although he judges that most steps toward financial integration are likely to be taken, Grilli sees potential problems on the tax front. With capital increasingly mobile, tax harmonization is essential for its efficient allocation. Yet national differences in views on taxation of capital income are wide. Not only are tax treatments different from country to country, but it is proving difficult to get agreement even on withholding taxes on capital income. Grilli concludes that the tax treatment of capital income remains an important unresolved problem that threatens to perpetuate tax avoidance and tax evasion.

IN THE THIRD SYMPOSIUM PAPER, Richard N. Cooper looks at the likely changes in barriers to trade, both within Europe and between Europe and the rest of the world. He emphasizes the need for governments to coordinate their tax policies as a complement to the reduction of regulatory and other barriers to trade. Although not attempting a detailed critique of the economic gains projected by the Cecchini report, he believes that the effects of integration are likely to be substantial. Indeed, if the macroeconomic benefits include lower inflation, monetary and fiscal authorities might feel free to boost GDP even more than the report projects.

Cooper, like Grilli, emphasizes that taxation remains one of the most difficult problems for 1992. At present, different levels of national valueadded and excise taxes are reconciled by rebating and imposing taxes as goods cross borders. If borders, and with them these equalizing taxes, are eliminated, indirect taxes would need to be made more uniform across the EC nations. But near equality may be hard to achieve because tax rates and the reliance on indirect taxes as a source of revenue now vary greatly among countries in Europe. Collecting taxes on interest and dividends poses a further problem, because, especially with full capital mobility, individuals can evade taxes by holding their savings in other member countries. A uniform withholding tax on capital income would take care of the problem, but all member nations are not willing to adopt withholding. Cooper notes that footloose firms have an incentive to locate where regulation and taxes are the least onerous. Nations, in turn, would have incentives to ease regulations and reduce taxes to attract firms. Increased "tax competition" may actually pose a fiscal difficulty for the EC; and, if tax rates are not harmonized, increased mobility could actually lead to a poorer allocation of capital. Because of the threat of such effects, Cooper thinks it important to adopt Community-wide standards for regulation and taxation.

Cooper also examines concerns about a "Fortress Europe" developing as a consequence of 1992. He regards the trade diversion that

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would arise naturally from the removal of trade barriers within the Community as minor. New barriers are a greater worry for outsiders. and Cooper discusses several ways in which they might come about. Automobiles provide an important example. Present national quotas on Japanese cars in some countries will have to be eliminated or made uniform. But with a new uniform quota, the free entry that now exists into some parts of Europe would vanish. Similarly, TV broadcasting, an important export of the United States, may be restricted if a quota requiring European content on television programming is adopted. Uncertainties about how reciprocity is interpreted, particularly with respect to financial markets, have troubled non-European firms. That fear has diminished since Community officials indicated that countries treating European banks the same as domestic banks would meet the requirement, even if the treatment differed from EC regulations. However, in part because of such uncertainties, Cooper observes that non-European firms have responded to the prospects of 1992 well before the political arrangements have been completed. He shows that, beginning in the mid-1980s, mergers and acquisitions and direct investment in Europe by both U.S. and Japanese firms increased. Another fear is that the uniform standards for products sold in the EC will be set so as to put foreign suppliers at a disadvantage. Although Cooper acknowledges that such possibilities exist, and should be guarded against in policy discussion with the EC, he believes that the main thrust of the European policy is to open markets and not to be protectionist, so that, on balance, 1992 will be beneficial to American and other foreign exporters.

The dramatic changes now occurring in Eastern Europe raise many new issues for 1992 that EC planners could not have anticipated. Although writing before the opening of the Berlin Wall, Cooper notes that East Germany presents special problems. Because West Germany admits its goods freely, either East Germany would become an effective member of the Community as far as its exports are concerned, or some other way of dealing with East German exports would have to be found. Now that much of Eastern Europe is opening up to the West, the EC will need to confront such issues for a much larger and more diverse group of countries.

IN THE FINAL PAPER of the symposium, Rudiger Dornbusch discusses the implications of 1992 for the conduct of European stabilization policy and

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for the welfare of Europe's trading partners. Dornbusch is more pessimistic than Cooper about what 1992 will mean for non-European economies. He notes that the EC projections themselves anticipate that the creation of the internal market will improve the EC external balance by 1 percent of GDP, implying an equivalent worsening trade balance for others. He also believes there may be additional adverse effects for trading partners due to protectionist pressures, centered in sectors where renewed competition closes plants and costs jobs and where government procurement is open to cross-border competition among European nations. He adds that the mere threat of protection has already caused foreign firms to expand their productive capacity within Europe, so that production will have moved to Europe, whether a protectionist barrier ultimately arises or not. Dornbusch also warns that if, as he believes, the "social dimension" of 1992 raises wages in the low-wage countries, pressure for protection from those countries will increase because their labor will be uncompetitive until their productivity improves.

Financial integration is commonly expected to lower prices for financial services, narrow spreads among interest rates, and lower the average cost of capital. However, Dornbusch notes that, in countries in which interest rates are now repressed, rates may rise as credit rationing becomes less important and borrowers find it easier to get loans. This freeing up of domestic availability will be accompanied by an increase in international lending and borrowing that will permit the financing of investment that was formerly squeezed out of domestic capital markets by public sector deficits.

Although there is already considerable coordination of policymaking within Europe, 1992 will require even more. At present, there are substantial differentials in interest rates across countries, even though exchange rates are supposedly fixed. Dornbusch interprets this to mean that the fixed rates are not expected to last. If exchange rates are to stay fixed, he expects increased capital mobility eventually to force lock-step monetary policies across Europe. He suggests that most foreign central banks would welcome this kind of arrangement, which would tie them closely to German monetary policy. However, in countries such as Spain, Portugal, and Greece, where present inflation rates make fixing nominal exchange rates unrealistic, he suggests a policy of depreciating currencies at a rate equal to the inflation differential with Germany that is, a policy of fixing real exchange rates.

Finally, because a financially unified European market would be a viable alternative to the U.S. capital market, Dornbusch sees a relative decline in demand for dollar-denominated assets. He expects this decline, together with the adverse effects of Europe 1992 on the current accounts of Europe's trading partners, to lead to a major depreciation of the dollar relative to European currencies in the 1990s.